

suspicion of DUI. The Court then scheduled the balance of the Defendant's Motion to be heard at a later date. On July 13, 2017, a hearing was convened on the balance of the Motion to Suppress, at which time the Court heard testimony from Cynthia McCarthy (hereinafter "Ms. McCarthy"). During the hearing, the State informed the court that the legal issue presented had been addressed by a ruling of the Superior Court. At the conclusion of the hearing, the Court determined the Defendant's Motion to Suppress would be best addressed by a written opinion after transcript from the Superior Court case mentioned by the State has been obtained. This is the Final Decision and Order of the Court on the balance of Defendant's Motion to Suppress.

FACTS

During the first hearing, convened on March 7, 2017, the Court heard from Trooper Myers. Trooper Myers had been a member of the DSP for over a year and a half¹ and, at the time of the events, had been a part of around 20 DUI investigations. Trooper Myers stated he had DUI training at the DSP Academy, for which he received a certification.²

The Court heard testimony about the events of May 8, 2016. On that date, Trooper Myers was on routine patrol when he received a call from Corporal Collins regarding a possible DUI near the intersection of Delaware Route 2 and Route 7, in front of Crossroads Restaurant. When he arrived at the scene, Trooper Myers saw a vehicle stopped at the roadway with an open driver's side door, a person sitting in the driver's seat, and a large puddle of vomit outside the driver's side door. Trooper Myers identified the Defendant as the person sitting in the driver's seat. Trooper Myers testified Defendant told him that he had just left the Bullseye Saloon where he had taken two shots. Trooper Myers also testified that Defendant had blood-shot, glassy eyes. Trooper Myers

¹ As of the date of the hearing.

² Trooper Myers took an additional 40 hour DUI class before the May 8, 2016 incident.

took the Defendant to the Crossroads parking lot where it would be safer to conduct a Field Sobriety Test. At the parking lot, Trooper Myers administered the following tests: the Nine-Step Walk and Turn Test; the One-Legged Stand Test; the Horizontal Gaze Nystagmus Test; and the Vertical Gaze Nystagmus Test.

After performing the tests, Trooper Myers arrested Defendant on suspicion of DUI. Once inside the police cruiser, Trooper Myers administered a Portable Breathalyzer Test (hereinafter "PBT"). Defendant blew a 0.159% blood alcohol concentration (hereinafter "BAC") on the PBT. After performing the tests, Trooper Myers transported Defendant to Troop 6, where he would administer an Intoxilyzer 5000EN Breathalyzer Test (hereinafter "Intoxilyzer"). Trooper Myers testified that in the Impaired Driving Report (hereinafter "IDR") the block indicating Defendant was wearing dentures was checked, but that the block indicating Defendant removed his dentures was not checked.

During the second hearing, on July 13, 2017, the Court heard from Ms. McCarthy, a forensic chemist employed by the DSP since 2009. Ms. McCarthy testified she oversees the State's breath alcohol program, with her primary duties involving maintaining the State's Intoxilyzer machines and training police officers on the use of the machine. Ms. McCarthy has certified approximately 900 officers while employed by the DSP.

The Court heard testimony on Ms. McCarthy's qualifications and professional training. Ms. McCarthy received a Bachelor of Science in Biology from University of Pittsburgh. Ms. McCarthy's career history includes several positions as laboratory technologist, technician, and manager, as well as teaching positions in Delaware schools. Ms. McCarthy is a member of the International Association for Chemical Testing (hereinafter the "IACT"), and has attended numerous courses on continuing education. These courses include, *inter alia*, the Robert F.

Borkenstein Course on Alcohol and Highway Safety: Testing, Research, and Litigation; the CMI Intoxilyzer Operation, Maintenance, and Calibration Course;³ and the Quality Assurance for Forensic Alcohol Testing Programs Workshop, hosted by the IACT.

On March 18, 2010, Ms. McCarthy received a Certificate of Completion and Competency on the Intoxilyzer from CMI, Inc. (hereinafter “CMI”). According to the Certificate, “CMI qualifies [Ms. McCarthy] to perform those covered maintenance procedures [and] instruct others on the operation of the Intoxilyzer [.]” Ms. McCarthy testified she is certified to perform routine maintenance on the Intoxilyzer. Ms. McCarthy’s primary responsibility is in verifying each intoxilyzer machine remains calibrated and then certifying the continued calibration. Ms. McCarthy testified she performs this function approximately once every forty-five days. However, it is Delaware’s policy to send the unit back to CMI to perform many repairs, including calibration.

Ms. McCarthy also provided testimony on the basic principles underlying how the intoxilyzer functions, the effects of residual mouth alcohol on the intoxilyzer, the effects of dentures in retaining mouth alcohol, and related matters. The fundamental principle of breath alcohol detection involves the application of Henry’s Law, which Ms. McCarthy described as a fundamental law providing a constant and known amount of gas dissipation within a closed system at a known temperature. The intoxilyzer detects gas particles contained within the subject’s alveolar breath and applies a mathematical formula to calculate the corresponding BAC of the subject. According to Ms. McCarthy, this calculation is conservative, and it invariably reports the BAC as equal to or lower, and never higher, than the subject’s actual BAC.

Residual mouth alcohol, as described by Ms. McCarthy, is alcohol retained – but not absorbed – within the mouth of the subject. The presence of mouth alcohol increases the amount

³ CMI Inc. is the manufacturer of the intoxilyzer machines used in Delaware.

of alcohol detected by the intoxilyzer, potentially leading to a false positive or an erroneous reported BAC. The Intoxilyzer includes a slope detection device, which is capable of detecting mouth alcohol. When mouth alcohol is detected, the intoxilyzer reports the sample as invalid; the printout of the result contains “XXX” in place of a numerical BAC value. Ms. McCarthy testified the slope detector is not entirely reliable at detecting residual mouth alcohol. The requisite twenty-minute observation period⁴ is intended to accommodate for this deficiency, as Ms. McCarthy testified mouth alcohol dissipates within nine to eleven minutes.

Ms. McCarthy discussed an article titled “The Effect of Dentures and Denture Adhesives on Mouth Alcohol Retention” (hereinafter the “Article”).⁵ The Article was originally published in the July, 1992 volume of the Journal of Forensic Sciences, a peer-reviewed journal accepted within the scientific community of forensic chemists. The study discussed in the Article utilized twenty-four⁶ participants described as “alcohol-free” and “denture-wearing,” with three tests performed on each participant across a span of approximately eight months. At each test, the participant would swish thirty milliliters of 80-proof brandy in his or her mouth for two minutes, without swallowing the brandy, and would then spit the brandy out. The participant would then be tested utilizing an intoxilyzer machine to determine how long it took the reading to return to negative for the presence of alcohol. The test was performed under three conditions: without dentures; with dentures but without denture adhesive; and with dentures and denture adhesive.

⁴ Ms. McCarthy testified CMI only requires a fifteen-minute observation period, while Delaware requires twenty minutes. In the event the intoxilyzer detects mouth alcohol, officers are trained to wait an additional twenty minutes or to obtain a sample of the subject’s blood.

⁵ The Article was authored by Patrick M. Harding, B.S.; Mary C. McMurray, B.S.; Ronald H. Laessig, Ph.D.; Donald O. Simley II, D.D.S.; Paul J. Correll, D.D.S.; and John K. Tsunehiro, D.D.S. The Article was also provisionally admitted, over the Defendant’s objection, pending the Court’s ruling as to whether Ms. McCarthy is properly an expert.

⁶ There were originally twenty-five participants, but one participant was disqualified during the course of the study for consuming rather than spitting the brandy.

According to the Article, participants were selected by referral from two of the authors, an article in the State Laboratory of Hygiene employee newsletter, and by word of mouth.⁷ The participants supplied their own dentures,⁸ while the authors provided fifteen different denture adhesives – comprised of powders, creams, liquids, and pads by various manufacturers – and assigned to specific participants. Some adhesives were only assigned to a single participant, and no single adhesive exceeded use by three participants. Prior to each session, the participants answered questions pertaining to their denture usage and were then familiarized with the test parameters. Prior to testing, each participant submitted to an intoxilyzer test to verify there was no prior alcohol content within the participant's system.

Each participant swished thirty milliliters of brandy, at approximately 40% alcohol by volume, for two minutes before expectorating. The participants then provided three breath samples at intervals of four minutes; if a participant continued to provide a positive BAC reading, then breath tests were administered every two minutes. For the test involving dentures but no denture adhesive, participants were instructed to keep the dentures loose in their mouths. For the test involving dentures with denture adhesive, the adhesive was applied per manufacturer instructions and given at least one minute for the adhesive to set prior to dosing.

As per the data referenced in the Article, the mean time for BAC to return to zero was thirteen minutes for no dentures or denture adhesives, fourteen minutes for dentures with no denture adhesives, and fifteen minutes for dentures with denture adhesives. Only two subjects showed any residual mouth alcohol after twenty minutes, with the amount of alcohol being less than 0.01 grams per 210 liters. One of those subjects was retested, as the subject had partial

⁷ Each participant was paid \$30.00 for their participation.

⁸ The participants were required to have a full upper denture, while some participants also had lower dentures and/or retainer devices.

dentures that did not sit properly with the denture adhesive pad used during the study; removing the pad from the lower partial denture eliminated the abnormal time to zero.

The study conditions were selected by the authors to represent a worst-case scenario of residual mouth alcohol. The Article concluded as follows: “The use of dentures, either with or without the concurrent use of denture adhesives, does not significantly affect mouth alcohol retention time and contribute to [BAC] readings beyond twenty minutes.” It went on to state “[d]entures need not be treated as foreign objects in the mouth and removed prior to conducting a [BAC] test[.]” According to Ms. McCarthy, the Article used a small sample size. Ms. McCarthy also stated the Article was the only scientific test, to her knowledge, on the effects of dentures in relation to residual mouth alcohol. Ms. McCarthy did opine the Article contained valid and reliable conclusions as to the lack of need to remove dentures prior to testing for breath alcohol.

Lastly, Ms. McCarthy discussed the standard operating procedures of both the Intoxilyzer and the DSP. Ms. McCarthy reported CMI’s manufacturer recommendations for the Intoxilyzer do not contain any reference to having subjects remove dentures prior to administering a breath test. However, the DSP standard operating procedures for administering a breath test require officers to ask a defendant whether the defendant wears dentures and, if so, to remove the dentures prior to testing. Ms. McCarthy described this requirement as originating from an abundance of caution and as an added safety measure for the reliability of the test, rather than due to some scientific basis suggesting a need to remove dentures prior to testing. However, Ms. McCarthy testified that the DSP had not performed or commissioned any research or studies that would justify removing the requirement from its standard operating procedures.

PARTIES' CONTENTIONS

The Defendant argues the intoxilyzer test was administered in violation of the DSP requirement of having a defendant remove dentures prior to administration of a breath test.⁹ Furthermore, the Defendant argues the presence of dentures renders the intoxilyzer results scientifically unreliable. Therefore, the Defendant seeks suppression of the intoxilyzer results. Furthermore, during the hearing, the Defendant objected to the Court accepting Ms. McCarthy as an expert on the subject of residual mouth alcohol and related matters. The Defendant argued Ms. McCarthy lacked adequate education, training, and experience in this specific field and, therefore, lacked the requisite expertise to testify as an expert.

The State's argument is threefold. First, the DSP standard operating procedure of having a defendant remove his or her dentures prior to a breath test is an additional step that is not required to establish the validity of the test results. Second, the existing relevant case law focuses on complying with manufacturer requirements – requirements that do not include removal of dentures. Third, the study was scientifically valid and reliable, thereby negating any concern regarding the reliability of the intoxilyzer results. Concerning Ms. McCarthy's qualifications as an expert, the State pointed to Ms. McCarthy's extensive experience with breath alcohol testing, education, and training, as well as her familiarity with the subject matter.

DISCUSSION

The subject matter of the instant Motion to Suppress is the admissibility of the intoxilyzer results when the Officer failed to ask the Defendant to remove his dentures before the administration of the test. The Court will first consider whether Ms. McCarthy may testify as an

⁹ The Court has accepted the Defendant was wearing dentures at the time of his arrest.

expert, followed by a discussion of the merits of the Defendant's arguments in favor of suppression.

I. Requirements for Testifying as an Expert

Delaware Uniform Rule of Evidence 702 controls the admissibility of expert testimony, while *Daubert* and its progeny provide guidance on whether a purported expert is suitable to testify as such. "When considering the admissibility of expert testimony, the Court is to act as a 'gatekeeper' to determine whether the 'expert's opinion [is] based upon proper factual foundation and sound methodology.'"¹⁰ "The Court further has 'broad latitude' in making such rulings."¹¹

As stated by our Supreme Court, this Court

must determine whether: (1) the witness is qualified as an expert by knowledge, skill experience, training or education; (2) the evidence is relevant and reliable; (3) the expert's opinion is based upon information reasonably relied upon by experts in the particular field; (4) the expert testimony will assist the trier of fact to understand the evidence or to determine a fact in issue; and (5) the expert testimony will not create unfair prejudice or confuse or mislead the jury.¹²

Rule 702 provides, in relevant part, "a witness qualified as an expert . . . may testify . . . 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 Superior Court has provided a succinct summary of the appropriate considerations under Rule 702:

Addressing the "proper factual foundation" part of the analysis, . . . an expert's opinion must be based on "facts" of the case rather than "suppositions." The "sound methodology" aspect of the test focuses upon the techniques used by the expert in formulating his opinion. The reliability of the opinion is determined by inquiring into such factors as: "(1) whether the technique or scientific knowledge has been tested or can be tested; (2) whether the theory or technique has been subject to peer review and publication; (3) the known or potential rate of error and the control

¹⁰ *Hynson v. Dover Downs, Inc.*, 2015 WL 5168353, at *3 (Del. Super. Sept. 2, 2015) (internal citations omitted).

¹¹ *Russum v. IPM Development Partnership LLC*, 2015 WL 2438599, at *2 (Del. Super. May 21, 2015) (internal citations omitted).

¹² *Sheehan v. Oblates of St. Francis de Sales*, 15 A.3d 1247, 1253-54 (Del. 2011) (internal citations omitted).

standards for the technique's operation; and (4) whether the technique has gained general acceptance.” Importantly, the expert's method must be based in *science* and not “subjective belief or speculation.” Courts are to review expert opinions to ensure they are “derived from supportable facts.”¹³

Concerning the precise qualifications of an expert, Delaware courts have recognized that, while “at times an expert may be qualified by criteria outside of his [or her] formal training or designated specialty, [the Court] must scrutinize an expert’s qualifications with ‘due regard for the specialization of modern science.’ ”¹⁴ Individuals have been rejected as experts when their education, training, and experience does not align with the subject matter of the anticipated testimony.¹⁵ The United States Supreme Court has emphasized the trial judge’s gatekeeping function as requiring a judge to “make certain that an expert, whether basing testimony upon professional studies or experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.”¹⁶

The Court recognizes while Ms. McCarthy lacks formal degrees in chemistry, her expertise comes from professional studies and personal experience. The first factor requires the Court to determine whether “the witness is qualified as an expert by knowledge, skill, experience, training *or* education.” Formal education and degrees are not a definitive requirement to testify as an expert. The Court must examine the totality of the purported expert’s qualifications to determine if he or she is qualified by any combination of knowledge, skill, experience, training, or education.

The Court finds Ms. McCarthy has a significant and specialized background in the study of breath alcohol and residual mouth alcohol. This background includes extensive training by CMI, including training in excess of that which the DSP requires for Ms. McCarthy’s job

¹³ *Arroyo v. Regal Builders, LLC*, 2015 WL 6000464, at *2 (Del. Super. Sept. 29, 2015) (internal citations omitted).

¹⁴ *Bowen v. E.I. DuPont de Nemours & Co., Inc.*, 906 A.2d 787, 796 (Del. 2006) (internal citations omitted).

¹⁵ *Spencer v. Wal-Mart Stores East, LP*, 930 A.2d 881, 888-89 (Del. 2007).

¹⁶ *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 152 (1999).

functions. Ms. McCarthy has been a member of IACT for five years and has pursued continuing education on the broader subject of alcohol testing.

Lastly, Ms. McCarthy proved to the Court's satisfaction a degree of competence and comfort with the subject matter matching or exceeding that which the Court would expect an expert to possess. Therefore, the Court accepts Ms. McCarthy as an expert in breath alcohol, residual mouth alcohol, and related matters.

II. Admissibility of the Intoxilyzer Results

Defendant argues the results of the intoxilyzer test should be suppressed because Trooper Myers violated DSP standard operating procedures by failing to ask Defendant to remove his dentures. The State concedes the standard operating procedures in place for utilizing an intoxilyzer machine require the officer to have the subject remove his or her dentures prior to testing and those procedures were violated during the administration of the intoxilyzer test. However, the State argues the standard operating procedure is merely an added, and unnecessary, precaution, and the existing case law only requires the State to prove compliance with manufacturer procedures.

At the close of the July 13 hearing, the State noted the Superior Court had recently decided a motion to suppress in a similar case involving a defendant wearing dentures. The Court obtained¹⁷ and reviewed a transcript of the Superior Court decision in *State v. Hayes*.¹⁸ In *Hayes*, before performing the intoxilyzer test, the arresting officer asked the Defendant whether he had dentures and the Defendant responded in the affirmative. The officer then asked Defendant to take the dentures out, but Defendant stated they were permanent. After being charged with a DUI, the Defendant moved to suppress the results of the intoxilyzer test because the presence of dentures in Defendant's mouth invalidates the test results. The Court denied Defendant's motion. The holding

¹⁷ The transcript was received on September 14, 2017.

¹⁸ CR ID No.: 1609021474.

of the Court was two-fold. First, the Court held that the officer followed procedure. Second, the Court held that the failure to remove dentures may go to the weight of the evidence, but does not go to the admissibility of the intoxilyzer test because studies refute the theory that dentures prolong mouth alcohol retention.¹⁹ After the Court's ruling on the Motion to Suppress, Defendant's counsel informed the Court that Defendant may actually have had nonpermanent dentures. The Court noted the officer followed standard operating procedure because he asked the Defendant to remove his dentures.²⁰

The Delaware Supreme Court has held that "the admissibility of intoxilyzer test results center on the State providing an adequate evidentiary foundation for the test result's admission."²¹ Following the manufacturer's use requirements guarantees reliability and accuracy "that is the foundational cornerstone to the admissibility of the results of a scientific test."²² In *Clawson*, the Supreme Court held that it was an error for the trial court to admit into evidence the results of an intoxilyzer test after it was determined that the intoxilyzer manufacturer's protocol was not complied with by the State Police before administering the test.²³ When a police officer performs a scientific test, "any deviations from protocol threaten the test's validity where the results determine a central issue, *i.e.*, a BAC above the legal limit, and it cannot be based upon unreliable evidence."²⁴

¹⁹ The study that the Court in *Hayes* alludes to is the same study that Ms. McCarthy, who was also an expert witness in *Hayes*, testified to in this instant case.

²⁰ *Hayes*, CR ID No.: 1609021474 (citing *Clawson v. State*, 867 A.2d 187, 192-93 (Del. 2005)).

²¹ *Clawson*, 867 A.2d at 191.

²² *Hunter v. State*, 55 A.3d 360, 365-66 (Del. 2012).

²³ *Clawson*, 867 A.2d at 191-92. In *Clawson*, the Court held that the State failed to lay an adequate evidentiary foundation because it did not show that there was an uninterrupted twenty-minute observation period of the Defendant prior to the testing. *Id.* at 192. The twenty-minute observation period was part of the manufacturer's protocol and of DSP standard operating procedures. *Id.* at 191.

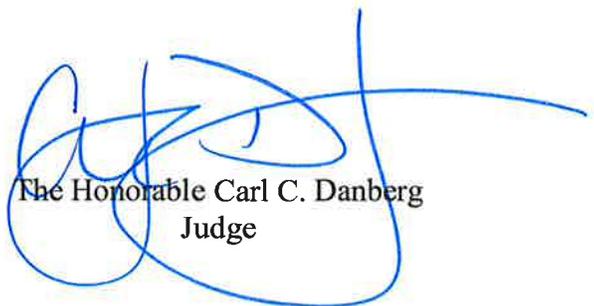
²⁴ *State v. Fountain*, 2016 WL 4542741, at *3 (Del. Super. Aug. 30, 2016).

Here, the IDR reflects that Trooper Myers administer the Intoxilyzer upon Defendant Billings without first instructing Defendant to remove his dentures. This violates DSP standard operating procedures for administering the breathalyzer test. However, Ms. McCarthy testified that this requirement originates from an abundance of caution and is not part of the manufacturer's recommended procedures. Furthermore, Ms. McCarthy testified as to a study that refutes the theory that dentures prolong mouth alcohol retention.

The State argues that because CMI does not require operators of its Intoxilyzer to have subjects remove dentures prior to testing, it is not required for an officer to do so. The Court agrees. Delaware courts only require full compliance with a manufacturer's recommendations to ensure the reliability of the intoxilyzer test.²⁵ There is no case law that indicates this requirement extends to DSP standard operating procedures. Thus, Trooper Myers's failure to ask Defendant to remove the dentures does not warrant suppression of the Intoxilyzer test. As noted in *Hayes*, the failure to remove the dentures will go to weight.

CONCLUSION

For the foregoing reasons, **IT IS HEREBY ORDERED** this 19th day of January 2018, that Defendant's Motion to Suppress is **DENIED**. The case will be set for trial.



The Honorable Carl C. Danberg
Judge

cc: Diane Healy, Judicial Case Management Supervisor

²⁵ See *Hunter*, 55 A.3d at 366; *Clawson*, 867 A.2d at 192.