

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MARYLAND

UNITED STATES OF AMERICA

:

:

v.

: Criminal No. DKC 01-0367

CORNELL WINFREI McCLURE

:

**MEMORANDUM OPINION**

Presently pending and ready for resolution is Defendant's motion to exclude evidence of bullet lead analysis. For the reasons that follow, the motion will be granted.

**Background**

The victim in this murder case, Tessa Mae Osborne, was shot multiple times. Two types of bullets were recovered from her body and found at the crime scene: 9 mm and .32 caliber. Two vehicles registered to Mr. McClure's co-defendant were searched and two boxes of ammunition were recovered. Charles Peters, the government's proposed expert, determined that certain groups of bullets removed from Tessa Osborne's body and found at the scene are "analytically indistinguishable" from some of the bullets seized from Rufus Millegan's vehicle. Mr. Peters used Inductively Coupled Plasma-Optical Emission Spectroscopy (ICP-OES) to make the analysis. He concludes that they "likely" come from the same source or melt of lead.<sup>1</sup>

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<sup>1</sup> The government apparently proposes to have Mr. Peters testify merely from his observations that the types and calibers match, without resort to the ICP analysis. Tr. 3/11/2003 at 3.

In an article entitled "*The Basis for Compositional Bullet Lead Comparisons*," Mr. Peters describes the manufacturing process:

Lead used in the bullet-manufacturing process is generally obtained from secondary lead smelters where the raw material is made primarily of recycled automobile batteries. . . . This scrap lead is reprocessed into ingots (also called pigs). Elements such as copper and tin may be present but are controlled within limits determined by the economics of the process and use of the product. For bullet manufacture, there are few physical requirements for the lead. Chiefly, the lead must be processable. Antimony may be added to harden the alloy, but its level will also vary with the requirements of the product and the economics of its use. . . .

Lead is generally delivered to the bullet manufacturers in several forms: ingots which are 65 to 80 pounds; billets which are 100 to 300 pounds (often 125); and sows which are approximately 2,000 pounds (1 ton). If delivered in ingots or sows, the lead is remelted in 7- to 10-ton pots along with lead waste from the manufacturing process that may include rejected bullets (coated or uncoated), excess lead from bullet shaping, or any other scrap lead in the factory. The molten lead is then poured into a billet mold and allowed to cool and solidify. Wire is extruded from the billets and cut into slugs. The slugs are formed into bullets by swaging, then tumbled for smoothness, and loaded along with gunpowder into primed cartridge cases. The cartridges are then loaded into boxes, which are stamped with a packing code (also called lot number).

Peters, Charles A., *The Basis for Compositional Bullet Lead Comparisons*, 4 Forensic Sci. Comm. No. 3 (July 2002), available at <http://www.fbi.gov/hq/lab/fsc/backissu/july2002/peters.htm>

(last visited Nov. 29, 2004) (figures and figure references omitted).

According to Mr. Peters, "sources of lead are fairly homogeneous." (Tr. 30). He also said, however, that the melting is a continuous process, and that more lead is added when the pots get down to a certain quantity. (Tr. 67). The manufacturers do not keep records of the specifications of any particular melt.

Mr. Peters agreed that, due to geographic distribution patterns, it is possible that everyone in Maryland with bullets from a particular manufacturer would have bullets from the same source. (Tr. 64). At the conclusion of his testimony on cross examination, Mr. Peters said that he had no idea how many boxes of Federal bullets with the same composition were in Maryland in any particular time frame. (Tr. 112).

The Government posits that:

The methodical analysis of bullets for distinctive composition grows out of a few simple principles: (1) bullets are manufactured out of large, molten batches of lead, coupled with a variety of other chemicals; (2) the composition of bullets can be examined to see whether bullets derive from the same original batch; and (3) identical compositions between two bullets is powerful proof that the bullets were manufactured from the same batch, and thus likely sold together.

The Government appears to acknowledge the limitations on the basis for the ultimate opinion: "the government's witness

provides a hybrid of expert testimony, originating from a proven scientific method of determining elemental composition of bullets, and concluding with 'common experience' or 'observation' regarding the significance of matching compositions in practical terms." (Paper 68 at 16).

### **Standard of Review**

The Federal Rules of Evidence provide that "[i]f 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 . . . ." Fed.R.Evid. 702. As stated by the Fourth Circuit:

The Supreme Court has made clear that it is the trial court's duty to play a gatekeeping function in deciding whether to admit expert testimony: "[T]he trial judge must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579, 589, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993).

*United States v. Crisp*, 324 F.3d 261, 265 (4<sup>th</sup> Cir. 2003). Thus, the decision involves a two step process:

In so holding, the *Daubert* Court set forth a two-part test which must be met in order for such expert testimony to be properly admitted under the FRE: (1) the expert testimony must consist of "scientific knowledge"--that is, the testimony must be supported by appropriate validation; and (2) the evidence or testimony must "assist the trier of fact to understand the evidence or to determine a

fact in issue." [509 U.S. at 592], 113 S.Ct. at 2795.

*United States v. Dorsey*, 45 F.3d 809, 813 (4<sup>th</sup> Cir. 1995). In the first step, there are a variety of factors to consider:

In *Daubert*, the Court announced five factors that may be used in assessing the relevancy and reliability of expert testimony: (1) whether the particular scientific theory "can be (and has been) tested"; (2) whether the theory "has been subjected to peer review and publication"; (3) the "known or potential rate of error"; (4) the "existence and maintenance of standards controlling the technique's operation"; and (5) whether the technique has achieved "general acceptance" in the relevant scientific or expert community. [509 U.S.] at 593-94, 113 S.Ct. 2786. Rather than providing a definitive or exhaustive list, *Daubert* merely illustrates the types of factors that will "bear on the inquiry." *Id.* As *Daubert* emphasized, the analysis must be "a flexible one." *Id.*; see also *Kumho [Tire Co., Ltd. v. Carmichael]*, 526 U.S. [137] at 141-42, 119 S.Ct. 1167 [(1999)](concluding that testing of reliability should be flexible and that *Daubert's* five factors neither necessarily nor exclusively apply to every expert).

*Crisp*, 324 F.3d at 265-66. At the second step, other considerations come into play:

In determining whether the evidence meets the second prong of the two-part test--that is, whether the evidence will be helpful to the trier of fact--the Supreme Court warned that throughout an admissibility determination, a judge must be mindful of other evidentiary rules, such as FRE 403, which permits the exclusion of relevant evidence "if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury." [509 U.S. at 595], 113 S.Ct. at 2798. Specifically, the Court held:

Expert evidence can be both powerful and quite misleading because of the difficulty of evaluating it. Because of this risk, the judge in weighing possible prejudice against probative force under Rule 403 of the present rules exercises more control over experts than over lay witnesses.

*Id.* (citations omitted).

*Dorsey*, 45 F.3d at 813.

### **Analysis**

Mr. Peters' ultimate opinion has two separate parts: the elemental comparison and the statistical significance of the comparison. The first part, based on ICP-OES analysis, is not in dispute. Instead, as described by Judge Guzman in *United States v. Mikos*, No. 02 CR 137, 2003 WL 22922197, at \*3 (N.D.Ill. Dec. 9, 2003), the second part is deficient:

It appears to us that Peters' opinions are grounded in two separate areas of expertise. The actual analysis of the two lead bullet compositions is a question of chemistry or chemical engineering. As pointed out above, this part of Peters' proposed testimony is not challenged at this time. The second portion of Peters' proposed testimony is essentially a statistical conclusion, i.e., Peters proposes an opinion as to a problem of probability. How probable is it that bullets having compositions so nearly identical as to be deemed "analytically indistinguishable" came from the same "source"? The answer to this question lies in statistical analysis. Given sufficient information a mathematician or statistician can accurately determine the probability of a given event, such as the likelihood that two bullets with the same elemental composition would have been

manufactured from the same source. Herein, however, lies the government's problem. . . .

So, too, in this case. Mr. Peters was unable to supply any reliable data on this aspect of his opinion. He testifies based on assumptions of homogeneity, but admits to no proof; he agrees that there may be more variability than he assumes, but argues that any error in that regard inures to the benefit of the defendant. As found in *Mikos*, there simply is no sufficient scientific basis for the second step in his analysis.

It is true that other trial courts have admitted such evidence and the exercise of discretion was upheld on appeal. The catalogue was repeated recently in *Ragland v. Commonwealth*, - - S.W. 3d ---, Nos. 2002-SC-0388-MR and 2003-SC-0084-TG, 2004 WL 2623926, \*12 (Ky. Nov. 18, 2004):

Other jurisdictions have admitted similar evidence of comparative bullet lead analysis. *E.g.*, *United States v. Davis*, 103 F.3d 660, 673-74 (8<sup>th</sup> Cir. 1996); *Commonwealth v. Dayer*, 411 Mass. 719, 587 N.E.2d 194, 207 (Mass. 1992); *State v. Noel*, 157 N.J. 141, 723 A.2d 602, 605-06 (N.J. 1999); *State v. Krumacher*, 269 Or. 125, 523 P.2d 1009, 1017 (Or. 1974). Lundy testified that the analysis has been subjected to peer review in a number of scientific journals. We conclude that there was substantial evidence to support the trial court's finding that the methodology used to determine the metallurgical composition of lead bullets and Lundy's reasoning that the fact that two or more bullets have an analytically indistinguishable metallurgical composition is consistent with their having come from the same source were both scientifically reliable. Whether Lundy's evidence would assist the trier of fact was a closer call, given that literally millions of

bullets could come from the same source. Nevertheless, because that fact goes more to weight of the evidence than to its relevance, *Noel*, 723 A.2d at 605 ("the production of a large quantity of comparative samples affects the weight, not the admissibility of the evidence"), we conclude that the trial court did not abuse its discretion in determining that the evidence would assist the trier of fact in determining whether Appellant fired the shot that killed DiGiuro.

Despite those rulings, the undersigned concludes that the so-called expert testimony both lacks sufficient foundation and, even if it did not, should be excluded because of the danger that a jury would misuse or misconstrue the opinion by giving it more weight than it deserves. In short, the opinion of Mr. Peters does not add much to the circumstantial evidence that bullets of the same type and caliber were found at the scene and in Millegan's car. That said, the significant time and attention that would be devoted to describing the manufacturing process in order to support the meager finding that the elements match would prompt the jury to make more of the limited opinion than is intended. Accordingly, the proposed testimony of Mr. Peters, beyond the observations relating to caliber and type, will be excluded.

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/s/  
DEBORAH K. CHASANOW  
United States District Judge

November 29, 2004

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF MARYLAND

UNITED STATES OF AMERICA :  
 :  
 v. : Criminal No. DKC 01-0367  
 CORNELL WINFREI McCLURE :

**ORDER**

For the reasons stated in the foregoing Memorandum Opinion, it is this 29<sup>th</sup> day of November, 2004, by the United States District Court for the District of Maryland, ORDERED that:

1. Defendant's motion in limine to exclude proposed expert testimony relating to comparative bullet lead analysis (paper 51) BE, and the same hereby IS, GRANTED; and
2. The clerk will transmit copies of the Memorandum Opinion and this Order to counsel for the parties.

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/s/  
DEBORAH K. CHASANOW  
United States District Judge