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**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF CALIFORNIA**

CHRISTINE MYERS, Acting as
guardian ad litem for L. Myers, a
minor,

Plaintiff,

vs.

UNITED STATES OF AMERICA,

Defendant.

CASE NO. 02cv1349-BEN
**DECISION WITH
FINDINGS OF FACT AND
CONCLUSIONS OF LAW**

INTRODUCTION

Plaintiff CHRISTINE MYERS filed a First Amended Complaint against a private contractor for the United States, IT/OHM, and the United States under the Federal Tort Claims Act (“FTCA”). *See* 28 U.S.C. § 1346(b).¹ Plaintiff reached a

¹Title 28 U.S.C. § 1346(b) states:

(b) . . . the district courts shall have exclusive jurisdiction of civil actions on claims against the United States, for money damages . . . for injury or loss of property, or personal injury or death caused by the negligent or wrongful act or omission of any employee of the Government while

1 settlement with the private contractor and it is no longer a party to this action. *See*
2 Order Filed Aug.12, 2005.

3 *The Claim*

4 The United States Navy decided to clean up contaminated areas on a military
5 base known as Camp Pendleton.² In carrying out work on the project (in what
6 became known as the Box Canyon landfill project, or Site 7, or "OU-3"), Plaintiff
7 claims that her minor daughter, L Myers, was negligently exposed to toxic levels of
8 the dangerous elemental metal *thallium*. She claims that dirt was being brought to
9 the landfill adjacent to the Wire Mountain Housing Project on the base where the
10 Myers family lived. She claims further that heavy metals migrated in wind-blown
11 dust to the yard where her daughter played and that her daughter was exposed to the
12 heavy metals, particularly thallium. As a result of her exposure to thallium, Plaintiff
13 asserts that L suffers from neurological damage, gastrointestinal disorders, alopecia
14 (loss of hair), pain, psychological injuries, and severe emotional distress and now
15 seeks damages. (First Amended Complaint ¶¶ 12 and 13.)

16 *The Evidence*

17 The first phase of a bifurcated bench trial was held before this Court from
18 February 28, 2006 to March 10, 2006. After this Court issued its findings of fact
19 and conclusions of law finding in favor of the Defendant, an appeal was filed. The
20 Ninth Circuit Court of Appeals reversed. *Myers v. United States*, 652 F.3d 1021
21 (9th Cir. 2011). On remand, the second phase of the trial took place over 11 days
22

23
24 acting within the scope of his office or employment, under circumstances
25 where the United States, if a private person, would be liable to the
claimant in accordance with the law of the place where the act or omission
occurred.

26 ² Camp Pendleton is a United States Marine Corps Base in San Diego County,
27 California. In 1989, the United States Environmental Protection Agency placed Camp
28 Pendleton on its National Priority List. Sites are listed on EPA's National Priority List
based on the relative risk or danger to the public health. *See* 42 U.S.C. § 9605(a)(8).
Placing Camp Pendleton on the National Priority List triggered intra-agency and intra-
governmental plans for clean up. *See* 42 U.S.C. § 9620(e).

1 from February 20, 2013 to March 8, 2013.³

2 During the first phase of the trial in 2006, 51 exhibits were admitted. After
3 the trial concluded, 311 exhibits were entered into evidence by stipulation,
4 including the 51 previously mentioned. Several of the exhibits were hundreds of
5 pages. Few were one or two pages. The overwhelming number of exhibits were of
6 technical or scientific content. Many were nearly illegible because of print quality,
7 size of print, or because they were handwritten.

8 Four months after the second phase of the trial in 2013, the parties jointly
9 moved 123 exhibits into evidence. One exhibit was 3,837 pages in length and filled
10 three banker's boxes (exhibit NR). Plaintiff's exhibits were presented in 23 3½"
11 three-ring binders. Defendant's exhibits were held in six 3½" three-ring binders, in
12 addition to the three boxes of exhibit NR. The Court was required to cull through
13 and remove from those binders the exhibits that were never admitted. The joint
14 exhibits from the first phase of trial together with Plaintiff's admitted exhibits from
15

16 ³ Plaintiff recently stated that the Myers family is "befuddled and perplexed"
17 about how much time has passed without a final decision, explaining that plans for L's
18 future cannot be made without knowing what resources she will have. See Plaintiff's
19 Request for Status Conference (filed Sept. 12, 2014), Dkt.#567 at 3.

20 After settling with IT/OHM for \$1,500,000, a Special Needs Trust was set up for
21 L and funded with \$181,898.21. See Plaintiff's Biennial Account and Report of the
22 Trust (filed Sept. 11, 2013), Dkt.#563.

23 In 2007, a \$36,054 disbursement was made for a 2007 Hyundai Veracruz
24 automobile for L's benefit (L would have been approximately 11 years old).

25 Yet, some medical care that has been recommended has *not* been obtained for
26 L. For example, L has not received recommended annual neuropsychological exams
27 or monthly psychotherapy sessions because, as Plaintiff testified, "Tricare won't pay
28 for it." Trial Phase 2, Dkt.#543 at 122:4-18 (Testimony of Christine Myers). "Tricare"
is shorthand for the health benefits program covering members of the U.S. military and
their families. As of Sept. 30, 2012, there remained in L's Special Needs Trust
\$115,672.08.

Meanwhile, Plaintiff has claimed that she cannot afford to provide L with needed
educational assistance. See Appellant's Brief, *Myers v. U.S.A.*, Case No. 09-56092, at
67-68 (filed Nov. 12, 2009) ("Part of Plaintiff's claim for damages is based on the need
for funds to provide L[] with educational assistance that her parents cannot afford.
Every additional day that passes is another missed opportunity to help with L[]'s
education.").

The Court notes that Plaintiff is an emergency room nurse. L's father is a Master
Sergeant in the United States Marine Corps. And although the facts are not critical to
this Court's decision, that L has not received the care recommended, does call into
question whether Plaintiff really believes that such care is needed.

1 the second phase, required about two gigabytes of memory. *See* Statement of Scott
2 Allen, Esq., Status Conference (held Sept. 25, 2014).

3 Many of the exhibits from both phases of the trial were several hundred pages
4 in length. *E.g.*, Exh JA: 261 pgs. (medical records); Exh JH: 145 pgs. (ATSDR
5 Public Health Assessment); Exh KE/730: 117 pgs. (INCHEM: Environmental
6 Health Criteria 102 Thallium); Exh LT: 186 pgs. (Personality Assessment Inventory
7 - Adolescent); Exh MR/719: 163 pgs. (EPA Toxicological Review of Thallium and
8 Compounds); Exh NU: 134 pgs. (Dr. Renfroe medical records); Exh 189: 403 pgs.;
9 Exh 229: 229 pgs. (L[] Myers ESE Central File); Exh 452: 129 pgs. (Addendum);
10 Exh 611: 115 pgs. (WISC III); Exh 704: 114 pgs. (Toxicological Profile for
11 Thallium); Exh 775: 299 pgs. (Revised Final Toxicity of Thallium Sulfate); Exh
12 785: 599 pgs. (lab raw data); Exh 820: 314 pgs. (notes); Exh 835: 121 pgs. (school
13 records); Exh 836: 164 pgs. (school records); Exh 848: 221 pgs. (Deposition of
14 William A. Dunn); Exh 78: 290 pgs. (construction notes); Exh 85: 320 pgs. (NMS
15 Instrument Data); Exh 109: 572 pgs. (construction data); Exh 482: 381 pgs.
16 (military records); Exh 645: 162 pgs. (Metal Analysis Calibration); Exh 646: 217
17 pgs. (raw data); Exh A: 146 pgs. (Draft Final Remedial Design and Remedial
18 Action Work Plan); Exh AU: 192 pgs. (ROD); Exh AX: 138 pgs. (Remedial
19 Investigation and Feasibility Study); and Exh X: 290 pgs.

20 And as in the first trial phase, many from the second trial phase were near
21 illegible because of print quality, size of print, or again because they were
22 handwritten. *E.g.*, Exh JW: 42 pgs. (small typeface); Exh NC: 92 pgs. (poor print
23 quality medical records); Exh NQ: 31 pgs. (poor quality print and handwritten
24 pages); Exh 90: 92 pgs. (poor print quality medical records); Exh 219: 7 pgs. (Sgt.
25 Myers handwritten notes); Exh 654: 19 pgs. (Neuropsychology of Thallium
26 Poisoning)(small print); Exh 708: 15 pgs. (Brockhaus Study) (small, poor print
27 quality); Exh 710: 27 pgs. (Cavanagh Study) (small, poor print quality); Exh 736:
28 54 pgs. (Environmental Levels of Thallium) (small, poor print quality); Exh 753: 40

1 pgs. (Thallium Poisoning) (small, poor print quality); Exh 774: 55 pgs. (Toxicity of
2 Thallium Sulfate) (small, poor print quality); and Exh 796: 52 pgs. (Protocols for
3 Determination of Limits of Detection and Limits of Quantitation) (small print).

4 Many of the exhibits included physician notes with handwriting that was difficult to
5 read. And many were highly technical such as the 1996 World Health Organization
6 Report on Thallium, the EPA 2009 Report on Thallium, the ATSDR,⁴ the PPRTV,⁵
7 the Sprague-Dawley Rat Study, and the Munsch Study, to list a few. This Court has
8 reviewed every admitted exhibit, as well as the 1,740 page transcript from the first
9 phase of trial and the 2,365 page transcript from the second phase of trial.

10 *The Plaintiff's Burden*

11 In order for the Plaintiff to prevail, she must prove by a preponderance of the
12 evidence: (1) that the Navy owed a duty; (2) that the Navy breached its duty; and (3)
13 that the breach of the duty was the proximate and actual cause of her daughter's
14 injuries. The first two elements, duty and breach of duty, have already been proven,
15 according to the Court of Appeals. In order for her to prove proximate and actual
16 causation, she must further demonstrate that her daughter was exposed to toxic
17 quantities of thallium from the landfill operations. Once exposure to thallium is
18 proven, Plaintiff "must . . . establish that the substance at issue was capable of
19 causing the injury alleged (general causation), and that the substance caused, or was
20 a substantial factor in causing, the specific plaintiff's injury (specific causation)."
21 *Avila v. Willits Env'tl. Remediation Trust*, 633 F.3d 828, 836 (9th Cir. 2011).

22 Plaintiff must prove that: (1) the dirt being brought to the Box Canyon
23 landfill contained a sufficient quantity of thallium to cause injury; (2) that the soil
24 migrated to her back yard; (3) that her daughter ingested a sufficient quantity of
25 thallium to cause the injuries that she claims; and (4) that she was, in fact, injured.

26 Competent expert testimony is required. "[C]ausation must be proven within

27 ⁴"ATSDR" means Agency of Toxic Substances and Disease Registry.

28 ⁵"PPRTV" means Provisional Peer-Reviewed Toxic Value.

1 a reasonable medical probability based upon competent expert testimony.” *Avila*,
2 633 F.3d at 836 (quoting *Jones v. Ortho Pharm. Corp.*, 163 Cal. App. 3d 396, 402
3 (1985)); *see also Claar v. Burlington N. R.R. Co.*, 29 F.3d 499, 503-04 (9th Cir.
4 1994) (expert testimony required to show that plaintiff suffered ailments as a result).

5 *Scientific Evidence Gatekeeping*

6 The Court is aware of its obligation to act as a gatekeeper to keep out junk
7 science where it does not meet the reliability standard of *Daubert v. Merrell Dow*
8 *Pharmaceuticals, Inc.*, 509 U.S. 579 (1993) and Federal Rule of Evidence 702. *See*
9 *Estate of Barabin v. Astenjohnson*, 740 F.3d 457, 463 (9th Cir. 2014) (en banc)
10 (duty falls squarely upon the district court to act as gatekeeper). It is also aware of
11 its broad latitude and flexibility in fashioning its inquiry into the relevance and
12 reliability of scientific evidence. *Id.*

13 This entire case is based on scientific evidence. Almost every witness had an
14 expert opinion to offer. There were toxicologists, analytical chemists, industrial
15 hygienists, environmental scientists, neuropsychologists, educators, family practice
16 physicians, and physicians with specialities and sub-specialities. These witnesses
17 were permitted to testify because, “[t]he relevancy bar is low,” and Rule 702 is to be
18 applied with a liberal thrust favoring admission. *Messick v. Novartis Pharm. Corp.*,
19 747 F.3d 1193, 1196 (9th Cir. 2014). This is all the more true in bench trial.

20 Even so, while the Court may have found opinions and evidence admissible,
21 in some cases, the evidence has been given very little weight or no weight at all.
22 This is the fact finder’s role. *Primiano v. Cook*, 598 F.3d 558, 568 (9th Cir. 2010)
23 (though opinion of doctor is admitted, jury may reject the opinion); *see also, e.g.*,
24 *United States v. Vallejo*, 237 F.3d 1008, 1021 (9th Cir. 2001) (admissibility of
25 expert opinion different than weight to be accorded). “Challenges that go to the
26 weight of the evidence are within the province of a fact finder” *City of*
27 *Pomona v. SQMN. Am. Corp.*, 750 F.3d 1036, 1044 (9th Cir. 2014). So, while
28 questionable expert testimony was admitted, it has now been weighed in light of all

1 of the evidence. *Id.* (quoting *Daubert*, 509 U.S. at 564) (“Shaky but admissible
2 evidence is to be attacked by cross examination, contrary evidence, and attention to
3 the burden of proof, not exclusion.”).

4 *Weighing Two Views*

5 This case is about two contrasting views on what happened to Plaintiff’s
6 daughter while living with her parents at Camp Pendleton. One view is that L’s hair
7 fell out because she was poisoned by thallium from dust blown off the nearby
8 landfill. That thallium was the culprit is proven, in this view, by a lab test that
9 showed “ten times” more than a normal adult in her body. And in this view, her
10 physical and intellectual functioning has been degraded ever since.

11 The contrasting view is one of genetics and coincidence. In this view, her
12 hair fell out because of a well-known genetic condition that runs in families and her
13 physical and intellectual functioning is simply within the wide range of “normal.”
14 That her alopecia is genetic is proven, in this view, by the fact her sister also has
15 alopecia, and all of the soil, environmental, and biological testing proves that there
16 existed such a small amount of thallium anywhere that it would be harmless. That
17 there was thallium in the nearby landfill, in this view, is merely coincidence. And
18 in this view, that her intellectual functioning is nothing more than genetics at work,
19 is proven by the fact that her I.Q. is very much like her mother’s when she was a
20 child.

21 To decide whether Plaintiff has proven her view of what happened to L,
22 scientific evidence is necessary. Physicians evaluated physical symptoms.
23 Neuropsychologists evaluated intellectual functioning. Environmental scientists
24 explained environmental and biological testing. Industrial hygienists explained
25 what hazards the landfill work posed to humans. Analytical chemists opined about
26 how to measure thallium in urine. And finally, toxicologists attempted to explain
27 whether and to what extent thallium may have injured L.

28 In this case, the science of toxicology is all the more important because the

1 accused “toxin” is thallium. It is an element that is toxic at higher doses but
2 relatively harmless at a very low dose. Therefore, the toxicologist is necessary to
3 describe the relationship between dose and response so that the fact finder may
4 determine causation. B. Black & P. Lee, *Expert Evidence* (West 1997), Ch. 4(I), A
5 Practitioner’s Guide to Toxicology, at 122 n.11 (“Aspirin is a relatively safe drug at
6 recommended doses, but it is fatal at a dose of about 0.2-0.5 g/kg. Metals such as
7 iron, copper, and magnesium are dietary essentials, but are toxic at high levels. To
8 say that a compound is ‘toxic’ or ‘nontoxic’ is meaningless until qualified by a dose
9 factor.”) (citations omitted). In evaluating the toxicology opinions in this case, the
10 Court understands that a toxicologist should be able to demonstrate an
11 understanding of the discipline of toxicology and disease processes. Federal
12 Judicial Center, *Reference Manual on Scientific Evidence* 3d., at 676. The
13 following caution from the *Reference Manual* applies directly to the toxicological
14 opinions of Plaintiff’s expert, Dr. Barry Gustin, M.D.,

15 A physician without particular training or expertise in
16 toxicology is unlikely to have sufficient background to
17 evaluate the strengths and weaknesses of toxicological
18 research. . . most physicians have little training in
19 chemical toxicology and lack an understanding of
20 exposure assessment and dose-response relationships.

21 *Id.* As noted later in this opinion, Dr. Gustin is an emergency room physician of
22 many years, but without particular expertise in toxicology.

23 Also, in assessing the expert witness’ opinions, a court looks to see whether
24 the opinions given are newly made or whether they grew naturally out of research
25 conducted outside of the litigation. *Daubert v. Merrell Dow Pharm., Inc.*, 43 F.3d
26 1311, 1317 (9th Cir. 1995) (after remand) (“One very significant fact to be
27 considered is whether the experts are proposing to testify about matters growing
28 naturally and directly out of research they have conducted independent of the
litigation, or whether they have developed their opinions expressly for purposes of
testifying.”); *Cabrera v. Cordis Corp.*, 134 F.3d 1418, 1422 (9th Cir. 1998)

1 (expert's development of opinion expressly for purposes of testifying is a significant
2 consideration in evaluating opinion). This came into play while evaluating the
3 analytical chemistry opinions of Plaintiff's expert, Ron Briggs, PhD., who had done
4 little prior research and had little actual experience, as discussed *infra*.

5 Bias may be evident, according to legal authorities, where the expert forms an
6 opinion without peer-reviewed scientific support or before examining sufficient
7 data. *Expert Evidence*, Ch. 4(IV)(B) at 147 ("A toxicologist who is willing to
8 provide an opinion before performing the necessary validating tests could properly
9 be viewed by a trial court 'as lacking the objectivity that is the hallmark of the
10 scientific method.'"). This was a consideration, for example, with the opinions
11 expressed by the environmental scientist testifying for Plaintiff, Jon Chorover, PhD.
12 As is noted below, he arrived at his main expert opinions during a single full day
13 spent on university meetings and teaching.

14 Finally, the Court is mindful that, "[f]or scientific evidence to be admissible,
15 the proponent must show the assertion is 'derived by a scientific method,'" and
16 "[o]pinion based on 'unsubstantiated and undocumented information is the
17 antithesis of scientifically reliable expert opinion.'" *City of Pomona*, 750 F.3d at
18 1044 (quoting *Cabrera*, 134 F.3d at 1423). This was an issue present throughout
19 the trial. "The court must assess the expert's reasoning or methodology, using as
20 appropriate criteria such as testability, publication in peer-reviewed literature,
21 known or potential error rate, and general acceptance." *Id.* Methods and
22 procedures must be followed and undisciplined speculation is not science. *Daubert*,
23 509 U.S. at 589-90. ("The subject of an expert's testimony must be 'scientific ...
24 knowledge.' The adjective 'scientific' implies a grounding in the methods and
25 procedures of science. Similarly, the word 'knowledge' connotes more than
26 subjective belief or unsupported speculation.").

27 ***Deciding Causation is Fact Specific***

28 Deciding proximate and actual causation has required this Court to consider

1 and evaluate all of the above – including testimony and exhibits from the first trial.
2 “Forseeability in evaluating negligence and causation requires a ‘more focused,
3 fact-specific’ inquiry that takes into account a particular plaintiff’s injuries and the
4 particular defendant’s conduct.” *Myers*, 652 F.3d at 1034-35 (quoting *Laabs v. S.*
5 *Cal. Edison Co.*, 175 Cal. App. 4th 1260, 1273 (2009)). Questions bearing on
6 negligence and proximate causation are fact-specific. *Id.*

7 This Court has looked at every page of the hundreds of exhibits and
8 considered the testimony of every witness. As to the exhibits, although this Court
9 acknowledges a considerable amount of duplication, this Court assumed that these
10 exhibits were not being submitted simply for the purpose of decimating a small
11 forest. Therefore, even if there were duplicates, the Court examined each exhibit in
12 order to verify that there was nothing new or different for this Court to glean. Many
13 of these exhibits, it is worth noting, were admitted without context and sometimes
14 were an agglomeration of multiple, unrelated exhibits. Because of the voluminous
15 evidence, this Court cannot and will not note or discuss many aspects of the
16 evidence. The fact that some evidence is not noted or not mentioned should not be
17 construed as an oversight. Furthermore, much of the evidence presented was
18 exaggerated, contradicted, or simply not believable.

19 *Other Preliminary Notes*

20 As a preliminary matter, the Court notes that it is familiar with the admonition
21 against allowing sympathy to enter into its decision. See Ninth Circuit Model Jury
22 Instruction 1.1. The Court is also familiar with Ninth Circuit Model Jury
23 Instruction 1.7, which cautions that argument and questions by lawyers are not
24 evidence. And finally, the Court is familiar with how a trier of fact should go about
25 evaluating the testimony of a witness. Ninth Circuit Jury Instruction 1.11.
26 Although these instructions are designed to guide a jury, they are no less applicable
27 to a trial without a jury.

28 The Court also notes that it may have previously decided issues at motions to

1 dismiss, summary judgment, or on *Daubert* motions. Motions are generally decided
2 based on different standards and the burden may lie with a different party than at
3 trial. For example, motions to dismiss, where facts are to be construed in a light
4 most favorable to the non-moving party and the post-*Iqbal* and *Twombly standard*
5 require only plausibility. Furthermore, such motions are almost always decided
6 based on declarations which do not allow the trier of fact to observe demeanor, hear
7 inflection, or allow for cross-examination, which as Professor Wigmore once noted
8 is “the greatest legal engine ever invented for the discovery of truth.” 5 J. Wigmore,
9 *Evidence* § 1367, p. 32 (J. Chadbourn rev. 1974).

10 The parties filed proposed findings of fact and conclusions of law. Except to
11 the extent that they may conflict with this Court’s expressed findings below, the
12 Court adopts and incorporates by reference the Defendant’s findings of fact and
13 conclusions of law. Pursuant to Federal Rule of Civil Procedure 52(a)(2), this Court
14 now makes the following additional findings of fact and conclusions of law. Where
15 appropriate, findings of fact shall operate as conclusions of law, and conclusions of
16 law shall operate as findings of fact.

17 *Everyday Thallium*

18 Without a doubt, thallium is a dangerous substance. But thallium is a
19 naturally occurring substance distributed widely throughout the earth’s crust.
20 Thallium is unlike artificially created dangerous chemicals or substances, like
21 gasoline or anthrax powder, that have no proper place to be loose in the
22 environment without human negligence. According to the U.S. Environmental
23 Protection Agency, the natural concentration of thallium in the soil around Camp
24 Pendleton is 1.4 milligrams (mg) per kilogram (kg). Though unaware, humans daily
25 ingest thallium. It is estimated that the average adult generally consumes over 5.0
26 micrograms (*ug*)/kg per day, mostly from foodstuffs. How much thallium the
27 average person has in his or her body at any one time varies by location and even by
28 year.

1 Thallium is generally found to have two naturally occurring isotopes, 203 and
2 205. Other isotopes also exist, but these have a very short half-life of days, with the
3 exception of isotope 204. Isotope 204 has a half-life of 3.78 years. Isotopes other
4 than 203 and 205 are not naturally occurring.

5 *Common Uses*

6 Thallium has been used as a depilatory causing a rapid loss of hair. It has
7 been used to cure syphilis and tuberculosis. It has been used as a rodenticide.
8 These uses have generally been discontinued in the United States. It is also used in
9 the manufacturing of costume jewelry, glass and optics, thermometers, green
10 fireworks and photovoltaic cells. It is also used in the medical field. It is estimated
11 that 70% of thallium used in the U.S. is in electronics.⁶

12 *Normal Thallium Levels in Humans*

13 Everyone, however, has thallium in their system. Laboratories will generally
14 not report a urine level less than 5.0 $\mu\text{g/L}$.⁷ Likewise, occupational exposure
15 resulting in an urine level of less than 50.0 $\mu\text{g/L}$ is not deemed reportable.

16 According to the World Health Organization, urine concentrations of less
17 than 5.0 $\mu\text{g/L}$ are not believed to have any adverse health effects. Urine
18 concentrations of more than 5.0 $\mu\text{g/L}$, up to 500 $\mu\text{g/L}$, may or may not have an effect
19 on health. Concentrations of more than 500 $\mu\text{g/L}$ generally have some toxic effect.

20 *Why a Landfill Near Homes and a School?*

21 With these general comments in mind, it is not unreasonable to ask: Why
22 would they move dirt containing toxic substances like thallium to a landfill adjacent
23

24 ⁶The Court notes that L's father, at the time that L began to lose her hair, was a
25 Marine Corps helicopter electronics instructor at Camp Pendleton.

26 ⁷Thallium in urine is often measured in micrograms per liter, which may be
27 abbreviated as mcg/L or $\mu\text{g/L}$. Particulates in dust are often measured in milligrams
28 or micrograms per cubic meter of air, which may be abbreviated as mg/m^3 or mcg/m^3
or $\mu\text{g/m}^3$.

Quantities cited in this opinion may refer to units measured in milligrams or
units measured in micrograms, since the witnesses and trial exhibits vary in usage and
forms of abbreviation.

1 to an elementary school and family housing area? The answer is found in the
2 testimony of several witnesses, including Cheryl Lauth and Dr. Daniel Stralka of the
3 EPA, Fred Mlakar, a Certified Industrial Hygienist (CIH) employed by IT/OHM,
4 and Walter J. Shields, PhD, an expert in environmental investigation and
5 remediation (whose opinions are relevant and reliable), the Federal Facility
6 Agreement Under CERCLA Section 120 (FFA), and the Record of Decision (ROD).
7 These will be addressed in greater detail below.

8 *Not a Knee-Jerk Decision*

9 The evidence clearly demonstrates the decision to relocate the dirt to the Box
10 Canyon landfill was not some careless, knee jerk decision, made with disregard for
11 the well-being of families and children in the adjacent housing complex and
12 elementary school. It was made seriously and deliberately by many individuals who
13 are professionals in the health and environmental disciplines, and only after much
14 investigation of the risks involved and the possible alternatives. That those of us in
15 the legal profession may find it curious, does not mean the decision was incautious.
16 Surely, individuals outside of the legal profession have shaken their heads in
17 bewilderment when we issued a proclamation, ordered or enjoined some action to
18 be taken, or exercised our discretion in the myriad of ways that we are required to
19 do by our office, profession, or training.

20 *A Joint Decision*

21 The decision to use the Box Canyon landfill was not made by the Navy. In
22 1989, the EPA placed Camp Pendleton on its National Priority List. The Navy
23 collaborated with other government agencies in the planning and oversight of the
24 soil remediation work to be carried out at Box Canyon. In 1990, the Department of
25 the Navy formulated a plan with input and approval from the EPA, the California
26 Department of Toxic Substances Control (DTSC), and the California Regional
27 Water Quality Control Board (RWQCB). Remediation investigations were
28 conducted of the possible hazards. The data was gathered and analyzed. Risk

1 assessments were made by the regulatory agencies and a comprehensive analysis
2 undertaken. Cheryl Lauth, an EPA project manager with many years of experience,
3 looked at the results of the investigations. So did the California regulatory
4 agencies. A decision was made to move contaminated material to the Box Canyon
5 landfill (also known as Site 7).

6 First, and foremost, the Court notes that the EPA is not an agency known to
7 act irresponsibly or to take its obligation to protect human health and the
8 environment lightly. In fact, this Court would suspect that many might argue the
9 contrary – that it is over-zealous in its enforcement and tends to over-regulate.
10 Even Plaintiff's CIH, Mr. Roman Worobel, admitted that in his experience the EPA
11 takes its obligations seriously. The DTSC and the RWQCB also take their
12 responsibility to protect the public from toxic substances seriously.

13 *The Federal Facility Agreement (FFA)*

14 The result was the FFA. Exh AL. The purpose of the FFA was to ensure that
15 the soil contamination was thoroughly investigated and remediated with the goal of
16 protecting the public health and the natural environment. The FFA also established
17 a framework for sorting out the roles and responsibilities of the national, state, and
18 local government entities.

19 Under the FFA, the EPA, the DTSC and the RWQCB held wide-ranging
20 oversight authority. As a result of the FFA, sites on Camp Pendleton were
21 identified as worthy of either remediation or investigation. One site, Box Canyon,
22 had been the site of quarry operations from 1946 to 1970. From 1974 to 1984, Box
23 Canyon became a landfill for the disposal of solid waste. Box Canyon, or Site 7, is
24 not a small parcel of land. It is a 28-acre parcel that slopes steeply towards the
25 ocean.

26 Per the FFA and the ROD, it was decided that the highest priority sites at
27 Camp Pendleton should be excavated, treated, and then placed in the Box Canyon
28 landfill for consolidation and covering. The four FFA entities agreed that the Box

1 Canyon plan would not create unacceptable risks to humans, even though it was not
2 far from a military housing complex and an elementary school. Initial work began
3 in 1996 as material was moved to Box Canyon. That work was completed in 1997.

4 *The Record of Decision (ROD)*

5 In 1998, the four FFA agencies decided to remediate five additional Camp
6 Pendleton environmental sites. The decision was memorialized in a Record of
7 Decision, Operable Unit 3 Final (“ROD”).⁸ Exhs 59 & BD. Twenty-eight sites
8 were prioritized and assigned to groups based on the potential health hazards. Sites
9 ranked in “Group A” had the highest risk to human health and “Group D” sites the
10 lowest. Site 7, itself, was a “Group B” site. The soil to be brought to site 7 came
11 from sites in lower hazard groups, “Group C” and “Group D.” *Id.* at ¶1.1. These
12 are the sites at the center of this case.

13 *The Five Clean-Up Sites*

14 According to the ROD, Cal/EPA, RWQCB, and DTSC approved the plan to
15 clean up only sites 1A, 1D, 1E, 1F, and 2A by moving soil from these sites to the
16 Box Canyon landfill.⁹ *Id.* at ¶ 2.4.4.3.1. *All five of these sites were lower level risk*
17 *sites.* Sites 1A and 1F were assigned to the least hazardous “Group D.” *Id.* at ¶1.1.
18 Sites 1D, 1E, and 2A were assigned to hazard “Group C.” *Id.*

19 The plan called for using the soil from sites 1A, 1D, 1E, 1F, and 2A, along
20 with stockpiles of other clean fill brought from completely uncontaminated sites, to
21 cap the dirt previously relocated to site 7 in 1996/1997. At the end of the
22 remediation project, an impenetrable material would be installed over the top layer
23 of clean fill. Afterwards, site 7 would be monitored every five years to insure that
24 there was no migration of any contaminants off of the site.

25
26 ⁸The ROD looked at a total of 28 sites on the Camp Pendleton military base that
27 potentially needed remediation. These were designated as sites 1A through 1I, 2A
through 2G, 7, 10, etc.

28 ⁹It was deemed that no action was necessary for the protection of human or
ecological health for all of the other investigated sites. *Id.* at ¶1.6.

1 Cheryl Lauth performed a risk assessment of the various possible
2 contaminants. Those contaminants for sites 1A, 1B, 1E, 1F, and 2A were mostly
3 heavy metals. They included arsenic, copper, manganese, barium, thallium and
4 lead. These were found in various frequencies and concentrations throughout the
5 various sites. Although thallium was found at two of the sites, the remediation
6 program was not undertaken because of a concern for thallium. A determination
7 was made with regards to thallium that the concentrations of 5.4 mg/kg for the
8 surface soil presented a low residential risk. At those concentrations, a person
9 would live for 30 years gardening, playing, and doing all of the activities human
10 residents are likely to do without experiencing any adverse health effects.

11 But Ms. Lauth was not the only person to perform a risk assessment. Dr.
12 Stralka, a PhD with many years of experience in the Superfund program, whose
13 specialty was risk assessment, also weighed in on the decision. The Court heard
14 from Ms. Lauth and Dr. Stralka and found them both to be credible. In addition to
15 the EPA, as previously stated, the RWQCB and the DTSC were also actively
16 involved in the risk assessment. A list of contaminants of concern and contaminants
17 of possible concern was compiled, the risk assessed, the opportunity for public
18 comment was given, and various alternatives for remediation were considered.
19 Then public hearings were held and notice given to nearby residents. Eventually,
20 the ROD was approved. After the ROD was approved a Remedial Work Action
21 Plan was signed and the plan effectuated. As the Court of Appeals noted, paragraph
22 2.5.8.1 of the ROD required a site-specific health and safety plan to address
23 potential risks to workers and nearby receptors. *Myers*, 652 F.3d at 962. The
24 Defendant hired IT/OHM to do the remediation work. This Court notes that any
25 party to the FFA could stop work at any time if it believed that the health and safety
26 of persons or the environment was being threatened.

27 ***Thallium Not the Major Contaminant of Concern***

28 The phase 1 and phase 2 investigations of all the sites showed that thallium

1 was not a major threat. That its levels, where it was found, were unacceptable is
2 true, but so were the levels of many other heavy metals, including lead. This Court
3 previously found, although the Ninth Circuit disagreed,¹⁰ that lead was the major
4 concern. No witness ever testified that thallium was the contaminant of greatest
5 concern. Every witness involved in the investigation and remediation testified that
6 lead was the contaminant of greatest concern.

7 In disagreeing with this Court, the Ninth Circuit focused on two sentences
8 from the ROD. The first sentence referenced the primary contaminants of site 1A –
9 one of the four sites to be remediated. That sentence read as follows: “[t]he primary
10 contributors to the HI [Hazard Index] are arsenic, copper, and thallium.” Exhibit
11 BD, ROD at p. 2-20. However, lead was analyzed separately for some reason.
12 Thus, although the language quoted from the ROD was accurate, if one turns the
13 page, one can see that the ROD actually states with regard to 1A, as follows: “[f]inal
14 human health COC’s [contaminants of concern] for soils are arsenic, copper,
15 thallium, *and lead.*” *Id.* at 2-21 (emphasis added). The second sentence references
16 site 2A and says that lead was not mentioned in the list of primary hazard
17 contributors. Site 2A was divided into two areas: the burn pit and the grease pit. In
18 regard to the burn pit, it was an area not larger than two football fields. With regard
19 to that area, the ROD states again that lead was separately analyzed.

20 *Contaminants of Concern at the Sites*

21 Attached to this Decision, marked as an exhibit, are copies of the relevant
22 pages of the ROD that address the various sites and the contaminants. Also
23 attached to this Decision is a table from the ROD, showing not just the
24 contaminants, but the maximum concentrations found at the various sites. This is
25 important to the Court’s later analysis of the dust monitoring records and records
26 documenting the origin of the dirt being moved each day.

27 These pages show the following. For site 1A, as described in the body of the
28

¹⁰See *Myers*, 652 F.3d at 1025.

1 ROD, lead was found in a maximum concentration that was “at least one order of
2 magnitude greater than the EPA residential soil Provisional Remediation Goal
3 (PRG) of 400 mg/kg, and the Cal/EPA residential soil PRG of 130 mg/kg.” The
4 maximum lead concentration was, in fact, 8,800 mg/kg. By comparison, the
5 background concentration for Camp Pendleton was 10.2 mg/kg. That means that
6 there was 863 times more lead than the PRG. By comparison, thallium exceeded
7 the PRG by approximately five times.

8 For site 1E, the ROD found that “the site-related primary contributors and/or
9 hazard[s] to risk are antimony, arsenic, and chromium. In addition, the maximum
10 lead concentration of 1,610 mg/kg exceeds background.” For site 1F, the ROD
11 states, “the maximum lead concentration (1,216 mg/kg) exceeds the EPA residential
12 soil screening value of 400 mg/kg and the Cal/EPA residential soil PRG of 130
13 mg/kg.” “Lead and antimony are the other main contributors to hazard.” *Neither*
14 *site 1E nor site 1F was ever found to contain any thallium whatsoever.* The soil
15 from site 1E and site 1F made up approximately 47% of all the soil that was
16 transported to site 7 in connection with the clean-up. Another 40% came from site
17 1A, which contained a small amount of thallium. Thirteen percent came from 2A
18 and only one third of that came from the area where the highest concentration of
19 thallium was found. As mentioned later in this decision, this drilling down through
20 the data is important, because, among other things, the data discloses that on days
21 when soil was being transported from sites 1E or 1F, any fugitive dust escaping the
22 perimeter would not present a thallium hazard.

23 With regard to site 2A, the ROD noted that there were nine metals detected at
24 concentrations exceeding PRGs: antimony, arsenic, beryllium, cadmium, copper,
25 lead, manganese, thallium, and zinc. “Antimony, cadmium, copper, lead,
26 manganese, thallium, and zinc concentrations exceeded PRGs and background
27 concentrations and samples from boring 2AB-05. In addition, the lead
28 concentrations from a five-foot sample from boring 230-03 exceeded the PRG and

1 background.”

2 The ROD then further describes the risks as follows: “The cumulative
3 residential risk is 5×10^{-5} and is attributable primarily to arsenic The primary
4 hazard contributors are manganese, thallium, and zinc. Manganese and zinc
5 concentrations exceed background concentrations by more than three orders of
6 magnitude.” The previous discussion, taken out of the ROD, was relevant to what
7 was labeled as the burn pit area, again a small area within a much larger area.

8 It was uncontroverted that boring 2AB-05 contained a lot of metal. In fact, it
9 was reported that shards of metal, not just dirt, were detected. The regulatory
10 agencies agreed that the 2AB-05 boring should be qualified with the initials BJ,
11 meaning it was a questionable test result. A duplicate field sample was tested, and
12 it showed results at 3.5 mg/kg.

13 *Elevated Thallium Amounts at Sites 1A & 2A?*

14 As the sites were being excavated, the soil was being tested. This Court has
15 reviewed 151 sample results taken from site 1A. Twenty-three of those samples
16 exceeded background levels for thallium. Only two were above PRG. The mode
17 for the remaining samples was .35 mg/kg. The Court reviewed 90 samples from site
18 2A. Of those samples, 23 tested above background. Only one was above PRG.
19 The mode was 0.365 mg/kg. Therefore, it is clear to this Court that, just as the EPA
20 and the DTSC found in their professional judgment, the thallium concentrations for
21 sites 1A and 2A were very low. The evidence supports the conclusion.

22 Other contaminants such as lead, arsenic, and manganese were driving the
23 clean-up. Soil being brought in from site 1E and site 1F was not contaminated by
24 any amount of thallium. Furthermore, as previously pointed out, the soil that was
25 being brought in from site 1E and site 1F made up 47% of all the soil that was being
26 brought to site 7. In addition, prior to the remediation project beginning, huge
27 quantities of uncontaminated dirt had been brought from other sites and stockpiled
28 at site 7. Daily, the uncontaminated dirt was then being used, as soils from 1A, 1E,

1 1F and 2A were brought in to site 7, in order to cover up the contaminated dirt.

2 *Watermarks*

3 In the analysis that follows, there are a number of “watermarks” found on
4 every page that run through the entire body of evidence. There is the decision to
5 hide, for years, the fact that L’s sister also has alopecia. There is the decision to buy
6 with trust money a new car for L before she was old enough to drive, and then later
7 exclaim at trial that she is incapable of driving. There is the odd picture of landfill
8 dust beginning with many contaminants but depositing only thallium in Plaintiff’s
9 backyard. There is the insistence that L has psychological injuries, but an
10 unwillingness by the parents to pay for therapy because it is not covered by
11 insurance. There is the single, deeply flawed, urine lab test result that is
12 communicated to every medical provider at the outset of every course of treatment
13 that tinges every medical opinion. It is the obvious manipulation by counsel of the
14 medical opinions of Drs. Renfroe, Eichenfield, and Brown. There is Plaintiff’s
15 expert, Dr. Gustin, explaining away every inconvenient medical fact about L as
16 being due to the “protean” (unpredictable) nature of thallium toxicity. And it is the
17 many unreliable histories offered by L’s parents and their viewing of every
18 circumstance through thallium-colored glasses.

19 **I. THE NAVY’S BREACH OF ITS DUTY TO EXERCISE REASONABLE** 20 **CARE TO ENSURE THAT ITS CONTRACTOR TOOK** 21 **REASONABLE CARE TO FOLLOW REQUIRED SAFETY** 22 **PRECAUTIONS WAS NOT THE PROXIMATE CAUSE OF L’s** 23 **ALLEGED INJURIES**

23 The Court of Appeals held that the Navy had a duty to exercise reasonable
24 care to ensure that its contractor took reasonable care to follow required safety
25 precautions in the Box Canyon landfill remediation project. Specifically, the Court
26 of Appeals found that the Navy owed the Plaintiff’s daughter, L, a duty and that the
27 duty was breached in two respects. *First*, the Navy failed to have the site health and
28 safety plan (HASP) reviewed by a competent person employed by the Navy.
Second, the Court of Appeals further found that the Navy had breached its duty by

1 failing to have its quality assurance officer review the perimeter air monitoring data
2 generated as required by the HASP. Neither of these breaches of duty by the Navy
3 proximately or actually caused L's asserted injuries.

4 Before digging into and testing the evidence on the question of causation, the
5 Court must address the burden of proof. The general rule, of course, is that the
6 plaintiff bears the burden of proof. *Avila v. Willits Env'tl. Remediation Trust*, 633
7 F.3d 828, 836 (9th Cir. 2011). Plaintiff argues that *this* is a special case where the
8 exception to the general rule of California law applies. This is so, according to
9 Plaintiff, because the negligence of the Defendant has prevented precise evidence of
10 exposure because it negligently failed to measure for "total dust" or speciate the
11 dust during the Box Canyon operation. Under such circumstances, California law,
12 according to Plaintiff, requires the shifting of the burden on causation from Plaintiff
13 to Defendant, so that the Defendant does not profit from its own negligence, citing
14 *Haft v. Lone Palm Hotel*, 3 Cal. 3d 756 (1970) and *Summers v. Tice*, 33 Cal. 2d 80
15 (1948). With this approach, the trial ought to have gone backward, with Defendant
16 going first, in an effort to prove its breach of duty did not cause thallium to leave
17 the landfill, that thallium did not migrate to L's environment, that thallium from the
18 landfill was not ingested by L, and that L suffered no injuries, at least not from
19 landfill dirt. If Defendant failed to introduce enough evidence, Plaintiff's burden
20 would be satisfied, with this exceptional burden shift. The problem with Plaintiff's
21 argument is that the exception to the general rule is extremely narrow in California
22 law, and this case does not fit the exception. Moreover, though Defendant does not
23 have the burden of proof, even if it did, it would still be entitled to a favorable
24 judgement, because Defendant has proven each of these points (as will be seen
25 below).

26 This Case does not fit within the narrow exception created by *Haft* and
27 *Summers* and their limited progeny. *Thomas v. Lusk*, 27 Cal. App. 4th 1709, 1717
28 (1994) (narrow exception to the usual allocation of proof). L's alleged injuries are

1 not certain, and if they really are injuries rather than normal functioning, it cannot
2 be said that they are certainly caused by Box Canyon thallium dust. With
3 uncertainty of injury and uncertainty of its instrumentality, burden shifting is
4 improper. *See, e.g., Jones v. Ortho Pharm. Corp.*, 163 Cal. App. 3d 396, 406
5 (1985) (“Under these circumstances the presumption of causation would be
6 tantamount to a presumption of the instrumentality which caused the injury. . . .
7 There is a limit to the number of presumptions in which the court will indulge solely
8 for the purpose of assisting plaintiff in proving a case, especially when there is no
9 evidentiary starting point from which those presumptions can flow.”)

10 This Court holds that, under California law, Plaintiff cannot shift the
11 causation burden of proof to Defendant under *Haft* and *Summers*, because it is not at
12 all certain that any defendant caused L injury. *Sanderson v. Int’l Flavors and*
13 *Fragrances, Inc.*, 950 F. Supp. 981, 989-90 (C.D. Cal. 1996) (“[P]laintiff is not
14 merely unable to prove how much damage each defendant did; she can’t prove that
15 any defendant did any damage. And it is most emphatically not certain that between
16 all of the defendants, they caused all of plaintiff’s injuries.”). With the burden of
17 proof resting on Plaintiff, as is the normal case, let us look at the evidence.

18 **A. HASP Review by a Navy CIH**

19 The Navy’s contractor, IT/OHM, proposed a site-specific Health and Safety
20 Plan (HASP). Exhibit 107B. Had a Navy CIH or a competent person by equivalent
21 training or experience reviewed the HASP before work began, he or she would
22 likely have approved the HASP. It would have been approved because the
23 perimeter air monitoring plan, in particular, was well-designed to protect human
24 health.

25 IT/OHM CIH, Mr. Frederick Mlakar, helped design the HASP and selected
26 the air monitoring action levels. The Court of Appeals decided that a *Navy* CIH or a
27 competent person by equivalent training or experience was required to approve the
28 HASP. *Myers*, 652 F.3d at 1036. The Court of Appeals also found that the only

1 reasonable inference from the evidence is that the HASP was never reviewed by a
2 *Navy* CIH. *Id.* As a result, the Court of Appeals concluded that, by violating that
3 mandatory duty to have a *Navy* CIH or equivalent person approve the HASP, the
4 Defendant breached its “duty to exercise reasonable care to ensure that the
5 contractor took reasonable care to follow required safety precautions.” *Id.* at 1036-
6 37.

7 The Court of Appeals concluded that the following language from the Navy’s
8 policy manual required that a Navy CIH review the HASP:

9 b. Scheduling. Each NAVFACENGCOM activity shall
10 ensure that plans are reviewed and accepted prior to
issuing the Notice to Proceed.

11 c. Reviews. All HASPs shall be reviewed prior to
12 initiating site work by a competent person. Competent
13 person shall mean a certified industrial hygienist or
equivalent by training and/or experience.

14 Trial Exh. 107B, NAVFACENGCOM Safety and Health Program Manual,
15 NAVFACINST 5100.11J (dated Jan. 19, 2000) at ¶ 0407. In its opinion, the Court
16 of Appeals mandated that this Court determine whether the Navy’s breach of this
17 duty was the proximate and actual cause of injuries to Plaintiff’s daughter. After
18 carefully reviewing the evidence the Court finds that it was not the proximate and
19 actual cause.

20 **1. HASP on Perimeter Air Monitoring**

21 Plaintiff’s counsel argued that the HASP should have been reviewed by one
22 of two Navy CIHs that worked for NAVFACENGCOM, Janet Corbett or Andrew
23 Bryson. He further argued that, “[a]ny competent CIH would have looked at it and
24 would have said, ‘Your perimeter air monitoring is all screwed up for several
25 reasons.’” (Oral argument of Steven Cox, Esq., before the Ninth Circuit Court of
26 Appeals, June 10, 2010.) In light of Plaintiff’s claims, the Court set out to evaluate
27 the testimony and evidence that would support Plaintiff’s claims. Since Plaintiff
28 claimed that Janet Corbett or Andrew Bryson should have reviewed the HASP, but

1 did not, it begs the question: what would Janet Corbett or Andrew Bryson have
2 done if presented with the HASP in question? Would they have said the HASP is
3 defective? The answer is clear.

4 **2. Navy CIH Janet Corbett**

5 Janet Corbett testified at trial. Although Corbett did not specifically recall
6 reviewing the HASP for this remediation, she never said that she would have
7 rejected, or amended, the HASP. On the contrary, she would probably have
8 approved the HASP. She testified that she followed a checklist in reviewing
9 HASPs. The checklist (Exh Y) was a list of HASP components. Corbett testified
10 that it was not part of her job when reviewing HASPs to select air monitoring
11 equipment or select action levels. Janet Corbett is a CIH with many years of
12 experience. Did she say that she would have rejected the HASP? No. Did she say
13 that she found anything wrong with the HASP? No. Rather, she testified that she
14 would *not* have second-guessed the contractor CIH's choice of action level, nor
15 would she have questioned the choice of perimeter air monitoring. Corbett testified,

16 Q. So as the Navy Certified Industrial Hygienist, do you have any
17 responsibility for approving the type of instrument used in air
18 monitoring?

18 A. No.

19 Q. Do you have any role in setting action levels?

20 A. No.

21 Q. Do you review the action level listed by the contractor?

22 A. Yes, I would like [sic] at the action level.

23 Q. Are you looking to see that it's included in the plan?

24 A. I'm looking to see that it's included in the plan, yes.

25 Q. Do you do any kind of a mathematical calculation to see if you
26 agree with the action level?

26 A. No.

27 Trial Phase 1, Dkt.#439, at 104:25-105:12. Corbett suggested in only one instance
28 she might have questioned the contractor's decision about the necessary action

1 level. Only if the HASP set an action level of “total dust,” while measuring for
2 PM10,¹¹ would she have talked to the contractor about the plan. *Id.* at 106 (“Well,
3 there certainly would be an inconsistency there, and I would probably talk to the
4 contractor about it.”). But, that is a far cry from evidence that she would have
5 rejected the plan.

6 **3. Navy CIH Andrew Bryson**

7 At the time of the remediation, the other Camp Pendleton Navy CIH was
8 Andrew Bryson. Andrew Bryson was the Health and Safety Manager at Southwest
9 Division. He holds a master’s degree in Occupational Environmental Toxicology.
10 He testified through deposition testimony that he and Ms. Corbett reviewed 1,200 to
11 2,000 HASPs a year. (Corbett had reviewed only approximately 60 per year).
12 Bryson testified that he would not change the air monitoring equipment specified in
13 a HASP. And Bryson would not change the action level set in a HASP. His only
14 observation about the HASP in this remediation project is that he “would have
15 asked questions” about using PM10 measurements rather than “total dust”
16 measurements for an action level. His questioning of PM10, if there was confusion,
17 is far from saying that he would have rejected the HASP.

18 Mr. Bryson’s testimony was particularly credible because of his exhaustive
19 experience. Furthermore, at the time he was deposed he was no longer working for
20 the Navy. He had no motive or bias. He could have just as easily thrown the Navy
21 under the proverbial bus. Did Andrew Bryson say that he would have rejected the
22 HASP had it been given to him for review? No. Did he find anything wrong with
23 the HASP? No. Like Janet Corbett, he testified that it was not their job to second
24 guess the contractor’s CIH. In fact, he testified, “I’m reviewing a submittal from a
25 contractor, whoever it is, who we’ve hired because he’s an expert in that field.
26 That’s why we have them. You don’t tell a doctor how to make a decision.” *See*

27
28

¹¹The term, PM10, is shorthand for an industry standard for measuring concentrations of airborne particulates that are less than 10 micrometers in size.

1 Deposition of Andrew Landon Bryson, dated Nov. 6, 2003, at 79:5-8. Bryson found
2 no fault with the action level. He found no fault with the choice of air monitoring
3 equipment. Given Frederick Mlakar's testimony at trial,¹² this Court has no doubt
4 that any question would have been answered to Mr. Bryson's satisfaction. It has, to
5 this Court's satisfaction.

6 The evidence at trial does not convince this Court that a Navy CIH would
7 have rejected the HASP upon review. The answer to the question becomes even
8 more apparent when one considers that two other industrial hygienists from the
9 Navy did look at the HASP. Neither one said the HASP was deficient.

10 **4. Navy NEHC Industrial Hygienists Did Review the HASP**

11 The NAVFACENGCOCOM policy manual that Plaintiff and the Court of
12 Appeals relied on says, "[A]ll HASPs shall be reviewed prior to initiating site work
13 by a competent person. Competent person shall mean a certified industrial hygienist
14 or equivalent by training and/or experience." Trial Exh. 107A, NAVFACENGCOCOM
15 Safety and Health Program Manual, NAVFACINST 5100.11J (dated Jan. 19, 2000)
16 at ¶ 0407(c).

17 The very next paragraph provides that the "NEHC is funded to assist Navy
18 activities in reviewing the worker health related aspects of HASPs and
19 environmental risk assessments for the Navy environmental program." *Id.* at
20 ¶ 0407(d). It is the mission of the Navy Environmental Health Center (or NEHC) to
21 provide support and assistance to the Navy with regard to environmental and health
22 matters.

23 2. Mission. To coordinate and provide centralized support and
24 services to medical activities, afloat and ashore, in areas of
25 occupational health, environmental health, preventative medicine,
26 health promotion (HP), population health, deployment medical
surveillance, including chemical, biological, radiological, and
environmental defense (CBRE-D), and drug screening, and perform
such other functions and tasks as directed by higher authority.

27
28 ¹²Frederick John Mlakar was employed by IT/OHM as a CIH. Mr. Mlakar was
the final author of the aspect of the HASP that addressed fugitive dust and perimeter
air monitoring. Trial Phase 1, Dkt.#444 at 10:10, *et seq.*

1
2 Exh BUMEDINST 5450.157A, dated Oct. 1, 2001, *Mission and Functions of the*
3 *Navy Environmental Health Center, Norfolk, VA.*

4 In July of 1999, a copy of the HASP was sent by the contractor to the NEHC
5 for review. On August 5th, two industrial hygienists from NEHC traveled to Camp
6 Pendleton, after reviewing the HASP, to audit the work and compliance with the
7 HASP. One of them was Mary Ann Simmons.

8 **5. Navy NEHC Industrial Hygienist Mary Ann Simmons**

9 Ms. Simmons is an industrial hygienist with the Navy. Although she is not
10 certified, there is no question but that she is “a competent person,” *i.e.*, someone
11 with “equivalent [] training and/or experience.” She has been with the Navy for 22
12 years. She has reviewed several hundred HASPs. At the beginning of her career
13 she worked for OSHA as a compliance officer.¹³ She has a bachelor’s of science
14 degree in Environmental Health Science and has completed course work towards a
15 master’s degree in the same subject. When she reviewed the HASP, did she say it
16 was defective? No. In fact, she spent several hours at the Box Canyon landfill on
17 August 5, 1999. When she returned to Norfolk, Virginia, her duty station, she wrote
18 an email to the contractor’s CIH, Mr. Mlakar, complimenting him on how well the
19 HASP was being implemented. She wrote, “Both Carl and I were impressed with
20 the site implementation of your health and safety plans. It was obvious from
21 everyone we spoke with or watched that health and safety was not just a paper
22 program.” See Exh “CS” (email message dated Aug. 13, 1999). It is true that she
23 did not actually look at the perimeter air monitoring equipment readings. She did
24 not have to.

25 **6. Navy CIH Cmdr. Dan Field**

26 Another CIH from the Navy also looked at the HASP: Commander Danny
27 Field. After L’s complaints surfaced, he looked at a number of issues and provided
28

¹³There is no dispute that a HASP is an OSHA-required document.

1 a written critique based on what he called “best practices.” Specifically, he could
2 not understand how there would not be dust level exceedences given the number of
3 trucks that would be running. He also criticized that PM10 was being used for an
4 action level rather than total dust. After listening to Cmdr. Field testify, it appears
5 that his critique did not mean that the HASP was defective, for a number of reasons.

6 First, Cmdr. Field’s CIH experience is in the static environment, not a
7 dynamic environment such as the landfill.¹⁴ Second, “best practices” are simply one
8 person’s view of how something should be done. No one ever testified that it was
9 expected that there would never be exceedences, given the volume of dirt being
10 brought in to Box Canyon and the meteorological conditions at Camp Pendleton.
11 Furthermore, it would be unreasonable to require such perfection. While finding
12 fault with the HASP for not requiring a total dust action level, even Cmdr. Field
13 testified that one could calculate a total dust action level by extrapolation from the
14 PM10 action level. And extrapolation is precisely what Mr. Mlakar testified that he
15 did when he drafted the HASP. He explained,

16 A. Those contaminants which were of most concern were
17 metallic components, such as lead, and which were above
18 -- they're in part per million levels. They're not really
19 high. Part per million levels are quite low. It takes
20 10,000 parts per million to equal one percent, and one part
per million is -- a part per million is like 1 inch out of 15
miles. It's kind of hard to relate to, but these are very
small levels.

21
22 ¹⁴Dust monitoring in a static environment is different from monitoring in an
23 active environment. For example, Plaintiff argues that the perimeter air monitors
24 should have measured for “total dust” and speciated the dust. This is a static model
25 approach. It is backward-looking. Reactive. Because it takes days to do the laboratory
26 testing necessary to speciate the dust, it is useful for revealing what particles may have
left the work site in the past. It is too slow a process to bear on actions in the present.

27 The air monitoring used in the HASP is dynamic – changing with conditions.
28 It is preventative and proactive. Rather than identifying the types of dust that left the
work site, the HASP objective was to prevent dust from leaving the site in the first
place.

Approximately 240 truck loads of dirt were being hauled every day. In an 8 hour
day, that is 30 trucks an hour or one truck every 2 minutes. Had the other approach
been taken (measuring for total dust and speciating dust), by the time fugitive dust
would have been collected, laboratory tested, and speciated, and work stopped based
on the results, a large quantity of hazardous dust could have left the work site.

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I use that information in deriving what we call action levels for worker protection. I need to know what the potential hazards of this stuff is so that I can use that information in determining what kind of protective equipment our workers are going to use? Do they need respirators? Do they need full suits? What is it going to take to do that? And then also to prescribe what we call action levels because we use direct reading instrumentation on these job sites, and I would calculate a dust level in the air based on these concentrations in the soil that a safe level of dust which would -- we can monitor these in direct reading instruments and then use that to alter or change our protective levels, depending on if dust levels fluctuate.

....

Q. So what were you trying to determine by reason of doing these calculations? What was your purpose of doing them?

A. Okay. The purpose of me doing these was to determine, and this is unique to our industry, what we call an action level of total dust in the air, given all these considerations of the amount of the concentrations of contaminants, the relatively permissible exposure limits, building in various safety factors, because I just took the highest levels of lead from each of these areas. I didn't average them all, made conservative assumptions, take the highest lead levels from each of these five areas. I averaged those and calculated what level of total dust needs to be in the air in order to meet the permissible exposure for lead, and by picking lead in the highest levels of lead in all that were found in these areas, that puts a large safety factor in the calculation to begin with.

THE COURT: So, in other words, you don't do those calculations for each and every metal that is found in the area, you use one.

A. I picked one, but I'm making -- yes, I did, but a lot of it's a simple calculation, to look at many of these and say, okay, that one I can ignore because it's too low? The levels are low, and the permissible exposure limit is high. I can pick lead and find it has a low permissible exposure level and higher levels, that's the one I key on. I could run

1 the calculation very simply and demonstrate that lead is
2 the most conservative. And then that level what we came
3 up with -- what I came up with, my calculation shows
4 about 16.9. You need to get 16.9 milligrams of total dust
5 in the air per cubic meter of air and sustain that for an 8-
6 hour time-weighted average, on an 8-hour day, in order to
7 exceed the lead permissible exposure limit which Cal-
8 OSHA would write me a citation for overexposure of my
9 workers. Well, 16.9 cubic meters of dust in the air is so
10 thick you would not be able to see across this courtroom
11 room. To sustain that for an 8-hour day on our job site is
12 not possible. So I know right away, okay, this waste is
13 relatively safe. It's not going to take a whole lot of effort
14 for us to control this dust and make it safe for our workers.
15 So in order to make -- I'm not going to tell these guys,
16 "Look, you can have 17 milligrams of dust in the air." I
17 reduced that by a factor of 10 -- or actually 11, made it 1.5
18 milligrams per cubic liter (sic) of air. That was our action
19 level for worker protection. Using our air monitoring dust
20 monitors, if they achieve those levels they need to increase
21 their dust control and that -- or upgrade the protective
22 equipment by putting respirators on. I laid a factor of 10
23 on so that -- again, a huge margin of safety on the original
24 calculations, which were based on conservative
25 assumptions to begin with.

26 Trial Phase 1, Dkt.#444 27:10-16; 28:9-21; 31:4-33:4. In other words, Mr. Mlakar
27 had calculated a total dust action level. He then converted that action level to a
28 PM10 action level that could be measured by the perimeter air monitoring devices.

Plaintiff's expert, Mr. Roman Worobel, in his report (submitted to this Court
in opposition to Defendant's motion for summary judgment and referred to at trial),
had no trouble calculating a PM10 action level and then extrapolating back to a total
dust action level. Again, Field's concerns about the HASP did not amount to a
rejection, and based on Mr. Mlakar's explanation, his questions likely would have
been satisfactorily addressed. This Court found Cmdr. Field's testimony to be
credible. He had retired from the Navy and had no reason to shade his testimony.

7. DTSC CIH Frank Parr

Like the EPA, the DTSC is charged with protecting the health of California
residents. The DTSC sent a copy of the HASP to one of its CIHs, Mr. Frank Parr,

1 for review. Mr. Parr reviewed the HASP and wrote a memorandum to Manny
2 Alonzo expressing several concerns about the HASP and asking for further
3 information. Mr. Parr had only one question regarding the perimeter air monitoring
4 or the action level: "Please provide additional detail describing how the particulate
5 air monitoring action levels were derived. Are the action levels based upon mass-
6 loading calculations incorporating soil-bound contaminant concentrations?"

7 Exhibit 147, Memorandum from Frank S. Parr, CIH, Department of Toxic
8 Substances Control to Manny Alonzo, Office of Military Facilities, dated Jul. 7,
9 1999, at p. 4. Mr. Parr's memorandum was peer-reviewed by a second DTSC CIH.

10 As previously mentioned, Mr. Mlakar arrived at his action level using a mass-
11 loading calculation. He determined the contaminant concentration and calculated
12 how much dirt would have to be in the air before the Permissible Exposure Limit
13 (PEL) was reached. The second amendment to the HASP took Mlakar's original
14 calculations and then made the new action level 20 times more stringent than the
15 original. The DTSC management team, the EPA, the contractor, and the Navy, were
16 in constant communication. Even after Mr. Parr's questions were aired, no one
17 asked for work to be stopped. The only reasonable inference that this Court can
18 reach is that the DTSC's question was answered to its satisfaction.

19 Although Mr. Worobel, Plaintiff's CIH, testified that in his opinion the HASP
20 was defective, the Court did not find his testimony persuasive and gave his
21 opinions little weight. He seemed to be unable to answer simple questions posed to
22 him, so much so that twice, in quick succession, the Court had to admonish him.
23 His credentials were also less than impressive. His experience was very limited.
24 And many of his opinions were inconsistent or simply not well supported, including
25 that one cannot calculate a total dust action level by using PM10, although he did it.
26 He also had complaints about Mr. Mlakar's calculations. The big difference was as
27 follows: (1) he used an EPA rather than OSHA health based level; and (2) he used a
28 2002 EPA standard. Of course, the HASP was drafted in 1999. He also assumed

1 that all dirt brought to Box Canyon would contain 144 mg/kg of thallium. That
2 makes little sense. He also did not seem to know that Mr. Mlakar had used lead as
3 his surrogate contaminant, since at the time lead had the most stringent PEL and
4 was found in greater quantities and concentrations in the sites being remediated.
5 These criticisms of Mr. Worobel are discussed in greater depth a little later.

6 **8. DTSC Was Unconcerned With Perimeter Air Monitoring**

7 The Navy's breach of duty in failing to have a Navy CIH review the HASP
8 before work began, did not lead to a work site that was toxicologically hazardous –
9 to either on-site workers or off-site human "receptors." This conclusion is
10 buttressed by the fact that DTSC had authority to stop the project at any time.
11 Manny Alonzo was the project manager for DTSC. At trial, Alonzo's demeanor
12 was hostile toward the Navy.¹⁵ Nevertheless, he testified that the concern of DTSC
13 (and the EPA) on the Box Canyon landfill project was not fugitive dust. The
14 concern was lead in the soil and ash leaching into the groundwater.

15 **9. HASP Erred on Side of Protecting Human Health**

16 Therefore, the Court finds that the fact that a Navy CIH or equivalent person
17 did not review the HASP before work commenced was not the proximate cause of
18 Plaintiff's injuries.

19 ***a. Why the Contractor Selected This HASP Air Monitoring Plan***

20 For addressing dust control at the landfill and beyond, the HASP used this
21 language describing the monitoring equipment and the "action level."

22 ***7.1.3 Miniram Aerosol Monitor***

23 A Miniram Aerosol PDM-3 or equivalent will be used to measure
24 airborne particulates between 0.1 to 10 micrometers in size. The
25 Miniram PDM-3 will be used as an indicator of breathable dust in the
26 work area and will serve to monitor when additional dust control is
27 required.

28 ¹⁵The DTSC management had overruled him regarding the lead concentrations at site 1D leaching into the groundwater.

1 Using the levels listed below, worst case scenarios can be assessed for
the purpose of establishing a total dust action level:

2 - Instrument -- Miniram Aerosol Monitor Model PDM-3

3 - Action Level -- 1.5 mg/m³ for general site
4 areas; 1.0 mg/m³ for perimeter (level chosen
5 to minimize overall permissible dust release
from site)

6 - Action -- Don level C, Implement dust
control procedures.

7 Exh 3, *Draft Final Site Health and Safety Plan, Remedial Action, Operable Unit-3,*
8 *Sites 1A, 2A, 1D, 1E, and 1F, Marine Corps Base, Camp Pendleton, California*
9 *(dated May 17, 1999).*

10 Mr. Mlakar was a credible witness and his testimony is given considerable
11 weight. He explained the plan reasoning in detail. As previously noted, the plan
12 was very cautious and based on conservative estimates of the toxicological elements
13 that might present a hazard to humans. He testified that in determining an action
14 level for dust, he began with the contaminant of greatest concern: lead. He found
15 the OSHA lead permissible exposure level ("PEL") for a time-weighted average
16 eight hour airborne exposure to be .05 milligrams per cubic meter ("mg/m³"). He
17 selected lead based upon its high incidence of occurrence above naturally occurring
18 soil levels at the sites to be remediated, as well as upon the OSHA PEL level which
19 was the most stringent for any of the contaminants of concern (and twice as
20 stringent as thallium).

21 The HASP is consistent with Mlakar's testimony. First, the HASP defines the
22 equipment to be used. Section 7.1.3 clearly provides that it will measure airborne
23 particles between 0.1 to 10 micrometers in size. This served to monitor when
24 additional dust control was required. It says nothing about measuring total dust and,
25 in fact, by definition excludes any particulates above 10 micrometers in size.

26 Next, it states, "[u]sing the levels listed below, worst case scenarios can be
27 assessed for the purpose of establishing a total dust action level." All that a reader
28 needs to do is substitute the synonyms for "assessed" (*i.e.*, gauge, estimate,

1 determine), and the sentence meaning becomes crystal clear. It goes on to say,
2 “[a]ction level – 1.5 mg/m³ for general site areas; 1.0 mg/m³ for perimeter (level
3 chosen to minimize overall permissible dust release from site).” To paraphrase,
4 using the levels below we can estimate a dust action level. Or, using the levels
5 below, we can gauge a total dust action level. This Court will not purposefully
6 attempt to create an ambiguity where there is none. That its meaning is crystal clear
7 is supported by the fact that Plaintiff’s “competent CIH,” Mr. Worobel, was
8 perfectly able to understand what it says. He calculated a PM10 action level
9 although much lower than Mr. Mlakar, but then he did what Mlakar did and
10 extrapolated to a total dust action level.

11 ***b. Thallium vs. Lead Permissible Exposure Levels***

12 Mr. Mlakar did the calculations and concluded that in order to exceed the lead
13 permissible exposure limit, there would have to be present more than 16.9 mg/m³ of
14 total dust, for an eight hour time weighted average, over an eight hour day. Trial
15 Phase 1, Dkt.#444 at 1091. Mlakar then said that if there were 16.9 mg/m³ of dust
16 in the air, the air would be so thick that, “you would not be able to see across the
17 courtroom.” *Id.* Although the PEL already has a safety margin built in, Mlakar then
18 reduced the 16.9 limit eleven times with a resulting action level of 1.5 mg/m³. At
19 that level, he knew his workers would be safe, and by extension, humans outside the
20 site would be safe at 1.0 mg/m³. Given the PEL for thallium, the amount of soil that
21 would have to be in the air to exceed the action level “would be about 20 times that
22 of lead because the PEL is twice as high.” Trial Phase 1, Dkt.#444 at 1096.

23 Described differently, if 1.0 mg/m³ of PM10 size dust were to reach the
24 perimeter fence, then more than an additional 15 mg/m³ of dust in particles larger
25 than PM10 would also have to reach the fence in order to expose humans outside
26 the fence to impermissible levels of lead dust. Of course, that would be extremely
27 unlikely because, as Plaintiff’s fate and transport expert, Dr. Chorover, conceded, it
28 is the smaller particles of dust that tend to travel farther on the wind. (Dr. Shields

1 opined that PM10 makes up roughly one-third of dirt in the air.) In the end, Mlakar
 2 reduced the action level even further, to make it even more stringent, specifying the
 3 new action level to be .050 mg/m³ (or 50 *micrograms* per cubic meter). That is
 4 twenty times more stringent.

5 ***c. The Action Level Was Very Protective of Human Health***

6 In Southern California, ambient air quality is often above .050 mg/m³.¹⁶ And
 7 just how clean is air with particles in concentrations of .050 mg/m³? Perhaps most
 8 telling, was a demonstration during the first phase of the trial. The witness, Kevin
 9 Hubbard, was demonstrating the type of air monitor used for the Box Canyon
 10 remediation work. *During the presentation, the monitor detected .050 mg/m³ of*
 11 *dust particulates inside the courtroom. Over the course of the ensuing testimony,*
 12 *the level rose to .078 mg/m³.* In the courtroom, there are no windows or vents to the
 13 outside, no one was vacuuming, no one was dusting, and there was no visible dust
 14 in the air.

15 The action level was not simply selected for the sake of the contractor's
 16 convenience or to give only lip service to human safety. It was based upon solid
 17 reasoning by a CIH with vast experience using, not his own, but OSHA's PELs for
 18 the greatest contaminants of concern, arriving at a permissible safety level and then
 19 reducing that by a factor of eleven for workers and sixteen at the perimeter fence,
 20 erring on the side of human safety.

21 ***d. The Action Level Was Adjusted Downward to be***
 22 ***More Cautious and to be an Alert; It Was Not***
 23 ***Meant to Immediately Stop Work***

23 It bears noting that the "action level" for perimeter air monitoring was
 24 adjusted from the first HASP to the second amendment of the HASP.¹⁷ The second
 25 amendment to the HASP set the action level as .050 mg/m³ where ambient air or
 26

27 ¹⁶ 0.050 mg/m³ = 50 mcg/m³ = 50 ug/m³.

28 ¹⁷The first amendment to the HASP was dated June 21, 1999. The second and
 final amendment referred to here was adopted on July 8, 1999.

1 “background” readings were .000 mg/m³. It also took into account the many times
2 when ambient air quality showed PM10 above .000 mg/m³. The second amendment
3 to the HASP states, *inter alia*,

4 Instrument Placement:

5 Two Miniram dust monitors will be placed between the
6 work area and the adjacent residential area. Two Miniram
7 dust monitors will be placed between the work area and
8 the adjacent school. Two Miniram dust monitors will be
9 placed between the work area and the ocean, which is
10 normally upwind and, therefore, representative of
11 background particulate concentrations. . . .

12 Data Interpretation:

13 If the readings of the monitors near the school or housing
14 exceeds the background readings or the ambient air quality
15 standard of 0.05 mg/m³, whichever is higher, [the] source
16 of the airborne particles will be determined, and dust
17 control efforts will be increased. If the increased dust
18 control efforts are ineffective, the soil moving activities
19 will be stopped. Work will also be stopped whenever
20 visible dust emissions reach the perimeter fence. If a work
21 stoppage occurs, the project manager and health and safety
22 manager will be notified. Dave Song, Camp Pendleton’s
23 Assistant Chief of Staff, Environmental Security will also
24 be notified at (760) 725-9741.

25 See Exh 5. The significant point for this aspect of the causation issue is that the
26 HASP, as designed by Mlakar, and spelled out in the second amendment, did not
27 require work to be stopped when the action level was hit.

28 Mr. Mlakar was asked at trial about what was intended to be done by the
contractor if the action level was exceeded. He explained that an exceedence did
not mean that work must be stopped. Instead, it meant that the contractor had to sit
up and take notice of what was occurring in the air and determine the source of the
high particulate reading. If the source was work site dust, dust suppression
measures were to be taken. If the source was fog, or a motor vehicle idling by a
monitor, then no action needed to be taken. It was only if work site dust could not
be controlled that work was to be stopped. Mlakar testified,

No, not at all. It was an action level which meant the site
safety officer and the team there would have to take notice
of what was going on, try to determine the source, and

1 control it. If the source could not be controlled, such as on
2 a highly windy day, then the action was to shut the job
3 down. But just because the action level was exceeded,
4 that doesn't automatically trigger a shutdown of the work.

5 Trial Phase 1, Dkt.#444 at 1117-1118.

6 *e. Plaintiff's Expert Witness Roman Worobel*

7 The only criticism suggesting the HASP was defective came from Plaintiff's
8 expert, Roman Worobel. Worobel criticized the HASP action level. He opined that
9 the action level should have been 0.000294 mg/m³ for PM10. Trial Phase 1,
10 Dkt.#439 at 542:5-544:13. He based this extremely low action level on an
11 unrealistic worst case scenario. Worobel started with the highest pre-remediation
12 soil sample reading for thallium found at any of the several sites to be remediated:
13 144 mg/m³. He then assumed that all of the soil from all of the sites had similar
14 amounts of thallium. He then derived his safe exposure level calculation assuming
15 that all the soil at Box Canyon would have the same 144 mg/m³ concentration.

16 One problem with Worobel's suggested action level is that there is no
17 evidence to support the idea that all the soil would have a thallium content of 144
18 mg/m³. The soil samples taken both before and after the Box Canyon project
19 detected much lower levels of thallium. The 144 mg/m³ reading was questioned by
20 all. It could have been a false reading due to the large amount of manganese close
21 by. A second sample at that site detected a much lower thallium level of 3.5. Other
22 than the questionable soil sample at the single point, there was no evidence that
23 thallium concentrations at either site 1A or 2A was anywhere near 144 mg/m³.
24 Consequently, it would be unreasonable to employ a soil dust action level based on
25 the assumption that all of the soil being brought to the Box Canyon landfill had
26 concentrations of thallium of 144 mg/m³, when sampling at sites from which soil
27 was brought had much lower thallium concentrations or only background amounts.
28 And some of the soil spread at Box Canyon was known clean soil used for capping
and layering over the levels of remediated soil.

Plaintiff also criticized the action level selected because it was based upon

1 PM10, rather than total dust. In essence, Plaintiff argues that by not measuring for
2 total dust, larger particles of hazardous substances in general, and thallium in
3 particular, were permitted to escape the work site and pass over the perimeter
4 fencing to the Wire Mountain housing complex.¹⁸ One problem with this criticism
5 is that thallium is a metal. And metals like thallium, lead, and antimony, in particle
6 sizes over 10 micrometers were not likely to be blown off site on the wind because
7 of their weight. The other problem is that the action level for PM10 selected by
8 Mlakar took into account the total dust hazard. And it does not require a CIH to
9 recognize a total dust problem level, as larger particulates are easily seen with the
10 naked eye. As one witness put it, you have a total dust problem when you see a
11 cloud of dust.

12 Even Cmdr. Field testified that Mlakar could calculate a total dust action
13 level from a PM10 action level through extrapolation. Plaintiff's expert, Mr.
14 Worobel, himself was able to work the calculation back, starting at his proposed
15 PM10 action level of .000294 mg/m³, and arriving at a total dust action level of 2.0
16 mg/m³. The Court finds that Mlakar's PM10 action level, the method used in the
17 HASP, to be more reasonable than Worobel's proposed action level. Not because
18 Mlakar and Worobel use irreconcilable methods, but because of Worobel's
19 assumption that all the soil dust at the Box Canyon site would have concentrations
20 of thallium in amounts of 144 mg/m³. Worobel's criticism of the HASP is
21 unconvincing.

22 10. Conclusion

23 The Navy's contractor selected reasonable safety precautions and took
24 reasonable care to follow those required precautions by policing itself and
25

26 ¹⁸But speculation regarding the effect of additional safety precautions or
27 supervision is not sufficient to meet a plaintiff's burden on causation. *See, e.g.,*
28 *Rinehart v. Boys & Girls Club of Chula Vista*, 133 Cal. App. 4th 419, 435 (2005)
(stating "it is entirely conjecture that such added personnel and repairs if needed would
prevent all assaults or negligent acts which can occur despite the highest level of
supervision").

1 successfully using techniques to minimize the creation and transportation of wind-
2 borne dust. For this reason, had the contractor's HASP been reviewed by a Navy
3 CIH before work began, the evidence convinces this Court that the HASP would
4 have been approved without modification. Therefore, the Navy's breach of duty
5 was not the proximate or actual cause of L's alleged injuries.

6 **B. Navy Quality Assurance Officer (QAO) Nars Ancog and Review of
7 the Perimeter Air Monitoring Data**

8 Next, the Court turns its attention to whether the fact that Navy Quality
9 Assurance Officer (QAO), Mr. Nars Ancog, did not review the perimeter air
10 monitoring data was the proximate cause of Lacie injuries. Put differently, did the
11 Navy's breach of its duty to exercise reasonable care to ensure that its contractor
12 took reasonable care to follow required safety procedures, by failing to have Nars
13 Ancog review the air monitoring data, proximately or actually cause L's alleged
14 injuries? The Court concludes that the Navy's breach of duty in this regard was not
15 the proximate or actual cause of L's alleged injuries, because if Nars Ancog had
16 reviewed all of the perimeter air monitoring data, he would have seen few
17 exceedences. No work would have been stopped.

18 Preliminarily, the Court is somewhat troubled by the Ninth Circuit's
19 conclusion that Mr. Ancog did not review the perimeter air monitoring data. It is
20 troubled because the only evidence on the subject came from Mr. Dunaway, the
21 project manager. Mr. Ancog was higher on the chain of command than Mr.
22 Dunaway, according to the project organizational chart of the Remedial Work
23 Action Plan. Mr. Dunaway was only at the Camp Pendleton site one day a week or
24 one day every other week. He would attend project manager meetings. Mr. Ancog
25 was not at those meetings. Mr. Dunaway did not control the perimeter air
26 monitoring data. The only testimony on this issue was as follows:

27 Q. Do you know whether Nars Ancog ever looked at
28 the perimeter air monitoring data?

A. *I don't know. I don't recall him ever looking at the
data when I was on the project. He may have
afterwards, but I wouldn't know the answer to that.*

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Q. The QAO's job was to ensure that the contractor was doing all the testing that he was supposed to do, correct?

A. Correct.

Q. And his job was to ensure that the testing that was being done was being done in accordance with the work plan?

A. Correct. I know it's not exactly clarified in this text here, but, generally, Nars would focus more on the sampling data at the sites that were being cleaned up or that were being contained, such as Box Canyon landfill, but more so soil and water sampling data versus air data.

Q. Sure. You had all sorts of sampling going out there. You were doing confirmation sampling, and you were doing this sampling that indicated you need to step out, but some of the sampling test data that was involved was the perimeter air monitoring data, and it was collected by the contractor, right?

A. Correct.

Q. And as far as you know, the QAO never looked at that.

A. He did not look at the data results.

Trial Phase 1, Dkt.#439 70:9-13 and 71:5-23 (emphasis added).

There is no way Mr. Dunaway established the preliminary facts to show that he had the opportunity to know whether or not Mr. Ancog looked at the perimeter air monitoring data. *See* FRE 104. Nor does it appear that he was testifying from his own personal observations. *See* FRE 602. Given that his initial response was, "I don't know," leads this Court to believe that he was speculating. Perhaps Mr. Ancog did look at the data. Perhaps he did not. Be that as it may, at this point, this Court is bound by and will follow the Ninth Circuit's holding.

1. Contamination Levels Were Low and the HASP Action Level Appropriate

As previously noted, all of the professionals involved in this remediation project including the EPA and DTSC were satisfied that the contamination levels

1 from site 1A, 1E, 1F, and 2A were very low. Furthermore, the action level was very
2 conservative. What about the dirt from site 1E and 1F? What about the clean dirt
3 that was also being moved around the site? The Court finds that Mr. Mlakar's
4 action level was appropriately set in the first HASP and made 20 times more
5 stringent with the second amendment to the HASP. But even accepting Mr.
6 Worobel's calculations as accurate, what would the Navy QAO have found?

7 **2. There Were Few, If Any, Action Level Exceedences for**
8 **Ancog to See**

9 Mr. Ancog would have seen a handful of exceedences over 0.050 mg/m³ at
10 the perimeter. That would mean that only during a handful of times, out of the
11 3,379 times readings were taken, would Mr. Ancog have seen anything to put him
12 on notice that dirt control efforts needed to be increased.

13 **3. Even If Mr. Ancog Observed Exceedences, Work Would**
14 **Have Continued**

15 The language of the HASP does not say that, if there is an exceedence, then
16 work will be stopped. Nor does it say that if there is more than one exceedence,
17 then work must be stopped. That is what Plaintiff would like it to say, but it does
18 not. What it does say, is that if there is an exceedence, efforts will be made to locate
19 the source of the measured particulates. Then it says: "if the increased dust control
20 efforts are ineffective, the soil moving activities will be stopped." See Exh 5.

21 The obvious and inescapable basic premise underlying that sentence is that if
22 the source of the particulates in the air is the soil-working activities, then and only
23 then, if additional dust control efforts are not effective, soil moving activities will be
24 stopped. As several witnesses testified, if the exceedences were not the result of
25 soil working activities, there was nothing to be done.

26 **4. Any Action Level Exceedences That Occurred Were**
27 **Insignificant; There Was No Further Action for Mr. Ancog**
28 **to Take**

With this in mind, the Court has evaluated the number of exceedences
applying the stricter action level of the second amendment. See Exh HE, Map, Dr.

1 Shields' Demonstratives, Figure 4, Locations of PM10 1999 Monitoring Stations.
2 Regrettably, the author of the Ninth Circuit Opinion noted that the trial court had
3 failed to note that there were over 200 exceedences. To be clear, this Court did not
4 fail to note it; it did not intend to note it. Why not? The Court will explain.

5 If one accepts the most cramped interpretation of the $.050 \text{ mg/m}^3$ action level,
6 the data would indicate 265 exceedences. This is the action level that was exceeded
7 inside the windowless courtroom during this trial. With only 265 instances out of
8 3,379 readings, the exceedence rate would be only 7.8% over the 99 days of work.
9 That, this Court concluded, was at least a careful, if not excellent, effort at
10 complying with the action level.

11 **a. False Exceedences From Non-Work Activities**

12 The fact that activities other than soil-moving activities might cause the
13 monitors to register high readings, was not lost on those working at the site. As
14 Kevin Hubbard testified, he was told to look to see if there was visible dirt in the
15 air. And if the readings were due to something other than the soil-moving activities,
16 he understood that he could disregard the readings. This may not make sense to
17 some, but it makes perfectly good sense to this Court. If no earth moving activity
18 was going on, but the monitors were reflecting high readings, what were they
19 supposed to do, stop *not* working?

20 **b. The HASP Set the Action Level at $.050 \text{ mg/m}^3$ Above Background**

21 The Plaintiff's notion that an exceedence was simply any reading, at any
22 monitor, over $.050 \text{ mg/m}^3$, is simply wrong. Both experts, Mr. Worobel and Dr.
23 Shields, interpreted the action level to mean either $.050 \text{ mg/m}^3$ *above background*,
24 or $.050 \text{ mg/m}^3$, *whichever was higher*. That comes straight from the language of the
25 second amendment to the HASP. Only by counting every reading above $.050$
26 mg/m^3 , regardless of background conditions, regardless of fog, regardless of
27 monitor location can one say that there were over 200 exceedences. That is a
28 clearly tortured application of the HASP action level language. The HASP directed

1 that two dust monitors be placed between the work area and the ocean to represent
2 "background" particulate concentrations. Exh 5. It then said, "[i]f the readings of
3 the monitors near the school or housing exceeds the background readings or the
4 ambient air quality standard of 0.05 mg/m³, whichever is higher, [the] source of the
5 airborne particles will be determined, and dust control efforts will be increased."

6 Exh 5 (emphasis added).

7 When asked at trial, Mr. Worobel, Plaintiff's own expert, explained that the
8 action level exceedence was a reading .050 mg/m³ above background, and
9 background readings were those at the ocean monitors. He testified:

10 Q. Now, do you understand if the background was 50,
11 and -- meaning one of the ocean monitors was 50,
and one of the houses was 51, would that have been
an exceedence of their action level?

12 A. No.

13 ...

14 Court: I think Mr. Hubbard testified yesterday that he thought it
was .066, I believe.

15 Q. 066, and on that occasion would that have been a
16 violation of their action level?

17 A. It's right at the margin, based on the 016 reading.

18 Q. What about the .059 reading at 9:50, say, compared
to the ocean reading of .006?

19 A. Yeah, well, the difference is .053.

20 Q. And that would have been in excess of their action
21 level, is that correct?

22 A. Yes.

23 ...

24 Q. Let me show you exhibit 10b, which is the data
sheet for July 13th, and at the top it shows a reading
of 78, and is that in excess of the action level?

25 A. No, no, it's not.

26 Q. If the reading is higher than 78, how much higher
27 would it have to be before it violated the action
level?

28 A. 83.

1 Trial Phase 1, Dkt.#440 113:3-21 and 116:20-117:1.

2 ***c. False Exceedences From the Marine Layer***

3 It was conceded that the monitors would register false positives if there was
4 moisture in the air. In other words, all of the monitors would register moisture
5 particles the same as dirt particles. The Court considered the fact that Box Canyon
6 landfill is adjacent to the Pacific Ocean. The Court also considered that Southern
7 California coastal areas like Camp Pendleton experience a meteorological
8 phenomena in the summer and fall months known as the marine layer. And what
9 does the marine layer carry with it? Moisture. In fact, when the Court looked at the
10 reported data, the highest number of readings above the worst case scenario of .050
11 mg/m³ occurred on two days: August 3rd and November 3rd. Those two days
12 accounted for 23% of the 7.8% of all readings above .050 mg/m³. What was
13 glaringly obvious was that those two days were noted to have either a heavy marine
14 layer or an onshore marine layer. Additionally, many of the exceedences above .050
15 mg/m³ were readings from the ocean-side monitors, 55 of the exceedences, to be
16 exact. And these, by definition, could not be exceedences, according to the HASP.

17 ***d. Plaintiff's Own Expert: 87 Exceedences Over 99 Days***

18 Attached to Mr. Worobel's report, which had been submitted to the Court in
19 opposition to the defense's motion for summary judgement, was a schedule listing
20 the number of exceedences using what he understood to be the IT/OHM action
21 level. The schedule showed a total of 87 exceedences, not 265. If one considers
22 that the remediation project lasted 99 days, that is less than one exceedence per day.
23 That includes readings from four monitors at the start, and later as many as eight. In
24 this Court's opinion, that shows beyond a shadow of a doubt excellent dust
25 mitigation results.

26 ***e. The Court Calculated Only 40 Genuine Exceedences;
at the Myers Residence...Only 8***

27 Looking at the actual data in what was last marked as Exhibit 189B, a copy of
28 which is attached and using what Mr. Worobel and Dr. Shields described the action

1 level to be, the Court found only 40 genuine exceedences. Those were distributed
2 as follows: 28 for the housing monitors and 12 for the school monitors. Of the 28
3 exceedences at the housing monitors, *only eight were at the monitor closest to the*
4 *Myers residence*. One exceedence occurred on July 2, 1999 when 1,200 cubic yards
5 of dirt were brought in from site 1F. (Site 1F had no thallium.) No dirt was brought
6 in from sites 1A or 2A (where thallium had been detected). On July 12, 1999, there
7 were four exceedences; 2,520 cubic yards from site 1F and 390 cubic yards from
8 site 2A were brought to the landfill on that day. The dirt from 2A made up only
9 13% of the dirt brought to Box Canyon on that day. On August 3, 1999, there was
10 one exceedence and only dirt from site 1F was brought to the landfill. (Again, no
11 thallium at site 1F.) On November 15, 1999, there were two exceedences. All of
12 the dirt came from site 1E (where no thallium had been detected).

13 Close inspection of the air monitoring results reveal a careful and successful
14 effort by the contractor to minimize fugitive dust, confirmed by a very small
15 percentage of exceedences at perimeter air monitors with an action level already set
16 to be extremely conservative and protective of human health.

17 *f. And Perimeter Air Monitoring Was Not Actually*
18 *Necessary*

19 The EPA had determined that perimeter air monitoring was not even
20 necessary to protect human health at Box Canyon. According to the EPA remedial
21 project manager, Sheryl Lauth, the EPA did not believe that there was a risk to the
22 residents near Box Canyon primarily because the concentrations of the metals were
23 relatively low and metals are non-volatile compounds not readily transported
24 through the air. This Court notes that there were no complaints in 1999 from
25 residents of the adjacent housing complex or the elementary school about blowing
26 dust from Box Canyon.

27 Of the various health and safety officials that routinely visited the site, none
28 observed conditions causing concerns. There were complaints of noise. Those
complaints were addressed by setting up noise monitors to control noise.

1 A teacher at the elementary school testified that her classroom faced the
2 landfill. Daily, the teacher was in a position to notice whether dust was being
3 created and whether dust was spreading towards either the school grounds or farther
4 to the school buildings. The school teacher, Ms. Erin Hughes, was credible. Ms.
5 Hughes testified that, over the life of the Box Canyon project, she observed dust
6 coming over the fence onto the school grounds on only two or three occasions, and
7 that each time the dust came over the perimeter fence, it did not approach the
8 school. Moreover, the two or three occasions she saw dust migrating, it was from
9 equipment creating a berm out of clean cover soil ("the capping soil"). She further
10 testified that she did not keep her classroom door closed because of a concern about
11 landfill dust. Instead, she kept it closed to keep out noise. Trial Phase 1, Dkt.#440
12 at 93:2 to 106:4 (Testimony of Erin Hughes). In contrast, L's father, Sgt. Myers
13 testified that when soil was being dumped in the landfill near their housing unit,
14 dust migrated towards the housing and settled in and around his house and over the
15 neighborhood. Sgt. Myers testified that he had to keep the doors and windows
16 closed because of the amount of dust coming into the living areas. Trial Phase 1,
17 Dkt.#443 at Tr. 104:4-17; 106:6-13 (Testimony of Sgt. David J. Myers). As will be
18 seen, Sgt. Myers is not a reliable historian.

19 The evidence showed that, Defendant's contractor took steps to prevent
20 airborne dust at Box Canyon. Soil to be excavated was first sprayed with water.
21 Tarpaulins covered truck beds used to transport soil. Dumped soil was moved little
22 and then compacted. Water was again sprayed, sometimes with a mixed-in polymer
23 bonding agent. The contaminated soil was covered at least once each day with six
24 inches of clean soil. Any visible dust was likely from uncontaminated soil. The air
25 monitors employed by IT/OHM were appropriate for the task. While there were
26 occasions where the action level for airborne dust might have been exceeded, the
27 action level set by IT/OHM was so low that there were exceedences where there
28 was no visible dust.

5. Conclusion

Consequently, even if Navy QAO, Nars Ancog, had reviewed every one of the 3,379 perimeter air monitor readings during each of the 99 days of the Box Canyon project, he would not have had occasion to stop the remediation work because of a HASP action level exceedence. Therefore, the Plaintiff has not proven and the Court cannot say that the Navy's breach of duty in failing to ensure its QAO reviewed the perimeter air monitoring data was the proximate or actual cause of L's alleged injuries.

II. ALTERNATIVELY, THE NAVY'S BREACH OF DUTY DID NOT PERMIT THALLIUM TO ESCAPE BEYOND THE PERIMETER FENCE IN HAZARDOUS AMOUNTS

Even if the contractor's HASP should have been rejected and the work stopped by the Navy's QAO, there is a lack of evidence that hazardous thallium escaped the landfill work site and fell beyond the perimeter fencing into Plaintiff's daughter's environment.

A. Environmental Soil, Swipe, and Bulk Sample Testing

Testing in the year 2000 at Box Canyon landfill, the Wire Mountain housing area, and the elementary school adjacent to the landfill, showed no elevated levels of thallium. Only one sample at the school showed any detection of thallium and that was at a level below the naturally-occurring background level of 1.4 mg/kg. None of the soil samples taken from Plaintiff's residence indicated the presence of thallium. Likewise, none of the "swipe" samples taken from inside Plaintiff's residence reported detections of thallium. In fact, one of the "really good" samples came from the window sill of L's bedroom, and there was no thallium evident from testing the built-up dust. Dr. Shields testified,

Let me just add one comment on the Navy Environmental Lab wipe sample. There was one sample there that Commander Field pointed out to me. . . . that was the one that I was really focusing on because Commander Field said that that would be the worst case situation. It was in the little girl's bedroom window facing the landfill, and

1 they had collected about a teaspoon of soil or dust from
2 the window sill on their wipe. And so if anything was
3 going to show a hint of thallium or these other indicators,
4 manganese or zinc, it would be that sample, and there was
5 sufficient material in there to really give you confidence
6 that they had -- they didn't have to dilute it. It was not like
7 two dust particles. There was a teaspoonful, like 2 or 3
8 grams of soil. That sample was -- I think it was 1.3
micrograms per wipe below their detection limit of 2, so
that gave me confidence that even under the worst case
situations they weren't able to detect any thallium or any
other metals at an elevated level.

9 Trial Phase 1, Dkt.#446 109:14-110:7 (Testimony of Dr. Shields). The testing was
10 based upon sound scientific practices and by experienced chemists. There is simply
11 no evidence that any thallium migrated from Box Canyon to Plaintiff's residence or
12 elementary school.

13 As previously explained, prior to the 1999 earth movement activity, the
14 primary concern was lead, because lead was found in greater quantities than any
15 other hazardous substance in the soil to be moved. There was no concern raised
16 regarding danger to residents of the nearby housing complex or elementary school
17 from exposure to lead or thallium contaminants in airborne dust. As one witness
18 testified,

19 [T]he idea of dust having contaminants that would pose a threat to
20 humans at the school or at the housing area was just so negligible,
21 intuitively, we had low concentrations of stuff at the sites themselves
22 . . . we were transporting that to a site and disposing of it in a very
small area of the site, in which probably 95 percent of the site was
clean soil that was the source of potential dust at the site.

23 Trial Phase 1, Dkt.#439 at 33:7-15 (Testimony of Jerry Dunaway).

24 After L's complaints surfaced, the Navy made efforts to determine if dirt
25 contaminated with thallium had migrated to L's environment. In March of 2000,
26 four months after remediation activity ceased, and later again in September,
27 environmental samples were taken from around L's house, nearby residences, and
28 the Santa Margarita Elementary School. As Cmdr. Field testified, he planned to

1 take samples with a view towards biasing them high. Samples were taken from
2 areas such as around and under the dog house at the Myers' residence, in the attic
3 space, inside a closet, under the eaves, and other areas that would not be affected by
4 weather or other environmental factors. Plaintiff's own expert, Dr. Chorover,
5 agreed that if thallium had escaped the landfill in wind-blown dust, one would
6 expect to find it in these places at the Myers' housing unit. He testified,

7 I think that they are significant in that they are locations
8 that one would expect bulk samples to have been protected
9 from the weather in an exterior environment that would
10 otherwise be subject to rain and other climatic effects. So
11 these are -- these are places that are exterior to the house,
12 which would have been impacted by the fugitive thallium
13 dust, but on the other hand, protected from [the] sort of
14 weather incidents that would remove that dust over the
15 course of time, in the interim period between the landfill
16 operations and sampling.

17 Trial Phase 2, Dkt.#544 at 84:18-85:2.

18 These samples were sent to two different labs for testing. Both labs returned
19 results that showed that thallium was not detected. "Not detected" does not mean
20 that there was no thallium present. What it does mean, is that if thallium was
21 present, it was in such low concentrations that it was not detected at all, or that it is
22 below the quantitation limit of the testing instrument used.

23 One lab retained its "raw data." The other, apparently, did not. The results,
24 however, were consistent with each other. These samples were tested using a
25 technology know as ICP-AES, or Inductively-Coupled Plasma Atomic Emission
26 Spectrometry. Like all laboratory testing techniques (GFAAS, ICP/MS, and XRF or
27 X-Ray Fluorescence), it is subject to false positives resulting from inter-element or
28 matrix interference. The raw data showed that these samples had a very high
background interference from iron.

The chemist who ran the samples for the Navy Consolidated Industrial
Hygiene Laboratory, Richard Lee Norman, PhD, was cogent and reliable. He

1 testified that, in his opinion, it was proper to report the samples as non-detect for
2 thallium, because just as in the testing of L's urine (described *infra.*) the background
3 signal was so high when compared to any signal for thallium that the result yielded
4 a negative number. He testified that he did not run "background correction," but did
5 run scans that in his opinion verified that if thallium was present, it was present in
6 very, very low levels. Trial Phase 2, Dkt.#552 at 113:4-144-19.

7 Again, the presence of thallium would be expected. To simply say that
8 thallium was present in L's urine, or in these environmental samples, is
9 inconsequential since thallium is normally present in the environment. The results
10 from the Navy Consolidated Industrial Hygiene Laboratory and the Navy
11 Environmental Lab were corroborated by test results also run by IT/OHM and the
12 Santa Margarita School District. Split samples of some of these were also sent to
13 DTSC for testing. No different results were reported.

14 **1. No Thallium Hazard Found in Samples At the Myers'**
15 **Residence**

16 Since the perimeter air monitoring action level was set so low, and since the
17 contractor took so many affirmative steps to control fugitive dust, one would not
18 expect to find much thallium in the environment at the Myers residence. As
19 expected, only naturally-occurring amounts of thallium were found.

20 As mentioned above, toxicological sampling took place in March and
21 September 2000. The Navy did a great deal of sampling in and around the
22 Plaintiff's residence. There were 30 swipe samples of surfaces. There were 10 bulk
23 samples. There were 100 soil samples. The sampling was not random. The
24 approach was designed to collect dirt and dust from areas protected from the
25 weather and methodically carried out to achieve comprehensive coverage. Soil
26 samples were taken at each point of a large grid from the grassy area between
27 Plaintiff's unit and the work site perimeter fence. Samples were even taken from a
28 storm water drainage washout area where water from winter rains would have
naturally collected and deposited any trace metals. As Dr. Shields and Dr. Chorover

1 commented, if high concentrations of thallium were to be found, this certainly
2 would have been the place. No thallium was detected above the background level
3 of 1.4 mg/kg – which is the amount found naturally occurring in native soil. Thus,
4 any inference that rain may have washed the thallium away does not hold water.

5 **2. Pre-Remediation Testing Disclosed Little Toxicological Risk**

6 That high levels of thallium were not found at the Myers residence was no
7 surprise, given that high levels of thallium were not found in the soil to be moved to
8 Box Canyon. The FFA agencies had done tests to determine the extent of toxic
9 metals in the soils before the project began. Sampling data revealed few
10 concentrations of thallium at very low levels. Specifically, thallium was of no
11 concern at three of the five sites. At the other two sites, extensive sampling was
12 done.

13 As touched on earlier, at site 1A, 151 soil samples were taken, including 40
14 samples taken from soil that ultimately was transported to Box Canyon. Of the 151
15 samples, only one sample exceeded the safe standard for thallium – and not by
16 much. At site 2A, 90 soil samples were taken, including 16 samples from the soil
17 ultimately transported to Box Canyon. Of the samples, only two samples exceeded
18 the safe standard for thallium. One sample was only a little high. The other sample
19 was high, but appeared to be an unreliable test result (the sample marked “BJ”).

20 The Defendant’s contractor used the Inductively Coupled Plasma Atomic
21 Emission Spectrometry (ICP-AES) method to identify thallium in the soil samples.
22 That method often produces false positives where there are other metals in the
23 sample. In the soil at site 2A, there were high concentrations of other metals such
24 as zinc and manganese, which likely caused the false positive test for thallium.

25 Plaintiff used unreliable data to try to convince this court that the
26 contamination was much greater than evidenced. The pre-remediation soil testing
27 was accomplished by a form of testing known as X-Ray Fluorescence (XRF).
28 According to Plaintiff’s “soil fate and transport expert,” this XRF testing showed

1 thallium in the soil at levels that were higher than background (*i.e.*, above what is
2 typically found naturally occurring in undisturbed soil). The evidence clearly
3 discredits this opinion.

4 XRF is a screening device. An XRF testing device was not a device that was
5 relied upon by any regulatory agency for accurate results (at least at the time of this
6 1990s clean-up). The XRF testing device is a portable device and is relatively
7 inexpensive, quick, and allows for testing of a sample without its destruction.
8 However, the Army Corps of Engineers in an unrelated paper has concluded that it
9 generally registers high-biased results. *See* Exh JG; Trial Phase 2, Dkt.#544 at
10 149:8-150:24 (Testimony of Jon Chorover). Other literature about XRF confirms
11 the EPA's conclusion. Dr. Shields is a highly qualified expert on remediation, soil
12 treatment, transport, and testing methodology. He ran comparisons between XRF
13 results and results by ICP/MS, and arrived at a similar conclusion. The reason is
14 simple. As with so many other testing methodologies, including Graphite Furnace
15 Atomic Absorption Spectrometry (GFAAS), they are all subject to interference from
16 other substances. In the case of XRF screening tests, the interference comes from
17 other metals in the soil matrix such as iron.

18 **3. The 5.4 mg/kg Reference Dose is 3000 Times Less Than the**
19 **NOAEL**

20 In analyzing the soil testing, the EPA and the DTSC used a preliminary
21 remedial goal (PRG) for thallium of 5.4 mg/kg. The PRG was designed to be 3,000
22 times *less* than the "no observable adverse effect level" (also known as NOAEL)
23 derived from animal studies.

24 In other words, through scientific studies on the effect of thallium on animals,
25 an amount of thallium was determined to have no observable adverse effect on
26 animals. That amount of thallium was then reduced 3,000 times to arrive at the
27 reference dose of 5.4 mg/kg for human protection. Amounts of thallium below the
28 reference dose were considered to be of no consequence. Even by this extremely
protective standard, the contaminants in soil placed in Box Canyon were so low that

1 it was deemed safe for landfill workers to forego wearing respiratory protection.

2 **4. Plaintiff's Claim of Thallium in the Samples**

3 But Plaintiff adamantly argues that thallium was detected in the samples.
4 Once again, that is not significant by itself because thallium is found to occur
5 naturally in soil. What is significant is the low amount of thallium in the samples.
6 The low amounts were not likely to cause elevated levels of thallium in an urine
7 sample.

8 ***a. Plaintiff's Expert Ron Briggs***

9 Plaintiff's expert analytical chemist, Dr. Ron Briggs, testified during the first
10 phase of the trial. While credible in the limited area of his knowledge, his opinions
11 are sophmoric and not entitled to much weight. He had little experience. He had
12 never done any type of work involving collecting and analyzing samples from the
13 field. He had never done any analysis of either soil or dust for heavy metals and he
14 had not analyzed biological materials. He had earned his PhD only two years before
15 and his official position title was "Senior Lecturer" at Arizona State University. He
16 had never testified before in court. His opinion was formed only for this specific
17 case. In other words, prior to this case, he had not analyzed laboratory raw data
18 from the testing of biological samples, soil samples, or dust samples. Yet, he
19 offered opinions on the results of urine testing and environmental testing.

20 ***b. Defendant's Expert Richard Norman***

21 On the other hand, Defendant's expert analytical chemist, Dr. Richard
22 Norman, was very experienced and knowledgeable. Dr. Norman earned his PhD in
23 1976 and worked as the lead chemist in the Navy's Consolidated Industrial Hygiene
24 Lab, analyzing metals from 1986 to 2010. His opinions are relevant and reliable.

25 ***c. Other Lab Results***

26 Three other laboratories analyzed the environmental samples. The Navy
27 Environmental Laboratory ran the samples with background correction and arrived
28 at similar low level readings. IT/OHM also ran samples that reported non-detect.

1 Even the Santa Margarita school did environmental sampling and analysis. One
2 sample measured 1.0 mg/kg of thallium.

3 *d. Missing Raw Data is Not a Problem*

4 Plaintiff discounts these results because the raw data for these test results are
5 “missing.”¹⁹ There is the implication of a conspiracy to hide the raw data. But the
6 lab used by the Santa Margarita school did not have a contract with the Navy. And
7 the lab used by IT/OHM did not have a contract with the Navy. There was no
8 obvious reason to conspire. Without valid scientific evidence, Plaintiff questions
9 the actual lab results that show nothing beyond the ordinary amounts of thallium
10 expected in native soils.

11 It is perhaps ironic that Plaintiff argues so heavily the absence of raw data
12 when all of Plaintiff’s medical experts form their opinions (regarding L’s thallium
13 poisoning) without having seen the actual urine lab reports, much less the raw data.
14 Be that as it may, this fact remains. Several laboratories tested the various samples.
15 All were licensed. Some samples were even split and sent to California’s DTSC
16 with similar results. No thallium above background was ever detected. The 2005
17 ATSDR (Agency for Toxic Substances and Disease Registry) report made similar
18 findings. Exhibit JH.

19 *e. Plaintiff’s Expert Dr. Chorover*

20 Plaintiff’s expert, Jon David Chorover PhD, was also unpersuasive. Dr.
21 Chorover is a professor and department head of the University of Arizona
22 Department of Soil, Water, and Environmental Science. Unlike an expert that
23 works carefully and deliberately to arrive at an opinion, he arrived at his far ranging
24 and detailed opinions within hours of being hired and in spite of other time
25 commitments. See Exh NS (communication between Chorover and Plaintiff’s
26 counsel, dated Feb. 14, 2012) (“I received last night your Fedex package containing

27
28 ¹⁹Plaintiff had the opportunity to subpoena the raw data from IT/OHM but did not. Additionally, at one point Plaintiff moved to compel production of the raw data. For reasons not apparent from the record, Plaintiff later withdrew her motion.

1 documents pertaining to the Myers v. U.S.A. case and, with a full day of meetings
2 and teaching today, I have had only a brief opportunity to review the materials.”).

3 Curiously, his opinions were similar to counsel’s arguments.

4 Moreover, Dr. Chorover’s opinions regarding dilution of the thallium in soil
5 sampling and expected ratios of iron to thallium were not persuasive.

6 Consequently, his opinion that four of the ten bulk samples were incorrectly
7 reported as “non-detect” was not persuasive. His opinions are accorded little
8 weight. *Sartor v. Arkansas Natural Gas Corp.*, 321 U.S. 620, 627 (1944) (even if
9 expert testimony is admitted, it is for the trier of fact to decide the weight to which
10 it is entitled).

11 Dr. Shields, on the other hand, was persuasive regarding his opinion that a
12 preferable normalization would be to manganese, given the high level of manganese
13 detected at 2AB-05. “It is very clear in the literature that iron is an interferent for
14 thallium, and the laboratories absolutely must correct for inter-element correction,
15 as well as background, in order to have reliable quantitative runs, reliable
16 quantitative data. It is very, very fundamental.” Trial Phase 2, Dkt.#553 at 65:21-
17 25 (Testimony of Walter Shields).

18 **B. No Thallium Detected in Family Members and Pets**

19 Blood samples were taken from L and both of L’s parents, and the two family
20 dogs. No results of elevated thallium levels were reported. Trial Phase 2, Dkt.#553
21 at 66:6-69:8 (Testimony of Walter Shields); Trial Phase 2, Dkt.#548 at 51:6-25
22 (Testimony of Cmdr. Dan Field). No results showed the presence of other heavy
23 metals either, such as lead, manganese, antimony, etc., in the biological sampling
24 from the Myers family and their two dogs. And there was no detection of other
25 heavy metals in the soil sampling. *Id.* at Dkt.#553 at 71:18-23.

26 **C. No Complaints or Observations of Visible Dust**

27 In 1999, there were no complaints by anyone of visible dust leaving Box
28 Canyon. No witness during the first phase of trial (except Sgt. Myers) testified that

1 dust was seen blowing over the perimeter fence toward the Wire Mountain housing
2 complex. Sgt. Myers took the opportunity in March and April 2000 to canvass his
3 neighbors in the Wire Mountain housing complex. Apparently, he found no one
4 else who would support their testimony. There was a public hearing in April 2000,
5 held by the Navy on base for the residents of the Wire Mountain housing complex,
6 to talk about the Box Canyon project. No complaints of dust were recorded. Mary
7 Simmons from NEHC testified that she never saw dust leaving the work site or
8 approaching the perimeter fence during her visit. Jerry Dunaway testified he never
9 saw dust blowing off of the landfill. Even Manny Alonzo, testified that he never
10 saw dust leaving the site.

11 The most convincing testimony, however, came from previously-mentioned
12 school teacher, Erin Hughes, who kept her classroom door closed due to Box
13 Canyon noise – not because of dust.²⁰ The Court found Ms. Hughes a credible
14 witness with no apparent bias or motive to testify in any particular fashion.
15 Similarly, the school principal, Mr. Frank Gomez, complained about *noise* to the
16 Navy. Exh 78, Meeting Minutes.

17 Only Sgt. Myers, joined in the second trial phase by Mrs. Myers, testified that
18 dust was a constant problem blowing from the work site into their yard and housing
19 area. The Court found their testimony on this point to not be credible. Although
20 Plaintiff's attorney often phrased witness questions by including a phrase about
21 residents in the nearby Wire Mountain housing complex seeing clouds of dust
22 blowing from the landfill, the only residents who actually testified that they saw
23 such clouds were Sgt. Myers and Christine Myers. No unbiased witness ever
24 corroborated their testimony.

25 **D. Because No Thallium Left the Landfill, the Navy's Breach of Duty**
26 **Was Not the Cause of L's Exposure**

27 If it is assumed that L's harm was caused by an exposure to thallium, it is still

28

²⁰Ms. Hughes did see on two or three occasions dust passing over the perimeter fence in the direction of the school to the south. Wire Mountain is east of the landfill.

1 not clear where or how the exposure occurred. Viewing the evidence in retrospect,
2 it can be reasonably suggested that thallium from the adjacent landfill somehow
3 migrated to the Myers' yard or their neighbors' yards. However, the results from
4 soil testing around the yards showed that thallium was absent. In the same vein,
5 swipe testing was performed inside the Myers' residence. Areas of the home where
6 dust was likely to build up were specifically included in the testing. The swipe test
7 results proved an absence of thallium. Even Plaintiff's expert CIH, Mr. Worobel,
8 conceded that there was no detection of thallium above the PRG of 5.4 mg/kg in the
9 soil around the housing area or the elementary school. Trial Phase 1, Dkt.#440 at
10 197:13-199:8. At these amounts, defense toxicologist, Wayne Snodgrass, M.D.
11 calculated that L would have had to ingest 60 pounds of dirt in order to have a toxic
12 dose above 100 mcg/L in her urine. Even if thallium was present at a higher
13 concentration of 144 mg/kg in the soil, it would still require L to ingest 20 pounds
14 of dirt to consume a toxic dose.

15 If thallium was present in L's home environment, one would also expect that
16 her parents would show elevated levels of thallium in their bodies. Biological
17 testing showed the opposite. If thallium was present, one would certainly have
18 expected that the family dogs would have tested positive. They did not. If thallium
19 had migrated off the landfill, it would be reasonable to expect that high levels of
20 other metals would have been detected. Metals such as copper, manganese, and
21 lead. They were not. And neither L, nor her parents, nor her dogs ever showed
22 abnormal concentrations of these metals when they were tested.

23 Perhaps the laws of physics, to steal a line from *My Cousin Vinny*, ceased to
24 exist at the landfill perimeter fence? What about the lead, the manganese, the iron,
25 the zinc, and the other metals that were *not* found above background levels around
26 the Myers' residence in post-project biological and environmental testing?²¹ The

27
28 ²¹*My Cousin Vinny* (Twentieth Century Fox Film Corporation 1992), (Q. "Are we to believe that boiling water soaks into a grit faster in your kitchen than in any place on the face of the earth? A. I don't know. Q. Perhaps the laws of physics cease to exist on you stove?").

1 point is, even in retrospect, Plaintiff has not demonstrated, by a preponderance of
2 the evidence, that the thallium which harmed L, if thallium harmed L, came from the
3 Defendant's Box Canyon operations. The evidence does not convince the Court
4 that Defendant was negligent in its task of ensuring IT/OHM performed the Box
5 Canyon work with adequate safety measures in place.

6 **III. ALTERNATIVELY, EVEN IF THALLIUM LEFT THE LANDFILL IN**
7 **HAZARDOUS QUANTITIES AND L WAS EXPOSED, L WAS NOT**
8 **INTOXICATED**

9 If it were the case that thallium had escaped in wind-borne dust during the
10 remediation project, and if the fugitive thallium had accumulated in hazardous
11 quantities in L's environment, there is no reliable evidence that L ever had more
12 than a normal amount of thallium in her body. The normal amount of thallium in
13 children age 6 to 11 is approximately .2 mcg/L. And, if L had only the typical
14 amount of thallium in her body, then Plaintiff has failed to put forth evidence of
15 exposure to thallium as a result of the Navy's remediation project at the Box
16 Canyon landfill.

17 **A. L's Urine Samples Indicated Normal Thallium Levels, Except for**
18 **Three Unreliable Readings**

19 It is not too much of an overstatement to say that this case is built entirely on
20 one piece of evidence: a laboratory test report indicating a thallium concentration of
21 6.91 mcg/L²² in L's urine. It is central. As Plaintiff's counsel said, "[a]nd 6.91 just
22 stands like a beacon." Trial Phase 2, Dkt.#553 at 140:1-2 (Plaintiff's Closing
23 Argument). It is one of three lab results from the same lab that suggest a thallium
24 concentration in L's urine above what is typically found in the human population.

25 The main problem is that these three test results are worthless. Even the lab
26 must have recognized that the first and third results were unreliable because the lab
27 did not "report out" those test results. The second one, the one test result that was

28 ²²Thallium in urine is often measured in micrograms per liter, which may be abbreviated as mcg/L or ug/L. Particulates in dust are often measured in milligrams or micrograms per cubic meter of air, which may be abbreviated as mg/m³ or mcg/m³ or ug/m³.

1 reported out, is an example of junk science. Other than this one curiosity,
2 performed by an inaccurate method, in violation of lab protocols, and without
3 confirmation testing, all of the rest of L's lab results were normal. See Exh OH
4 (Chart of Urine Analyses).

5 "Reported out" is a term of art for laboratories that means the lab is confident
6 in the accuracy of the result. A result may not be reported out for a number of
7 reasons. One reason may be that the lab technician has not run calibration tests on
8 the testing instrument. Another reason could be that the technician suspects that the
9 sample tested (the analyte) contains impurities. Artifacts from prior tests of other
10 analytes could also interfere with reading an accurate test result. When an
11 instrument provides a result that is smaller than the instrument can accurately detect
12 (also known as the limit of quantification), the chemist may report the result as a
13 non-detect. *E.g.*, Trial Phase 2, Dkt.#544 at 15:4-16-22 (Testimony of Jon
14 Chorover) ("The limit of quantification is the amount of contaminant or analyte that
15 can be measured reliably and precisely sort of in a quantitative sense above the
16 noise of the instrument.").

17 **B. Three Test Results From the Same Lab Are Unreliable**

18 Three lab test results were higher than all of the others. All three came from
19 the same laboratory. The first two tests were run on a urine sample collected on
20 March 13, 2000 and analyzed by National Medical Services laboratory (NMS) on
21 March 15, 2000. The *first* result was 15.43 mcg/L but this result was not reported
22 out. The *second* test result was 3.46 mcg/L, which was reported out as 6.91 mcg/L.
23 A third test was also performed by NMS later on April 12, 2000. It is unclear which
24 urine sample was tested. The *third* result was 9.52 mcg/L but was not reported out.

25 For a number of reasons, this Court is not confident that any of these three
26 "high" results are accurate. And the Court is not alone. Even William Dunn, a
27 forensic toxicologist and the only person to testify who actually worked at the NMS
28 lab, concluded that after looking at all four of its test results, "If thallium is present,

1 it is not in excess of 5 micrograms per liter.” *See* § D(3) *infra*.

2 Some of the other reasons include the unreliability of using Graphite Furnace
3 Atomic Absorption Spectrometry (GFAAS) testing of thallium in urine, the sample
4 (or accession number) confusion, the odd manipulation of the analyte and machine
5 readings for the 6.91 result, the lack of confirmation tests such as the “spike-
6 recovery” approach, and the fact that three other laboratories analyzing plaintiff’s
7 urine samples arrived at much lower (*i.e.*, normal) concentrations of thallium.

8 **1. The First High Test Result – Not Reported Out**

9 The chemist at NMS that actually ran the tests at NMS did not testify,
10 although she may have been available to testify. She was available at the time
11 William Dunn was deposed in 2003. Apparently, Plaintiff did not depose her.
12 William Dunn, was a forensic toxicologist²³ at the NMS lab. He did testify by way
13 of deposition. He testified about his lab practices and his observations of the way
14 samples are analyzed at NMS. Dunn described the various quality control tests and
15 procedures employed prior to testing an analyte. He said the GFAAS machine
16 equipment appeared to have been set up properly prior to testing plaintiff’s first
17 sample. The first result was 15.43 mcg/L (the first high result). The lab
18 technician/chemist who ran the test, however, did not report this result. One can
19 only conclude from this, that the chemist was of the opinion that the result was
20 inaccurate or unreliable. It is not accepted as evidence of elevated thallium in L’s
21 urine.

22 It was surmised that the analyte contained too much background interference.
23 Witnesses testified that a test result can be skewed by the presence of salts,

24 _____
25 ²³Plaintiff’s counsel incorrectly referred to Mr. Dunn as the “Lab Director” at
26 NMS throughout both phases of the trial. Ten times during the first phase and seven
27 times during the second phase. But Mr. Dunn said his job title is simply, “forensic
28 toxicologist.” *See* Deposition Excerpts filed March 19, 2013, Dkt.#538, at 26:11. He
described his duties as supervising and certifying reports as they leave the lab. He was
apparently one of several toxicologists, as he described the “tox of the day” as a “duty
that all the toxicologists in National Medical Services will take on rotation.” *Id.* at
158:12-19. Defense counsel also referred to Dunn once in closing argument as the lab
director.

1 something which urine is known to have. A result can also be skewed by artifacts
2 on the testing equipment. A result can also be skewed by too much “background”
3 contaminants. Even Plaintiff’s expert witness and analytical chemist, Dr. Briggs,
4 acknowledged, after looking at the raw data for the test, that the thallium signal was
5 so weak that it was less than 1% of the background in the sample. Trial Phase 1,
6 Dkt.#441 at 142:15-18 (Testimony of Dr. Briggs).

7 Defendant’s expert Daniel Joseph McCoy, M.D., is a toxicologist with
8 expertise in analytical chemistry. McCoy has many years of experience testing
9 heavy metals and setting up test equipment and running investigative laboratories.
10 See Exh EE (Curriculum Vitae). Dr. McCoy’s opinions in both phases of the trial
11 are relevant and reliable. Dr. McCoy explained that, “the laboratory documentation
12 indicated that there was an excessive amount of interference or background signal
13 that would indicate that this was, quote, a specimen that was not optimal for
14 analysis, and the results could not be relied upon.” Trial Phase 2, Dkt.#549 at
15 167:21-25. This opinion makes sense.

16 **2. The Second High Test Result – Unreliable**

17 The problems with the second high result are developed more fully below, but
18 summarized here.

19 For the second high lab report, the lab technician/chemist diluted the urine
20 and re-ran the test. This time the detected amount was much lower, 3.46 mcg/L
21 according to the raw data. That amount is *smaller* than the test equipment was set
22 up to accurately measure. The technician/chemist then multiplied the measured
23 amount by two and reported out a test result of 6.91 mcg/L. And as with the first
24 sample, even after dilution, the thallium signal was still less than 1% of the large
25 background signal. Trial Phase 1, Dkt.#441 at 142:15-18 (Testimony of Dr.
26 Briggs).

27 The striking problem with the 3.46 mcg/L result is that the test equipment
28 was not calibrated to detect amounts below 5.0 mcg/L. Doubling the 3.46 mcg/L

1 still results in an inaccurate and unreliable result. The technician failed to confirm
2 the result by running a new lower calibration curve for the test equipment or doing a
3 “spike recovery” where a known additional amount of thallium is added to the
4 analyte and retested.²⁴

5 As evident from guidance Dr. Briggs received from the instrument
6 manufacturer, when background is high and the thallium signal is low, spike
7 recoveries and pretreatment studies are recommended.

8 Q. Now, you made an inquiry about this issue of a
9 large background signal versus a small thallium
10 signal with the scientists at Perkin-Elmer, the
11 company that manufactures this instrument?

12 A. Yes, I did.

13 Q. And you called Perkin-Elmer and asked for a field
14 technician or somebody with a lot of experience
15 with this instrument?

16 A. Correct.

17 Trial Phase 1, Dkt.#441 at 143:17-25 (Testimony of Ronald Briggs). Dr. Briggs’
18 August 31, 2004 email from Randy Hergenreder at Perkin-Elmer was raised at trial:

19 Q. “. . . If background is high, then somehow also look
20 at possible matrix interferences in your samples;” is
21 that right?

22 A. Yes.

23 Q. And if you look at the last two sentences in that
24 paragraph [Hergenreder] states, “when you have
25 samples with high background, check for
26 interferences by doing spike recoveries and
27 pretreatment studies to check for losses. Also, it is
28 good to run reference materials to confirm your
methodology,” do you see that?

A. Yes, I do.

Trial Phase 1, Dkt.#441 at 145:17-146:2 (Testimony of Ronald Briggs). After
hemming and hawing, Dr. Briggs eventually conceded that no spike recoveries or

26

27 ²⁴A spike recovery works like this: to determine if a 3.45 mcg/L result with a
28 large background was accurate, one might add 5.0 mcg/L of thallium to the specimen,
and re-test. A result of 8.45 mcg/L would then offer confidence that the earlier 3.45
result was accurate.

1 pretreatment studies were done on L's samples. Trial Phase 1, Dkt.#441 at 157:2-9.
2 High salts in the samples were not considered and chemical modifiers were not
3 used. Instead of performing these confirmation tests, the lab technician/chemist
4 simply doubled the unreliable 3.46 mcg/L result (presumably to account for the 1 to
5 1 water dilution) and reported out the conspicuously high 6.91 mcg/L result.

6 **3. The Third High Test Result – Not Reported Out**

7 The third abnormal result came from the same laboratory, using the same type
8 of testing, approximately two weeks later. The test result was 9.52 mcg/L, but the
9 lab did not report out the result. This was also a curious result. And it was a
10 significant element in Dr. Gustin's flawed toxicological opinion.²⁵

11 One problem with the result is that the specimen had been labeled with the
12 same accession number as the sample tested on March 28, 2000, yet the creatinine
13 concentration was vastly different (the concentration levels should be the same for
14 the same samples). The specimen tested March 28, 2000 had a recorded creatinine
15 concentration of 0.912 g/L. The specimen tested on April 12, 2000 had a recorded
16 creatinine concentration of 0.143 g/L. Creatinine concentrations are like
17 identification tags for urine specimens in that they allow chemists to be sure that
18 smaller aliquots split from larger specimens come from the same specimen and the
19 same patient. This Court concludes that something was amiss. Either the two
20 samples were from the same specimen, yet testing produced different results, or they
21 were two different specimens from different days, yet with the same accession
22 number. The Court concludes that none of the three test results are reliable.

23 **4. Unreliability of GFAAS Testing vs. ICP/MS Testing**

24 The GFAAS laboratory test results of L's urine samples performed by NMS
25

26 ²⁵“So I'm relying on that as that being *a valid 9.52*. So that is a very important
27 piece of information. Because not only does L[] have the classical findings of chronic
28 thallium intoxication, but she has a laboratory test to prove it.” Trial Phase 2, Dkt.#547
at 47:18-21 (emphasis added) (Testimony of Gustin, M.D.). The problem is that the
9.52 result was not valid. The lab did not report it out. She did not have a valid test
to prove it.

1 are unreliable. Reasons include the confusion of the specimens, the non-reporting
2 of two results, and the oddly-arrived-at 6.91 result. Analytical chemist, Dr. McCoy,
3 testified that the GFAAS method is less reliable than a test known as ICP/MS or
4 inductively-coupled plasma mass spectrometry. Even William Dunn, the forensic
5 toxicologist working at NMS at the time, agreed that where there are lower levels to
6 be measured, ICP/MS is a better method than GFAAS because the accuracy will be
7 better and there are less problems with interfering compounds. *See* Deposition
8 Designations filed March 28, 2013, Dkt.#539 at 195:9-23.

9 After NMS arrived at the non-reported GFAAS result of 9.52 on April 12,
10 2000, the specimen accession number was changed. The analyte was then tested
11 using the more reliable ICP/MS test equipment. The result showed a very low
12 amount of thallium in L's urine. Specifically, thallium isotope 203 was detected to
13 have a concentration of only 0.124317 mcg/L. This was cross-checked against
14 thallium isotope 205. The result was similar to the isotope 203 test with a result of
15 0.148017 mcg/L. Those results, in turn, tend to confirm similar results arrived at by
16 another laboratory for two specimens from the same time frame.

17 **C. Other Lab Test Results Showed Normal Thallium Levels**

18 Pacific Toxicology (PACTOX) used ICP/MS to test a urine sample from L
19 collected on March 31, 2000 and received on April 1, 2000. The specimen was
20 tested and thallium was detected in the typical concentration of 0.2 mcg/L. The
21 result was reported out on April 4, 2000. A second specimen with a different
22 creatinine concentration was received by PACTOX on April 7, 2000, tested using
23 ICP/MS and reported out on April 10, 2000 a similar result of 0.2 mcg/L. *See* Exh
24 109B.

25 Convinced by the testimony of the experts in this field who testified, this
26 Court is persuaded that these results of approximately 0.2 mcg/L reliably and
27 accurately described the thallium level in L's urine by the end of March 2000. To
28 sum up, the ICP/MS test results from both NMS and PACTOX were similar and

1 they detected only typical levels of thallium in the urine. Each of the other three
2 tests done by GFAAS by NMS were suspect for the various reasons discussed above
3 and below. The one elevated 6.91 result that is the centerpiece of this case might be
4 precise, but it is likely precisely wrong.

5 **D. Analysis of the Evidence**

6 Does the laboratory evidence substantiate L's alleged exposure to thallium?
7 First, as previously explained, everyone is exposed to thallium in food and other
8 products like costume jewelry, glassware, and electronics. We all have thallium in
9 our bodies. *See Reference Manual on Scientific Evidence*, 3d, n.77 (citing National
10 Center for Environmental Health, Centers for Disease Control and Prevention,
11 Fourth National Report on Human Exposure to Environmental Chemicals (Updated
12 Tables August 2014), at 204) (mean level of urinary thallium in age group 6-11
13 years during survey years 99-00, = .201 ug/L).

14 It is equally false to say that there is no safe level of thallium to which
15 humans can be exposed. It logically does not follow. Since we are exposed to
16 thallium on a daily basis, there must be a level that does not cause adverse health
17 effects. With regards to children, both Dr. Frederick Oehme, Plaintiff's prior
18 toxicologist, and defense toxicologist, Dr. Snodgrass, have opined that children are
19 *less sensitive* to thallium. Laboratories generally do not report as abnormal, any
20 urine level of less than 5.0 mcg/L. A worker is not considered as having been
21 industrially exposed to thallium, according to OSHA, unless his or her thallium
22 urine levels are 50 mcg/L, or more.

23 **1. World Health Organization Exposure Levels**

24 As previously mentioned, the World Health Organization has concluded that
25 thallium urine levels of less than 5 mcg/L are not associated with any adverse health
26 effects. Levels between 5 mcg/L and 500 mcg/L liter are uncertain as to any
27 adverse health effects. Only levels greater than 500 mcg/L are generally considered
28 toxic. OSHA has a permissible exposure limit for thallium (or what has been

1 previously referred to as a PEL in Mr. Mlakar's testimony) of .1 milliliters per cubic
2 meter of air, for 40 hours per week, over a lifetime. Dr. Snodgrass testified that the
3 literature equates that to a urine level of 100 mcg/L.

4 **2. EPA Exposure Levels**

5 Plaintiff has argued, apparently convincingly, that in 2009 the EPA found that
6 there was no NOAEL (no observable adverse effect level) for thallium. That is a
7 gross distortion of what the EPA concluded. What it concluded was as follows:

8 As discussed in section 4.6.1 most information on thallium toxicity in
9 humans comes from poisoning, suicide attempt, or accidental
10 exposures. Epidemiologic studies of either the general population for
11 occupationally exposed groups are limited by design or insufficient
12 exposure characterization. Thus available human studies do not
13 provide data useful for dose-response analysis.

14 The lack of reliable studies was again addressed by the EPA in 2012 in its
15 Provisional Peer-Reviewed Toxicity Values.²⁶ The PPRTV summarizes the 2009
16 EPA IRIS (Integrated Risk Information System) report as follows: "No toxicity
17 values were posted on the IRIS database (U.S. EPA 2009) for thallium because of
18 limitations in the database of toxicological information." The PPRTV then goes on:
19 "However, the toxicological review presents information which could be used for
20 development of an RFD." The PPRTV includes an appendix listing toxicity values,
21 including one for thallium.

22 From the above data one can conclude that there is some level of thallium that

23 ²⁶ Dr. Gustin explains the EPA hierarchy of standards,

24 IRIS is that entity the EPA charged with determining what toxic
25 thresholds and toxic values are for any substances. The EPA maintains
26 a tier system for evaluating the toxicity of substances and products in the
27 environment, and the tier system is -- IRIS is the first tier. The second tier
28 is PPRTV, which is the provisional peer-reviewed toxic value group. And
the third tier is a smattering of other groups, including the ATSDR from
the -- which is the Agency of Toxic Substances and Disease Registry.
And so IRIS is charged -- if IRIS comes up with a conclusion regarding
[a] substance, it is gospel. Nothing else happens after that unless there is
a special need. If IRIS can't come up with something, then it goes to tier
2 or tier 3.

Trial Phase 2, Dkt.#547 at 61:4-15 (Testimony of Dr. Gustin).

1 is not related to adverse health effects. In fact, both children and adults who have
2 had much greater thallium concentrations in their urine – sometimes in thousands of
3 mcg/L – have recovered fully. And no case has ever reported a child or adult with
4 7.0 mcg/L as suffering adverse health effects, much less of the magnitude claimed
5 by Plaintiff.

6 **3. The Unreliable Urine Lab Result of 6.91 mcg/L**

7 The “elevated” lab result of 6.91 which Plaintiff repeatedly and forcefully has
8 argued was “ten times that of an unexposed adult,” is completely unreliable.

9 In March 2000, as the parents and the doctors were trying to find out what
10 was causing L’s alopecia, a urine sample was taken. Previously, a blood sample had
11 been taken which was negative for thallium and lead. However, blood serum is not
12 as reliable a test for determining thallium exposure. The urine sample was sent to
13 Quest Labs for analysis. Quest then sent it to NMS. NMS then tested the sample
14 using GFAAS. As mentioned above, GFAAS testing is far from foolproof.
15 Possible errors can be caused by sample preparation, lack of dilution, and high
16 background interference, among many other reasons. Even though the technician
17 who analyzed the sample apparently had set up the equipment properly, according
18 to both Plaintiff’s analytical chemist, Dr. Ron Briggs, and William Dunn, forensic
19 toxicologist at NMS, when she ran the first test the equipment generated a result of
20 15.43. See Exhibit OH.

21 It is undisputed that the technician found this result to be questionable,
22 although the precise reason is not known. The Court would have liked to have
23 heard from the technician/chemist as to why she questioned the result. Everyone
24 agreed that she might have found the sample to be “dirty.” We do know that she
25 then diluted the sample one to one with de-ionized water. Again she ran the sample
26 through the GFAAS process. This time the result dropped considerably – not by
27 50% but by a factor of almost five. She then multiplied the resulting 3.46, even
28 though it was below the machine’s quantitation limit of 5.0, and arrived at a final

1 result of 6.91. This result was reported out.

2 This is the result that Plaintiff claims shows L had “ten times the amount of
3 an unexposed adult.” This is the result Plaintiff’s counsel communicated to Dr.
4 Eichenfield (after he had stopped treating L) which led him to conclude that L had
5 “alopecia areata-acquired.” This is also a result conveyed to Dr. Gustin, Plaintiff’s
6 “toxicologist,” and on which he relied. This is the result which has in one way or
7 another been communicated to almost every one of L’s health care providers
8 through the years. Given the significance of this result, it becomes critical that its
9 accuracy and reliability be scrutinized.

10 **a. Equipment Set Up Properly, But Something Was Wrong**

11 The Court begins by looking at the obvious. Everyone has concluded that the
12 GFAAS equipment had been properly set up before the first sample was run. But
13 the evidence shows that something was wrong – the technician refused to accept the
14 first result. Next, the Court notes that by diluting the sample 1 to 1, the subsequent
15 result dropped considerably. That drop may be explainable. But how that happened
16 was never satisfactorily explained.

17 Not only is the sample preparation important, so is something known as
18 calibration. Like a speedometer on a car, it may register a certain reading, but that
19 reading will be repeatedly in error if it has not been properly calibrated. To
20 calibrate a GFAAS instrument, known quantities of the specific substance to be
21 analyzed, known as “a standard,” are run through the instrument. This sets up a
22 calibration curve. Even Dr. Briggs acknowledged that the instrument calibration
23 can “drift” in just 20 minutes. The GFAAS instrument used to test L’s urine had not
24 been calibrated *below* five micrograms per liter. Dr. Briggs said about the NMS
25 testing: “[t]his lab lists a reporting limit of 5 micrograms per liter, and the reason
26 they do that is it’s the lowest actual standard they ran through their machine
27 [T]his lab has chosen not to report anything below that lowest standard because
28 that’s their reporting limit.” Trial Phase 1, Dkt.#441 at 81:21-82:2. But the

1 reporting limit was ignored.

2 Dr. McCoy explained why the result of 3.46 was unreliable. There is no point
3 in going through all of the quality control analysis if in the end, one is simply given
4 to say, "whatever." Such disregard for established practice and lab protocol makes
5 any result not scientifically or technologically reliable. He testified,

6 A. It should not have been reported according to the
7 guidelines that National Medical used for reporting
out information that they had for test values.

8 Q. Can you explain to the court why that is?

9 A. National Medical, in their calibration curve and
10 data, used the lowest standard of a five. So that was
11 the lowest reportable level. When they actually did
12 this analysis, the level that was determined was
13 below 0.5 -- pardon me, below 5. What they did to
14 get the 6.9 level was multiply that level by 2. *But by*
15 *doing that, they have violated their own standard*
16 *protocol, as indicated in their own literature and in*
17 *their own guidelines and in their own process.*
18 Their lowest reporting level was 5. So anything
lower than 5 is not a reportable concentration. By
using the value that was determined that was below
5, they violated that particular policy. They've also
violated, if you will, the standard way of looking at
a reportable level, and that is to not report a level
that is lower than your lowest standard. The lowest
standard they ran was a 5, and this level was below
a 5.

19 Trial Phase 2, Dkt.#549 at 169:6-25 (emphasis added). Dr. McCoy's opinion is
20 given considerable weight.

21 One cannot just say, "well, the result was below our calibration curve, but if
22 we multiply by two we have an acceptable result." Such guesswork cannot pass the
23 reliability standard required by *Daubert*, 509 U.S. 579. *See Reference Manual on*
24 *Scientific Evidence*, 3d, at 28 (unintended inaccurate results from malfunctioning
25 laboratories are subject to *Daubert* challenges); *see also Expert Evidence*, at n.8
26 ("For scientists, the 'validity' of a test instrument means the extent to which it
27 'measures what it is supposed to measure rather than something else.' Thus a
28 bathroom scale that misweighs people by ten pounds every time they use it would

1 be reliable but not valid.”).

2 The lack of reliability becomes even more pronounced when one considers
3 other factors. GFAAS results can be adversely affected by something known a
4 background interference. Background interference can be caused by other elements
5 or substances, such as salts, salts such as sodium chloride or potassium chloride,
6 both commonly found in urine.

7 ***b. Dr. Briggs Needed Assistance***

8 Dr. Briggs had never analyzed urine samples. He had never used GFAAS to
9 analyze for thallium. But he was hired by plaintiff to testify about the GFAAS urine
10 test results. Given his lack of expertise, he reached out to more knowledgeable
11 sources on urine testing by GFAAS.

12 One of those sources was a Mr. Hergenreder at Perkins-Elmer. Perkins-Elmer
13 was the manufacturer of the GFAAS equipment used at NMS. Mr. Hergenreder
14 confirmed that “high salts” can cause interference. He was told, “if background is
15 high, then somehow also look at possible matrix interferences in your sample.” Dr.
16 Briggs acknowledged that background was high, not just with regard to the 15.43
17 sample, but with both of the first two samples. He agreed,

18 Q. Having read this, and having looked at the results
19 yourself, you were aware for the 15.43 result that
20 the thallium signal was less than 1 percent for the
21 background of that sample?

22 A. Yes.

23 Q. And you're aware for the other result, the 6.91, that
24 the thallium signal was less than 1 percent of the
25 background for that analysis as well, right?

26 A. Yes.

27 Trial Phase 1, Dkt.#441 at 142:10-18. Briggs was also advised that in cases where
28 the signal is very low compared to background, spike recoveries, pre-treatment
studies, and modifiers should be used. For example, Dr. Briggs was told by Mr.
Hergenreder at Perkins-Elmer that the 6.91 result would be more reliable if a spike
recovery had been performed:

1 Q. Let's look at the next question that you asked him . .
2 . . It says, "which of the two statements would you
3 agree with?" The first one is, "to a reasonable
4 degree of scientific uncertainty, the reported
5 concentration of 6.91 micrograms per liter, ppb, is
6 not a false positive." Is that right?

7 A. Correct.

8 Q. His statement is, "this would be true if spike
9 recoveries determine that there are no matrix
10 interferences, as I've discussed above." Right?

11 A. That is his reply, correct.

12 Trial Phase 1, Dkt.#441 at 150:3-13.

13 A spike recovery is not a vague term. It is well established in the scientific
14 community and, as Dr. McCoy testified, a common validating technique. It simply
15 refers to adding a known quantity of the analyte to the sample and then re-testing
16 the sample. If the result is equal to the sum of the known quantity and the previous
17 result, the previous result is reliable. If not, the reliability of the previous result is in
18 doubt. That was never done.

19 Salts were also a potential problem. Dr. Briggs was instructed and
20 understood that urine samples that contain high levels of salts can cause
21 interferences with the results.

22 Q. "While Zeeman background correction will correct
23 for background to relatively high levels, the high
24 salts in the samples can cause other interferences"
25 Is that right?

26 A. Yes, that can be a problem.

27 *Id.* at 145:8-12.

28 In other words, Dr. Briggs needed help explaining the NMS results run by
GFAAS. He turned to the manufacturer of the GFAAS machine. The
manufacturer's experts told him the test results would be reliable if spike recoveries
were done, if pretreatment studies were done, watch out for high salts in the samples
and used modifiers. Now, he had answers. But not the answers he would have
liked.

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c. Dr. Briggs Squirms

NMS had not run spike recoveries. It had not done pretreatment studies. It had not used modifiers. And it had not analyzed the samples for high salt content. In an attempt to justify the unjustifiable, Dr. Briggs attempted to confuse calibration standards with spike recoveries and pretreatment studies:

Q. In the data that you reviewed from NMS, you didn't see any data reporting spike recoveries or pretreatment studies, did you?

A. What those included, with that data packet, was kind of a combination of spike recoveries and reference materials, the bio-rad solutions.

Q. Are you saying now that you did see spike recoveries in pretreatment studies?

A. I think what I said initially is there was nothing specifically called a spike or a pretreatment study, but, as we outlined today, there are reference materials known amounts that go through the graphite furnace.

Q. But I'm asking you about spike recoveries or pretreatment studies, no reference materials; is there any data showing spike recoveries or pretreatment studies?

A. Again, a spike is just another type of reference material, so I would have to say yes to that. There's nothing specific we called a spike though.

Trial Phase 1, Dkt.#441 at 146:3-20. Dr. Briggs continued to squirm,

Q. And you didn't see any data on spike recoveries for this urine sample, did you?

A. Again, just what we were calling standards or QA/QC data, but nothing specifically called a spike sample.

Id. at 157:2-5. This was the same conflation offered by Dr. Briggs at his deposition: "I do not see in the data any reports on spike recoveries or pretreatment studies, but I did see calibration data which looks very good, as a matter of fact, as well as the spectrum for each one of those things." *Id.* at 147:14-17.

1 He also waffled on pretreatment studies but conceded that they also had not
2 been done for L's GFAAS testing at NMS. He answered,

3 Q. You didn't see any data on pretreatment studies for
4 this urine sample, did you?

5 A. Once again, just the way the solutions were made
6 up, but nothing called -- specifically called a
7 pretreatment.

8 *Id.* at 157:6-9. And again,

9 Q. You didn't see any pretreatment studies for this
10 urine sample, did you?

11 A. The only pretreatment studies, if I would even call
12 them that, is the pages that precede the raw data that
13 show the way the solutions were prepared.

14 *Id.* at 150:21-25. And he conceded that he could not say what level of salts were in
15 L's urine sample:

16 Q. And then if you look about halfway down the
17 paragraph it states, "in almost all of these situations,
18 zeeman correction was error-free. However, there
19 was interference for thallium in the presence of .1
20 percent milligrams per liter of nacl or ccl, both with
21 Zeeman and continuum correction," do you see
22 that?

23 A. Yes.

24 Q. And nacl is sodium chloride?

25 A. Yes.

26 Q. And ccl is potassium chloride, is that right?

27 A. Right, but no molybdenum though.

28 Q. And from the data you were provided, you couldn't
tell how much salt, either sodium chloride or
potassium chloride, was in L[] Myers' urine?

A. No, I didn't know how much.

Id. at 152:4-18. Another way that the 3.46 result might have been analyzed to gain
a higher degree of confidence would have been to add what are known as "chemical
modifiers." Dr. Briggs acknowledged that there was no indication that chemical
modifiers were used.

1 Q. And you're also aware, aren't you, that this article
2 discusses the use of chemical modifying to
eliminate chemical interferences for the detection of
thallium by the graphite furnace method?

3 A. Yes.

4 Q. You've heard of chemical modifiers before, haven't
5 you?

6 A. Of course.

7 Q. And from your review of the NMS data, you didn't
see any data regarding use of a modifier, did you?

8 A. In the NMS data that I reviewed earlier, no, I didn't
9 see any indication whether one was or was not used.

10 *Id.* at 154:1-11.

11 Dr. Briggs eventually acknowledged all of these points under cross-
12 examination:

13 Q. And you didn't see any data on spike recoveries for
this urine sample, did you?

14 A. Again, just what we were calling standards or
15 QA/QC data, but nothing specifically called a spike
sample.

16 Q. You didn't see any data on pretreatment studies for
17 this urine sample, did you?

18 A. Once again, just the way the solutions were made
up, but nothing called -- specifically called a
19 pretreatment.

20 Q. And you didn't see any data on the amount of salt in
this urine sample.

21 A. No, I did not.

22 Q. Or any documentation whether a modifier was used.

23 A. I could not tell one way or the other whether a
24 modifier was used.

25 *Id.* at 157:2-15.

26 The Court finds that the 3.46 result is not reliable and that the 6.91 "result"
27 lacks scientific validation. Plaintiff's own analytical chemist knew little about
28 testing urine samples by GFAAS. He got advice from the manufacturer of the

1 GFAAS testing equipment. The manufacturer told him that for a reliable result,
2 spike recoveries and pretreatment studies should be performed, high salts content
3 considered and chemical modifiers used. Dr. Briggs conceded that none of that was
4 done in the case of L's urine sample tests. Any opinion by Dr. Briggs, that these
5 results were reliable, is given no weight. And the 6.91 test result, itself, is
6 disregarded.

7 *d. Another Indicia of Unreliability*

8 But the evidence establishing the lack of reliability does not end there. A
9 third sample was tested. As noted above, there is some confusion as to whether or
10 not it is the same sample as the 3.46 or 15.43 sample. It was given the same
11 laboratory number as the two previous samples. It too was tested by GFAAS. This
12 time the result was 9.52. It has the same high background as the prior samples. No
13 spike recoveries were conducted for this sample either and the result was never
14 reported by the lab.

15 Plaintiff argues, and is possibly right, that this was a different sample. That
16 does nothing to make the lab practices followed any more reliable. And whether it
17 was the same sample or the previous sample, lab notes show that everyone was
18 anxious to get the results, but the lab apparently misplaced the sample.

19 Why the 9.52 lab result was not reported out may never be known. Dr.
20 McCoy said that the same problems existed with both the 6.91 test and the 9.52
21 unreported test. Trial Phase 2, Dkt.#549 at 182:20-23. Plaintiff would like the
22 Court to think that the Navy, specifically a Commander Betts MD, ordered the
23 results not to be reported out. The Court does not accept that speculation. There is
24 no question that everyone was trying to get the results back. That does not equate to
25 Commander Betts ordering that the results not be reported out. And this Court will
26 not adopt an unfounded accusation.

27 *e. Normal ICP/MS Results Cast Doubt*

28 There is at least one other, and probably more reasonable, explanation for

1 why the GFAAS 9.52 result was not reported out. The testing by ICP/MS. When
2 NMS tested the urine sample by ICP/MS, the result was 0.27.

3 Dr. McCoy said that, theoretically, if the same sample is analyzed by both
4 GFAAS and ICP/MS, the results should be similar. But the NMS results were
5 inexplicably different. He testified,

6 Q. Now theoretically, if the same sample is analyzed by
7 two different methods, should the results be the
8 same or similar?

9 A. They should be similar.

10 Q. Are these results similar by graphite furnace and by
11 ICP-MS?

12 A. No, they're not.

13 Q. And how do you explain the fact they're not similar?

14 A. *That is a question that really can't be explained very*
15 *well. If appropriate analysis or appropriate*
16 *preparation of the specimen for graphite furnace*
17 *would have been performed, and the background*
18 *would have been corrected, you would get a better*
19 *idea what the values were for thallium. They just*
20 *don't compare, even to one another. The values that*
21 *were actually determined by graphite furnace were*
22 *different all three of the times it was performed. So*
23 *they don't agree with one another; whereas, with the*
24 *ICP data, they seem to be consistent.*

25 Trial Phase 2, Dkt.#549 at 187:1-17 (emphasis added).

26 Quest, the lab where the samples had been originally sent, analyzed the
27 sample by ICP-MS. It returned a result of $<.5$ ug/L, which is well within normal
28 limits. That result was reported out. Two other test results were obtained from a
different lab, PACTOX. They tested a sample, not once but twice and obtained a
result of $.2$ ug/L. See Exh 109B.

Plaintiff has argued that the ICP/MS result cannot be relied on because it only
tested for two thallium isotopes, 203 and 205. But those are the only naturally -
occurring, stable isotopes. Most other isotopes have half-lives of days or less.
Isotope 204 has a half-life of 3.78 years. But there would be no reason to think that
these other forms of thallium would be present at the landfill. The sites being

1 remediated, Sites 1A, 1E, 1F and 2A, had not been in use for twenty years or more.
 2 There is a paucity of evidence to support the idea. This Court will not engage in
 3 such rank speculation.

4 *f. The Sword of Raw Data*

5 Plaintiff also argues that the “raw data” is missing and therefore the results of
 6 the ICP/MS testing cannot be verified. That sword cuts two ways. Plaintiff would
 7 like the Court to accept the questionable GFAAS result despite the raw data; at the
 8 same time, Plaintiff would like the Court to reject the ICP/MS results by assuming
 9 the raw data would cause questions. But missing raw data does not make the
 10 ICP/MS results inadmissible. After all, experts like Dr. Eichenfield rely in their
 11 professional practice on test results without looking at the raw data. And as
 12 between accepting as valid, a test result that was not consistent with the lab
 13 calibration curve obtained by less-than-disciplined practices, versus consistent lab
 14 results generated by two (if not three) separate licensed labs, each using their own
 15 equipment, their own technicians and their own protocols, the Court chooses to
 16 accept the latter and disregard the former.

17 *g. Even Dunn Says All GFAAS Results Are Below 5.0 ug/L*

18 Finally, and perhaps most compelling is that even Mr. Dunn testified that the
 19 four results run by NMS showed L’s thallium levels to be below 5.0 ug/L – thereby
 20 undermining the validity of the 15.43, 3.46 (6.91), and 9.52 “results.” Mr. Dunn
 21 said that he had overseen 100,000 GFAAS tests per year, and 50,000 ICP/MS tests
 22 per year, mostly of urine samples. Mr. Dunn testified,

23 Q. Being we talked about many different methods and different analyses
 24 on L[]’s urine, is it your opinion that thallium was contained in L[]’s
 urine?

25 A. Possibly, but not in excessive (sic) 5 micrograms per mill, or , excuse
 26 me, micrograms per liter.

...

27 Q. We are talking about all four analyses, the three graphite furnace
 analyses which were positive and the fourth being the ICP/MS.

28 A. Correct. If thallium is present, it is not in excess of 5 micrograms per

1 liter.

2 Q. So could you – can you conclusively state in your opinion whether
3 thallium was contained in the sample tested by NMS?

4 A. Not in – not in excess of 5 micrograms per liter. It could potentially be
5 there at very low levels.

6 *Id.* at 196:1-8 & 197:6-20 (Deposition Testimony of William Dunn). And although
7 he admitted that it looked like thallium might be present as previously noted, that is
8 a *non sequitur*. It is not the presence of thallium, it is the dose that matters.

9 E. Conclusion

10 Therefore this Court finds that the evidence is insufficient to prove by a
11 preponderance of the evidence that L had abnormally high levels of thallium in her
12 urine. Dr. McCoy concluded that there was a normal level of thallium in the urine
13 samples, after looking at all of the urine test results. “My ultimate conclusion is that
14 the information that I reviewed, the test results, the analytical data supporting them,
15 indicates that there is a normal background level of thallium in the urine.” Trial
16 Phase 2, Dkt.#549 at 201:16-20. Dr. McCoy’s opinion is given substantial weight
17 and this Court agrees. The Court finds that L’s urine thallium levels were within
18 normal limits. That fact that some thallium was detected in the urine samples is
19 insignificant. “The presence of a chemical in the body is not evidence that it is
20 causing harm. And in some cases – those that involve chemicals, such as the metals
21 . . . that occur naturally – the [National Health and Nutrition Examination Survey]
22 findings may simply reflect natural background levels.” *See Reference Manual on
23 Scientific Evidence*, 3d, at 537. Consequently, Plaintiff has not proven that L was
24 exposed to fugitive thallium dust from the Box Canyon remediation operations.
25 Even if she was, it has not been proven that she was exposed to a hazardous amount
26 of thallium because her blood and urine tests were within normal limits.

26 IV. ALTERNATIVELY, EVEN IF THALLIUM WAS INGESTED IN 27 ABOVE-NORMAL AMOUNTS, THE EXPOSURE DID NOT CAUSE 28 L’S INJURIES

Assuming for the sake of argument that due to the Navy’s breach of duty, L
was exposed to thallium, as evidenced by the reported out 6.91 $\mu\text{g/L}$ urine test

1 result, the amount of thallium was small – it stands more like a dim porch light than
2 “a beacon.” Even if elevated, the thallium level was very low. The low level is
3 consistent with the medical testimony that her physical condition and alleged
4 injuries are either overstated, or unrelated to thallium toxicity.

5 **A. L Has Alopecia Areata; Not Alopecia From Thallium Toxicity**

6 L has Alopecia Areata, or more specifically, Alopecia Areata Universalis.
7 Alopecia Areata is *not* associated with exposure to thallium. In December of 1999,
8 L’s parents noticed that L’s hair was falling out. L was taken to see Dr. Thomas
9 Robinson. *See* Exh NR, Office Visit Notes, dated Jan. 25, 2000, at MED0006. The
10 initial diagnosis was Alopecia Totalis. *Id.* She then was referred to Dr. William
11 Lennard. His initial diagnosis was “extensive Alopecia Areata / Universalis R/O
12 [rule out] Anagen effluvium.” *See* Exh NR, Office Visit Notes, dated Feb. 20, 2000,
13 at MED00218. She was referred to, and eventually seen by, Dr. Lawrence
14 Eichenfield at Children’s Hospital of San Diego. *See* Exh NR, Referral Form, dated
15 Mar 8, 2000, at MED00178; Exh NR, Report Letter From Dr. Eichenfield to Dr.
16 Le[n]nard For Date of Service Mar. 20, 2000, at MED00014-00015.

17 “Alopecia” is a generic term for hair loss. It is generally divided into
18 subgroups. It is labeled according to its etiology and/or stage of hair growth at the
19 time the hair loss occurs. By April 2000, Plaintiff’s father had contacted a lawyer
20 and had found a book which confirmed in his mind that L’s alopecia was related to
21 the landfill activities.

22 There is no question that alopecia is often evident in cases of thallium
23 poisoning. The temporal and geographic proximity to L’s alopecia certainly lends
24 weight to such a conclusion. *E.g., Dominique v. Holland America line, N.V.*, 2013
25 WL 5437436 *4 (W.D. Wash. Sept. 27, 2013) (noting Ninth Circuit opinion finding
26 significance in temporal and geographic proximity of toxin to oyster bed in toxic
27 tort case).

28 However, a careful review of the evidence in this case convinces this Court

1 that L's alopecia is not the result of thallium exposure. As previously stated, this
2 Court cannot comment on every exhibit in the record that it has reviewed in order to
3 arrive at this conclusion. Nor will it attempt to comment on every nuanced bit of
4 testimony. The Court, however, will review the evidence that leads to its
5 conclusion.

6 **1. Alopecia Associated With Thallium Poisoning**

7 Alopecia associated with thallium poisoning generally manifests itself within
8 ten days to three weeks after exposure. The majority of dirt brought to the landfill
9 showing the highest concentration of thallium was brought to the landfill between
10 July 16th and July 26th.

11 Alopecia associated with thallium poisoning generally results in rapid hair
12 loss, usually within a month. L's hair loss, on the other hand, progressed over four
13 and one-half months, starting approximately six months later. Alopecia associated
14 with thallium poisoning generally reverses itself and there is complete re-growth
15 within a month following hair loss. L's hair loss has ebbed and flowed with some
16 periods of re-growth then followed by new hair loss. Alopecia associated with
17 thallium poisoning generally affects the lateral portions of the eyebrows. L's
18 alopecia involves all of her eyebrows. Alopecia associated with thallium poisoning
19 involves depilation of scalp hair and portions of the eyebrows. L's alopecia
20 involves her scalp, eyebrows, and all axillary hair as well. Alopecia associated with
21 thallium poisoning is oftentimes accompanied by Mees lines which are semi-lunar
22 lines that run laterally across the nails. L did not have Mees lines.

23 Alopecia Areata, on the other hand, is often accompanied by pitting of the
24 nails. The lack of pitting does not detract from a diagnosis of Alopecia Areata.
25 Pitting, however, tends to confirm Alopecia Areata. L had nail pitting. Alopecia
26 Areata is often associated with hypothyroidism. L has been diagnosed as being
27
28

1 hypothroid.²⁷

2 **2. Alopecia Areata Runs In Families**

3 Finally, and perhaps most compelling, is that Alopecia Areata runs in
4 families. Alopecia Areata is a polygenetic autoimmune disorder that causes the
5 immune system to attack the hair follicles. Because it is genetic, there is a high
6 incidence of first and second generation relatives who also experienced Alopecia
7 Areata.

8 Alopecia Areata, is subdivided into three subtypes, depending on the severity
9 of the manifestation. The more common Alopecia Areata generally manifests itself
10 by focal, localized, patchy hair loss. A more severe variant, Alopecia Totalis,
11 involves all of the scalp. The most severe form is known as Alopecia Universalis.
12 It manifests itself by loss of all hair. L has the most severe form, Alopecia
13 Universalis.

14 Dr. David Norris, an extremely well qualified expert on Alopecia Areata,
15 testified at trial. His qualifications were impressive. He is a board certified
16 dermatologist and he is board certified in a sub-specialty dermatologic immunology
17

18

²⁷Plaintiff has argued that L's hypothroidism was also caused by thallium
19 poisoning. Plaintiff relies on two factors: (A) elevated LDH; and (B) lack of thyroid
20 antibodies. Even Dr. Gustin, Plaintiff's toxicologist, was scarcely aware of medical
21 literature finding a connection between elevated LDH and thallium toxicity. He
22 testified,

21 Q. Dr. Gustin, I just want to make clear, the document I'm referring to
22 is the 2009 EPA document on thallium toxicity. You did not see
23 any indication in that document that elevated LDH was associated
24 with thallium toxicity?

24 A. I don't recall seeing that. I'd have to look again. I don't remember.

25 Q. And with respect to all the other literature, looking at thallium
26 toxicity that you reviewed, you did not see any reference in that
27 literature to elevated LDH being an indication or one of the things
28 that follows from thallium toxicity, did you?

27 A. That is correct. Except for the Sprague rats study, which doesn't
28 specifically mention it. It just shows the elevation.

Trial Phase 2, Dkt. #550 95:21 - 96:8.

1 and diagnostic immunology. He has been on the faculty of the University of
2 Colorado since 1977 and is currently the chairman of the Department of
3 Dermatology at the University of Colorado School of Medicine. Dr. Norris sees
4 patients with Alopecia Areata five half-days a week in a hair speciality practice that
5 has been focusing on Alopecia Areata for the past 20 years. He has also authored
6 over 100 primary publications in high quality medical journals. He is also a co-
7 principal in the National Alopecia Areata Registry which is funded by the National
8 Institute of Health. The registry collects information about Alopecia Areata patients
9 and tracks their progress. Dr. Norris' credentials are exceptional and his testimony
10 was cogent and disciplined. His opinions are relevant and reliable. Even in the face
11 of thorough and sometimes heated cross-examination, Dr. Norris was able to
12 explain his thought process and defend his opinion. Dr. Norris testified that he
13 examined L, looked at her medical records, took her history, and concluded that L
14 has Alopecia Universalis.

15 **3. L's Sister, D, Also Has Alopecia Areata – But the Myers**
16 **Deny It**

17 The familial incidence of Alopecia Areata is so well established that even Dr.
18 Gustin, Plaintiff's "toxicologist," wrote in what came to be known as his "cheat
19 sheet" as follows: "1/3 of patients who have it [Alopecia Areata] have a family
20 history of it." See Exh OF at ¶11. That is accurate.

21 Unfortunately, Dr. Gustin's comments about there being no Myers family
22 history of alopecia was just plain wrong. Although he wrote in the cheat sheet, "In
23 1st/2nd degree relatives of L[] there is no autoimmune disorders, no alopecia. . . ,"
24 *L's little sister, D, was diagnosed with Alopecia Areata in 2001. See Exh JN,*
25 *Office Notes of Christi M. Zohlen, MD, dated Oct. 12, 2001. Although her*
26 *Alopecia Areata is of the less severe variant, it has been a recurring problem for her,*
27 *"every other school year." Trial Phase 2, Dkt.#543 at 23:1-7 (Testimony of D*
28 *Myers).*

Both Sgt. Myers and Plaintiff testified that when D began losing her hair they

1 became very concerned. In Plaintiff's words, she began "freaking out." Exh NR,
2 Office Notes dated Nov. 8, 2001 at MED02761. Dr. Pesqueira, a physician who
3 examined D, had also examined L and noted on D's visit, "sister has alopecia
4 universalis."

5 D's struggle with Alopecia Areata, is such a determinative factor, that when
6 Plaintiff and her husband were deposed in 2004 they failed to disclose D's alopecia.
7 When confronted with the fact (that D suffers from Alopecia Areata also and that
8 they had failed to disclose it), both Plaintiff and her husband claimed that they did
9 not understand the question posed. The question was not difficult. Christine Myers
10 was asked,

11 Q. Mrs. Myers, that is on the screen in front of you.
12 Do you see where I ask at that deposition: question:
13 and other than your daughter L[], has anybody in
14 your family had any episodes of hair loss? And you
15 gave the following answer: huh-uh, no?

16 Trial Phase 2, Dkt.#543 at 98:9-13 (Testimony of Christine Myers). And Sgt.
17 Myers was asked,

18 Q. I'm showing you a section from your 2004
19 deposition. And I'm referring to page 31, 9 through
20 12. Do you see where I asked: okay, other than
21 your daughter L[], has anybody in your family,
22 being your blood relatives, suffered any hair loss?
23 Answer: no.

24 Trial Phase 2, Dkt.#543 at 209:15-20 (Testimony of Master Sergeant David Myers).
25 Their depositions were never corrected. Plaintiff, in particular, became quite
26 defensive at trial when impeached. Given the fact that hair loss has been such a
27 significant part of their family's life, the Court does not accept their explanation.
28 The concealment of D's Alopecia Areata is extremely troubling. The Court notes
that Plaintiff negotiated a settlement with the co-defendant, the contractor, IT/OHM
for 1.5 million dollars before this critical fact was revealed.

**4. Analysis of Plaintiff's Evidence of Alopecia Resulting From
Thallium**

The Court will now address Plaintiff's evidence. Although other

1 dermatologists have treated L over the years since 2000, including Dr. Michelle
 2 Dern, Plaintiff only called two physicians to discuss the cause of L's alopecia: Dr.
 3 Eichenfield (a dermatologist) and Dr. Gustin (an emergency room physician). First,
 4 the Court will address Dr. Gustin.

5 **a. Dr. Gustin**

6 Barry Gustin, M.D., was offered as a "toxicologist." He is not. He is not
 7 board certified and has no relevant experience in the field. He is not a
 8 dermatologist. He is not a neurologist. He is an emergency room physician. As
 9 pointed out at the outset, a physician without particular expertise in toxicology is
 10 unlikely to be able to evaluate the strengths and weaknesses of toxicological
 11 research. "Most practicing physicians have little knowledge of environmental and
 12 occupational medicine." See *Reference Manual on Scientific Evidence* 3d,
 13 *Reference Guide on Toxicology*, ¶ V. Expert Qualifications, at 676. His demeanor
 14 at trial was less than confidence inspiring. As previously mentioned, he had to
 15 constantly refer to what became known as the "cheat sheet." See Exh OF, Tying it
 16 All Together. The cheat sheet contained information about thallium literature and
 17 included such basic information as: what is a differential diagnosis?

18 As previously pointed out, he began noting that there was no alopecia in L's
 19 family. When confronted with D's Alopecia Areata, he incredibly opined that even
 20 D's Alopecia Areata might have been triggered by thallium. He testified,

21 Q. You told me at deposition that you were not able to render an
 22 opinion regarding the most likely cause of D[]'s alopecia even
 though you acknowledged to me that that would be an important
 factor in determining the cause of L[]'s alopecia, right?

23 A. I think last Wednesday we went over that. I believe it is more
 24 likely than not alopecia areata. But I said I cannot eliminate the
 25 possibility of thallium-induced delayed alopecia for the reasons I
 mentioned a few days ago. It is still an open question. I'm sorry,
 go ahead.

26 Trial Phase 2, Dkt.#550 at 15:4-13. Dr. Gustin was out on a limb, as the following
 27 question and answer demonstrated,

28 The Court: Dr. Gustin, do you know of any physician, or

1 anyone who has diagnosed D[]'s alopecia to be
2 thallium poisoning related?

3 The witness: Your Honor, no. When I looked through all of
4 D[]'s records, I actually never saw the word
5 thallium even mentioned in any of those records,
6 which was kind of concerning to me.

7 The Court: So the answer to the question is no?

8 The witness: No.

9 Trial Phase 2, Dkt.#550 at 21:16 - 22:1. Of course, emergency room physicians,
10 perhaps even more than any other physicians, are used to going out on a limb to
11 form an opinion on causality without hard evidence. “[P]hysicians . . . are
12 accustomed to using *any* reliable data to assess causality, no matter what their
13 source because they must make [health] care decisions even in the face of
14 uncertainty. This is in contrast to the courts which require a higher standard than
15 clinicians . . . , and wherein causation cannot just be ‘possible’ but where ‘a
16 preponderance of evidence’ establishes that an injury was caused by an alleged
17 exposure.” *See Reference Manual on Scientific Evidence*, 3d, at 714 (citation
18 omitted). Dr. Gustin’s tree limb cannot bear the weight of his opinion in this case.

19 This Court has reviewed considerable medical literature, case studies, and
20 case surveys provided in the trial exhibits. It has found no evidence whatsoever for
21 the proposition that Alopecia Areata can be triggered by exposure to thallium. The
22 opinion is given no weight. *Sartor*, 321 U.S. at 627 (trier of fact left to decide the
23 weight of expert opinion); *Cooper v. Smith & Nephew, Inc.*, 259 F.3d 194, 200 (4th
24 Cir. 2001) (“A reliable expert opinion must be based on scientific, technical, or
25 other specialized knowledge and not on belief or speculation, and inferences must
26 be derived using scientific or other valid methods.”) (citation omitted). The medical
27 study that Dr. Gustin relied upon to support that incredible speculation is found at
28 paragraph 29 of Exhibit “OF” and will be referred to as the Rodriguez Study.
Ironically, that study was performed in collaboration with the National Alopecia
Areata Registry.

1 Dr. Norris testified that Alopecia Areata is triggered by something that
2 excites or stimulates the immune system such as stress or a viral or bacterial
3 infection. Thallium, on the other hand, suppresses the immune system which is why
4 one of the common associated symptoms of thallium poisoning is anorexia or
5 cachexia. L was experiencing quite the opposite – an increase in appetite and
6 gaining weight.

7 The Rodriguez study does not mention thallium, much less draw a link
8 between thallium and Alopecia Areata. It does, however, clearly corroborate Dr.
9 Norris' testimony that Alopecia Areata can be triggered by a viral infection.
10 Specifically, in the Rodriguez study, they were looking at the concordance of twins
11 diagnosed with Alopecia Areata and the Epstein-Barr virus. This Court also notes
12 that it is claimed that L had experienced flu-like symptoms just prior to L's hair
13 loss.

14 ***b. Dr. Eichenfield***

15 Finally, the Court will address the testimony of physician Lawrence
16 Eichenfield, M.D. Dr. Eichenfield is a well-respected dermatologist from the San
17 Diego, California, area. He saw L in March and April 2000 to treat her alopecia. A
18 Navy physician, Dr. Lennard, made the referral.

19 In his referral to Dr. Eichenfield, Dr. Lennard recommended that L undergo a
20 biopsy and hair mount. *See* Exh KG. Both procedures are helpful in diagnosing
21 conditions such as thallium poisoning and Alopecia Areata. Unfortunately, neither
22 procedure was performed. Dr. Eichenfield did look at L's hair and did not notice a
23 darkening of the root. That is significant because what appears as a darkening of
24 the hair root is a very common objective sign of thallium poisoning. He also sent a
25 hair sample to be examined for heavy metals. The result was negative for heavy
26 metals.

27 His notes reflect that, although "Telogen Effluvium" (a category of alopecia)
28 and exposure to thallium were both in the differential, the most likely diagnosis was

1 Alopecia Areata. His notes also reflect that lab tests of L's blood were normal. He
2 noted that L's urine had been sent out for testing. He noted that he would await the
3 lab results and that "the mother" was to bring the lab results the next time he saw L
4 in four to six weeks.

5 Dr. Eichenfield noted no complaints other than Alopecia. He performed a
6 review of systems. That exam was normal. There was no ataxia, no cranial nerve
7 involvement, no gastrointestinal complaints, no complaints of L losing her appetite
8 or her coordination. Dr. Eichenfield testified:

9 Q. Did the family or L[] report to you any history of neurologic symptoms
10 at the time you saw her, L[], in March of 2000?

11 A. In March of 2000, I don't have any record of that at the time.

12 Q. Is there any report of temperature sensitivities?

13 A. No, there is not.

14 Q. Is there any report of numbness or clumsiness?

15 A. No, there is not.

16 Q. Is it correct that during your examination, you observed no neurologic
17 symptoms?

18 A. That's correct we don't do neurologic evaluations in dermatology.
19 And we didn't do it, and it is not reported that we did it. But a general
20 assessment, we did not notice anything that was abnormal.

21 Trial 2, Dkt.#545, at 200:15 - 201:15.

22 The Court also notes that although Dr. Eichenfield may be a dermatologist, he
23 is a physician first. At the time he first suspected possible thallium exposure, he
24 could not have known what L's urine tests would later show. Thallium poisoning
25 can be a fatal condition. It can quickly cascade into paralysis, respiratory distress
26 and even cardiac failure. Notwithstanding the fact that they had no idea what L's
27 thallium level might be, no one, neither Dr. Robinson, nor Dr. Lennard, nor Dr.
28 Eichenfield, ever suggested that she be chelated, treated with Prussian Blue (the
standard treatment for thallium poisoning), or hospitalized for observation. Even if
he is just a dermatologist, surely Dr. Eichenfield would have taken note if L had any

1 other complaints that would cause him to seriously suspect thallium poisoning. Dr.
2 Eichenfield never treated L for thallium poisoning. He did, however, treat her for
3 Alopecia Areata.

4 The next (third) appointment with Dr. Eichenfield was scheduled for May
5 2000. Plaintiff and L did not make that appointment and years passed by. As it
6 turned out, Plaintiff did not get the lab results to Dr. Eichenfield. But Plaintiff's
7 counsel did, before Dr. Eichenfield was deposed in June of 2004.²⁸

8 *c. Dr. Dern*

9 In another curious turn of events, although Plaintiff did not return to see Dr.
10 Eichenfield in May 2000, she did meet with another physician for an appointment
11 arranged by her lawyer. On July 9, 2000, three months after she last saw Dr.
12 Eichenfield, Plaintiff brought L to be seen by Michelle Dern, M.D., a pediatrician at
13 U.C.S.D. Dr. Dern's office notes reflect that the doctor met with L's parents and
14 lawyers for an hour. The office notes also reflect that Dr. Dern had lab results. L
15 did not return for treatment by Dr. Dern after that summer.

16 *d. The 2011 Appointments*

17 Eleven years after her last office visit, Plaintiff's counsel scheduled another
18 appointment for Dr. Eichenfield to see L. At the time the appointment was made,
19 Plaintiff and her family were living in Keller, Texas. They traveled to San Diego,
20 California, for the expressed purpose of having Dr. Eichenfield refer them to a
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24 ²⁸Dr. Eichenfield made oblique reference to this 2004 meeting during his trial
testimony in 2013, when he said,

25 The Court: As a result of your learning of the lab results, did you take
26 any other medical treatment of L[]?

27 Eichenfield: We had – no. Because it was in between that time period,
28 between her last visit in April [2000], and when we expected
to see her again. *And we didn't see her again for four years.*

Trial Phase 2, Dkt.#545 at 189:11-16 (emphasis added).

1 dermatologist in “the Fort Worth area.”²⁹ Apparently, U.S. Postal Service to San
 2 Diego had ceased, the phone lines cut, and email service discontinued. Of course,
 3 Plaintiff never listed Dr. Eichenfield as an expert witness and did not provide an
 4 expert report. But even during this 2011 visit, Dr. Eichenfield did nothing to treat
 5 L’s suspected thallium-associated alopecia. At trial, defense counsel
 6 understandably objected to Dr. Eichenfield’s testimony about causation.
 7 Nevertheless, Dr. Eichenfield’s notes of his 2011 visit with L were admitted into
 8 evidence.

9 *e. Dr. Eichenfield’s Troubled Quasi-Expert Opinion on*
 10 *Causation*

11 This Court finds the transparent attempt to circumvent Federal Rule of Civil
 12 Procedure 26 to be absurd. The absurdity becomes clear when one considers that, in
 13 August of 2011, Plaintiff or L had visited the Keller Family Practice clinic. What
 14 should be apparent to anyone is that the 2011 visit to Dr. Eichenfield was a
 15 transparent attempt to circumvent Rule 26. Why? Because in August, Plaintiff had
 16 been to the Keller clinic with both L and D. Specifically, she requested a referral to:
 17 (1) an endocrinologist; (2) a neurologist; and (3) a dermatologist. She was given a
 18 referral to Dr. Harla, a dermatologist in her local area around Fort Worth, Texas,
 19 and a Dr. Gonzales, a neurologist in the Fort Worth Area.

20 In any event, Dr. Eichenfield never testified as to how he went about ruling
 21 out Alopecia Areata. He testified that he had one positive clue and one negative
 22 indicator,

23 The Court: And I think you testified that you -- you met with
 24 some folks, and you eventually formed the opinion
 25 that it was thallium toxicity?

26 The witness: Yeah. We had one -- we had one positive and one negative

27 ²⁹ The trip is all the more curious for the following reasons. In August, the Keller
 28 Family Practice clinic had referred Plaintiff to a neurologist in Irving, Texas, and a
 dermatologist in Keller, Texas. Plaintiff had made an appointment with Dr. Harla, a
 dermatologist, for October 2011. Keller, Texas, is a northern suburb of Fort Worth,
 Texas. See Exh 468. Instead of going to see these doctors, the family never showed
 up. See Exh 937.

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The Court: That is what I was trying to get.

The witness: The positive test -- if we had a history and we had -- we had a history of potential exposure.

The Court: Okay.

The witness: Plus the physical finding of the diffused hair loss. And then we had at least one or two urine tests that looked consistent with an abnormality. Because my understanding was that there were significantly elevated levels of thallium, which you wouldn't have unless you had unusual thallium exposure. The hair tests -- and this is where you'll get other experts. But my reading at that time was that hair tests were highly unreliable.

Trial Phase 2, Dkt.#545 at 210:24-211:15. His opinion that L's alopecia is related to thallium exposure is certainly not supported by what this Court would consider a rigorous differential diagnosis.³⁰

The notes reflect that his impression was Alopecia Areata "acutely-acquired." If that was included to mean that her Alopecia Areata was the result of exposure to thallium, for the reasons stated previously, this Court does not accept that conclusion. It is certainly not the result of a disciplined differential diagnosis and

³⁰One court recently described "differential diagnosis" like this:

A reliable differential diagnosis . . . generally is accomplished by determining the possible causes for the patient's symptoms and then eliminating each of these potential causes until reaching one that cannot be ruled out or determining which of those that cannot be excluded is the most likely. The first step is creating a comprehensive list of all possible causes of the person's symptoms. After the expert has ruled in all of the potential causes, the expert begins a process of elimination based on continued review of the evidence. Ninth Circuit law requires an expert to provide reasons for rejecting possible causes using scientific methods. The elimination of those hypotheses must be founded on more than subjective beliefs or unsupported speculation.

Dominique v. Holland Am. Line, N.V., No. C12-78RSL, 2013 WL 5437436, at *3 (W.D. Wash. Sept. 27, 2013) (quoting *Clausen v. M/V New Carissa*, 339 F.3d 1049 n.4 (9th Cir. 2003) (internal quotations omitted); see also *Reference Manual on Scientific Evidence*, 3d, at 690 ("In the legal context, differential diagnosis refers to a technique 'in which [a] physician first rules in all scientifically plausible causes of plaintiff's injury, then rules out the least plausible causes of injury until the most likely cause remains, thereby reaching [a] conclusion as to whether defendant's product caused injury. . . .").

1 there is no scientific data to support it. "When an expert rules out a potential cause
 2 in the course of a differential diagnosis, the 'expert must provide reasons for
 3 rejecting alternative hypotheses using scientific methods and procedures and the
 4 elimination of those hypotheses must be founded on more than subjective beliefs or
 5 unsupported speculation.'" *Messick v. Novartis Pharm. Corp.*, 747 F.3d 1193, 1198
 6 (9th Cir. 2014) (quoting *Clausen*, 339 F.3d at 1058).

7 Furthermore, his opinion on the etiology of L's alopecia was not formed
 8 during the course of treatment and could, but will not be, excluded. Nevertheless,
 9 his opinion clearly lacks objectivity and scientific support. Because of its lack of
 10 objectivity and reliability, and given the surreptitious way that it was obtained, the
 11 Court has elected to disregard Dr. Eichenfield's opinion, giving it no weight.

12 Other aspects of his testimony were also rather troubling. Dr. Eichenfield
 13 testified he was supposed to see L after April 10, 2000. He testified L did come to
 14 her next appointment and that he did not examine her again until 2011. Some time
 15 in the interim, he said he obtained the lab results of her urine. He never mentioned
 16 from whom he got the results. In a rather curious way, Dr. Eichenfield testified,

17 The Court: Look, let me try this: you said you found out about
 the urine test, right?

18 The witness: Yes.

19 The Court: That caused you to think that definitely thallium was a
 20 possibility?

21 The witness: Yes, absolutely.

22 The Court: Now did you make any notes to your records, to your
 medical records, of your conclusion in that regard?

23 The witness: I don't know if they're physically written. Because *we*
 24 probably -- *we* processed the laboratory work when it
 25 came. But since at the time, *we* were on paper records --
 26 now, with electronic medical records -- *we* were physically
 27 writing -- we're much more conscious of the trail of
 evidence, so to speak, in medicine. But in this case, *we*
 probably didn't write it down. It was something that was
 known. It was something that *we* discussed as a group.

28 Trial Phase 2, Dkt.#545 at 188:12-189:4 (emphasis added).

1 The Court was troubled by that testimony. Why did his records not include a
2 copy of the lab results? How did he conclude that whatever the thallium level
3 reflected by the report, was such a high level so as to cause L's alopecia? And who
4 was the "we" that he referred to? Was it an intern, a resident, a fellow, or some
5 other doctor? If so, why was there not a note? He had his paper records from the
6 March and April 2000 visits – yet nothing to reflect a significant aid in diagnosis
7 such as a lab result or his consultation with others? This Court did not buy it. As it
8 turns out, it would eventually come to light that it was Plaintiff's counsel who told
9 him about the 6.91 and the 9.52 results just prior to his deposition in 2004. Of
10 course, there is no record of what other information or misinformation may have
11 been conveyed in order to taint his opinion.

12 Nor is there any explanation in his notes or testimony of how he applied the
13 information that D also had Alopecia Areata into his opinion.³¹ Did he ignore it?
14 Did he not think it was important? And if not, why not? Was he told of the normal
15 ICP/MS test results from NMS, PACTOX, or ARUP? How did he rule out Alopecia
16 Areata in light of D's Alopecia Areata? And why did he mention to Plaintiff:
17 "Discussed novel research into alopecia areata gene and hope for promising gene
18 therapies in the pipeline"? See Exh 394, Physician Notes, dated Nov. 28, 2011, at
19 p. 4.

20 These questions have not been answered to this Court's satisfaction.
21 Whatever opinion Dr. Eichenfield may have reached about L's alopecia, this Court
22 elects to reject it in favor of the opinion of Dr. Norris. *Sartor*, 321 U.S. at 627 (trier
23 of fact left to decide the weight of expert opinion). The Court adopts the opinion of
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27 ³¹In the "assessment/treatment plan" portion of Dr. Eichenfield's 2011 office visit
28 notes, he wrote: "*Family history of alopecia in the patient's sister raises question of
alopecia areata with precipitation with heavy metal [blank space in original]
Exposure.*" See Exh 394, Physician Notes dated Nov. 28, 2011, at p. 4.

1 Dr. Norris and treating dermatologist, Dr. Pesqueira³², and finds that L's alopecia is
2 Alopecia Universalis and is not caused by thallium poisoning.

3 **B. No Cognitive Deficits Result from Thallium Toxicity**

4 Next the Court will address L's alleged neuro-cognitive impairment. Plaintiff
5 alleges that L is impaired and that the impairment is the result of L's exposure to
6 thallium. To opine on this, Plaintiff called neuropsychologist Sandra Brown, PhD,
7 neurologist James Renfroe, M.D., and rehabilitation counselor and life care planner
8 Carol Hyland. It is claimed that L will not be able to live alone, will not be able to
9 drive, will not be able to go to college, and will not be able to hold down a job
10 without supportive help. Having heard and observed L, for this Court to accept
11 such claims as anything other than gross exaggeration, would require the suspension
12 of disbelief.

13 **1. L's Courtroom Testimony**

14 L entered the courtroom appearing as an attractive, although somewhat
15 overweight, young lady. She walked with purpose and poise. She approached the
16 witness stand with confidence. She answered questions articulately and without
17 hesitation. L made good eye contact, even with the Court. Some witnesses do not.
18 When the Court asked her to name her favorite band, without hesitation she
19 answered that she didn't have one. When the Court asked her to name her favorite
20 book, she answered "Glass." The Court asked her what the book was about and
21 again she answered appropriately. In short, L appeared to function no less capably
22 than hundreds of other witnesses that this Court has observed. Other than her
23 alopecia, which she disguises quite well, L seemed like the typical average teenage
24 young lady.

25 This Court's impression was validated by the testimony of several witnesses.
26 First, Michael Westerveld, PhD. Dr. Westerveld is a neuropsychologist. He is

27 _____
28 ³²"Although Thallium exposure can be assoc. [with] hair loss, Alopecia
Areata/Universalis in this Pt not related." (Emphasis in original.) Exh NR, Office
Notes dated Oct. 9, 2001, at MED000917, MED00277, and MED 00310.

1 employed at the Florida Hospital Medical Center and is the director of Pediatric
2 Neuropsychology at the Walt Disney Pavilion at the Florida Hospital for Children.
3 Before that, he had been an associate professor in the neurosurgery department at
4 Yale University. He is board certified in clinical neuropsychology. He was the
5 president of the American Board of Clinical Neuropsychology. He was at the time
6 of the trial, the chairman of the Practice Advisory Committee of the
7 Neuropsychology Division of the American Psychological Association. He has a
8 sub-specialty, children with neuropsychological conditions. His opinions are
9 relevant and reliable.

10 **2. Standardized Testing**

11 Dr. Westerveld reviewed L's medical history, and administered standardized
12 tests of L's abilities in 2012. He concluded that L's full scale IQ was 84. Her
13 verbal score was 89, and non-verbal was 83. Dr Westerveld testified that 50% of
14 the population would generally fall within the 90 - 109 range. He testified that he
15 also administered another exam called the Test of Memory Malingering to
16 determine if L was giving her best effort. It is expected that by mere chance one
17 should get 50%, or 25 questions, correct. The TOMM is a test also given to persons
18 with Alzheimer or dementia. Persons with Alzheimer's or dementia obtain better
19 scores the second time it is administered. Someone with severe memory impairment
20 would be expected to get 75% correct.

21 L, on the other hand, took the test three times. The first time she took the test,
22 she got only 28 correct. The second time she got 6 correct, and the third time, 2
23 correct. Although Dr. Westerveld was too kind to assert that L was malingering, he
24 testified that the chances of that happening would be minuscule. In his words, "She
25 was 98 percent accurate in selecting the wrong response."

26 The Court notes that L was also administered the standardized tests twice by
27 Dr. Sandra Brown, Plaintiff's expert neuropsychologist. Dr. Brown had tested L in
28 2003. Dr. Brown tested L again in 2012. Dr. Brown testified that she had to repeat

1 the test because it did not seem that L was giving it her best effort. Dr. Brown
2 attributed the lack of effort to the fact that the test was really administered by one of
3 her students, who, as Dr. Brown put it, "is very handsome and L[] is a teenage girl."

4 **3. L's Cognitive Performance is Similar to Her Mother's**
5 **Performance**

6 Dr. Westerveld compared L's scores to her mother's score when she was a
7 young girl. It was uncontroverted that parental intelligence contributes largely to a
8 child's intelligence. L's mother scored 87 on the verbal, 84 on the non-verbal and
9 68 on the quantitative test, which he described as below borderline. He testified
10 that L's mother's scores were substantially below grade average, with one exception
11 – math. She was at grade level in math.

12 Dr. Westerveld then reviewed an analysis of L's performance. In that
13 analysis, Dr. Westerveld concluded that L's score performance throughout the years
14 was average to low average. *See* Exh JX. He also compared how L is described by
15 Plaintiff and Plaintiff's experts to her performance in real life. He concluded, "It is
16 just not a plausible presentation of the reality of what her independence is." Having
17 reviewed L's school records and the testimony of her teachers, this Court could not
18 agree more.

19 Perhaps the most meaningful exchange occurred when Plaintiff's counsel
20 tried to impeach Dr. Westerveld.

21 Q. You guys talked a lot about Christine's bad grades in high
22 school. How did that fit in, given the fact that she's performed
23 excellently since that time?

24 A. I think it fits in in a number of ways. So one of the things that I
25 really wanted to emphasize is, that you can't look at somebody's
26 I.Q. and say this is going to place a ceiling on what you're going
27 to be doing for the rest of your life. And that example is
28 exemplified with Christine. She performed poorly on that test in
eighth grade. And if they had said, now you're not going to
graduate, and made all of these negative proclamations about
her, then maybe she wouldn't have been as successful. But her
motivation trumped what was at that time her I.Q. And I
guarantee you, if we gave her a test now, she would score much

1 higher. I.Q. changes over time, based on your experiences. And
2 I think that's what we really have to focus on, can L[] do more
3 than you think she can because she got an I.Q. of 84 or 86?

4 Trial Phase 2, Dkt.#549 at 146:5-21 (Testimony of Michael Westerveld). This
5 Court could not agree more. L's mother has gone on to become a successful
6 emergency room nurse. Although L has been diagnosed many times as having ADD
7 or ADHD, this Court feels that she is much more capable than the Plaintiff is
8 leading us to believe.

9 **4. ADD/ADHD Is Not Associated With Thallium Toxicity**

10 Perhaps it should be noted that there is absolutely no case study literature or
11 report that has ever associated ADD or ADHD to thallium exposure. It is for that
12 reason that Plaintiff's neurologist, Dr. Renfro, refused to acknowledge that L has
13 ADD or ADHD, preferring to use a less specific term (*i.e.*, neuro-cognitive
14 impairment). When confronted with the fact that his records included several
15 mentions or diagnosis of ADD or ADHD, he offered numerous excuses, including
16 incredibly that such was the language selected by his computer. Dr. Yarbrough and
17 Dr. Westerveld have both opined that L has ADD or ADHD.

18 **5. Observations of L's School Teachers**

19 But this Court's views of L's true cognitive condition is not limited to
20 witness-stand observations or opinions of doctors. L's teachers, who see her every
21 day, have also commented about how competent and capable she is. Again, no one
22 denies that she has ADD or ADHD and that she is easily distracted. But the
23 teachers interact with L daily. One of her teachers, Ms. Maxine Davis, testified (by
24 deposition) that L learns all of the same concepts as other students. She does not
25 need extra time to be instructed on what to do on an exam. She works
26 independently, but if she needs help she knows to ask for it. L can grasp exponents.
27 When she needs to do extra work she comes into class early and knows what to do.
28 She is social and gets along "really well" with others. She is driven to do well and

1 so she tends to be successful. Ms. Davis believes, based on her observations and
 2 her observations of others, that L will be able to hold down a job. Although L has at
 3 times been distracted by putting on her make-up in class, L never seems
 4 overwhelmed. "She smiles and she works."

5 Another of L's teachers was ebullient about how well L had done on a paper
 6 examining *Romeo and Juliet*, Acts I & II. Ms. Jamie Mayes testified (by deposition)
 7 that this was a very difficult subject for most students, but L handled it
 8 impressively. The evidence also shows that L has done quite well in some of her
 9 classes, including getting the second-highest grade in her class in Integrated Physics
 10 and Chemistry. In her English class, she did better than satisfactory. The same was
 11 true of Biology. Remarkably, during trial Plaintiff attempted to understate L's
 12 competence. The following exchange is illustrative:

13 The Court: . . . So tell me, which classes is she mainstreamed in
 and which classes is she not mainstreamed in?

14 The witness: She's mainstreamed in her -- it's like life sciences,
 15 where they learn to go fish.

16 The Court: They learn to go fish?

17 The witness: Yes.

18 The Court: Okay. So she learns to bait a hook?

19 The witness: Right. And then hiking, that's part of it. And then
 20 the other classes that she's getting pulled out for,
 21 last semester -- she's getting pulled out for her main
 subjects, every one besides English. And English is
 the one she failed. . . .

22 Trial Phase 2, Dkt.#543 at 123:13-24 (Testimony of Christine Myers).

23 **6. Analysis of Plaintiff's Evidence on Cognitive Performance**

24 The Court will now evaluate Plaintiff's evidence. First, the Court will
 25 address Dr. Sandra Brown.

26 ***a. Dr. Sandra Brown***

27 Dr. Brown is a well-qualified and respected professor at the University of
 28 California, San Diego. She is a professor in the Department of Psychiatry. She is

1 board certified in neuropsychology. However, unlike Dr. Westerveld, she has no
2 sub-specialty, or specialized experience with children. Dr. Brown testified that she
3 was provided a considerable amount of information by Plaintiff's counsel, including
4 a series of articles on thallium poisoning as well as medical records. In other words,
5 after having "poisoned the well" sufficiently, Plaintiff's counsel asked her to
6 administer tests and evaluate L. She tested L at 7 years, 3 months of age, and found
7 that her verbal IQ was 83. According to Dr. Brown, the standard score would be
8 100, with a standard deviation of 12.5. Her performance score was 102. Her full
9 scale IQ was 91.

10 Dr. Brown testified that L was inconsistent. Interestingly, Dr. Yarborough,
11 who will be discussed later, referred to L not as inconsistent, but as "inconstant."
12 Dr. Brown testified that L is "scattered."

13 She testified that family history was very important and that she inquired
14 about it, and it was all reported to her as negative. However, in a report she wrote
15 the following:

16 I summarized Christine's [L's mother] grade school
17 performance on two tests of achievement and proficiency
18 and the Metropolitan Achievement tests. I started with the
19 twelfth grade. Since her grades in high school are
20 probably more stable (as she was closer to being an adult)
21 and reflective of her current academic attainment.... As
22 you can see, Christine's scores in the achievement tests, in
23 several domains, varies widely from year to year. At times
24 she scores poorly in math and at other times, her scores are
25 more in the average range. Her scores also vary in
26 language and spelling, however, scores are largely in the
27 average to low average range overall.

28 To this Court, it sounds eerily like the description of L's cognitive performance. In
another report, Dr. Brown criticized Dr. Westerveld's conclusions stating: "It is
unclear what Dr. Westerveld means when he says 'the expectations of her
development given the family history.'" What family history? It was established
prior to Dr. Westerveld's review of this case that there is no family history of
intellectual impoverishment nor is there a family history of learning "problems" or
"learning disabilities."

1 To support her conclusion, Dr. Brown also wrote: “It is important to note that
2 in contrast to L[], D[] does not have alopecia....” Apparently, Plaintiff’s learning
3 problems and the alopecia of L’s sister, D, had *not* been communicated to Dr.
4 Brown. Curious to say the least.

5 Finally, Dr. Brown acknowledged that there is nothing in the literature that
6 associates thallium toxicity and attention deficit disorder. Trial Phase 2, Dkt.#546
7 at 108:9-11 (Testimony of Dr. Sandra Brown).

8 ***b. Mother’s Dyslexia?***

9 And like the troubling testimony about D’s Alopecia Areata, a similar
10 pivoting occurred with regards to Plaintiff’s own learning issues. For years,
11 Plaintiff had been telling others that she was dyslexic. In his medical records, Dr.
12 Sharp noted in 2001 “mom is dyslexic.” In 2004, Dr. Yarbrough testified that she
13 told him that she was dyslexic. Exh NR at MED03722, 80:1-9 (Deposition of
14 Ronald Yarbrough, Vol. I). She told Dr. Gustin that she was dyslexic. When she
15 was deposed by Defendant she said she was dyslexic. Incredibly, at trial, she now
16 testified that she was *not* dyslexic because her mother had recently told her that she
17 had never been diagnosed as dyslexic.³³ Trial Phase 2, Dkt.#543 at 110:5-112:11
18 (Testimony of Christine Myers).

19 Whether she is dyslexic or not, is not the question. The question is whether
20 she also has exhibited some learning disabilities. It is confirmed by her admissions.
21 It is confirmed reluctantly perhaps by Dr. Brown. And heredity matters, as both Dr.
22 Brown and Dr. Westerveld have testified. In its review of the thousands of pages of
23

24 ³³This is another example of facts that suggest Plaintiff is an unreliable historian.
25 During her testimony in 2013, she testifies that her mother informed her that she was
26 never diagnosed with dyslexia. She says that took place recently: “It was a couple
months ago.” Trial Phase 2, Dkt.#543 at 112:16.

27 However, nine years earlier, her mother, Flo Bernard, filed a declaration in this
28 case that said, *inter alia*, “Christine has never been diagnosed or treated for dyslexia.”
See Declaration of Flo Bernard, at ¶2, Dkt.#100 (filed Feb. 12, 2004). Did Plaintiff
remember this event nine years ago as if it were only months ago? Did she completely
forget being informed by her mother in 2004? Could Plaintiff’s mother have filed this
declaration without telling Plaintiff about it?

1 evidence admitted in this case, in the bowels of Exhibit "NR" the Court found a
2 typewritten note from Plaintiff to one of L's teachers. The body of the note is 110
3 words. It includes the following:

4 It seems everyday she gets a bad commit (sic) in her
5 folder. As for her not doing her homework, every time she
6 brings home her homework, she does it. On the days for
7 what ever (sic) reason she doesn't bring her homework
8 home, is (sic) out of my control. She does get grounded
9 for not bringing it home. Maybe the school can't met (sic)
10 her needs, if this is so please let me know so we can sit
11 (sic) up a conference.

12 Exh. NR at Med 03661. One does not have to be an English professor or a
13 neuropsychologist to see that Plaintiff, herself, struggles with language or attention
14 to writing detail. Nevertheless, notwithstanding whatever her own difficulties may
15 be, she has gone on to become a successful woman and an ER nurse.

16 *c. Dr. Yarbrough*

17 Finally, the Court will briefly comment on Ronald C. Yarbrough, PhD. In
18 2004, he had been practicing forensic psychology for forty years. His testimony is
19 credible, but it was based upon information sifted by Plaintiff's counsel. Dr.
20 Yarbrough tested L in 2002. According to Dr. Yarbrough's testing, L's full scale
21 IQ, in 2002, was 96. L's verbal IQ was 93, and her performance IQ was 100. Exh
22 NR, at MED00352 (WISC-R Test Profile). All three are within the average range.
23 Trial Phase 2, Dkt.#546 at 120:2-9 (testimony of Dr. Sandra Brown commenting on
24 Dr. Yarbrough's testing). Dr. Yarborough concluded that L has attention deficit
25 disorder.

26 Q Is it your opinion to a reasonable degree of psychological
27 certainty that L[] suffers from ADHD or ADD?

28 A: Yes, sir.

Q: And what is that opinion?

A: That she does.

Exh NR at MED03716, 56:20-25 (Deposition of Ronald Yarbrough, Vol. I). He

1 described her as “inconstant,” or a case of “inconstantcy versus inconsistency.” *Id.*
2 at MED03718, 61:7-13. Dr. Yarbrough further testified that he saw no indicator
3 that L had been diagnosed with central nervous system impairment.

4 ***d. Plaintiff’s Counsel “Poisons the Well” with Expert
Witnesses***

5 Dr. Yarbrough, like Dr. Eichenfield, and Dr. Renfroe, all pose a disturbing
6 evidentiary scenario for this Court. All are held out to be “treating physicians.”
7 And what is the importance of that? Well, treating physicians are not hired
8 litigation experts. Ordinarily, their opinions might be entitled to more deference,
9 since the opinions are arrived at solely for the purpose of treating a disease or
10 condition. The problem, however, is that as to all of these doctors, Plaintiff’s
11 attorneys injected themselves into the doctors’ opinions, and in so doing,
12 compromised their independence.

13 This Court is fully aware that a plaintiff’s lawyer may, in fact, should contact
14 a treating physician to ascertain the nature of the injury (as opposed to causation),
15 the treatment provided, and the prognosis. But there is a difference. This Court’s
16 view is that Plaintiff’s counsel overstepped acceptable limits by providing these
17 providers with information not germane to their treatment, and not providing other
18 records that are germane to forming an opinion. Information about test results,
19 information from other providers, information and opinions obtained from litigation
20 experts and literature about thallium and thallium-related conditions were provided.
21 With the exception of Dr. Renfroe, who will be discussed later, none of these
22 providers used the information for purposes of providing treatment. In other
23 instances, experts were only given selected records. For example, Dr. Renfroe was
24 not provided with a complete set of L’s medical or educational records, nor did he
25 have the reports of defense toxicologists. Trial Phase 2, Dkt.#545 at 109:19-111:22.
26 He did not have the medical record of Dr. Sharp. *Id.* at 126:7-13. In another
27 example, Dr. Gustin did not know that biological samples had been taken from L’s
28 parents and pet dogs. Trial Phase 2, Dkt.#547 at 142:13-19. Dr. Brown was given

1 no school records about L's father. Trial Phase 2, Dkt.#546 at 118:17-24. In the
2 practice of law, this is commonly known as "poisoning the well."

3 Plaintiff's counsel's attempts to bias Dr. Yarbrough were downright blatant.
4 The Court has read Dr. Yarbrough's deposition and finds that his assessment of L is
5 "spot on." Exh NR, at MED03703-03747. The Court, however, disregards any
6 opinions of causation for the reason previously stated and because as a treating
7 physician or psychologist he cannot express such an opinion. *Goodman v. Staples*
8 *The Office Superstore, LLC*, 644 F.3d 817, 826 (9th Cir. 2011) ("Today we join
9 those circuits that have addressed the issue and hold that a treating physician is only
10 exempt from Rule 26(a)(2)(B)'s written report requirement to the extent that his
11 opinions were formed during the course of treatment.").

12 Dr. Yarbrough, in his notes of April 12, 2002, noted that L was "full of life
13 and bubbling with information. It is obvious that she is very intelligent and
14 creative." Exh NR, at MED03723, 82:13-24. Fair enough. But with regards to any
15 opinion on causation, this Court elects to disregard it. Why? Dr. Yarbrough
16 testified that before his deposition, Plaintiff's counsel met with him on May 25,
17 2002. He did not ask Dr. Yarbrough any specific questions. He did, however work
18 through with him how the thallium exposure occurred. He testified that Plaintiff's
19 counsel took him through, "this notebook that had a variety of pictures and a history
20 starting with photographs, and actually, the notebook starts with a work plan about
21 re-mediation of the soil at Camp Pendleton and helped me understand where the
22 house was and why this might have been an issue, and then through the medical lab
23 proceedings and stuff like that." *Id.* at MED03733, 121:1-16.

24 If defense counsel had tried this, this Court has no doubt that Plaintiff would
25 be screaming bloody murder, accusing them of witness tampering and seeking some
26 form of sanction. Plaintiff's education of Dr. Yarbrough had nothing to do with
27 whatever testing Dr. Yarbrough did while he was seeing L in 2002. This blatant
28 effort to taint Dr. Yarbrough's opinion and then his attempt to hold him out as a

1 disinterested treating physician, renders Dr. Yarbrough's causation opinion
2 unreliable and unworthy of any weight.

3 Finally, in reviewing the literature on thallium poisoning and its effect on
4 cognitive function, it is true that there are a few cases where cognitive impairment
5 has been associated with thallium. However, a survey of the literature and case
6 studies show that the thallium levels were quite high, again, sometimes in the
7 thousands of micrograms per liter. In any event, this Court finds that L suffers from
8 ADD or ADHD and that there is no basis in the literature or the evidence to
9 associate that with thallium poisoning. Whatever L's cognitive limitations may be,
10 it is due to heredity factors, not exposure to thallium.

11 **C. No Gastrointestinal Complaints from Thallium Toxicity**

12 The Court will now turn to claims that L had gastrointestinal (GI) symptoms
13 in mid-December 1999, shortly before she began losing her hair. This is important
14 for Plaintiff, because GI complaints are very common among patients that have
15 consumed toxic quantities of thallium.

16 More specifically, reference has been made to L having "flu like symptoms."
17 Of course, if L did have the flu, it would be consistent with Dr. Norris' testimony
18 that a viral infection can trigger Alopecia Areata. Nonetheless, the Court will
19 briefly address the GI complaints.

20 First, Plaintiff and her husband have both testified that L experienced GI
21 issues. The problem is that their versions of the onset or duration of the symptoms
22 vary greatly. Second, they claim that they took L to Dr. Lennard for treatment and
23 that he saw L several times for the GI problems. The medical records however do
24 not support such a claim. The medical records do show that sometime in December
25 1999 Plaintiff went to the clinic, requested over-the-counter Tylenol, refused to see
26 the triage nurse, and left without being seen.

27 When Dr. Lennard was deposed several years later, his recollection was
28 clouded. He could not recall seeing L for GI complaints, although he would not

1 close the door on whether or not he had seen her. He could recall seeing L for
2 Alopecia Areata. He could also recall being told of possible exposure to thallium
3 and recommending that the family be moved to other housing. On March 3, 2000,
4 Dr. Lennard wrote the Camp Pendleton Housing Office stating:

5 “I have been evaluating his daughter, L[], for the past three months for
6 *hair loss*. To date the work up for her hair loss has been negative with
7 no etiology identified. From talking with the family, it sounds as if
8 there may be some hazardous toxins in their environment.... Although
9 this can not be definitively identified as the cause of this child’s *hair*
10 *loss*, it can not be ruled out as the cause either.”

11 Exh 63 (emphasis added). Nowhere in the note, written at a time when Dr.
12 Lennard’s memory would have been fresh, is there any mention of GI complaints.
13 Nor is there any mention of GI complaints on visits or treatments in any other note
14 written by Dr. Lennard. As several physicians testified, a patient’s history of
15 symptoms are important in arriving at a diagnosis. So it begs the question: If Dr.
16 Lennard suspected that L’s hair loss was associated with toxic chemical exposure,
17 and if he had seen L for GI complaints or been told that she had GI complaints,
18 would he not have noted it?

19 Given that, as previously pointed out, Plaintiff and her husband are not the
20 most reliable historians, the Court finds this evidence to be questionable, at best.
21 Furthermore, as relevant and reliable experts Dr. Snead (board certified neurologist)
22 and Dr. Snodgrass (board certified toxicologist) pointed out, if GI symptoms are
23 going to manifest themselves, they are painful, they manifest themselves early, and
24 they cease when toxic exposure ceases. As noted by Sgt. Myers, L’s GI complaints
25 continued long after the suspected exposure ceased and she was moved from the
26 Wire Mountain residence.

27 The Court notes that no one has ever treated L for Thallotoxicosis. Therefore,
28 the Court finds that, if in fact, L did have GI symptoms, those symptoms are: (1)
non-specific; (2) not supported by the medical records; and (3) in any event, could
just as likely have been a case of the “flu” which triggered L’s Alopecia Areata.

1 **D. Neuropathy Complaints Not From Thallium Toxicity**

2 Next, the Court will address the claim of neuropathy. This claim covers a
3 panoply of symptoms. For example, it is alleged that L was tripping and falling at
4 the time she began to lose her hair. She could not catch a ball. She could not ride a
5 bike. It is claimed that she would complain about bath water being too hot, while
6 her little sister did not. It is claimed that her deep tendon reflexes (DTRs) were
7 diminished and at times even absent. It is also claimed that she had epileptic
8 seizures. It has even been claimed that she had head tremors.

9 **1. Tingling in Hands and Feet?**

10 Plaintiff testified that in 1999, L began to have tingling in her hands and feet
11 and complaining when she took a bath. As previously pointed out, Plaintiff is not a
12 reliable historian. There is no corroboration in the medical records of any such
13 complaints until 2001. Plaintiff also testified that L was tripping and falling when
14 she was sick (presumably in November or December 1999.) Plaintiff testified “she
15 wouldn’t ride her bike or anything, she was not feeling good, just feeling –you can
16 tell when you have a sick child. She had a problem walking upstairs, but she was
17 also tired. She would trip.” At trial, Sgt. Myers corroborated Plaintiff’s testimony.
18 Unfortunately, he was deposed in 2004. At that time, he was asked:

19 Q: ...When did you first notice that she was having a problem with
 balance and coordination?

20 A: The first time I really noticed it was probably a few years ago, I
21 guess.

22 Q: So that would....

23 A: So shortly - - right about the time we got here, I’d have to say is
 when I really started noticing it.

24 Q: And I’m sorry, that would have been sometime in 2001?

25 A: Yeah

26 Q: Okay

27 A: We got here in July 2001.

28 There is no medical record that mentions tripping, falling, or head tremors.

1 As Dr. Snead cogently pointed out, Plaintiff and her husband thought their daughter
2 was sick. They thought she might have been poisoned, yet they failed to mention
3 these things that they noticed to any of the doctors: Thomas, Robinson, Lennard,
4 Eichenfield, or Dern? It is just not credible.

5 The medical records all note that reviews of systems were normal, a normal
6 gait, no ataxia, cranial nerves intact, nothing that would even hint that this child
7 might have been poisoned. Nothing abnormal was noted except: (1) her alopecia;
8 and (2) that she was gaining weight. No medical provider has ever reported
9 numbness or tingling, with the exception of Dr. Renfroe. Dr. Renfroe will be
10 discussed shortly.

11 **2. Temperature Sensitivity?**

12 Next the Court will address the temperature sensitivity. During October
13 2001, almost two years after L began to lose her hair, it was reported to Dr. Sharp
14 that L would complain about hot water. It was repeated by Plaintiff in a history
15 given to Dr. Renfroe in April 2003. Exh NR at MED00979; Trial Phase 2,
16 Dkt.#545 at 53:3-14.

17 First, that condition has never been confirmed by objective testing. In fact,
18 those physicians that have tested L for temperature sensitivity have not been able to
19 confirm it. Second, this Court has looked at a substantial amount of literature on
20 thallium poisoning, both acute and chronic. It has not found any case study, article,
21 or survey that reports any such symptom being associated with thallium exposure.
22 The neuropathy that is generally reported is painful, like walking on coals, a
23 sensation which depending on the severity of exposure can be incapacitating. There
24 is also no literature that supports a delay of two years, after exposure ceases, before
25 the neuropathy manifests itself.

26 **3. Epileptic Seizures?**

27 Plaintiff contends L had epileptic seizures. L had an EEG in December of
28 2003. That EEG showed one abnormal spike. Its cause was not determined. L was

1 then administered a second EEG. This time a much more thorough EEG, an
2 ambulatory 24 hour EEG. That EEG allowed the parents to push a button and mark
3 the EEG if they thought L was having a seizure. The parents pushed the button
4 three separate times. The EEG was subsequently found to be normal, with no
5 spikes. Nothing abnormal was noted. A subsequent EEG in 2010 also was reported
6 as normal – although Plaintiff erroneously reported to at least one medical provider
7 that L’s 2010 EEG was abnormal.

8 **4. Diminished Deep Tendon Reflexes?**

9 With regard to L’s DTRs, they have been reported from time to time to be 1+,
10 meaning that they are diminished. But it had also been reported many times that
11 they were 2+, meaning normal. In any event, even Dr. Renfroe, Plaintiff’s
12 neurologist had to admit that it was a “soft sign.” Curiously, when L first saw Dr.
13 Renfroe or perhaps more accurately, his nurse practitioner, Gene Bougher, DTRs
14 were the only indication of any abnormality. All other systems were normal. Yet,
15 for whatever reason, even though L was seen many times, testing of DTRs was
16 thereafter “deferred.”

17 **5. Medical Testimony**

18 ***a. Dr. Renfroe***

19 The Court has considered Dr. Renfroe’s testimony and concluded that it is not
20 worthy of being given any weight. This Court does not come to this conclusion
21 lightly. First, like Dr. Eichenfield and Dr. Yarbrough, Dr. Renfroe’s opinions were
22 severely compromised by Plaintiff’s counsel. Within two months of L’s first
23 presenting at his office, counsel had made sure to provide Dr. Renfroe information
24 about thallium. We know that he was given articles and literature about L’s
25 poisoning. “Dear Dr. Renfroe: Enclosed please find journal articles re: Thallium
26 (provided by plaintiff’s toxicologist) for your review regarding the above-
27 referenced matter. After your review please call Scott Allen to discuss your
28 findings.” *See* Exh NV (Letter dated Aug. 20, 2003).

1 Of course, of what value that would be to a treating physician who is not
 2 treating for thallium poisoning, but is treating for neuropathy remains unknown.
 3 What other information may have been provided to him, like the case of Dr.
 4 Yarbrough, we do not know. The information provided to Dr. Renfroe was in his
 5 "legal box."³⁴ In any event, all that Dr. Renfroe could do three years after the
 6 alleged exposure was manage the symptoms. Once he learned from Plaintiff that L
 7 had allegedly been exposed to thallium, he would need to know nothing else in
 8 order to manage the symptoms.

9 This Court notes that no one, not even Dr. Renfroe, ever testified that his
 10 management of L's neuropathy would have been any different if it was caused by an
 11 auto-immune disease or by her hypothyroid condition. Furthermore, the literature
 12 reveals that in cases of thallium poisoning, peripheral reflexes are normally spared.
 13 L's sensory examination was normal. Of interest to this Court was that the
 14 following abnormalities were noted upon presentation to Dr. Renfroe: "very
 15 overweight, greater than 97th percentile. She has a dowager's hump . . . which we
 16 see with some endocrine abnormalities." Trial Phase 2, Dkt.#545 at 61:22-25. It
 17 was also noted that she had a very large head size. He admitted that he should have
 18 checked her birth records. He didn't. *Id.* at 59:9-14 (The Court: "Doctor, did you,

19
 20 ³⁴ Dr. Renfroe explained his legal box:

21 The Court: Just a second. What do you mean the legal records?

22 The witness: Generally, when I'm doing a court case -- and I think in
 23 L[]'s, it has gone on so long, there is a box I put notes in or
 24 copies so it doesn't get mixed in with her medical records,
 25 his request for information, her request for information, etc.
 26 so that would include things like articles that I had searched
 and information I obtained. So it's not part of the medical
 records. If I want to Google thallium, and I think that is an
 interesting article, I'll throw it in a stack to read later.

27 The Court: Isn't that part of your treating --

28 The witness: No, not in general.

Trial Phase 2, Dkt.#545 at 110:13-25.

1 by any chance, look to see what her measurements were, her head measurements
2 were after she was born?" The Witness: "I did not. I was thinking about that
3 yesterday as I reviewed this. I wonder what the neonatal reports showed.").
4 As it turned out, she had what is known as a pseudo tumor cerebri, a condition
5 where there is too much fluid around the brain causing headaches and vision
6 problems.

7 When questioned about why his nurse practitioner referred to L's "cognitive
8 impairment" as ADHD, he replied, "one it is a habit, it ended up there. She was
9 diagnosed with ADHD and treated with Concerta before we saw her....and just
10 habitually she is repeating that. Now, two, it could be that insurance will not pay
11 for Concerta or other stimulants unless she has a diagnosis of ADHD." *Id.* at 73:10-
12 15.

13 Eventually, L's "treatment" would stop being performed by Dr. Renfroe's
14 "beyond competent" nurse practitioner. He speculated that when the nurse
15 practitioner learned that the case would be going to trial, she turned the patient over
16 to himself. *Id.* at 78:15-16 ("Knowing Ms. Bougher, she was starting to get scared
17 this was going to be a legal issue, and she wanted it off her plate."). Almost
18 immediately, L's symptoms appear to have grown worse. Now, L had "absent
19 patella reflexes bilaterally, questionable biceps reflexes bilaterally." She also began
20 experiencing diadochokinesis but her sensory exam was "intact to light touch,
21 appropriate perception and pin prick."

22 So, four years after the alleged exposure and after the exposure had ceased,
23 her sensory exam was normal but a completely different symptom now surfaced.
24 Disdiadochokinesis and what had previously been "somewhat diminished DTR's"
25 were suddenly completely absent and her biceps reflexes were also now affected.
26 Of course, Dr. Renfroe also testified that DTRs were nothing "he would hang his hat
27 on." In 2011 he again saw L. This time she was complaining of numbness in her
28 hands and legs, like having gloves on and pantyhose." He added, however, that

1 “she feels this is worse when she is stressed.”

2 This Court will now make a few observations. First, Dr. Renfroe has been
3 offered as a “treating physician.” He may have been at one time, but that ship sailed
4 long ago. How many treating physicians review expert witness reports before
5 testifying? When is an expert witness report relevant to the treatment, diagnosis or
6 prognosis of a patient? But, as he admitted, Plaintiff’s counsel provided Dr.
7 Renfroe with a copy of Dr. Snead’s expert report. When? In time to review the
8 report on his plane trip to San Diego - “I reviewed it on the plane trip over.” Trial
9 Phase 2, Dkt.#545 at 110:2-11. Of course, like Dr. Eichenfield, Dr. Renfroe was not
10 listed by Plaintiff as an expert witness and did not provide an expert report to
11 Defendant.

12 And his visit with L is rather curious, much like L’s 2011 visit to Dr.
13 Eichenfield. The family was living in Keller, Texas, a town outside of Ft. Worth,
14 Texas. In August of 2011, Plaintiff requested a referral for an endocrinologist, a
15 dermatologist and a neurologist. She was referred to Dr. Harla, a dermatologist in
16 the Fort Worth area and as previously noted, Dr. Gonzales, a neurologist in the Fort
17 Worth area. But she did not see Dr. Harla, although she made an appointment to see
18 him. She did see Dr. Gonzales, but not until after her appointment with Dr.
19 Renfroe. For unexplained reasons, six years after she had last seen Dr. Renfroe, she
20 flew half way across the country to Florida to see him. Then all of the way back
21 across the country to San Diego to see Dr. Eichenfield. Since last seeing Dr.
22 Renfroe, L had seen Dr. Mosotti in 2010. Dr. Mosotti had reported no neurologic
23 symptoms. “DTRs 2+ and symmetrical, no pathological reflexes. Cerebellar exam,
24 condition, and gait within normal limits. Finger to nose intact . . .”

25 Dr. Jreisat, a neurologist saw L on February 24, 2011. He noted that her
26 cranial nerves were intact and there were no facial neurological deficits noted. Then
27 in October 2011, L went to another doctor at Mayfield Family Health Care. Dr.
28 Mayfield noted that L had “slightly decreased peripheral sensation.” Like every

1 other doctor that L saw, he also was told that L had been poisoned by heavy metals
2 as a toddler. He diagnosed her as having neuropathy secondary to heavy metal
3 exposure. He diagnosed her as having ADD and prescribed Vyvanse. He also
4 diagnosed L as having Alopecia Universalis and prescribed Closetassol Propionate
5 and Latisse.

6 When she finally arrived at Dr. Renfroe's office again, on November 18,
7 2011, L's DTRs were, "2/4 throughout." "Cerebellum is completely normal." "Her
8 motor strength is 5/5 throughout with normal tone and bulk." "Sensory is intact."
9 "She continues to experience subjective complaints associated with her neuropathy.
10 She continues to experience paresthesias. Her examination is normal at this point."

11 ***b. Dr. Renfroe's Impeachment***

12 Dr. Renfroe denied that he had used as a basis for his opinion, a pre-existing
13 opinion that the cause of L's symptoms was thallium toxicity. He was subsequently
14 impeached and admitted that he was under the impression that she had a pre-
15 existing "diagnosis" of thallium exposure. He was also impeached with his
16 deposition testimony that he had not performed a differential diagnosis. And like
17 Dr. Eichenfield, when asked an important question, like:

18 Q: "Did you review the medical history before you
19 knew that L[] had a pending case, legal case,
regarding her alleged thallium exposure?"

20 An ever-present "we," as in Dr. Eichenfield's testimony, quickly surfaced.

21 A: "It would be *our* habit to search for information
22 concerning thallium toxicity. When *we* have a
23 patient with purported thallium toxicity. I don't
have any direct recollection of what type of search
we did."

24 Trial Phase 2, Dkt.#545 at 127:8-14 (emphasis added.) He then was forced to admit
25 that he had received a letter from Plaintiff's counsel including journal articles
26 provided by "plaintiff's toxicologist," requesting that Dr. Renfroe call plaintiff's
27 counsel "once he had reviewed the material."

28 In fact, Dr. Renfroe admitted, as this Court has previously noted, he would

1 have “no real need to know the effects of thallium toxicity.” Dr. Renfroe admitted
2 that L had not been on any medication to address her peripheral neuropathy. Dr.
3 Renfroe also admitted that he had not seen any literature that diminished deep
4 tendon reflexes are attributable to thallium toxicity. He was also not aware of any
5 literature identifying temperature sensitivity as a symptom of thallium toxicity. He
6 admitted that doctors can perform tests to test for temperature sensitivities, but that
7 he did not do it. He reluctantly admitted that even though the referral to him had
8 suggested a “complete work up,” including an MRI, he did not order one until
9 December, six months after the initial visit. The MRI was normal.

10 No weight is given to Dr. Renfroe’s opinions on causation. *Sartor*, 321 U.S.
11 at 627 (trier of fact left to decide the weight of expert opinion); *see also, e.g.,*
12 *Bowers v. Norfolk S. Corp.*, 537 F. Supp. 2d 1343, 1364 (M.D. Ga. 2007) (“But
13 bearing even more on the Court’s conclusion that Dr. Miller’s causation opinions
14 lack an independent basis is the fact that Plaintiff’s counsel hand-selected Dr.
15 Miller. When a plaintiff’s counsel chooses the plaintiff’s doctor for the plaintiff, it
16 raises serious questions in the Court’s mind about the independence of the doctor.
17 This is especially true when, as here, the plaintiff’s counsel sends his client 350
18 miles from home. . .”).

19 This Court concludes with the words of another court:

20 “Dr. Renfroe’s report is result oriented. The Special
21 Master’s unshakeable impression is that Dr. Renfroe starts
22 from the conclusion, (vaccine caused illnesses) and works
23 back from the conclusion in a multitude of ways, a number
of which are contradictory.”

24 This Court could not agree more. If Dr. Renfroe was ever a “treating physician,” his
25 opinions, besides being scientifically unreliable, were totally corrupted at an early
26 stage of his “treatment.” This Court elects to give little, if any weight to any of his
27 opinions about L’s condition or its cause.

28 **c. Dr. Gonzales**

Eventually, she did find her way to Dr. Gonzales. A review of his physician

1 notes reveals that, either he is a horrible note taker, or once again Plaintiff is not a
2 reliable historian. For example, Dr. Gonzales writes: "The patient has been
3 hypothyroid since 2009." That was not true. She was diagnosed in 2003. "[H]as
4 peripheral neuropathy since 2000." This is not supported by any contemporaneous
5 medical record. "She has had problems talking and expressing herself since age
6 three." No one has ever reported any such disability. "She had an EEG done in
7 2010 in North Carolina and apparently was abnormal." Also not true - her EEG was
8 normal. See Exhibit NR MED02193. "She has had ataxia and poor coordination
9 and walks like a drunk at times in 2000." No one has ever confirmed L experienced
10 ataxia. Dr. Gonzales was also told that L had "nerve conduction" studies.
11 Amazingly, this is something that Dr. Renfroe testified was a test to confirm
12 neuropathy, yet he would not do it or have it done. If, in fact, nerve conduction
13 studies were done, they are nowhere to be found in the medical records. Dr.
14 Gonzales noted that Plaintiff herself had been obese in the past (like L), and that she
15 had undergone gastric bypass surgery. So, why would so many inaccuracies be
16 found in a history given to a treating physician?

17 Dr. Gonzales concluded that L, "knows... that there are 12 quarters in \$3, 20
18 quarters in \$5, can spell "world" forwards and backwards, no right - left confusion,
19 initially 2/3 subsequently 3/3 recall. Able to write, "Today is a nice day" in print.
20 Sensory exam.: intact to position, pin prick, vibration, and touch. Cranial nerves are
21 grossly intact. ...motor exam 5/5. Coordination is fair... DTR's 1+ for both upper
22 and lower extremities. Toes are down going on plantar stimulation gait is not wide
23 based. She can walk on heels, walks in tiptoes. And hop on one foot well." Dr.
24 Gonzales also noted that she had ADD and prescribed medication for it. Dr.
25 Gonzales did not prescribe any medication for neuropathy. This Court found it
26 curious that Dr. Gonzales noted L's ability to tell how many quarters in \$3, etc.
27 This Court did not find credible Plaintiff's claim at trial that L could not make
28 change.

1 *d. Dr. Snead*

2 On the other hand, Defendants offered a qualified and un-impeached
3 neurologist, Dr. Snead. Dr. Snead is a pediatric child neurologist. His practice is in
4 the Hospital for Sick Children, in Toronto, Canada. He attended pharmacy school at
5 West Virginia University. He completed medical school also at West Virginia. He
6 did pediatrics at Duke and pediatric neurology at Yale. He obtained his MD degree
7 in 1970. Dr. Snead is board certified in pediatrics and by the Board of Psychiatry
8 and Neurology. He was a professor of neurology, pediatrics psychology and
9 pharmacology at the University of Alabama. He was a professor and Vice-chairman
10 of the Department of Neurology as well as a professor of pediatrics and
11 pharmacology at the University of Southern California. He has a clinical practice a
12 couple of times a week and trains students and others in the practice. He is also an
13 attending physician in neurology where he sees children with neurological diseases.
14 He has published 340 peer-reviewed articles and some 40 chapters in books. He has
15 also been involved in research. His opinions are relevant and reliable.

16 Like all of the other medical experts offered by the defense, his qualifications
17 are beyond criticism or question. But most importantly, his testimony was quite
18 persuasive. Dr. Snead makes out a well thought out, logical and supported analysis
19 and concludes that L does not fit the diagnosis of thallium intoxication. Trial Phase
20 2, Dkt.#551 at 143:9 - 200:13 (Testimony of Dr. Orlando Snead).

21 As this Court was listening to Dr. Gustin and Dr. Renfroe, it had formed
22 several questions. Why was there no evidence of ataxia or other neurological
23 problems until 2001? Why did no one treat her for thallium toxicity? Why were
24 there no notes or complaints of loss of coordination, head tremors? And so how
25 could her symptoms wax and wane and then suddenly in 2004 her symptoms
26 unexplainedly worsen? Why wasn't she treated for the subjective neuropathy that
27 surfaced in 2001? Does hypothyroidism also cause learning problems, weight
28 problems and neuropathies? Why was she gaining weight? Dr. Snead addressed

1 these issues and more. In particular with regards to L's claimed neuropathy, the
2 following exchange is instructive:

3 Q: Now Dr. Snead, assuming the reports of paresthesias in 2003 by
4 Dr. Renfroe are correct, is that symptomology consistent with
5 thallium toxicity?

6 A: No. It is not consistent for the reasons I have talked about in
7 terms of it's basically too late to occur twenty one months after
8 exposure to thallium to be asymptomatic. Neurologically
9 asymptomatic and then have onset of very subtle, subjective
10 findings. She only had – by the history taken by Dr. Sharp [in
11 October of 2001] at that time, she really only had this weird
12 sensation, numbness and tingling, when she put her hands in
13 water. So I don't think that that is consistent with a diagnosis of
14 thallium toxicity.

15 Trial Phase 2, Dkt.#551 at 148:13-24.

16 Dr. Snead then went through a list of medical providers that had seen L
17 between January 2000 and September 2001. *See* Exh OL. No health care provider
18 was ever told of any temperature sensitivity, numbness or tingling until October of
19 2001. As Dr. Snead pointed out, these parents were very concerned that their child
20 had been poisoned and would have reported these symptoms. Finally, Dr. Snead
21 discussed L's weight. He noted that from the earliest medical records, it was
22 reported that L was gaining weight. As Dr. Snead pointed out, anorexia is one of
23 the "hallmarks" of chronic thallium intoxication. She was reported to have good
24 activity level, not lethargic, normal gait. Finally, Dr. Snead pointed out that when
25 Dr. Sharp, the first neurologist to see L, examined her, he was not able to elicit any
26 abnormal response. Dr. Sharp noted that she had normal sensory exam including
27 light touch, pin prick, vibration and prociption . This Court has looked at Dr.
28 Sharp's records and it does not appear that he prescribed any medication for
neuropathy. Dr. Snead also tested L for temperature sensitivity and found nothing
abnormal. Dr. Snead's review of the medical providers, their finding and their
relevance to L's claims was thorough and dispelled much of the confusion
deliberately created by others.

1 *e. Medical Literature in Evidence*

2 The Court notes that no medication was prescribed and no other action taken
3 by Dr. Dern with regards to L's behavior. Remember, Dr. Michelle Dern was a
4 University of California San Diego pediatrician to whom L was referred by
5 Plaintiff's prior lawyers. After meeting with L's parents and their lawyers (for an
6 hour) in July of 2000 to discuss the case, Dr. Dern would be heard from no more.
7 Exh NR at MED00233 & MED00916 ("7/19/00 I met with parents and their lawyers
8 today for one hour to go over the case.").

9 The Court is unable to find whether or not L's reported neuropathy is real or
10 whether it is simply a report by a four-year old child of natural temperature sensory
11 differences between individuals. What this Court can conclude is that this type of
12 neuropathy, and its delay in manifesting itself, does not support a conclusion that it
13 was caused by thallium. It is not supported by the evidence or the medical
14 literature. The Court has reviewed the considerable medical literature regarding
15 thallium poisoning in evidence or alluded to at trial. Among the literature and case
16 studies there are reports of children as young as 19 months and adults who have
17 been exposed to thallium. Children who have presented with much worse
18 symptoms than L's, have recovered completely and most within a relatively short
19 period of time. Although some have had residual neurologic complaints, these
20 children's urine thallium levels were in the hundreds and thousands of micrograms
21 per liter of urine. In contrast, this Court was not able to find a single case study
22 where the subject presented with a level of only seven micrograms per liter, like L's
23 urine level (assuming, of course, that the 6.91 mcg/L result was a valid result).
24 Particularly with regards to IQ or neurocognitive deficits, the case studies show
25 extremely high thallium urine levels in symptomatic patients.

26 **6. Summing Up**

27 Therefore, in order to conclude L suffered thallium poisoning, this Court
28 would have to accept that L is an exception in virtually every way. The evidence is

1 clearly insufficient for this. Plaintiff has persistently argued that “every physician”
2 who has treated L has found that her symptoms were caused by thallium. That is
3 false. What is true, is that every physician or health care provider has been told (by
4 her parents or by her lawyers) as a fact that L was poisoned by thallium. No
5 physician or provider has, after the thorough and rigorous process of a differential
6 diagnosis, ever diagnosed L as having been poisoned by thallium. And no
7 physician or provider has ever treated L for thallium poisoning.

8 Whatever L’s physical, psychological, and neurological conditions are, or
9 have been over the years since 1999, they have not been caused by thallium toxicity.
10 Because L’s condition is not the result of thallium toxicity, and thallium is the only
11 hazardous substance Plaintiff claims left the Box Canyon landfill and entered L’s
12 living environment, Plaintiff has failed to prove that any breach of duty by the
13 Defendant is the proximate or actual cause of L’s alleged injuries.

14 **V. CONCLUSION**

15 “Under California’s nondelegable duty doctrine, the United States is directly
16 liable for its own negligence when it fails to ensure that an independent contractor
17 takes adequate safety precautions and the work to be performed involves special
18 dangers.” *Myers*, 652 F.3d at 1034. It is not, however, a strict liability standard.
19 *Privette v. Superior Court*, 5 Cal. 4th 689, 696 (1993) (“Even when work performed
20 by an independent contractor poses a special or peculiar risk of harm, however, the
21 person who hired the contractor will not be liable for injury to others if the injury
22 results from the contractor’s ‘collateral’ or ‘casual’ negligence.”); Restatement
23 (Second) of Torts §416, cmt. f (“In order that the employer be subject to liability, it
24 is necessary that the contractor fail to exercise reasonable care to take adequate
25 precautions.”). Causation and injury remains to be proven. *Myers*, 652 F.3d at
26 1037; *Willits Env’tl. Remediation Trust*, 633 F.3d at 836 .

27 Having now heard all of the testimony and reviewed all of the evidence, the
28 Court concludes that the Defendant’s breach of duty was not the cause of any

1 injuries, if there were injuries, that L may have suffered. The leaps in proof the
2 Plaintiff offers are significant and unjustified by the evidence. Plaintiff asks this
3 Court to find, *inter alia*:

4 (1) that L's alopecia was not Alopecia Areata, but caused by exposure to
5 thallium;

6 (2) that L's ADD or ADHD was proximately caused by exposure to thallium
7 even though there is no scientific basis for such a finding;

8 (3) that L's cognitive function is the result of thallium exposure rather than
9 heredity;

10 (4) if it was more than just subjective, that L's reported neuropathy, first
11 reported two years after exposure ceased, was caused by thallium even though there
12 is no scientific evidence to support such a finding;

13 (5) that the clearly unreliable urine test results from a single lab should be
14 credited and the reliable results from three other labs should be disregarded;

15 (6) that L's hair testing negative for thallium is inconsequential;

16 (7) that L's hair roots showing no darkening indicative of thallium poisoning
17 is insignificant;

18 (8) that L's negative blood testing for heavy metals (including thallium)
19 should be discounted;

20 (9) that L's father, mother, and family dogs negative test for thallium and
21 other heavy metals should be disregarded;

22 (10) that the EPA and the DTSC were wrong in their evaluation of the toxic
23 risks associated with the dirt being moved to Box Canyon;

24 (11) that had Nars Ancog looked at the perimeter air monitoring data, he
25 would have taken action to stop remediation work and thereby prevented fugitive
26 thallium dust from accumulating in hazardous quantities in L's backyard and
27 residence;

28 (12) that there was a substantial quantity of dirt that migrated to L's yard, that

1 the Navy knew about it, and did nothing to stop;

2 (13) that only dirt carrying thallium migrated to L's residence;

3 (14) that the environmental samples from L's residential environment that did
4 not show abnormal levels of all of the other heavy metals found at sites 1A, 1E, 1F,
5 and 2A and transported to Box Canyon, while thallium was detected, has some
6 rational – although still unidentified – explanation;

7 (15) that the environmental sampling results obtained by at least four
8 different labs that are consistent with each other should be disregarded; or

9 (17) that had a Navy CIH looked at the HASP, the HASP would have been
10 rejected.

11 The Court finds that the evidence would not support any of these findings in
12 Plaintiff's favor. Therefore, the Court finds that Plaintiff has not proven by a
13 preponderance of the evidence that L was injured or that the injury was proximately
14 or actually caused by the Defendant's failure to have a competent person review the
15 HASP or by its failure to have the QAO, Nars Ancog, review the perimeter air
16 monitoring data.

17 In this case, the evidence of causation is scant and unreliable. The Court
18 concludes that neither the breach of duty in failing to carry out a HASP review by a
19 Navy CIH, nor its breach of duty in failing to have the Navy QAO reviewing air
20 monitoring data, are the proximate or actual causes of L's alleged injuries.
21 Therefore, judgment shall be entered against the Plaintiff and in favor of the
22 Defendant.

23 Alternatively, notwithstanding the Navy's breach of duty, wind-borne
24 thallium dust in hazardous quantities did not escape from the Box Canyon landfill
25 operations and enter L's living environment, and therefore did not cause her alleged
26 injuries.

27 Alternatively, notwithstanding the Navy's breach of duty, if wind-borne
28 thallium dust in hazardous quantities did escape from the Box Canyon landfill

1 operations and did enter L's living environment, she was not poisoned by the
2 escaped thallium, and it did not cause her alleged injuries.

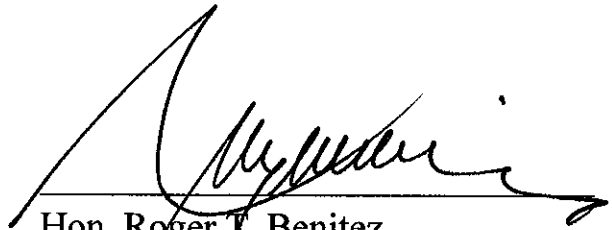
3 Alternatively, notwithstanding the Navy's breach of duty, if wind-borne
4 thallium dust in hazardous quantities did escape from the Box Canyon landfill
5 operations and did enter L's living environment, and she was poisoned by the
6 escaped thallium, it was not enough thallium to cause her alleged injuries and her
7 alleged injuries are not of the type and kind resulting from thallium toxicity
8 according to medical experts and published medical literature.

9 Judgment for the Defendant.

10 **SO ORDERED.**

11 DATED:

12 *11/20/14*

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14 Hon. Roger T. Benitez
15 United States District Judge

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