

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

DARREN ALLGOOD, <i>et al.</i> ,)	
)	
Plaintiff,)	
)	
v.)	CASE NO. 1:02-cv-1077-DFH-TAB
)	
GENERAL MOTORS CORPORATION,)	
)	
Defendant.)	

ENTRY ON PENDING MOTIONS

Defendant General Motors Corporation has operated a die casting plant in Bedford, Indiana since 1946. Plaintiffs in this case are the owners and residents of 20 parcels of land located near GM's Bedford plant. Plaintiffs allege that over the course of several decades, the GM Bedford plant released polychlorinated biphenyls ("PCBs") that have contaminated their land. Plaintiffs seek damages for harm to their property and for future expenses of medical monitoring.

In 2001 GM entered into a Voluntary Performance Based Corrective Action Agreement ("PBCA") with the United States Environmental Protection Agency ("EPA"). GM agreed to investigate, stabilize, and remediate any release of PCBs at or from its Bedford plant. Docket No. 305, Tab A, Ex. A. GM then sampled the soil, sediment, water, fish, and plants on and around the property of the Bedford plant. The sampling was done at the EPA's direction and in consultation with the

Indiana Department of Environmental Management (“IDEM”). GM entered into a Consent Order with the EPA in 2003 obligating the company to investigate and remediate other properties affected in the area. Docket No. 305, Tab A, Ex. B. This Consent Order requires GM to remove PCB-contaminated soil from the floodplain areas of the residential properties near the Bedford plant property to achieve a clean-up standard of no more than 1.8 parts per million (“ppm”) PCBs in the soil, or to bedrock. *Id.* at 16, ¶ 34(g). IDEM is reviewing and commenting on GM’s investigation and clean-up efforts. The 1.8 ppm clean-up level complies with IDEM’s default residential clean-up standard.

This remediation might also be called a “removal action” because it involves the removal of PCB-contaminated sediments and soils from the stream beds and floodplain areas to achieve the statistical clean-up criteria of 1.8 ppm for soil and 1.0 ppm for sediment. The removal action is taking place on the land of some plaintiffs, those whose properties lie within the floodplain area delineated by GM. The properties of other plaintiffs were deemed not to require removal based on testing performed by GM that showed total PCB levels at or below the government agreed clean-up level. GM has employed consultants and engineers to guide the removal action. GM is obliged to continue the remedial effort until the EPA finds that the established clean-up standards have been met.

This private tort lawsuit is an effort to recover the money needed for a much more extensive clean-up effort, though without any assurance that a more

extensive clean-up would actually occur. Plaintiffs own both floodplain and non-floodplain properties. They allege that the removal action and its clean-up standards will not be sufficient to remediate and compensate plaintiffs for their losses caused by contamination of their land by PCBs from the GM Bedford plant. Plaintiffs have alleged claims of trespass, private nuisance, negligence, willful and wanton conduct, and unjust enrichment. Plaintiffs estimate that the cost of a sufficient clean-up is approximately \$78 million. Plaintiffs also seek \$4 million in medical monitoring costs, as well as currently undetermined amounts of damages for lost property value resulting from what they describe as residual stigma associated with polluted properties, as well as for emotional distress. Plaintiffs also seek punitive damages and other damages.

GM has filed several motions challenging the admissibility of the plaintiffs' experts' opinions supporting these claims and moving for partial summary judgment. In terms of dollar effects, the biggest issues are whether there is a sound legal and scientific basis for awarding plaintiffs the costs of a hypothetical clean-up going well beyond the government agencies demands of 1.8 ppm in the soil. Plaintiffs claim to want a clean-up to a standard of 4 parts per trillion (ppt) of one particular PCB molecule or "congener," PCB 126. The clean-up would be only hypothetical because plaintiffs do not actually want to be obliged to clean up their property (at a cost far greater than the fair market value of the property). They simply want GM to pay them the cost to carry out such a clean-up. As explained below, the plaintiffs have not shown a sound scientific or legal basis for

such a claim. One exception, however, is that plaintiffs have presented evidence that raises a genuine issue of material fact as to a need for remediation of three water wells on their property. Plaintiffs' effort to extend the clean-up effort beyond the limits of the floodplain determined in the government-supervised clean-up also is not supported by evidence.

Plaintiffs' hypothetical medical monitoring program also is not supported by the evidence. Again, plaintiffs do not necessarily want the medical monitoring itself, but they would like GM to pay them the costs of a lifetime program. Indiana law would probably recognize such a claim for medical monitoring damages, at least in a proper case. See *Allgood v. General Motors Corp.*, 2005 WL 2218371 (S.D. Ind. Sept. 12, 2005) (denying motion to dismiss). Plaintiffs have not supported this claim, however, with evidence that they have higher than normal levels of PCBs in their blood or that any particular course of medical monitoring is appropriate. Plaintiffs also seek damages on a theory of unjust enrichment. GM is entitled to summary judgment on that claim because plaintiffs have not shown that they have no adequate remedy at law or that they provided services or other benefits to GM under circumstances where it would be unjust to leave plaintiffs uncompensated.

Finally, plaintiffs seek damages for reduced property values resulting from the stigma caused by the pollution. This claim is also theoretically viable under Indiana law. See *Terra-Products, Inc. v. Kraft General Foods, Inc.*, 653 N.E.2d 89

(Ind. App. 1995). In this case, however, plaintiffs have not supported the claim with evidence that would allow a reasonable jury to find such a stigma or to determine damages other than by speculation, at least before the GM clean-up has been completed. These claims for “stigma” damages will be dismissed as unripe, without prejudice to possible renewal in the future.

Discussion

I. *Plaintiffs’ Remediation Claims*

To support their claims for additional remediation costs, plaintiffs rely on the testimony of Dr. Bruce Molholt and Dr. Kostas Dovantzis. GM argues that the opinions of Dr. Molholt and Dr. Dovantzis do not satisfy the reliability and relevance requirements of Rule 702 of the Federal Rules of Evidence, and as articulated earlier in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993). GM has also moved for summary judgment on plaintiffs’ remediation claims based on the premise that the experts’ testimony should be excluded. Docket No. 300. The *Daubert* motion is granted with respect to the opinions of Dr. Molholt. The motion is granted in part and denied in part with respect to Dr. Dovantzis. His opinions regarding well-monitoring and source identification of contamination are sufficiently reliable to be admitted, but other opinions are not.

Rule 702 provides:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

The district court's role in applying Rule 702 is to be a gatekeeper. *Naeem v. McKesson Drug Co.*, 444 F.3d 593, 607 (7th Cir. 2006). In fulfilling this role, the court must consider both the relevance and reliability of the proffered evidence. *Kumho Tire Co. v. Carmichael*, 526 U.S. 137, 141 (1999), citing *Daubert*, 509 U.S. at 597. For an expert opinion to satisfy the reliability requirement, the expert must be qualified in the relevant field and the expert's opinion must be based on sound scientific or other relevant methodology. *Smith v. Ford Motor Co.*, 215 F.3d 713, 718 (7th Cir. 2000). Generally, "a court should consider a proposed expert's full range of practical experience as well as academic or technical training when determining whether that expert is qualified to render an opinion in a given area." *Id.* The court's role is not to decide whether the expert is actually correct, however. "Vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence." *Daubert*, 509 U.S. at 596, citing *Rock v. Arkansas*, 483 U.S. 44, 61 (1987).

The court's role as "gatekeeper" requires the court to ensure that scientific testimony is grounded in the "methods and procedures of science." *Deimer v. Cincinnati Sub-Zero Products, Inc.*, 58 F.3d 341, 344 (7th Cir. 1995), quoting

Daubert, 509 U.S. at 590. In evaluating the soundness of an expert's methodology, the court should avoid passing judgment on the "factual underpinnings of the expert's analysis and the correctness of the expert's conclusions," a role better left to the fact-finder. *Smith*, 215 F.3d at 718; *Daubert*, 509 U.S. at 595 (court must focus on methodology, not on the conclusions generated by the methodology); *Walker v. Soo Line Railroad Co.*, 208 F.3d 581, 587 (7th Cir. 2000) (affirming admission of expert's opinion where it was "appropriate for [him] to rely on the tests that he administered and upon the sources of information which he employed").

The line between methodology and conclusion can be subtle and even elusive in some cases. The court must determine that the data support an admissible expert's opinion by more than merely the say-so of the expert. *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997). The testimony cannot simply be "subjective belief or unsupported speculation." *Daubert*, 509 U.S. at 590. An opinion becomes speculative when too wide an analytical gap exists between the data and the opinion provided. *Target Market Publishing, Inc. v. ADVO, Inc.*, 136 F.3d 1139, 1144 (7th Cir. 1998) (affirming exclusion of expert opinion on expected revenues using unrealistic assumptions), citing *Joiner*, 522 U.S. at 146; see also *Beachler v. Amoco Oil Co.*, 112 F.3d 902, 909 n.6 (7th Cir. 1997) (affirming exclusion of opinion that refiner's assignment of service station franchise agreements would harm dealers; testimony was speculative and not supported by any factual foundation).

In *Daubert*, the Supreme Court identified factors that might be considered to determine the reliability of a scientific expert opinion, including whether the opinion can be tested or falsified, whether the opinion has been subjected to peer review and publication, any known rate of error of the methodology employed, and the degree of general acceptance of the opinion or its methodology within the relevant field. 509 U.S. at 593-94. In *Kumho Tire*, the Court made clear that strict adherence to the factors was not necessary; rather, the factors are examples of criteria that a trial court may use to determine whether the expert, in offering the opinion, acted as would an expert in the field. 526 U.S. at 151-52. As a result, “the *Daubert* framework is a flexible one that must be adapted to the particular circumstances of the case and the type of testimony being proffered.” *Mihailovich v. Laatsch*, 359 F.3d 892, 919 (7th Cir. 2004). Ultimately, the object of the court’s Rule 702 reliability inquiry is to ensure that the opinions expressed by testifying experts “adhere to the same standards of intellectual rigor that are demanded in their professional work.” *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 318 (7th Cir. 1996).

A. *GM’s Request to Strike the Molholt & Dovantzis Declarations*

Before addressing the merits of the *Daubert* issues, the court must address GM’s request under Rule 37 of the Federal Rules of Civil Procedure to strike the declarations of Dr. Molholt and Dr. Dovantzis filed by plaintiffs in response to defendant’s *Daubert* motions. GM argues that the declarations are improper

efforts to supplement the experts' original disclosures of opinions as required under Rule 26(a)(2).

Rule 37 provides in relevant part that a party may not rely on evidence that was not disclosed in violation of Rule 26(a), (e)(1), or (e)(2) unless the party has either a substantial justification or the information is harmless. An expert report should be sufficiently complete as to include the substance of what the expert is expected to give in direct testimony, and the reasons for such testimony. The report should offer the "how and why" of the results, not mere conclusions. *Salgado v. General Motors Corp.*, 150 F.3d 735, 741-42 & n.6 (7th Cir. 1998) (district court did not abuse its discretion by striking a party's expert reports where the reports were both woefully inadequate and untimely, even after a warning from the court). In *Lava Trading, Inc. v. Hartford Fire Ins. Co.*, 2005 U.S. Dist. LEXIS 4566 (S.D.N.Y. February 14, 2005), the court excluded expert affidavits submitted in response to a defendant's *Daubert* motion where the affidavits were the first detailed reports plaintiff had provided. Because the previous reports were inadequate, including at least one that "did not disclose any of the essential details needed to understand and assess" the expert's conclusions, *id.* at *17, and because the plaintiff had offered no justification for this problem, the court excluded affidavits under Rule 37, deeming them to be "new expert submissions" submitted too late under Rule 26.

While Rule 26 demands that expert disclosures be “complete,” there is no requirement that such disclosures cover any and every objection or criticism of which an opposing party might conceivably complain. In other words, an expert need not stand mute in response to an opposing party’s *Daubert* motion. Otherwise, if the expert needed to anticipate and rebut every possible criticism, expert witness practice would become even more expensive and unwieldy. In this case, both experts’ reports provide more than the kinds of unsupported conclusory assertions criticized in *Salgado* and *Lava Trading*. The supplemental declarations of plaintiffs’ experts were lengthy but either responded to GM’s specific *Daubert* criticisms or harmlessly repeat information provided in the earlier reports. The later submissions do not amount to the sort of prohibited ambush by an expert. *Salgado*, 150 F.3d at 741-42 n.6. Accordingly, GM’s request to strike is denied.

B. *Dr. Bruce Molholt*

Dr. Bruce Molholt holds a Ph.D. in microbiology and is an associate professor of Environmental Studies at the University of Pennsylvania. Plaintiffs seek to present testimony by Dr. Molholt regarding a risk assessment of the PCB exposure on plaintiffs’ property. Dr. Molholt sought to assess the risk of negative health effects related to plaintiffs’ properties at their present levels of PCB contamination.

1. *The “TEF” Approach*

To understand the experts’ opinions in this case, some general discussion is necessary regarding PCBs and risk assessment. PCBs, polychlorinated biphenyls, are a group of toxic, persistent chemicals that were commonly used as insulation or as lubricants before they were prohibited by law in 1979. Monsanto manufactured commercial mixtures of PCBs in the United States under the name Aroclor. The Aroclor mixtures contained many different kinds of PCB molecules or “congeners.” There are a total of 209 possible PCB congeners. Shifrin Rep. II at 4 n.4 (Att. C-2). The EPA’s current risk assessment approach methodology involves determining toxicity by establishing total PCB concentrations and multiplying those levels of total PCBs by a cancer potency factor (otherwise termed a “cancer slope factor”) of $2 \text{ mg}\cdot\text{kg}/\text{day}^{-1}$.¹

To quantify the potential for PCBs to cause cancer, the EPA developed slope factors. A cancer slope factor is an upper bound estimate of an individual’s excess lifetime cancer risks per unit dose or exposure to a carcinogen. It is presented in risk per units of milligrams of material ingested/body weight in kilograms per day, which is written as $(\text{mg}/\text{kg})/\text{day}$ or $\text{mg}/\text{kg day}$. The risk, or carcinogenic potency, is calculated by multiplying the dose (from exposure) of the carcinogen by the

¹The EPA defines a “slope factor” as: “An upper bound, approximating a 95% confidence limit, on the increased cancer risk from a lifetime exposure to an agent. This estimate, usually expressed in units of proportion (of a population) affected per $\text{mg}/\text{kg}\cdot\text{day}$, is generally reserved for use in the low dose region of the dose-response relationship, that is, for exposures corresponding to risks less than 1 in 100.” <http://www.epa.gov/iris/gloss8.htm> (last visited Sept. 18, 2006).

toxicity (cancer slope factor). See <http://www.epa.gov/udson/humanhealth.htm> (last visited Sept. 5, 2006). For example, the carcinogenic potency of the specific congener PCB 126 is currently recognized by the EPA to be 15,600 mg/kg-day⁻¹, which demonstrates the number of cancers that could occur if an individual were to be exposed to one milligram of PCB 126 per kilogram of body weight daily for a lifetime of 70 years. Molholt Rep. (Att. A-4) at 20.

Molholt Dep. at 383. Dr. Molholt has worked on sites, including the Paoli rail yards, where the PCB clean-up level was 2 ppm. Molholt Dep. at 51. The EPA has established a clean-up standard of 10 ppm for soil in residential areas, provided that soil is excavated to at least 10 inches. 40 C.F.R. § 761.125(c)(4)(v).

GM and the government agencies have agreed on a clean-up standard of 1.8 ppm for all PCB molecules or congeners. Rather than apply this “total PCB” approach, Dr. Molholt assessed the risk on the plaintiffs’ property by what he describes as a more “avant garde” risk assessment approach, see Molholt Dep. at 52, known as a toxicity equivalency factor or “TEF” approach. Of the 209 PCB congeners, some are considered to be “dioxin-like” because they bear some similarity to 2,3,7,8-tetrachlorodibenzo-p-dioxin (“2378-TCDD”). Molholt Dec. Ex. 6 (EPA statement on TEFs). Under the auspices of the World Health Organization, these dioxin-like congeners have been assigned toxic equivalency factors rating their toxicity in relation to 2378-TCDD, which is rated as having a TEF of 1.0. The TEF approach compares the relative potency of an individual congener to 2378-

TCDD. The concentration of each component in a mixture is then multiplied by its TEF to determine the toxic equivalency (“TEQ”); all of the TEQs in a mixture are then added to determine the total toxic equivalency of a mixture, which is then compared to reference exposure levels for 2378-TCDD to determine risk. Molholt Dec. ¶ 76, citing ATSDR 2000 report on PCBs.²

Using the TEF approach, Dr. Molholt identified a specific PCB congener, known as PCB 126, which Dr. Molholt found was “detected with frequency” among the samples collected from plaintiffs’ properties and GM’s Bedford plant site. Molholt Dep. ¶ 46. PCB 126, according to Dr. Molholt, is “universally regarded as the most toxic of PCB congeners,” and he claims that PCB 126 accounted for more than 50 percent of the total PCB risk. *Id.* ¶¶ 46-47. PCB 126 has a TEF of 0.1, meaning that it is deemed one-tenth as toxic as 2378-TCDD. Molholt Dec. Ex. 6. An EPA IRIS³ on PCBs states: “Although PCB exposures are often characterized in terms of Aroclors, this can be both imprecise and inappropriate. Total PCBs or congener or isomer analyses are recommended.” The IRIS goes on to state: “When congener concentrations are available, the slope factor approach can be

²Dr. Molholt calculated cancer risks using the TEF approach for the PCB 126 congener alone. He did not include risks presented by other congeners or contaminants. Accordingly, he stated in his declaration, his risk calculation likely underestimated the risk presented to plaintiffs. Molholt Dec. ¶ 90.

³The EPA maintains a database including risk assessment information and guidelines, known as the Integrated Risk Information System (“IRIS”). Molholt Dec. ¶ 30; Environmental Protection Agency, Integrated Risk Information System, <http://www.epa.gov/iris/> (last visited Sept. 18, 2006).

supplemented by analysis of TEQs to evaluate dioxin-like toxicity.” Molholt Dec. Ex. 5 at 6.

Defendant argues that Dr. Molholt’s application of the TEF approach is not a reliable method for risk assessment and drastically overstates the risks. Dr. Molholt testified that no studies have been done to compare the total PCB and TEF approaches to determine which more accurately assesses risks, though he also testified that such a study would be “almost impossible” to perform. Molholt Dep. at 390-92.

Dr. Molholt could not identify any sites where the “avant garde” TEF approach has been applied with respect to PCB risk assessment, though he indicated that he knew of sites where the TEF approach had been applied in connection with dioxins and other contaminants. *Id.* at 187, 379. Additionally, he could not point to any peer reviewed literature in which the TEF approach was used to determine clean-up levels for a PCB site, though he felt this was due to EPA’s failure to adapt its older approach to what he described as the better TEF approach. *Id.* at 388-89. Dr. Molholt testified that he has not seen data specific to PCB 126 from any site other than the GM site in Bedford. *Id.* at 53.

Defendant argues that the TEF methodology is unreliable for several reasons. First, defendant emphasizes that the approach is based mostly on *in vitro* and animal studies, which is a source of some uncertainty in risk analysis.

See *id.* at 574. Some *in vitro* or animal studies may differ so greatly from common human experiences with chemical contaminants, such as in exposure pathways or the amount of the exposure to the contaminant, that extrapolation from the study to a real life situation might be too great an analytical leap. See *Joiner*, 522 U.S. at 144-45. Because of the difficulty of obtaining appropriate epidemiological data and the obvious ethical problems involved in human experiments with known toxins, however, “animal toxicological evidence often provides the best scientific information about the risk of disease from a chemical exposure.” Bernard D. Goldstein & Mary Sue Henefin, “Reference Guide on Toxicology,” Federal Judicial Center, *Reference Manual on Scientific Evidence* 405 (2d ed. 2000). GM has not provided any specific argument as to the specific animal and *in vitro* studies at issue, or why extrapolation from such studies to human exposure risk assessments is unreliable. In light of this dearth of evidence, and in light of the importance of animal and *in vitro* studies in informing toxicological research, there is no reason to find the TEF method unreliable on this basis alone.

In fact, GM appears to acknowledge that the TEF approach is comparable to the total PCB approach relied upon by GM. See Def. Reply (Docket No. 414) at 10, citing Def. Reply Att. 1. Defendant has pointed to some weaknesses in the TEF approach employed by Dr. Molholt, including concerns relating to the antagonistic effects of non-co-planar PCBs on co-planar PCBs, low-dose linearity, and the “real world” exposure of individuals to a variety of PCB congeners.

Nevertheless, despite the “avant garde” aspects of the TEF approach, the literature cited above supporting the use of the TEF approach and defendant’s own evidence do not show that the TEF approach is so unreliable that the court should simply exclude all testimony based upon it, without further analysis. However, Dr. Molholt’s use of the method goes a significant step further than others have, and the additional step also goes beyond reliable methodology for the court and jury to rely upon it.⁴

2. *Dr. Molholt’s “Draft” Slope Factor*

GM’s attack on Dr. Molholt’s critical slope factor is more persuasive. GM claims that Dr. Molholt compounded any problems in his TEF analysis by applying an inappropriate slope factor to measure the risk of very low levels of PCB contamination. In assessing risk using the congener-specific method, a risk assessor would apply the toxicity equivalent factor for the congener at issue to the dioxin slope factor. Rao Dep. at 120-21 (Att. B-8). The current EPA dioxin slope factor is 156,000 mg/kg day⁻¹. *Id.* at 121-22; Molholt Dep. at 394. Application of the TEF for PCB 126, which is 0.1, to this dioxin slope factor yielded a factor of 15,600 mg/kg day⁻¹. Molholt Dep. at 394-95. In 2000, however, the EPA drafted a document (“the 2000 Reassessment”) proposing to modify the dioxin slope factor

⁴Plaintiffs object to the admission of Attachment 1 to GM’s Reply Brief regarding Dr. Molholt and Dr. Dovantzis, Docket No. 414. The court need not address the merits of this objection because the information within this attachment was either not relied upon by the court or was harmless in that it did not undermine plaintiffs’ position.

to between 1 million and 1.4 million mg/kg day⁻¹. This document has been submitted to the National Academy of Sciences for further review, but has not yet been formally approved. Rao Dep. at 121-22. In assessing the risk to plaintiffs' property, Dr. Molholt applied the higher slope factor of 1.4 million mg/kg day⁻¹ from the 2000 Reassessment to the PCB 126 congener using its TEF of 0.1. See Molholt Dep. at 299, 407; see Molholt Dep. Ex. 13 (Att. D-26). Applying the TEF of 0.1 to this higher dioxin slope factor, one arrives at a PCB 126 slope factor of 140,000 mg/kg day⁻¹. See Molholt Dep. at 299-300. The higher slope factor greatly increases the amount of risk indicated in the analysis.

GM argues that Dr. Molholt's risk assessment is not reliable because the 2000 Reassessment has not yet been formally adopted by the EPA. Molholt Dep. at 300, 338, 395. Because the current EPA default slope factor for dioxin is 156,000, the argument goes, even if the general TEF approach is sufficiently reliable, Dr. Molholt erred by going further and applying an unreliable slope factor. The 2000 Reassessment is labeled "DRAFT – DO NOT QUOTE OR CITE." The undisputed facts show that the document has not been adopted by the EPA as its official word. The document itself, however, indicates that, while a draft, it has undergone peer review:

The process for developing the Reassessment Documents has been open and participatory. Each of the documents has been developed in collaboration with scientists from inside and outside the Federal Government. Each document has undergone extensive internal and external review, including review by EPA's Science Advisory Board (SAB). In September 1994, drafts of each document were made available for public review and comment. These comments, along with those of the SAB (U.S.

EPA, 1995a), have been considered in the drafting of this final document. . . . In addition, as requested by the SAB, a chapter on Toxic Equivalency has been developed and underwent external peer review in parallel with the Integrated Summary and Risk Characterization in July 2000. The November 2000, review by the SAB of the Dose-Response Chapter, the Toxic Equivalency Chapter and the Integrated Summary and Risk Characterization was the final step in this open and participatory process of reassessment. The full set of background documents and the integrative summary and risk characterization replace the previous dioxin assessments as the scientific basis for EPA decision-making.

Molholt Dec. Ex. 7. GM points to evidence in the form of an exchange of emails between Dr. Dovantzis and Milt Clark and David Cooper of the EPA in which Cooper recommended *against* using the 1,400,000 mg/kg day⁻¹ slope factor provided in the 2000 Reassessment, stating that he did not know anyone at the EPA who had used or was planning to use this figure, recommended using the 1,000,000 mg/kg day⁻¹ figure in the uncertainty section explaining the limitations of the risk assessment, and “strongly recommend[ed]” applying the 156,000 mg/kg day⁻¹ figure in the body of the assessment. See Att. D-14. Dr. Molholt did not perform any assessment using the 1,000,000 mg/kg day⁻¹ figure. Molholt Dep. at 408-10.

The application of the highest draft slope factor in applying the “avant garde” TEF approach renders Dr. Molholt’s risk assessment unreliable for present purposes. Although the 2000 Reassessment document indicates that it is the product of peer review, the document is unconditionally in draft form and has emphatically not been adopted as the EPA’s accepted approach. Dr. Molholt’s assertions that a scientist in the field would “consider” any relevant EPA draft or

final publication and that draft reports often express the views of scientific review panels, Molholt Dec. ¶¶ 81-82, does not answer defendant's criticisms regarding the specific use of the highest draft slope factor in this case. Nor is it apparent why any re-evaluation of the toxicity of dioxin would automatically carry over, in a linear way, to risks posed by individual PCB congeners. The email evidence undermines any claim by plaintiffs that the draft dioxin slope factor, which is nearly nine times higher than the currently accepted slope factor, is being used by anyone in the field (apart from this opinion for litigation). Plaintiffs have not shown that Dr. Molholt, in applying the highest slope factor indicated in the 2000 Reassessment, employed a methodology of risk assessment that would be reliable and acceptable among reasonable professionals in his field. See *Cummins v. Lyle Industries*, 93 F.3d 362, 369-69 (7th Cir. 1996) ("Rule 702 is designed to ensure that, when expert witnesses testify in court, they adhere to the same standards of intellectual rigor that are demanded in their professional work."). For all of these reasons, his risk assessment opinions based on the calculations incorporating this slope factor are inadmissible.

3. *Selection Bias*

GM also argues that Dr. Molholt's risk assessment cannot be relied upon because he "cherry picked" the environmental samples that he used in calculating the PCB threat around the GM Bedford site. GM argues that Dr. Molholt intentionally included in his risk assessment calculations only those samples that showed the highest exposure and from parcels having the highest contamination

levels. GM also criticizes Dr. Molholt for using samples from exposure pathways that were not likely sources of exposure for these specific plaintiffs, such as samples from wells despite evidence that plaintiffs did not drink well water.

The latter argument misses the point of plaintiffs' claims in this case. Plaintiffs' actual use of their land does not control the issue whether GM has released PCBs that have caused some harm to plaintiffs' land for which a remedy is due. GM's characterization of plaintiffs' sampling of different exposure pathways, even those less likely based on plaintiffs' behavior, as some sort of over-inclusive "Garden of Eden" approach, misses the fact that any risk posed by such exposure pathways that might be found to limit plaintiffs' (or their children's or a future buyer's) use of their land may amount to an injury that did not exist before PCB exposure.

Whether a risk assessment based on the samples at issue is reliable is a valid question, however. GM criticized the choice of samples Dr. Molholt included in his risk assessment, which included the following: (1) surface soils from parcel 36, the parcel with the highest concentrations of PCB 126 (4.3 ppb)(see Molholt Dep. at 8-9, Table 2A), (2) well water with the highest PCB concentration, (3) the more contaminated raccoon liver of two samples taken, which had a concentration over 1000 times higher than the other sample, (4) the most contaminated blue bird egg sample, (5) one small fish that showed the highest PCB concentration (a 1993 sample), and (6) a 15 percent add-on for vegetables. See Shifrin II Rep. (Def.

Att. C-2) at 25-27; Molholt Rep. at 25. Based on these sources, Dr. Molholt calculated the risk associated with PCB 126 on plaintiffs' property to be 1.22×10^{-1} , which Dr. Neil Shifrin, GM's proffered expert, described as indicating a 1 in 8 chance of developing cancer. Shifrin Rep. II at 26.⁵

GM attacks Dr. Molholt's sample choices, arguing that he included only samples with the highest concentrations and ignored other samples. For example, GM also notes that Dr. Molholt did not incorporate into his calculation data from other animal samples that showed little or no PCB contamination. See Molholt Dep. at 200, 218, 220-22; Shifrin II Rep. at 23, 27-28. Dr. Molholt testified that he calculated the 15 percent add-on for vegetables without referring to any site-specific vegetable samples. Molholt Dep. at 220. Dr. Molholt testified that he did not have access to such samples, though the data were available to the plaintiffs. *Id.* at 220-22. Dr. Rao testified that Dr. Molholt knew about the samples because he had discussed the samples with Dr. Molholt, but it is unclear when this occurred. See Rao Dep. at 63.

⁵Risk assessors express the likelihood of contracting some form of cancer from an EPA Superfund site in a probability form. A 1 in 10,000 chance is expressed as 1×10^{-4} or 1E-04. This probability represents the chance that for 10,000 people exposed to the reasonable maximum exposure level of an area, one extra cancer may occur beyond what would have been expected but for the exposure. A 1×10^{-5} probability means that for every 100,000 people exposure to the reasonable maximum exposure level, one extra cancer may occur beyond what would have been expected but for the exposure. EPA, Focus on Risk Assessment: Involving the Community, *Superfund Today*, April 1999. A risk level of 10^{-6} to 10^{-4} , or a chance of between 1 in 1,000,000 and 1 in 10,000 has been deemed an acceptable level of risk defined by the EPA for Superfund sites. Shifrin Rep. II at iii.

Dr. Molholt testified that he calculated his risk assessment by determining the reasonable maximum exposure. In so doing, he testified, he disregarded samples that showed lower concentration levels. See Molholt Dep. at 327. Using appropriate data, risk assessors commonly calculate their risk assessments by determining the “reasonable maximum exposure” (“RME”) that exists on a given site. “The RME is the highest level of human exposure to the substances that is likely to occur,” and the risk assessor considers several factors, including present and likely future uses of a site. EPA, *Focus on Risk Assessment: Involving the Community, Superfund Today*, April 1999. Dr. Neil Shifrin, GM’s expert, wrote in his second report that Dr. Molholt’s risk assessment “presents an inflated depiction of the hypothetical risks” at issue and did not employ an RME calculation that complies with the EPA’s accepted approach as detailed in the Risk Assessment Guidance for Superfund (“RAGS”). See Shifrin Rep. II at 27-28. Dr. Molholt says that he did calculate risk in accordance with RAGS.

Plaintiffs counter GM’s argument by stating only that the data points chosen by Dr. Molholt in performing his risk analysis amount to the kind of “conclusions” that are better left to the province of a jury. Pl. Br. at 25. Without citation to the extensive record in this case, plaintiffs assert that “Dr. Molholt has amply explained his selection of datasets and defaults,” and assert that rather than ignore or omit relevant data, he simply chose data different from that which GM considers important. *Id.*

Plaintiffs' argument is unpersuasive. Questions as to Dr. Molholt's choice in data sampling go to the heart of his methodology. This principle was clearly explained in *Loeffel Steel Products, Inc. v. Delta Brands, Inc.*, 387 F. Supp. 2d 794 (N.D. Ill. 2005). The court in *Loeffel* found not reliable as expert testimony an appraiser's estimate of the plaintiff's lost profits and business as a result of allegedly tortious acts of the defendant. The appraiser's report included financial data pertaining to eight companies to which the plaintiff's company was compared in estimating damages. The opinion could not be reliable, the court explained, because the appraiser could not explain why the eight companies were given as comparisons. The court explained:

In order for the sampling chosen by DVC comparison to have the requisite predictive capacity and the reliability that *Daubert* demands, [the appraiser] had to select samples that were truly comparable. . . . This is often referred to as the yardstick approach. Absent the requisite showing of comparability, a damage model that predicts either the presence or absence of future profits is impermissibly speculative or conjectural. . . . Of course, exact correlation is not necessary but the samples must be fair congeners. If they are not, the comparison is manifestly unreliable and cannot "logically advance[] a material aspect of the proposing party's case. . . ."

Id. at 812; see also *Menasha Corp. v. News America Marketing In-Store Inc.*, 238 F. Supp. 2d 1024, 1030 (N.D. Ill. 2003) (journalist survey excluded in part because he failed to gather responses from a representative sample accurately representing the target population), *aff'd*, 354 F.3d 661 (7th Cir. 2004); *United States v. Mikos*, 2003 WL 22922197, *4 (N.D. Ill. 2003) (finding that FBI database of bullet samples could not be the basis for expert testimony; database could not satisfy *Daubert* requirements where there was no evidence "that the samples were

gathered in any approved scientific manner so as to be considered as representative of the bullet population as a whole”). Although these cases have addressed topics distinct from the kind of toxicology inquiry now before the court, each has clearly emphasized (1) that sample choice, the selection of datapoints on which to determine risk in this case, is an issue of methodology, and (2) that to represent adequately the risk or other prediction at issue, the samples must be chosen using some method that assures the samples are appropriately representative of the larger entity or population being measured.

Plaintiffs emphasize that risk assessments are meant to depict representative risk. Dr. Molholt’s risk assessment, which is apparently meant to assess the risk on plaintiffs’ land in general, was performed by using only a limited number of the available samples, and those that would tend to magnify greatly the risk calculation. Dr. Molholt has failed to offer any scientific justification for his sample selection choices, which are central to the reliability of his methodology. For this reason, as well, the court finds that Dr. Molholt’s methodology for assessing the plaintiffs’ risk of developing cancer was not sufficiently reliable to satisfy the demands of *Daubert* and Rule 702 due to selection bias and therefore cannot be admitted.⁶

⁶Additionally, the samples from the well water and the fish did not isolate the specific congener PCB 126. See Shifrin Rep. II at 30. Dr. Molholt extrapolated from the total PCB amount detected to PCB 126 using a PCB 126/Total PCB soil ratio calculation that, as explained in Section I–D regarding source analysis, the court also finds unreliable. This is an additional reason supporting the court’s findings that Dr. Molholt’s risk assessment does not meet Rule 702 standards.

C. *Dr. Kostas Dovantzis*

GM also seeks to exclude the testimony of Dr. Kostas Dovantzis, who has a Ph.D. in Environmental Engineering. Dr. Dovantzis has issued several formal reports in this case: (1) a May 2004 report estimating \$112.6 million in costs, including a "Preliminary Risk Evaluation," (2) a December 2004 report estimating costs at \$111.9 million, including a "Supplemental Human Health Risk Assessment," and (3) an April 2005 report indicating a cost estimate of \$78 million for the remediation of floodplain areas and parcels proximate to the plant, as well as for monitoring and treating three wells located on plaintiffs' property.

GM bases its motion to exclude Dr. Dovantzis's opinions on several arguments: (1) his testimony indicates that he based his opinions not on scientific inquiry but by the recommendations of the attorneys for the plaintiffs, demonstrated by what GM characterizes as ever-changing damage estimates; (2) Dr. Dovantzis's measurement and recording system used to document sample locations was erroneous, therefore rendering the sampling process unreliable; (3) Dr. Dovantzis erroneously delineated the floodplain; (4) Dr. Dovantzis's removal depth estimates are a product of plaintiffs' counsel's requests and are not based on any professional judgment or scientific determination; and (5) Dr. Dovantzis's monitoring recommendation for three wells is not based on inquiry consistent with the scientific method.

1. *The Changing Cost Estimates*

GM argues that Dr. Dovantzis's opinions are litigation driven, dictated by plaintiffs' counsel, and show a goal of maximizing plaintiffs' recovery rather than legitimate scientific inquiry. Dr. Dovantzis completed a preliminary remediation cost estimate of \$225 million in September 2003. Att. D-5. Dr. Dovantzis issued a lower cost estimate of \$147 million later in September 2003. See Dovantzis Dep. at 510. Dr. Dovantzis wrote plaintiffs' counsel a letter later that month with recommendations and a request for approval of testing and analysis strategies that Dr. Dovantzis believed would "bolster" and "support" plaintiffs' claims. Att. D-4. Of the data collection and analysis strategies referred to in Dr. Dovantzis's letter, he testified: "We proposed to collect additional data to support the cost estimates." Dovantzis Dep. at 507. In November 2003, he sent an email to plaintiffs' counsel referring to the risk-based strategy that he recommended following in this case:

In order to strengthen the claims vs. GM, the overall objective of the risk based strategy would be to establish a correlation of the types of congeners present in the various media/matrices sampled and demonstrate unacceptable risk.

Att. D-12. The email went on to list different parts of the strategy, including outlining sampling and methods of analysis to be used. "Assuming that significant risk is calculated" after a preliminary risk evaluation, Dr. Dovantzis wrote, additional samples were to be collected for analysis. *Id.*

Dr. Dovantzis testified that the “driving factor” behind his work on this case was “to establish if there was risk” at “levels that would be of concern,” but he acknowledged that when he wrote that he wanted to “strengthen” plaintiffs’ case against GM, he meant that he “wanted to collect data to support the estimates we made before.” Dovantzis Dep. at 512-13. GM argues that Dr. Dovantzis’s statements regarding efforts to “bolster” or “support” plaintiffs’ claims against GM raise a question as to whether Dr. Dovantzis’s opinion can be considered the product of a reliable scientific inquiry, or whether he assumed a result and sought data only to support that result.

GM cites *Clark v. Takata Corp.*, 192 F.3d 750, 757 (7th Cir. 1999), in which the Seventh Circuit upheld a district court’s decision to exclude the testimony of an expert regarding whether plaintiff’s seatbelt, manufactured by defendant, had become unlatched during an accident, allowing plaintiff to sustain serious head injuries. Plaintiff’s theory of the case was that the seatbelt had been fastened but had disengaged during the rollover of the car.

The expert in *Clark* issued a one and one half page report stating that if the seatbelt had functioned properly, the plaintiff would not have sustained a head injury. He appended to the report a short statement that he believed the seatbelt had been disengaged during the car’s rollover, based on the comparative blood amounts on the lap and shoulder belts. Because the expert had testified, however, that he had assumed that the seatbelt had disengaged during the

accident and that he did not address this question in preparing his opinion, the Seventh Circuit affirmed exclusion of his testimony. The expert had “assume[d] the very fact that he ha[d] been hired to prove.” *Id.* at 756-57; see also *Owens v. Ford Motor Co.*, 297 F. Supp. 2d 1099, 1105-06 (S.D. Ind. 2003) (excluding expert testimony as to whether plaintiff’s air bag inflated in collision where the expert had assumed the failure to inflate and had studied only the possible causes of such a failure).

GM also argues that the repeated modification of the cost estimates, from \$225 million to the ultimate \$78 million figure in the April 2005 report renders Dr. Dovantzis’s opinion unreliable, citing *Comer v. American Electric Power*, 63 F. Supp. 2d 927, 935 (N.D. Ind. 1999). In *Comer*, the plaintiff’s expert testified in an early deposition that a voltage surge occurred that was initially insufficient to cause the breakdown of insulation, thereby causing a fire, but that it had caused the breakdown over a period of days. Later, at trial, the expert testified that the surge caused an immediate breakdown and therefore caused an immediate fire. When asked to explain the discrepancy, the expert testified that he had been misinformed at the time of the deposition as to the date of the fire and that he had altered his opinions of how quickly the surge caused breakdown based on when the fire took place. *Id.* The court excluded the expert’s testimony, citing the “breath-taking ease” with which he offered his opinions, “surpassed only by his apparent ability to change them based on nothing more than the mere suggestion of counsel.” *Id.*

The evidence before the court does not show the same kind of blind, outcome-driven thinking by Dr. Dovantzis that was shown in *Clark, Owens, and Comer*. Dr. Dovantzis explained in his declaration that his evolving damage calculations were due to ongoing and additional data analysis. He described his process as beginning with a working hypothesis and then designing a testing method that would help prove or disprove the hypothesis. Dovantzis Dec. ¶¶ 77-78. These statements and the circumstances of the case indicate that Dr. Dovantzis's multiple estimates were based on evolving information. Dr. Dovantzis's modification of the amounts in response to collection of greater data might be characterized as reasonable responses to the analyses, demonstrating that he followed the scientific method by altering his cost estimates based on incoming data, though that is not the only fair reading of the record. The alteration of his opinions would provide defendant with ample fodder for cross-examination. Nevertheless, this evidence goes more to credibility and does not render his ultimate opinions, formed after the 2005 data collection and analysis in particular, unreliable. See *Deputy v. Lehman Bros., Inc.*, 345 F.3d 494, 507 (7th Cir. 2003) (reversing exclusion of expert because she changed her mind regarding her opinion; "the district court went beyond determining admissibility and focused on credibility"; focus should have been on whether experts in the field applied her methodology in preparing expert opinion); *Smith*, 215 F.3d at 719 ("The question of whether an expert is credible or whether his or her theories are correct given the circumstances of a particular case is a factual one that is left for the jury after

the opposing counsel has been provided the opportunity to cross-examine the expert . . .”).

2. *Sample Location Recording*

GM argues that Dr. Dovantzis’s opinions regarding excavation and remediation costs are unreliable because his records of the locations from which he took samples are not reliable. In February 2005, Dr. Dovantzis prepared a sampling plan in the form of maps for the collection of new samples that would provide data to allow the experts to characterize better their previous evaluations. Dovantzis. Dep. at 925-26, 957. The new data from the samples would allow Dr. Dovantzis to calculate excavation costs. *Id.* at 958.

GM argues that the sampling teams carrying out Dr. Dovantzis’s plan made errors in collecting the samples, or at least in recording their collection sites, that render the data from the samples unreliable. The sample collectors noted their collection sites by using both the “stake and tape” method, measuring with tape measures as they collected the samples, placing stakes in the ground to show sample locations, and by noting their sample locations using a Global Positioning System (“GPS”). Both parties seem to agree that the GPS coordinates recorded by the samplers included errors, either human or machine. Dr. Dovantzis accounted for such inconsistencies by noting that the GPS systems used have error rates that, depending on weather conditions, may result in inaccuracies of up to 100 feet. Dovantzis Dec. ¶¶ 28-36. Dr. Dovantzis testified that he relied on field staff

tape and stake measurements, not on the GPS coordinates that GM argues render his opinion unreliable. *Id.*; Dovantzis Dep. at 1293-98.

The sample collection method on which Dr. Dovantzis relied, while perhaps not the method on the technological cutting edge, was sufficiently reliable. All seem to agree that there were inaccuracies in the GPS coordinates. Evidence from Dr. Dovantzis indicates that he relied on the collection teams' use of the stake and tape method, the general reliability of which has not been questioned. Dr. Shifrin's observations as to the accuracy with which the Handex collection team employed the method are best reserved for cross-examination. See *Daubert*, 509 U.S. at 596 (courts should continue to rely on cross-examination, presentation of contrary evidence, and jury instructions to address weak but admissible evidence), citing *Rock v. Arkansas*, 483 U.S. 44, 61 (1987).

3. *Floodplain Delineation*

GM argues more persuasively that Dr. Dovantzis's opinion regarding the floodplain boundary, the limit of plaintiffs' proposed excavation, is unreliable. GM maintains, and plaintiffs have not disputed, that neither Dr. Dovantzis nor Rohan, on whose information Dr. Dovantzis relied in performing the floodplain delineation, see Dovantzis Dec. ¶ 75 & Att. A-3 at 9, have ever before delineated a floodplain. Plaintiffs have also not disputed GM's assertion that if Dr. Dovantzis's floodplain delineation was not methodologically sound, the additional floodplain area designated by Dr. Dovantzis, which is nearly 1 million square feet

larger than the floodplain estimate completed by GM, improperly inflates the damage estimate by approximately \$16.1 million. See Shifrin Rep. II at 39.

In his Report II, Dr. Shifrin had several criticisms of the floodplain delineation. Dr. Shifrin points out that although Dr. Dovantzis's 2005 report characterizes a floodplain as flat parcel areas that become flooded during storm events of certain duration and intensity, the report did not define the term "storm event." Shifrin Rep. II at 37. Dr. Shifrin wrote in his report that his analysis of Dr. Dovantzis's floodplain delineations (1) ignored topographic boundaries to the extent that the boundaries indicate "water running uphill"; (2) included sharp discontinuities across property lines for no physical or topographical reason; and (3) showed floodplain lines that would defy gravity by requiring water to rise to different elevations on opposite sides of the same creek. Shifrin Rep. II at 38.

In his declaration, Dr. Dovantzis explained his floodplain delineation by noting that he relied on "the kind of commonsense sort of information that any engineer would consider." Dovantzis Dec. ¶ 39. This includes (1) his review of topographic contour maps from GM; (2) consideration of drift lines, wet soil horizons, and soil sampling locations previously established by GM; and (3) interviews with plaintiffs regarding the flooding on their land. *Id.* ¶¶ 39-43.

Even assuming that these strategies are appropriate for measuring floodplain lines, Dr. Dovantzis's floodplain delineation cannot be considered

sufficiently reliable because he relied on the unrecorded and untrained observations of Rohan to observe signs of flooding. Rohan testified that in gathering information relevant to the delineation of the floodplain, he and assistants whom he instructed used visual observations of the topography and indicators of a previous flood event, which Rohan testified included flood lines (debris or other items showing a previous water line), tree line marks, and wetness. He testified that he learned that these could be indicators for marking floodplains by using common sense and in looking information up on the internet, though he could not recall the details of his internet research. These observations were not recorded in any manner, apart from some photographs of flood lines “on one or two of the parcels.” Additionally, Rohan could not recall consulting any agency guidance documents. Rohan Dep. at 137-40. Considering Rohan’s lack of experience and relevant training in floodplain delineation and the complete lack of documentation for such observations, upon which Dr. Dovantzis claimed to rely in forming his floodplain estimates, Dr. Dovantzis’s floodplain delineation opinions are not sufficiently reliable to submit to a jury or to use as a foundation for a remediation estimate.

4. *Excavation Depth Outside the Floodplain*

GM also argues that Dr. Dovantzis’s opinion that each of the non-floodplain properties should be 100 percent excavated to a one-foot depth cannot be deemed reliable. The court agrees. Dr. Dovantzis testified that his cost estimate incorporated such excavation of parcel 207, most of parcel 208, and parcels 210,

211, 387, 388, 412, and 415. This estimate was based on results obtained from the collection of a single data point on each parcel and on the proximity of the parcels to the Bedford plant. The data indicating PCB concentrations were collected from a depth of zero to four inches on each parcel. Dovantzis Dep. at 474-84. When asked what influence plaintiffs' counsel had in the decision to excavate to one foot, he testified: "We made the proposal and we discussed it with counsel, so it was a decision reached jointly." *Id.* at 484. GM points to an August 2003 email from Dr. Dovantzis to Rohan noting that plaintiffs' counsel suggested that they prepare two cost estimates for the excavation in the non-floodplain areas, one at an excavation depth of half a foot below grade, and the other at one foot below grade. Dovantzis wrote to Rohan: "This approach would maximize the amount of the claim" See Att. D-9.

Dr. Dovantzis explained in his declaration, as he did in his deposition, that his one-foot depth excavation and backfill estimate was based on soil testing at a 4-inch depth and on the proximity of the non-floodplain parcels to the Bedford plant property. Dovantzis Dep. at 480-82, 84. Dr. Dovantzis also included in his declaration that because GM's testing showed that floodplain parcels showed PCB contamination from one to three feet below grade, that "it is very likely that these results will also apply to the non-floodplain parcels," and therefore "to adequately reduce the PCB congener concentrations" he assumed that soil in the non-floodplain parcels would need to be excavated to a depth of one foot. Dovantzis Dec. ¶¶ 87-89.

Plaintiffs have failed to demonstrate that Dr. Dovantzis's critical one-foot excavation standard is sufficiently reliable to satisfy Rule 702. While his testimony indicates that the proximity of the soil samples collected at a 4-inch depth indicates PCB contamination, even if the court accepts this as a basis for 100% excavation of the non-floodplain parcels at some given depth, there is no evidence as to why excavation is appropriate to a depth of one foot. Dr. Dovantzis's extrapolation of floodplain data to non-floodplain data does nothing to explain this leap. Again, even accepting as true his assertions that floodplain data apply with the same force to non-floodplain areas, the floodplain data show PCB contamination at depths of between one and three feet. Dr. Dovantzis provides no explanation for establishing a one-foot excavation level other than to maximize plaintiffs' claims. Accordingly, the court finds the one-foot excavation recommendation is arbitrary and unreliable. See *United States v. Mamah*, 332 F.3d 475, 478 (7th Cir. 2003) ("It is critical under Rule 702 that there be a link between the facts or data the expert has worked with and the conclusion the expert's testimony is intended to support."), citing *General Electric Co. v. Joiner*, 522 U.S. 136, 146 (1997) ("A court may conclude that there is simply too great an analytical gap between the data and the opinion proffered.").

5. *Well-Monitoring and Treatment*

Dr. Dovantzis has also prepared a cost estimate seeking over \$900,000 to monitor and treat three wells on plaintiffs' property for a period of 20 years. Dovantzis Dep. at 387; Att. A-3 at 2. Defendant argues that this recommendation

is unreliable because Dr. Dovantzis did not consult data as to the current use of such wells or as to alternate water sources for the plaintiffs. Whether plaintiffs use their wells, however, is less relevant to the reliability of Dr. Dovantzis's well assessment than evidence regarding any contamination of the wells. Earlier evidence in this case regarding the wells at issue indicated that the wells had "non-detect" PCB concentrations. Dovantzis Dep. at 387. Dovantzis's April 2005 report, however, states that two of the wells for which the monitoring and treatment were recommended contained historic PCB concentrations above the Maximum Contaminant Level ("MCL") of 1 ppb, and one contained PCB 126, while the other wells sampled showed non-detect amounts of PCBs. Att. A-3 at 7. GM has not refuted these findings, which Dr. Dovantzis claims are derived from the testing performed by Conestoga-Rovers and Associates, hired by GM. Whether or not plaintiffs use such wells, the court cannot say that Dr. Dovantzis's opinion is unreliable on this score. The presence of PCBs above the MCL in the wells on parcels 207 and 208 and the presence of PCB 126 in the well from parcel 338 support Dr. Dovantzis's assertion that treatment and monitoring of the wells on parcels 207 and 208 and monitoring of the well on parcel 338 would be appropriate. Accordingly, the court finds Dr. Dovantzis's opinion as to well-monitoring sufficiently reliable to satisfy Rule 702.

D. *Source Analysis*

GM also argues that the opinions of Dr. Molholt and Dr. Dovantzis cannot reliably establish that GM was the source of any PCB contamination on the

plaintiffs' parcels. The real issue in this assertion is whether GM is the source of the PCBs found at the parcels of the plaintiffs whose properties do not lie within the floodplain. Defendant's counsel conceded during oral argument that GM's PCBs were found on the parcels lying in the floodplain, a concession entirely unsurprising considering GM's current multimillion dollar remediation of floodplain areas. As explained below, the ratio analysis method generated by Dr. Molholt is not sufficiently reliable within the meaning of *Daubert* and Rule 702 to present to a jury. Nevertheless, evidence relating to Dr. Dovantzis's opinion regarding the levels of PCB contamination on plaintiffs' property and traditional transport mechanism passes muster and supports Dr. Dovantzis's opinion with respect to source identification.

1. *Dr. Molholt's Ratio Analysis*

Despite Dr. Dovantzis's assurances in his declaration, his deposition testimony indicates that his opinion regarding the source of the PCBs found on plaintiffs' parcels is based on Dr. Molholt's work and on his own judgment and experience as an environmental engineer. See Dovantzis Dep. at 998-1002, 1227-30.

Dr. Molholt has introduced a method for determining whether PCBs found on plaintiffs' land can be traced to GM by determining a congener-specific ratio analysis in which he determined the ratio of the specific congener PCB 126 to the total PCBs found in a sample. Dr. Molholt's theory is that, because PCB mixtures

contain a wide range of congeners in different combinations, comparison of the ratio of PCB 126 to total PCBs among the samples from (1) GM's site, (2) plaintiffs' non-floodplain properties, and (3) background samples from a state park show that the ratios of PCB 126 in the GM samples and plaintiffs' samples are similar enough to infer that the PCBs on plaintiffs' properties came from GM. Molholt Rep. at 9 & Tables 2A & 2B. Defendant's expert Dr. Shifrin disputes that Dr. Molholt's data show either an internally consistent ratio or a statistically significant similarity between the GM and plaintiffs' non-floodplain parcels. Shifrin Rep. II at 30-32.

Dr. Molholt's ratio analysis theory is not sufficiently reliable to be admitted as evidence that GM is the source of the PCBs on plaintiffs' property. Neither Dr. Shifrin nor Dr. Dovantzis had any knowledge of such a PCB congener ratio being used as a "fingerprint" to determine the source of contamination in any other context. Shifrin Rep. II at 32-33; Dovantzis Dep. at 1229-30. Dr. Molholt testified that, although he had once used the ratio analysis on another site involving a dioxin congener, he had never done a PCB congener ratio analysis to identify a source before, did not know of any other scientist who had done so, and could not cite any published literature or EPA guidance supporting the source identification strategy. Molholt Dep. at 229-33. Additionally, when asked to explain discrepancies in the calculations used to determine the "fingerprint" ratio, he could not. See Molholt Dep. at 240-41; Shifrin Rep. II at 30-32.

Whether Dr. Molholt's ratio analysis might provide a point of departure for future research may be of scientific interest but has no legal relevance at this time. "[T]he courtroom is not the place for scientific guesswork, even of the inspired sort. Law lags science; it does not lead it." *Rosen v. Ciba-Geigy Corp.*, 78 F.3d 316, 319 (7th Cir. 1996). Plaintiffs have failed to demonstrate, with respect to this theory of Dr. Molholt's, that it is a methodology sufficiently reliable and widely recognized that it would be employed by another reasonable expert in the field. See *Kumho*, 526 U.S. at 152; *Chapman v. Maytag Corp.*, 297 F.3d 682, 688 (7th Cir. 2002) (reversing admission of expert opinion where his theory applied in forming his opinion was novel and unsupported by any article, text, study, scientific literature or scientific data produced by others in the field and where expert had not published any writings or studies concerning his theory).

2. *Background Levels and Mechanisms of Transport*

While Dr. Molholt's novel ratio-analysis method has not been shown to be sufficiently reliable in "fingerprinting" PCBs originating from the GM plant, Dr. Dovantzis has provided in his report and through his testimony sufficient evidence to support the inference that the PCBs found on the non-floodplain plaintiffs' properties originated from GM. Results included in Dr. Dovantzis's April 2005 report indicate that "PCB congener TEQ concentrations, and therefore human health risks, above background, exist in all of the plaintiffs' parcel soil samples" with the exception of portions of parcels 30, 208, and 40. Att. A-3 at 6. GM argues that Dr. Dovantzis's figures regarding background levels should be

discounted because he omitted from his calculations early background samples in lieu of later samples taken in spring of 2005. See Def. Reply at 15-16. The evidence indicates, however, that the later samples were collected from nearly the identical locations and tested by a laboratory with a lower detection limit than the earlier samples. Dovantzis Dep. at 981-84. Rather than undermine the validity of the testing, as GM claims, the data obtained from the later samples appear to provide information as to background levels with greater precision.

Dr. Dovantzis has offered evidence regarding traditional transport mechanisms for contaminants, which can include seeps and springs, erosion, and atmospheric deposition. See Att. A-1 at 2. PCBs were detected at seeps and springs within the area. See Administrative Order on Consent (Docket No. 379) at 10. As previously mentioned, PCBs were detected in two wells on plaintiffs' property as well. Dr. Dovantzis testified as to his theory of transport using these traditional transport mechanisms identified in his May 2004 report. See Dovantzis Dep. at 289-93; Att. A-1 at 2. Although Dr. Dovantzis testified that in the earlier stages of investigation, he assumed that GM was the source of PCB contamination on plaintiffs' land, Dovantzis Dep. at 296, evidence of greater than background levels on plaintiffs' land indicated in Dr. Dovantzis's April 2005 report, Att. A-3, combined with Dr. Dovantzis's testimony as to generally accepted transport mechanisms, Dovantzis Dep. at 289-93, could raise the inference that GM's PCBs are the source of contamination on the plaintiffs' land. This does not represent a great analytic leap. EPA, IDEM, and GM agree that GM's Bedford

plant is the source of PCB contamination in the immediate area, and the properties at issue are either within close proximity to the plant or are located along affected waterways.

GM also argues that Dr. Dovantzis cannot demonstrate that GM was the source because he has not offered evidence of the PCB levels on plaintiffs' properties prior to any PCB contamination from the GM's Bedford plant. GM does not suggest how Dr. Dovantzis might possibly have done so. See *Dovantzis Dep.* at 283-84. GM also notes that Dr. Dovantzis did not perform a fate and transport analysis otherwise to identify GM as the source of PCB congeners found on plaintiffs' land. *Reply Br.* at 16; *Dovantzis Dep.* at 296-97, 1003, 1227. While such evidence might have bolstered Dr. Dovantzis's opinion, his omission of such testing does not render his opinion unreliable within the standards provided by *Daubert* and Rule 702. Such criticism is better reserved for cross-examination.

To sum up thus far, Dr. Molholt's risk assessment opinions presented in support of plaintiffs' remediation claims are not sufficiently reliable to meet the standards provided by Rule 702 and *Daubert*. Dr. Dovantzis's opinions pertaining to excavation depth on non-floodplain parcels and floodplain delineation within the floodplain parcels are also not sufficiently reliable. Dr. Dovantzis's opinions regarding the source of PCB contamination on the plaintiffs' property and his opinions regarding well treatment and monitoring do meet the Rule 702 standard and are admissible.

E. *Summary Judgment as to Remediation Cost Claims*

Dr. Molholt and Dr. Dovantzis are the sole experts whose opinions plaintiffs intend to advance in support of their remediation cost claims. Summary judgment should be granted only where the pleadings, depositions, answers to interrogatories, affidavits, and other materials demonstrate that there exists “no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law.” Fed. R. Civ. P. 56(c). Only genuine disputes over material facts can prevent a grant of summary judgment. *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 248 (1986). A fact is material if it might affect the outcome of the suit under the governing law. *Id.*

In considering GM’s motion for summary judgment as to plaintiffs’ remediation cost claims, the court views the evidence and all reasonable inferences that might be drawn from it in the light reasonably most favorable to the non-moving parties. See Fed. R. Civ. P. 56(c); *Conley v. Village of Bedford Park*, 215 F.3d 703, 708 (7th Cir. 2000). The court must also keep in mind that the plaintiffs’ remediation cost claims require determinations that are dependent on evidence from those with specialized knowledge. See generally, *Porter v. Whitehall Laboratories, Inc.*, 791 F. Supp. 1335, 1342 (S.D. Ind. 1992) (explaining that medical expert testimony was essential to plaintiffs’ claims where such claims implicated questions of science that were not within the understanding of lay persons), *aff’d*, 9 F.3d 607 (7th Cir. 1993). Plaintiffs’ remediation claims require determinations relating to PCB-related health risk assessments, clean-up

strategies and levels, and other questions not within the understanding of laypersons. The court's decision to exclude much of plaintiffs' expert opinions warrants summary judgment for GM on all of plaintiffs' remediation claims except plaintiffs' claims for monitoring and treatment of the three wells identified in Dr. Dovantzis's report. See Att. A-3 at 2, 7.

Plaintiffs argue, however, that their claims for remediation do not depend at all on whether the PCBs present on their property actually pose a significant risk to health. Plaintiffs contend that if they prove that GM caused PCBs to be present on their property, they are entitled to recover from GM the costs of fully restoring their property to the condition it was in before GM caused the deposit of PCBs. According to plaintiffs, regardless of whether PCB levels below the EPA and IDEM clean-up standards pose a meaningful risk to human health or to the use of their property, they are entitled to the costs of a clean-up of their property to background levels, so that PCB 126 is present at no more than 4 parts per trillion (4 nanograms/kilogram) in the soil. As noted, plaintiffs estimate this clean-up would cost \$78 million. That sum is approximately twenty times the total fair market value of all plaintiffs' properties (apart from any loss in value for the contamination).

To support this startling result, plaintiffs rely primarily on language from *Terra-Products, Inc. v. Kraft General Foods, Inc.*, 653 N.E.2d 89 (Ind. App. 1995), which requires close examination. The property of Terra-Products had been

contaminated by PCBs from a neighboring business (which Kraft later bought). The EPA and IDEM ordered a clean-up. Kraft paid for and carried out the clean-up of the property owned by Terra-Products. The clean-up cost much more than the fair market value of the property. 653 N.E.2d at 92. As the clean-up neared completion, Terra-Products sold the property at an auction. Terra-Products then sued Kraft for what it claimed was the difference in price between the auction price and a higher appraised value that assumed no contamination of the property. The trial court granted summary judgment for Kraft, and the Court of Appeals affirmed. Along the way, the Court of Appeals offered guidance on the measure of damages for environmental contamination of land in Indiana.

First, the *Terra-Products* court noted the common law distinction between permanent and temporary injuries to land. Permanent injury occurs when the cost of restoration exceeds the market value prior to injury. In cases of permanent injury, “the measure of damages is limited to the difference between the fair market value of the property before and after the injury, based on the rationale that ‘economic waste’ results when restoration costs exceed the economic benefit.” 653 N.E.2d at 91-92. That difference was the measure of damages sought by plaintiff Terra-Products. Defendant Kraft opposed the request, arguing that it had already spent more than the fair market value of the Terra-Products property to remediate it and that any further damage award would amount to a double recovery.

The court noted that federal and state environmental laws often require remediation (repair) of contaminated land “virtually without regard to cost,” and often well in excess of the land’s earlier fair market value. *Id.* at 92. The court observed that “PCB contamination, therefore, will generally be considered a temporary injury capable of being remediated or ‘repaired.’” *Id.* The *Terra-Products* court then discussed the Third Circuit’s decision in *In re Paoli R.R. Yard Litigation*, 35 F.3d 717, 797-98 (3d Cir. 1994), and agreed that a plaintiff whose land had been contaminated and then remediated could recover damages if he could show that repair would not restore the value of the property to its prior value and that there is some ongoing risk to his land. 653 N.E.2d at 93.

Terra-Products does not support plaintiffs’ claims for damages on the order of twenty times the pre-contamination fair market value of plaintiffs’ property, especially without any showing of any continuing threat to human health. First, the *Terra-Products* court simply did not confront any dispute over the cost of remediation. Defendant Kraft had already completed and paid for remediation to the satisfaction of the EPA and IDEM, presumably by removing PCBs in excess of a target comparable to the 1.8 ppm target that the same agencies have given GM for the clean-up around the Bedford plant. The question actually before the *Terra-Products* court was whether the plaintiff could recover additional damages, such as for a long-term reduction in value even after the remediation. The answer was yes in theory, but the plaintiff lost because it did not have evidence to support such a reduction in value.

Second, there is no indication in *Terra-Products* that the Indiana court was approving the sort of windfall damages that plaintiffs seek here. The question did not arise. In this case, plaintiffs seek the damages for a purely hypothetical clean-up. If the courts were to embrace their theory, the result would be (a) GM would pay the plaintiffs approximately twenty times the value of their property; (b) plaintiffs would keep their property, and (c) the PCBs in concentrations of less than 1.8 ppm would remain on the land, unless the plaintiffs happened to choose to spend their money on the remediation (a decision that would require an extraordinary degree of economically irrational behavior on the part of the plaintiffs, far beyond what might be justified by personal, family, or other non-economic ties to the property in question).

By way of comparison, federal and state environmental laws do not adopt the common law distinction between permanent and temporary injury to land. Those laws show a distinct preference for restoration of contaminated property, so that remediation may be ordered even when it exceeds the current fair market value of uncontaminated property. See *Terra-Products*, 653 N.E.2d at 92, citing *State of Ohio v. U.S. Department of Interior*, 880 F.2d 432, 445-46 (D.C. Cir. 1989) (explaining that preference under CERCLA). Notwithstanding the common law rule, there may be situations in which the current fair market value of property does not fully reflect the long term social and environmental loss if that property cannot be used safely in the future. That is why environmental laws sometimes impose those heavy obligations to restore contaminated land so that it is available for future

use and enjoyment. *Terra-Products* recognized that reality and modified the common law rule to allow additional damages to compensate a plaintiff more fully.

That reasoning does not offer any justification, however, for awarding plaintiffs the extraordinary damages they seek, and for leaving the supposedly contaminated land unremediated. Such a result would not serve any goal of environmental law. It would merely transfer huge sums of money to a few plaintiffs. Such a result would encourage the “economic waste” that Indiana’s common law seeks to avoid. The *Terra-Products* court cited *City of Anderson v. Salling Concrete Corp.*, 411 N.E.2d 728, 734 (Ind. App. 1980), for the proposition that damages for injury to land would ordinarily not exceed the fair market value of the land because higher damages would result in economic waste. The *City of Anderson* court made the point forcefully, finding in Indiana law “a common thread, consisting of a policy against the law requiring money to be spent wastefully. Whenever the issue of damages has been squarely presented, whether in tort or in contract, the courts of Indiana have refused to command that damages be assessed on a theory of repair, if repairs would entail costs in excess of the economic benefit such repairs would confer.” 411 N.E.2d at 734. *Terra-Products* did not disagree; the case is best understood as adding the gloss that a plaintiff might be able to recover some additional damages beyond the cost of repair if repair will not fully compensate the plaintiff, such as where the evidence

shows disruption in use and/or a residual loss in value, despite the repair.
653 N.E.2d at 93.⁷

On this subject of damages for contamination of the land, the Restatement (Second) of Torts provides sound guidance that is consistent with Indiana law. Section 929 addresses the measure of damage for harm to land from past invasions, which can include pollution:

- (1) If one is entitled to a judgment for harm to land resulting from a past invasion and not amounting to a total destruction of value, the damages include compensation for
 - (a) the difference between the value of the land before the harm and the value after the harm, or at his election in an appropriate case, the cost of restoration that has been or may be reasonably incurred,
 - (b) the loss of use of the land, and
 - (c) discomfort and annoyance to him as an occupant.

Restatement § 929(1)(a) allows a plaintiff to elect to receive restoration costs “in an appropriate case,” but comment (b) adds this caution: “If, however, the cost of replacing the land in its original condition is disproportionate to the diminution in the value of the land caused by the trespass, unless there is a reason personal to the owner for restoring the original condition, damages are measured only by the difference between the value of the land before and after the harm.” In the present case, the cost of restoring the land to its original condition would be

⁷Perhaps the best language in *Terra-Products* for plaintiffs is the statement: “For a temporary injury the proper measure of damages is the cost of restoration.” 653 N.E.2d at 92, citing *City of Anderson*, 411 N.E.2d at 734. Taken out of context, the language is helpful to plaintiffs, but the court cannot take the language out of its context, including the strong rejection of wasteful damages in *City of Anderson*.

grossly disproportionate to any change in the value of the land, particularly in light of the absence of evidence of harm resulting from the levels below the clean-up target of 1.8 ppm for total PCBs.

At the hearing on the pending motions, the court asked plaintiffs whether they were aware of any decision in any other jurisdiction in the world adopting the theory of damages they advocate here, awarding under the common law the cost of remediation far in excess of the value of the damaged property, without regard for whether remediation actually occurred. Plaintiffs' counsel answered: "I don't believe plaintiffs are aware of any authority one way or another on that issue. I don't think there's any authority suggesting it's not appropriate." Hearing Tr. 59-60.

Plaintiffs later offered two recent Arkansas cases. *State v. Diamond Lakes Oil Co.*, 66 S.W.3d 613, 618-19 (Ark. 2002), affirmed an award against an adjoining property owner responsible for contaminating the property in question. The damage award for the cost of remediating the plaintiff's property was about four times the value of the property. On the surface, that result looks promising for plaintiffs. However, the court affirmed the award only where the state government had actually ordered the plaintiff property owner to carry out and pay for that remediation required as a result of the defendant's actions. In other words, there was going to be a real clean-up, required by government authorities for long-term protection of the environment, and paid for in the first instance by

the plaintiff property owner. The Arkansas Supreme Court rejected the argument that the damages were disproportionately high when compared to the value of the contaminated property:

This argument again ignores the fact that it was ADEQ [the state environmental agency] that ordered the remediation; Diamond Lakes had no discretion in the process. Dr. Overton, Diamond Lakes' expert, testified that the reasonable cost of remediation, as directed by the State, was in excess of \$260,000; other unreimbursed expenses exceeded \$60,500. Of the former amount, ADEQ had only reimbursed \$116,000 from the Petroleum Storage Tank Trust Fund. See Ark. Code Ann. § 8-7-905(d) (Repl.2000). The jury awarded \$200,000 in temporary damages. This amount was not unreasonable, *because Diamond Lakes had no choice but to conduct the repairs.*

66 S.W.3d at 618-19 (emphasis added). That reasoning is obviously sound. It would be unjust to allow the state to order an expensive clean-up at the plaintiff's expense yet to cap at a much lower level the damages the plaintiff could recover from the real wrongdoer. But that reasoning does not apply to the plaintiffs' claims in this case, seeking the massive costs of a merely hypothetical clean-up that would go far beyond the actual clean-up ordered by state and federal authorities.

Plaintiffs find more direct support from *Felton Oil Co. v. Gee*, 182 S.W.3d 72, 79 (Ark. 2004), where the Arkansas court left behind the key limit on its reasoning in *Diamond Lakes*. In *Felton Oil*, the land where plaintiffs lived was polluted by leaking fuel from an underground storage tank on the neighboring property. Some clean-up had been ordered and completed, apparently funded by a state fund for cleaning up leaks from underground storage tanks. A jury awarded

“temporary property damages” of \$180,000, which would have been the cost of cleaning up the groundwater on the plaintiffs’ property. There was evidence that the plaintiffs’ property had an original fair market value of only \$31,500, which the pollution had reduced by \$20,500, to \$11,000. Unlike *Diamond Lakes*, however, there was no requirement that the plaintiffs spend the \$180,000 for actual restoration of the land. The state fund argued that the larger award would amount to a windfall.

The Arkansas Supreme Court affirmed the jury verdict and rejected the “windfall” and economic waste argument. Even though the additional clean-up had not been ordered by the state and might never happen at all, the court noted that the property was the plaintiffs’ residence. 182 S.W.3d at 79-80. The court found that repair damages of nine times the reduction in market value were not “grossly disproportionate,” and emphasized the state’s public policy in favor of remediation. The court acknowledged that the state agency had adopted and implemented a corrective action plan, but affirmed the jury’s verdict based on the assumption that more was necessary, even though the jury verdict would not assure any additional restoration of the property or its groundwater. “We see no real distinction between ADEQ directing remediation, as was the case in *Diamond Lakes*, and a jury’s verdict that additional restoration was needed, as happened in the instant case. In both situations, the conclusion was that the property could be remediated, and under our holding in *Diamond Lakes*, this means the property damage was temporary.” *Id.* at 79.

Felton Oil is not consistent with Indiana law's policy against windfall damages, and it is highly unlikely that Indiana would adopt that approach, especially on the scale sought by plaintiffs here. More consistent with Restatement (Second) § 929 and with Indiana law and its interest in balancing the rights of the plaintiff against preventing windfall damages is the district court's decision in *Johansen v. Combustion Engineering, Inc.*, 834 F. Supp. 404 (S.D. Ga. 1993), in which the court granted summary judgment on the plaintiff landowners' claims for remediation costs exceeding the reduction in the value of their land resulting from pollution.⁸ The evidence showed that the aggregate reduction in the value of plaintiffs' land was less than \$700,000, but plaintiffs sought remediation costs estimated at \$20 million. 834 F. Supp. at 405-06.

In a detailed and thoughtful opinion, the district court predicted that Georgia courts would apply Restatement (Second) § 929. The court rejected the diminution in value as a rigid cap on damages for injury to land, recognizing that there may be special reasons (historical significance or unique personal value, for example) that would justify restoration costs in excess of the reduction in value.

⁸On the issue here, the *Johansen* decision stands as good law. The case has a long subsequent history relating to punitive damages. A trial resulted in a jury verdict of \$47,000 in compensatory damages and \$45 million in punitive damages, which the district court reduced to \$15 million. The district court decision was affirmed in a memorandum decision, 67 F.3d 314 (11th Cir. 1995), but was in turn vacated by the Supreme Court and remanded on other grounds for reconsideration of punitive damages issues in light of *BMW of North America, Inc. v. Gore*, 517 U.S. 559 (1996). *Johansen v. Combustion Engineering, Inc.*, 517 U.S. 1217 (1996). On remand, the district court reduced the punitive damages award to \$4.35 million, and the Eleventh Circuit affirmed in relevant part, 170 F.3d 1320 (11th Cir. 1999).

Id. at 407-08. But there are still limits: “Even upon a showing of personal reasons supporting restoration, the restoration costs still must be reasonable in light of the special considerations presented – that is, given those considerations, they must not be disproportionate to diminution in value.” *Id.* at 409. The *Johansen* court found that the requested remediation costs were disproportionate and not justifiable.

That result is consistent with *Heninger v. Dunn*, 101 Cal. App. 3d 858, 864-65, 162 Cal. Rptr. 104 (1980), in which the defendants had trespassed by bulldozing a road across the plaintiffs’ land. The new road actually increased the market value of the plaintiffs’ land, from \$179,000 to \$184,000, by providing additional access to it, but plaintiffs did not want to sell and objected to the destruction of 225 trees and other vegetation. Restoration would have been possible at an expense of \$241,000. Plaintiffs sought the lesser of the restoration expense or the full value of the property before the trespass. The trial court had dismissed all damages claims.

The appellate court reversed, adopting the flexible remedial standards of Restatement (Second) § 929. The court noted that restoration costs could sometimes exceed the market value of the property, but emphasized the importance of reasonableness. 162 Cal. Rptr. at 106-09. “The overall principles by which the courts are to be guided are ‘flexibility of approach and full compensation to the owner, within the overall limitation of reasonableness.’” *Id.*

at 108. The appellate court found that full restoration for \$241,000 would be “manifestly unreasonable” where the entire property had been worth only \$179,000 before the trespass. *Id.* at 109. But the court recognized the plaintiffs’ personal valuation of the natural state of the land and the aesthetic value of the trees. The appellate court remanded for a determination of damages based on the aesthetic and timber value of the trees that had been destroyed, as well as such restoration as would be reasonable under the circumstances. *Id.* at 109.

When confronting an issue of state law, this court’s role is to predict how the Indiana Supreme Court would decide it, using intermediate appellate decisions as important and valuable indications of state law. *E.g., State Farm Mut. Auto. Ins. Co. v. Pate*, 275 F.3d 666, 669 (7th Cir. 2001). *Terra-Products*, Restatement (Second) § 929, and the other cases just discussed indicate that Indiana would probably not apply a rigid standard for damages if these plaintiffs can prove their tort claims against GM. The Indiana Supreme Court would instead probably apply the flexible and reasonable standards set forth in *Terra-Products* and Section 929, keeping in mind Indiana’s well-established policy against windfall damages and economic waste. It is highly unlikely that the Indiana Supreme Court would adopt the standard urged by plaintiffs here, which would allow them to recover the full cost of restoration of injured land where (a) that cost is roughly twenty times the prior market value of the entire property, (b) there is no evidence that levels of contamination to be left after the government-ordered clean-up pose any risk to human health or otherwise limit the use of the property, and (c) there would be

no requirement that the enormous costs of restoration would actually be used to restore the land. Plaintiffs have not offered any evidence of any intermediate value of damages, such as a less extensive clean-up. Accordingly, apart from the well remediation discussed above, GM is entitled to summary judgment on any claim by plaintiffs for the cost of restoring their property to the condition it was in prior to contamination, beyond the conditions to be achieved by the government-ordered clean-up that GM has undertaken, and in excess of the market value of the property in the absence of any contamination.

II. *Medical Monitoring Damages*

Plaintiffs do not claim to have any present health effects or conditions as a result of the exposure to GM PCBs, but argue that their exposure to PCBs from GM's Bedford plant warrant lifetime medical monitoring to allow proper identification and treatment for any health effects that could be caused by such exposure. As part of the relief sought in this case, however, plaintiffs seek the "reasonable and necessary costs" of lifetime medical monitoring of their health due to PCB exposure. The court earlier denied GM's motion to preclude relief for medical monitoring damages in this case, applying what was in substance a standard applicable to a motion to dismiss for failure to state a claim upon which relief can be granted. 2005 WL 2218371 (S.D. Ind. Sept. 12, 2005).

In determining whether Indiana law might permit recovery of medical monitoring damages in tort, this court relied on *Gray v. Westinghouse Electric*

Corp., 624 N.E.2d 49 (Ind. App. 1993), which reversed a trial court's dismissal of a plaintiff's claims for medical monitoring. The *Gray* court held that "reasonably justified" fear for safety or health could support medical monitoring damages as part of the relief on a nuisance claim based on pollution. *Id.* at 54. This court noted that, assuming plaintiffs could demonstrate that the concerns about their future health were reasonably justified, as was alleged in the complaint, the "question then would become whether they could prove that the expenses of medical monitoring are reasonably necessary" and whether any tortious act by defendant was the proximate cause of such an expense. 2005 WL 2218371, at *6.

In an effort to support their claims for medical monitoring damages, plaintiffs have produced reports from toxicologist Daniel T. Teitelbaum, M.D., and environmental health professor David O. Carpenter, M.D., regarding the need for and cost of a medical monitoring program for the plaintiffs in this case. Plaintiffs intend to call both Dr. Teitelbaum and Dr. Carpenter to give testimony regarding the need for a medical monitoring program based on the general causation evidence regarding plaintiffs' exposure to PCBs. Plaintiffs intend to call Dr. Carpenter to testify on the components and expected cost of an appropriate medical monitoring program.

GM argues that the court should exclude any such testimony by Dr. Teitelbaum and Dr. Carpenter because their opinions do not satisfy the reliability and relevance requirements of Rule 702 of the Federal Rules of Evidence, and as

articulated by *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), the standards for which have been articulated above. Because the court finds that Dr. Carpenter's opinion does not meet standards for admission, plaintiffs' medical monitoring claim cannot survive. The court does not reach the question of the admissibility of Dr. Teitelbaum's opinion.

Medical monitoring claims typically permit a plaintiff to recover for the cost of testing and diagnosis of illnesses that have yet to develop, where the risk of disease is greater as a result of a defendant's tortious action. *In re Paoli Railroad Yard PCB Litigation*, 113 F.3d 444, 461-62 (3d Cir. 1997); *In re Meridia Products Liability Litigation*, 328 F. Supp. 2d 791, 825 (N.D. Ohio 2004), *aff'd*, *Meridia Products Liability Litigation v. Abbott Laboratories*, 447 F.3d 861 (6th Cir. 2006). The Third Circuit has established the elements of a claim for medical monitoring by predicting how such a claim would be recognized under Pennsylvania law in the *Paoli Railroad Yard PCB Litigation*:

We . . . predict that the Supreme Court of Pennsylvania would follow the weight of authority and recognize a cause of action for medical monitoring established by proving that:

1. Plaintiff was significantly exposed to a proven hazardous substance through the negligent actions of the defendant.
2. As a proximate result of exposure, plaintiff suffers a significantly increased risk of contracting a serious latent disease.
3. That increased risk makes periodic diagnostic medical examinations reasonably necessary.
4. Monitoring and testing procedures exist which make the early detection and treatment of the disease possible and beneficial.

916 F.2d 829, 852 (3d Cir. 1990); see also *In re Paoli Railroad Yard PCB Litigation*, 35 F.3d 717, 785-87 (3d Cir. 1994); *Meridia*, 328 F. Supp. 2d at 825 (requiring, in place of the third and fourth elements above, that the plaintiff show that a monitoring procedure exists that makes detection possible and that there is “some clinical value in early detection” of the disease).⁹ In *Paoli II*, the Third Circuit explained that encapsulated in its four-part test was the requirement that the plaintiff prove that, by reason of increased exposure, a reasonable physician would prescribe for the plaintiff a monitoring regime different from one that would be prescribed had the exposure never occurred. 35 F.3d at 788, citing *Hansen v. Mountain Fuel Supply Co.*, 858 P.2d 970, 980 (Utah 1993).

The Third Circuit noted that the factors “would, of course, be proven by competent expert testimony.” *Paoli I*, 916 F.2d at 852. The court later explained that “where experts individualize their testimony to a group of individuals with a common characteristic,” such as exposure to X contaminant over Y level, “we do not think there is a need for greater individualization so long as they testify that the risk to each member of the group is significant. We fail to see the purpose in requiring greater individualization. Nor do we think that an expert must quantify the increased risk.” *Paoli II*, 35 F.3d 788.

⁹Some courts have found that a claim for medical monitoring costs has been observed to be its own cause of action. The Indiana Court of Appeals’ opinion in *Gray* (relied upon by this court in predicting that Indiana law would recognize a medical monitoring claim in a proper case) indicated that Indiana courts would construe a medical monitoring “claim” as a measure of damages after establishing the tort of nuisance. See *Allgood v. General Motors Corp.*, 2005 WL 2218371, at *5.

In the Third Circuit's third consideration of the *Paoli* case, the court looked closely at what plaintiffs may need to show to satisfy the first element of the cause of action. In demonstrating significant exposure to PCBs, the court explained, plaintiffs must show that they were exposed to such toxins at levels significantly above the toxins' normal background presence, or in other words, more of the toxins than they would normally encounter in daily life. 113 F.3d at 459, citing *Redland Soccer Club, Inc. v. Dep't of Army*, 55 F.3d 827, 846-47 (3d Cir. 1995). Showing abnormal exposure to the toxin at issue, the *Paoli III* court explained, was an "absolute requisite" to satisfying the significant exposure element of a medical monitoring claim. 113 F.3d at 460.¹⁰ This abnormal showing is necessary, the court reasoned, because such claims are predicated on the plaintiff's greater than normal chance of contracting a toxin-related illness or other health problem. Requiring a plaintiff to show significant exposure beyond that normal for daily life demonstrates that the plaintiff's need for medical monitoring exceeds that of the rest of the world. *Paoli III*, 113 F.3d at 461-62.

Dr. Carpenter is currently the Director of the Institute for Health and Environment and Professor in the Departments of Environmental Health Sciences and Biomedical Sciences at the University of Albany, where he was the founding

¹⁰The only exception to this rule was where a tortfeasor had so contaminated a given area as to distort background levels for those in the area such that the egregiousness of the tort would in effect bar the showing necessary for recovery. Under such circumstances, "background" itself would be elevated as a result of a defendant's actions, and therefore exposure levels within background might still demonstrate significant exposure. 113 F.3d at 461. This exceedingly narrow exception, however, did not apply in *Paoli III*.

Dean of the School of Public Health. He was the Director of the Wadsworth Center for Laboratories and Research of the New York State Department of Health from 1980 through 1985. Carpenter Dec. ¶ 2. He has published several articles and has been invited to give lectures on PCB exposure to humans and animals, though he has not published or lectured on medical monitoring programs specifically. Carpenter Smt. 2-9; Carpenter Dep. I 99-100. Plaintiffs plan to have Dr. Carpenter testify as to the necessity for medical monitoring in this case and as to the components and cost of a proper medical monitoring program. While Dr. Carpenter has extensive experience relating to the study of PCBs and their effects, Dr. Carpenter's opinions are not sufficiently reliable and therefore are inadmissible in this case.

A. *Necessity of Medical Monitoring*

Plaintiffs do not dispute that the elements of a claim for medical monitoring, as established by *Paoli I* and its progeny, require them to show that they have been subjected to significant exposure to a hazardous substance that significantly increases their risk of contracting or developing the adverse health effects for which they seek the cost of medical monitoring. Although Dr. Carpenter reports that plaintiffs have had higher than usual exposure, plaintiffs have not shown that this opinion is reliable or that Dr. Carpenter's opinion, even if accepted, would be sufficient to demonstrate their burden under a medical monitoring theory.

In determining plaintiffs' exposure to the PCBs from GM's Bedford plant, Dr. Carpenter analyzed the blood serum levels of PCBs in plaintiffs' blood. Based on this analysis, Carpenter opines that "the majority of plaintiffs have been exposed to higher than 'usual' levels of PCBs." Carpenter Dec. ¶ 25. Dr. Carpenter arrived at this figure by comparing plaintiffs' blood serum levels to the mean serum levels reported by the Agencies for Toxic Substances and Disease Registry ("ATSDR"). Dr. Carpenter cites the ATSDR as reporting that mean serum levels (for individuals who do not have diets rich in fish from PCB-contaminated waters) range from 0.9 to 1.5 ppb,¹¹ a figure to which he compared plaintiffs' serum levels to determine the level of plaintiffs' exposure. Dr. Carpenter emphasizes that all of the plaintiffs have been exposed to PCBs, but testimony from both Dr. Carpenter and Dr. Teitelbaum indicates that, although PCBs do not exist in nature, virtually every person in the world has been exposed to PCBs. Dr. Carpenter opines that plaintiffs have higher than "usual" levels of exposure, however, because 40 of the 47 tested plaintiffs had levels above 0.9 ppb, 9 of the plaintiffs had levels above 3 ppb and some plaintiffs had levels as high as 4.9 ppb. Carpenter Dec. ¶ 25.

If one accepted Dr. Carpenter's assessment, showing essentially that some plaintiffs show signs of exposure up to three times the normal *range*, such results

¹¹Dr. Carpenter cited the figures as "0.9 – 1.5 ppb (g/L)." Carpenter Dec. ¶ 25. A measure of grams per liter of blood would be a measure of parts per thousand. The court assumes Dr. Carpenter meant to refer to micrograms per liter, which would be parts per billion.

would support plaintiffs' significant exposure argument. Dr. Carpenter's assessment, however, is not reliable. Dr. Carpenter failed to use reliable methodology in determining how to rate such levels as either usual or above background levels. In other words, plaintiffs have not demonstrated that Dr. Carpenter employed reliable methodology in determining that "normal" exposure levels are between 0.9 ppb and 1.5 ppb.

Dr. Carpenter obtained these estimates from the ATSDR's third party publication. ATSDR cited as its source for such information the "Hanrahan study" comparing the serum PCB levels of Great Lakes fish consumers with those who were not regular consumers. The study revealed that of those who were not consumers, the background PCB blood serum levels *ranged* from 0.5 to 9.7 ppb in males and 0.5 to 3.3 ppb in females. See Docket No. 327, Exhibit G. The mean serum levels in this same group were 0.5 for women and 1.5 for men. Dr. Carpenter testified that he had not read the Hanrahan article "carefully," despite acknowledging that the article is the main authority for establishing background ranges for PCBs. He drew from the ATSDR publication the mean values of blood serum levels. He relied on the means but ignored the relevant background range cited by Hanrahan as between 0.5 and 9.7 ppb. See Carpenter Dep. (Docket No. 386) at 88, 138-41 ("I take the ATSDR as my reference, not their original article."). Under this approach, one would expect half the world's population of approximately six billion people (everyone with levels above the median) to be

entitled to a special medical monitoring program, at least if they could identify the sources of their exposure to PCBs.

GM cites several other studies and the opinion of defendant's expert Dr. Krieger that the background range is significantly broader than that used by Dr. Carpenter. While this evidence provides at a minimum fodder for cross-examination or rebuttal, Dr. Carpenter's misapplication of his own source reveals a methodological flaw critical to his opinion of whether plaintiffs' exposure is significant. For example, if Dr. Carpenter had applied the background range found in Hanrahan, the source for his source, his findings would reveal that all of the plaintiffs' blood serum levels are within background range. Dr. Carpenter's failure to consider the Hanrahan article and Dr. Carpenter's use of the reported means (instead of the background ranges observed by the study) into the ranges themselves reveals a methodological flaw that cannot be overlooked by the court. Accordingly, plaintiffs have not come forward with reliable expert evidence of the first element of a medical monitoring damages claim.

B. *Planning and Implementing the Medical Monitoring Program*

Plaintiffs' medical monitoring claim fails for a second reason. Dr. Carpenter is the sole author of the medical monitoring program for which plaintiffs seek costs in this case. Defendant argues that Dr. Carpenter is not qualified to design and implement such a medical monitoring program, therefore rendering his opinion unreliable. Although Dr. Carpenter has admirable experience and

expertise, the court agrees that they do not extend to his testimony on the hypothetical medical monitoring program that plaintiffs propose.

Dr. Carpenter states that the study of the health effects of PCBs is his specialty. He directed a large interdisciplinary research study on PCB contamination from a GM site in New York funded by the Superfund Basic Research Program of the National Institute of Environmental Health Services, one of the National Institutes of Health. The investigation of the study included health studies of nearby residents, animal toxicology studies of the side effects of PCBs, determination of levels of PCBs in humans, animals, soils, sediments, air, and water of the region, as well as investigation of methods of destruction and removal of PCBs from soil and water. Carpenter Dec. ¶ 3. Dr. Carpenter has also engaged in studies of the health effects of PCB exposure and has reviewed thousands of medical records in connection with such studies. *Id.*, ¶ 4. Dr. Carpenter has also served on several national and international advisory committees pertaining to environmental health issues. See *id.*, ¶ 6.

Although Dr. Carpenter's experience studying the health effects of PCBs is extensive, he is not qualified to testify as to the proper components and cost of a proper medical monitoring program in this case. Dr. Carpenter is not and has never been licensed to practice medicine. He is not board certified in any medical field. He is not eligible to diagnose or to prescribe treatments or any diagnostic testing that are part of his proposed program. Carpenter Dep. I at 40-44.

Additionally, there is no evidence presented that Dr. Carpenter has ever designed, endorsed, or implemented a medical monitoring program on his own before, though he has offered advice regarding other medical monitoring programs. Carpenter Dep. I, 92-97. According to Dr. Carpenter, he has testified in at least one other case regarding PCB exposure and health risks in humans. He testified that he offered medical monitoring advice in one PCB related case he referred to as “Tolbert,” but he noted with respect to this case:

And I think that there were several of us that provided input so certainly what I provided was not the definitive medical margin. It listed a variety of options. It was the first time I had really been asked to develop a medical monitoring program and it was part of my learning experience of learning to balance the risks of the monitoring versus the risks of the disease.

Carpenter Dep. I at 93. When asked whether he could remember how many doctors and scientists contributed to the *Tolbert* medical monitoring program, Dr. Carpenter testified: “No I don’t recall, and I’m not even sure that I was ever totally in the loop. The lawyers for the plaintiffs solicited input from a number of us and on that basis developed a medical monitoring program which became part of the bigger settlement.” *Id.* at 93-94. Dr. Carpenter has never testified as to a specific medical monitoring program.

Dr. Carpenter testified that he also contributed to a medical monitoring program relating to perfluorinated sulfinate contamination. He also testified that he was a consultant to a special master’s advisory committee implementing a settlement involving medical monitoring at another site, as well. *Id.* at 98.

Outside of these experiences, Dr. Carpenter has not been significantly involved with the formation of a medical monitoring program:

- Q. Is there any other circumstance besides the Tolbert litigation and the [perfluorinated sulfinate] litigation that you can think of in which you would have participated in some way in developing or prescribing a medical monitoring program?
- A. I've had a couple of phone conversations but nothing beyond those two cases where I've been asked to put something in writing.

Id. at 97.

Dr. Carpenter reported in his December 2005 declaration that he “consulted with practicing physicians on standards of practice and specific medical monitoring procedures” and that he has “not hesitated to ask advice both on specific tests and the appropriate frequency of and risks of these tests.” Carpenter Dec. ¶ 5. The extent to which he consulted with others with either more direct patient experience or experience in crafting medical monitoring programs relating to PCB exposure remains unclear, however. Dr. Carpenter testified in his deposition that he did not specifically share his medical monitoring protocol or recommendations with any of his colleagues for review, Carpenter Dep. I at 109, and that no licensed medical doctor had reviewed the specific medical monitoring program he was proposing. *Id.* at 111.

In designing the medical monitoring program and estimating its cost, Dr. Carpenter testified that he first considered the history, routes of exposure, and

mechanism action of PCBs. He then determined the resulting diseases for which risks would be elevated as a result of PCB exposure. He determined that the literature indicated that exposure to PCBs increased the risk of development a number of diseases and conditions. Carpenter Dec. ¶¶ 14, 15. Dr. Carpenter then determined which diagnostic tests would be appropriate for the diseases for which early diagnosis would be beneficial. Finally, Carpenter balanced the risks associated with the diagnostic procedures with their potential benefit in providing early diagnosis, and determined whether such procedures should be eliminated or reduced. *Id.* ¶¶ 16, 17. After Carpenter developed the program, he contacted medical professionals in New York and Indiana to provide cost estimates. *Id.* ¶ 18.

Although Dr. Carpenter's academic and research experience is extensive, there is no indication that he has sufficient experience or qualifications to design and implement a medical monitoring program. He could not legally prescribe the diagnostic tests he advocates for the plaintiffs. Though plaintiffs emphasize that *Daubert* permits this court, to some extent, to recognize Dr. Carpenter's experience in his field in determining the reliability of his opinions, the record indicates that he has limited experience contributing to medical monitoring programs and no experience developing and implementing one on his own, which is what he seeks to do in this case. (Keep in mind, however, that plaintiffs do not necessarily seek to implement the plan; they simply want GM to pay them the estimated costs of such a plan.) Plaintiffs have not shown that Dr. Carpenter's opinion is reliable because his ability to determine reliably the diagnostic tests

necessary and to balance the risks of such tests with the benefits of early detection has not been established before the court.

The court's doubts about Dr. Carpenter's methodology in developing the program are heightened by his lack of experience in this task. Defendant has offered a report by Dr. Jessica Hertzstein regarding generally accepted medical monitoring practices.¹² Dr. Hertzstein's report states that a number of authoritative sources have studied and developed guidelines for medical screening and disease prevention, including the U.S. Preventive Services Task Force (USPSTF), the Canadian Task Force on the Periodic Health Examination, the American Cancer Society, the American College of Physicians, and the American Medical Association. Hertzstein Rep. II at 6.

Dr. Carpenter testified, however, that in developing the program he was not aware of any agency that might recommend periodic screening and did not refer to any guidelines or protocols of either the American Medical Association, the Centers for Disease Control, or USPSTF. Although he testified that he is aware of the guidelines provided by the American Cancer Society and the American Heart Association, Dr. Carpenter testified that he did not refer specifically to any guidelines or recommendations of any health association or organization in

¹²Dr. Hertzstein is a board certified physician and President of Environmental Health Resources, P.C., a consulting company that develops environmental and medical programs. Dr. Hertzstein served on the ATSDR expert panel that developed the final criteria for determining the appropriateness of a medical monitoring program under CERCLA. Hertzstein Rep. II at 2.

developing the medical monitoring program in this case. Carpenter Dep. I at 105, 108, 242, 243. Plaintiffs' argument that any attack on Dr. Carpenter's refusal to refer to such standards goes to the weight of the evidence is misplaced. In light of the other limitations on Dr. Carpenter's expertise for this project, the extent to which he even considered such sources (which plaintiffs do not dispute establish guidelines and protocols that are relevant and well respected in the field) is highly relevant to whether Dr. Carpenter used a method in developing the medical monitoring program that comports with generally accepted practices. This concern, combined with Dr. Carpenter's lack of experience both in developing and implementing medical monitoring programs, and in providing clinical treatment to patients, renders his opinion not sufficiently reliable to satisfy the demands of *Daubert* and Rule 702 for the purposes of this case.

Without Dr. Carpenter's inadmissible testimony, plaintiffs have no admissible evidence that could allow them to satisfy the elements for a medical monitoring program pursuant to *Paoli* and its progeny. Regardless of the precise formulation that Indiana might adopt for the elements of a medical monitoring claim, plaintiffs bear the burden of proving that certain beneficial diagnostic testing is reasonably necessary as a result of exposure to toxins caused by the defendant. Because plaintiffs have failed to demonstrate the reasonable necessity of the medical monitoring program for which they seek costs as a damage relating to their nuisance claims, GM is entitled to summary judgment on plaintiffs' request for medical monitoring damages.

III. *Unjust Enrichment*

Count IV of plaintiffs' complaint asserts a claim against GM for unjust enrichment. Plaintiffs acknowledge that they have not undertaken the clean-up effort they claim to seek, have not expended money or provided services toward the effort, and have not otherwise provided anything for GM's benefit. Nor do they claim to have incurred costs for any medical or soil testing performed. Pl. Br. at 2. Plaintiffs' theory on this claim is that GM, by disposing of PCBs onto plaintiffs' land, was spared the expense of properly disposing of such substances, and that equity demands that GM pay plaintiffs' projected remediation costs. This argument fails for several reasons.

First, plaintiffs have failed even to allege facts necessary to demonstrate the elements of an unjust enrichment claim in Indiana. Unjust enrichment, also referred to as *quantum meruit* or quasi-contract, requires a party who has been unjustly enriched at another's expense to make restitution to the aggrieved party. *Bayh v. Sonnenburg*, 573 N.E.2d 398, 408 (Ind. 1991), citing Restatement of Restitution § 1 (1937). "To prevail on a claim of unjust enrichment, a plaintiff must establish that a measurable benefit has been conferred on the defendant under such circumstances that the defendant's retention of the benefit without payment would be unjust." The court in *Sonnenburg* went on to explain that one who labors without expectation of payment cannot recover in a quasi-contract action. *Id.* at 408. In *Sonnenburg*, the Indiana Supreme Court held that the plaintiffs' claims for compensation on an unjust enrichment theory relating to

work performed during periods of commitment in state mental hospitals could not stand. Because the plaintiffs could show no expectation of payment in their performance, the court reasoned, no unjust enrichment could be established. *Id.*

To recover under a quasi-contract theory, the plaintiff must generally show that he rendered a benefit to the defendant at the defendant's express or implied request and that the benefit was not a gift, meaning that the plaintiff contemplated some return of consideration from the defendant or that the defendant could not have believed that the plaintiff did not expect some payment. *Biggerstaff v. Vanderburgh Humane Society, Inc.*, 453 N.E.2d 363, 364 (Ind. App. 1983), cited by *Sonnenburg*, 573 N.E.2d at 409; see also *Knowles & Associates LLC v. Cook*, 784 N.E.2d 1063, 1066 (Ind. App. 2003) (generally, a plaintiff must show that the benefit at issue was rendered to the defendant at his express or implied request). Plaintiffs argue that they need not demonstrate that the benefit was conferred on the defendant at its express or implied request, but that they need only show that the defendant received a benefit unjustly or wrongfully. See Pl. Br. at 6-7.

In support of this argument, plaintiffs point to three Indiana cases. In *Paul v. I.S.I. Services, Inc.*, 726 N.E.2d 318, 322 (Ind. App. 2000), the Indiana Court of Appeals upheld a trial court's grant of a preliminary injunction on an unjust enrichment claim relating to the defendant's benefit from funds her husband had embezzled from the plaintiff. The trial court did not err, the court

explained, by finding a reasonable likelihood of success where the evidence showed that money allegedly embezzled from plaintiff was placed into an account in which the defendant had an interest, and which had been used to confer a benefit on the defendant. *Id.*

Following *Paul*, in *Dominiack Mechanical, Inc. v. Dunbar*, 757 N.E.2d 186, 190-91 (Ind. App. 2001), the majority reversed a trial court dismissal of a plaintiff's unjust enrichment claim against the guests of an expensive party hosted by an employee of the plaintiff that was financed by funds the employee had embezzled from the plaintiff. Even where the plaintiff had not alleged that the defendants were complicit in the employee's embezzlement, as in *Paul*, the court found the plaintiff had nonetheless shown a legally sufficient claim for unjust enrichment. The court was careful to note, however, that it had not been determined conclusively whether the defendants knew or did not know the source of the party's funding was illegal. *Id.* at 191 n.5.

Additionally, in *King v. Terry*, 805 N.E.2d 397 (Ind. App. 2004), the Indiana Court of Appeals upheld the grant of defendant's motion to dismiss plaintiff's claim for unjust enrichment. The plaintiff in *Terry* had failed to record a deed on a home he had purchased, and a mistake by the local treasurer resulted in the purchase of the property by the defendant at a tax sale. Plaintiff sued defendant seeking rent and profit from the property that he alleged were "wrongfully" or "unjustly" received by the defendant. Before finding that the claim was time-

barred, the court explained that plaintiff's assertions established an action in *quantum meruit* that would otherwise have been sufficient to survive a motion to dismiss. *Id.* at 400.

The court doubts that these cases, which must be considered in the context of their procedural postures, do away with the requirement that a defendant expressly or impliedly request the plaintiff's services. *Paul*, which addressed the claim on a motion for preliminary injunction, must be considered in context. The court considered not only the likelihood of the merits of the unjust enrichment claim but also the restoration of the status quo and the potential risk of harm to the parties in a case where plaintiff sought to prevent the defendant from disposing of allegedly embezzled funds. In *Terry*, the court considered only whether the claim stated a cause of action and found that it did where the plaintiff asserted that the defendant had acted wrongfully and unjustly. *Dominiak* also addressed a claim on a motion to dismiss. The majority was careful to point out that it had not been determined that the defendants did not knowingly accept the benefit of the embezzled funds. These cases do not show that Indiana law has dispensed with the well-established requirement that plaintiff show that the defendant at least impliedly requested the benefit conferred by the plaintiff, especially in light of the line of cases emphasizing the importance of such a showing on an unjust enrichment claim. See, e.g., *Lakes and Rivers Transfer v. Rudolph Robinson Steel Co.*, 691 N.E.2d 1294, 1297 (Ind. App. 1998); *Timothy F. Kelly and Associates v. Illinois Farmers Insurance Co.*, 640 N.E.2d 82 85-86 (Ind.

App. 1994); *Dedelow v. Rudd Equipment Corp.*, 469 N.E.2d 1206, 1209 (Ind. App. 1984); *Milwaukee Guardian Ins. Inc. v. Reichhart*, 479 N.E.2d 1340, 1343 (Ind. App. 1985); *Kody Engineering Co. v. Fox & Fox Insurance Agency, Inc.*, 303 N.E.2d 307, 310-11 (Ind. App. 1973).

Plaintiffs have not come forward with evidence to support their unjust enrichment claims in opposing GM's motion for summary judgment. Plaintiffs have not shown that GM expressly or impliedly requested the benefit of avoiding proper PCB removal costs. Plaintiffs also have not shown that they offered such a benefit with any expectation of compensation. Just the opposite, plaintiffs assert that they had no knowledge of GM's actions. This evidence fails to demonstrate a claim for unjust enrichment, as in *Sonnenburg*, where the court clearly held that conferring a benefit without expectation of a payment or other consideration falls short of demonstrating such a claim. See 573 N.E.2d at 408. Accordingly, plaintiffs' effort to recycle their tort claims into a claim for unjust enrichment must fail.

Second, plaintiffs have offered no evidence or argument that could support a proper remedy for their unjust enrichment claims. Plaintiffs' argument is that, because GM benefitted from its use of plaintiffs' property to dispose improperly of PCBs, "a proper measure of damages for GM's unjust enrichment includes the disposal cost of the contaminated soil remaining on Plaintiffs' land (which may be determined by multiplying the disposal cost per unit by the number of

contaminated units on each parcel).” Pl. Br. at 10. Plaintiffs assert that the Dovantzis report, which estimates the cost of plaintiffs’ remediation, supplies such a figure.

The proper measure of damages for unjust enrichment is restitution. *Sonnenburg*, 573 N.E.2d at 408 (one who is unjustly enriched must make restitution); *Knowles*, 784 N.E.2d at 1066 (plaintiff may prevail in quasi-contract action where defendant was given a benefit at his implied request “under circumstances in which a court of equity invokes the remedy of restitution in order to avoid unjust enrichment”); *Kovatch Mobile Equipment Corp. v. Warren Township*, 831 F. Supp. 665, 671 (S.D. Ind. 1993). Restitution requires the disgorgement of the benefit received by the defendant. *Confold Pacific, Inc. v. Polaris Industries, Inc.*, 433 F.3d 952, 957-58 (7th Cir. 2006) (unjust enrichment and its synonym, restitution, includes either the return of a defendant’s benefit received from commission of a tort or payment of the value of a benefit received by defendant); *Rollings v. Smith*, 716 N.E.2d 502, 507 (Ind. App. 1999) (restitution, an award made to remedy defendant’s unjust enrichment, “measures the remedy by the defendant’s gain and seeks to force disgorgement of the gain”). Plaintiffs have not shown any evidence of the benefit to GM, *i.e.*, the cost saved in disposal of the PCBs over the years of contamination. Plaintiffs’ assertion that the remediation costs would be an appropriate measure of damages is unsupported by any Indiana law.

Finally, plaintiffs' unjust enrichment claim cannot stand because there exists a remedy at law for the alleged harm on which this claim is based. It is well settled that a plaintiff may not pursue an action in *quantum meruit*, a remnant of chancery procedure, where the plaintiff has an adequate remedy at law. *King*, 805 N.E.2d at 400; *Town of New Ross v. Feretti*, 815 N.E.2d 162, 168 (Ind. App. 2004); *Mayflower Transit, Inc. v. Davenport*, 714 N.E.2d 794, 800 (Ind. App. 1999) ("Where there is an adequate remedy at law, equity will not assume jurisdiction."); *Tri-Professional Realty, Inc. v. Hillenburg*, 669 N.E.2d 1064, 1070 (Ind. App. 1996) (same); *Comcount, Inc. v. Coconut Code, Inc.*, 2002 WL 1349913, * 3-4 (S.D. Ind. 2002) (dismissing promissory estoppel claim where it was "at least in part, a restatement of [plaintiff's] breach of contract claim"). Here, plaintiffs seek the same remedy in equity that they seek at law: compensation for the remediation they claim is due. Because of the overlapping nature of these claims, their claim for unjust enrichment cannot survive.

IV. *Post-Remediation Stigma*

Plaintiffs have also alleged a claim against General Motors for what plaintiffs describe as the reduction in the fair market value of their land due to stigma of the PCB contamination even after completion of the entire remediation process. In support of this claim, plaintiffs offer testimony from Nick Tillema, a licensed real estate appraiser, as to the expected percentage of reduction in the fair market value of their property after the completion of GM's remediation of the land. Additionally, with respect to the "certain plaintiffs" whose land will not be

remediated by GM as part of the present remediation plan, Mr. Tillema intends to testify as to the percentage of reduction in the value of their land due to stigma after the remediation on neighboring land has been completed. GM has filed a motion to exclude Mr. Tillema's testimony, arguing that his opinion fails to meet the standards of reliability required by Rule 702 of the Federal Rules of Evidence. GM has also filed a motion for summary judgment on plaintiffs' stigma claims.

At this stage in the remediation process, it would be improper for the court to allow this claim to go forward. At some future time, plaintiffs might be entitled to damages relating to post-remediation stigma, but on this record, such damages would have to be based on speculation before the remediation has been completed.

The Indiana Court of Appeals has recognized a right to recover damages for a loss in the fair market value of a plaintiff's land due to post-remediation stigma. In *Terra-Products, Inc. v. Kraft General Foods, Inc.*, 653 N.E.2d 89 (Ind. App. 1995), another PCB contamination case, the Indiana Court of Appeals recognized that a plaintiff could recover damages for a loss in the fair market value of its property due to stigma even where defendant had fully remediated the property. This somewhat unusual recovery for both restoration and diminution in value, the court explained, would be warranted where the plaintiff could demonstrate that an imperfect market rendered its property less valuable despite complete restoration. *Id.* at 93, citing *In re Paoli Railroad Yard Litigation*, 35 F.3d 717, 797-

98 (3d Cir. 1994). Applying the principle that damages should be applied flexibly in an effort to compensate plaintiffs fully for their losses, the court reasoned, both measures of damages were appropriate. The court applied the three elements for a stigma damages claim provided by the Third Circuit in *Paoli*:

- (1) defendants have caused some (temporary) physical damage to plaintiffs' property;
- (2) plaintiffs demonstrate that repair of this damage will not restore the value of the property to its prior level; and
- (3) plaintiffs show that there is some ongoing risk to their land.

Terra Products, 653 N.E.2d at 93, citing 35 F.3d at 797-98.¹³

The *Terra Products* court nevertheless affirmed the trial court's grant of summary judgment in favor of the defendant on plaintiff's stigma claims. The plaintiff had not offered evidence sufficient to meet the demands of the prima facie case, even at the summary judgment stage. 653 N.E.2d at 94. Because the plaintiff had sold the property while it was still in the process of being remediated, and because it presented no other reliable evidence on value prior to contamination, the plaintiff in *Terra-Products* could not demonstrate any actual diminution in value. *Id.*

¹³The basic premise of a "stigma" claim is analogous to the principle that a tortfeasor may be liable for both repairs to a damaged chattel and any residual reduction in value resulting from the fact of its damage and repair. See *Allgood v. Meridian Security Insurance Co.*, 836 N.E.2d 243, 245-46 (Ind. 2005) (under common law tort doctrine, a plaintiff whose vehicle has been damaged in an accident may recover from the tortfeasor costs of repair and, if such cost does not make the plaintiff whole, the diminution in value as well), citing Restatement (Second) of Torts § 928 (1977), and *Wiese-GMC, Inc. v. Wells*, 626 N.E.2d 595, 598 (Ind. App. 1993).

Plaintiffs' claims here run into a second obstacle. The damages they claim would be the difference in value between remediated property and otherwise identical property that had never been through the process of pollution and remediation. The idea that the real estate market might value such properties differently is not startling; it is consistent with the approach to damages for injury to chattels. See *Allgood v. Meridian Security Insurance Co.*, 836 N.E.2d 243, 245-46 (Ind. 2005). But a damage award would need to be based on something more than guesswork. At this point, there is no direct evidence about the post-remediation values of plaintiffs' properties because the remediation is not complete. In the absence of such evidence, Mr. Tillema tried to support his opinion with reports from other sites around the country. The problem is that he did not support his opinion with reports on reduction in fair market value in any other areas contaminated by PCB or any other pollutant after remediation had actually occurred. See Hearing Tr. 84-85. Accordingly, assuming it is possible to draw reliable comparisons between markets, which plaintiffs have not yet shown in this context, the basic foundation of comparative data is missing.

Also, Mr. Tillema has sought to estimate the reduction in fair market value after completion of the remediation. Mr. Tillema's own report and the findings of his sources indicate that reduction in fair market value can be greatly influenced by the stage of remediation. See Tillema Rep. II (Docket No. 323-1) at 3-4; see also Thomas Jackson, *The Analysis of Environmental Case Studies*, Appraisal Journal,

Jan. 2002, at 91. Again, the data needed to avoid sheer guesswork simply are not available, or at least have not been presented and considered.

Questions of the reliability and relevance of Mr. Tillema's opinion aside, the circumstances of the case at this stage render the plaintiffs' claims too premature to consider, though claims for post-remediation stigma damages may become ripe at a later stage. Plaintiffs have offered admissible evidence of the pre-contamination value of their properties.¹⁴ On this record, however, it is not possible to provide even a reasonable estimate of any post-remediation stigma, at least at this time. GM's argument in its brief that Mr. Tillema's opinions are necessarily speculative and defendant's comments at oral argument acknowledge that, to the extent these claims might have any merit, they would need to be advanced at a later date. See Def. Br. at 32-34; Hearing Tr. 79-80. This kind of uncertainty was not at issue in *Terra-Products*, where the remediation was already complete. In this case, even today there can be no guarantee as to when GM will complete the current remediation project. Accordingly, proper damages relating to post-remediation stigma may differ substantially based on the date of completion (or expected completion) and the extent of the remediation to be undertaken. While the court does not mean to indicate that a post-remediation stigma claim can be sought only after the last grain of soil has been removed, the

¹⁴Under Indiana law, a property owner may testify as to his opinion of the value of his own property. *In re Coyle*, 671 N.E.2d 938, 945 (Ind. App. 1996); *Jordan v. Talaga*, 532 N.E.2d 1174, 1188 (Ind. App. 1989). Plaintiffs have offered their own estimates of the value of their land before the contamination (or, more accurately, before discovery of contamination).

present circumstances of this case make clear that any estimate of post-remediation value of the plaintiffs' land would be speculative and premature.

The same is true, even if perhaps to a lesser extent, with respect to those plaintiffs whose properties are not currently being remediated by GM as part of the voluntary agreement. These persons, described in the briefs as "certain plaintiffs," face the same uncertainty with respect to the post-remediation value of their properties. The value of the remediated plaintiffs' land may have a substantial effect on the post-remediation fair market value of the "certain plaintiffs" land. Accordingly, because the evidence essential to the elements of a post-remediation stigma claim for damages cannot be determined at this time, the issue also is not ripe for resolution. The court dismisses all plaintiffs' stigma claims for lack of a ripe, justiciable claim, without prejudice to refileing.

V. *Summary Judgment as to "Certain Plaintiffs"*

GM filed a separate motion for summary judgment (Docket No. 307) as to all claims of the "certain plaintiffs," those whose properties lie outside the designated floodplain and will not be remediated as part of the current GM effort.¹⁵ For reasons the court has already addressed, these plaintiffs do not have viable

¹⁵These plaintiffs are adults Darren Allgood, Trace Barlow, Benjamin and Brenda Chambers, James and Heidi Dalton, Robert and Rose Fidler, Marjorie Martin, James and Patricia Moss, Dennis and Rehna Neal, Michael and Susan Taylor, and Lana Walker, and the minors designated in the record as C.A., J.B., F.B., E.B., N.D., and R.S.T.

claims for medical monitoring damages or, at least at this time, for lost property value resulting from any stigma associated with the GM plant and PCB contamination. All of these plaintiffs' properties have been tested for the presence of PCBs. The undisputed facts show that all of these properties have low levels of PCBs in the soil, below the 1.8 ppm clean-up standard adopted by the EPA and IDEM in their agreement with GM. Giving plaintiffs the benefit of conflicts in the evidence, the court assumes for purposes of summary judgment that plaintiffs will be able to show that these plaintiffs' properties contain PCBs at levels above a relevant "background" level, using data reported by Dr. Molholt and Dr. Dovantzis. The court also assumes that a reasonable jury could conclude that PCBs above background levels more likely than not came from GM's Bedford plant.

Plaintiffs contend that regardless of whether the low PCB levels pose a meaningful risk to health or the use of their property, they are entitled to the costs of a clean-up of their property to background levels, so that PCB 126 is present at no more than 4 parts per trillion (4 nanograms/kilogram) in the soil. Plaintiffs estimate this clean-up would cost \$78 million, which is approximately 20 times the total fair market value of all plaintiffs' properties. As explained above in Part I-E, plaintiffs are not entitled to these remediation damages, and GM is entitled to summary judgment on those claims for damages.

Conclusion

For the foregoing reasons, defendant's motion to exclude Dr. Molholt and Dr. Dovantzis and for summary judgment as to plaintiffs' remediation claims (Docket No. 300) is hereby granted with respect to Dr. Molholt's testimony and granted in part and denied in part with respect to Dr. Dovantzis's testimony, and defendant's motion for partial summary judgment on plaintiffs' remediation claims is granted as to all claims except claims for treatment and monitoring of wells. Defendant's motion to exclude expert testimony regarding medical monitoring claims and to strike the claim for medical monitoring damages (Docket No. 311) is hereby granted with respect to expert testimony by Dr. Carpenter and the claim for medical monitoring damages. Defendant's motion for summary judgment as to plaintiffs' unjust enrichment claims (Docket No. 304) is also granted. Defendant's motion to exclude expert testimony of Nick Tillema relating to plaintiffs' stigma damages and for summary judgment as to plaintiffs' stigma claims (Docket No. 310) is denied, but for the reasons stated above, plaintiffs' stigma claims are premature and are dismissed without prejudice. Defendant's motion for summary judgment as to "certain plaintiffs" (Docket No. 307) is granted with respect to claims for remediation, medical monitoring, and stigma damages, but denied to the extent these plaintiffs might seek other types of damages. All remaining motions (including Docket No. 306 and Docket No. 429) are hereby denied as moot. A status conference will be set by separate order.

So ordered.

Date: September 18, 2006



DAVID F. HAMILTON, JUDGE
United States District Court
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