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CERTIFIED FOR PUBLICATION

COURT OF APPEAL, FOURTH APPELLATE DISTRICT

DIVISION ONE

STATE OF CALIFORNIA

THE PEOPLE,

Plaintiff and Respondent,

v.

TERRY VANGELDER,

Defendant and Appellant.

D059012

(Super. Ct. No. CA221258)

APPEAL from a judgment of the San Diego superior court appellate division, William S. Dato, Lorna Alksne, and George W. Clarke, Judges. Reversed with directions.

Charles M. Sevilla, for Defendant and Appellant.

Jan I. Goldsmith, City Attorney, Tricia Pummill, Assistant City Attorney, and Jonathan I. Lapin, Deputy City Attorney, for Plaintiff and Respondent.

Defendant and appellant Terry Vangelder appeals a judgment after jury trial, finding him guilty of misdemeanor driving while impaired in violation of Vehicle Code

section¹ 23152, subdivision (b), ("per se" driving under the influence (DUI), driving with a blood-alcohol level of .08 or more), and a speeding infraction (§ 22348, subd. (b), over 100 miles per hour). The jury was unable to reach a verdict on an additional count charged under section 23152, subdivision (a), "generic DUI," and the trial court set that remaining DUI count for retrial, which was stayed pending his appeal to the appellate division of the superior court. The appellate division affirmed his convictions and denied his request for rehearing and certification for transfer. Defendant sought relief in this court, and we granted his petition to transfer the appeal and received supplemental briefing.

Defendant's appeal from the conviction is based on the trial court's ruling disallowing any expert testimony from defendant that would have presented a physiologist's scientific criticisms of the reliability of the data produced by breath test machines, which are based on the assumption that such devices only measure alveolar (deep lung breath) air. Defendant's offer of proof from his expert would have provided testimony that this assumption is not always justified, and that a series of physiological factors (e.g., individual breathing patterns, body temperature, blood hematocrit, and breath temperature) may affect the transmission of alcohol in gas form, from the bloodstream to the lower and upper portions of the lungs, to the trachea and mouth and back again, thereby making such breath measurements unreliable, and undermining, in

¹ All further statutory references are to the Vehicle Code unless noted.

turn, the application of the standardized partition ratio calculation for converting breath levels to blood-alcohol levels. (§ 23610, subd. (b).)²

In the challenged ruling, the trial court specified that no questions could be asked of this expert "which will solicit any testimony by him to be a fact that the breath sample that was measured here was not representative other than if it had contained mouth alcohol." The trial court found that the proposed testimony lacked foundation and was speculative, and did not materially differ from partition ratio evidence that had been determined to be inadmissible in per se DUI cases, pursuant to *People v. Bransford* (1994) 8 Cal.4th 885 (*Bransford*) (where charge is defined as driving with a blood-alcohol level of 0.08 percent or more). After this trial took place, the Supreme Court clarified that evidence about partition rate variability is admissible in impaired driving prosecutions on generic DUI charges. (*People v. McNeal* (2009) 46 Cal.4th 1183, 1188 (*McNeal*).

In his petition, defendant asserts that the trial court failed to recognize that his expert was not seeking to testify about partition ratio issues, but rather was making a different challenge to the reliability of breath test devices, and that this should be allowed for both generic and per se DUI counts. We granted the petition to address this issue,

² Section 23610 specifies the evidentiary effect of chemical tests in criminal proceedings or actions, by establishing certain presumptions, to be further described (fn. 5, *post*). In its subdivision (b), the partition ratio is standardized as follows: "Percent, by weight, of alcohol in the person's blood shall be based upon grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath." (See 2 Witkin Cal. Evidence (4th ed. 2000) Demonstrative, Experimental, and Scientific Evidence, § 54, pp. 65-67.)

recurring in many prosecutions, of whether it is error for the trial court to exclude expert testimony that would have demonstrated some unreliability in breath testing devices, based upon the asserted problems in obtaining pure data about blood alcohol from the intake of air utilized by those devices. Even though similar variable physiological factors admittedly affect the partition ratio, defendant's expert sought to testify that they also separately affect the amount of alcohol found in the alveolar air supposedly being tested.

The rules restricting admissibility of partition ratio evidence should now be considered to be well established, after *McNeal, supra*, 46 Cal.4th 1183, and *Bransford, supra*, 8 Cal.4th 885. The expert evidence offered by this defendant appears to be a different kind of scientific challenge to the data obtained by breath test machines, even before the partition ratio is applied to convert such breath test data to blood-alcohol content by weight. The standards for evaluating "the reliability and thus the relevance of scientific evidence" are set out in *People v. Kelly* (1976) 17 Cal.3d 24 and its progeny. In *People v. Williams* (2002) 28 Cal.4th 408, 414, the Supreme Court referred to those standards that are imposed on a party seeking to introduce evidence based on a new scientific technique, as requiring expert evidence to qualify the technique as "scientifically valid. [Citation.] Even for techniques thus established, the proponent must 'demonstrate that correct scientific procedures were used in the particular case.' " (*Ibid.*) The trial court acknowledged in this case that this expert testimony was "cut off at the pass," based on the trial court's evaluation that only partition ratio evidence was being offered.

As we will demonstrate, the trial court did not have a sufficient basis in the evidence to form that conclusion, and it prejudicially erred in excluding the proffered evidence about the quality of the sample taken by one or both of these types of breath testing devices: electrochromatograph/infrared (EC/IR) and/or preliminary alcohol screening (PAS). The evidence would have addressed breath testing devices and their results in a different manner, at a different stage of the process, than would partition ratio evidence. The superior court appellate division's order is reversed, for the issuance of its remittitur with directions to the trial court to vacate the count 2 conviction, while allowing the speeding count conviction to stand, and to allow further proceedings on count 2 and the remaining generic count, in accordance with the principles set forth in this opinion.

FACTUAL AND PROCEDURAL BACKGROUND

A. Arrest and Tests

On December 22, 2009, around 2:30 a.m., Sergeant Richard W. Berg of the California Highway Patrol (CHP) saw defendant driving over 125 miles per hour on Highway 163. Berg followed defendant's pickup truck for about five miles and eventually caught up with him, noticing that defendant slowed down to about 100 miles per hour when he caught up to other traffic, and was not weaving outside his lane. After about another mile and a half, Berg turned on his red lights and defendant rapidly decelerated and pulled over, and as directed, went down to a wider spot on the shoulder.

When defendant rolled down his right side window, he provided his license and registration and told Berg, "I know, I was just screwing around." He also told Berg that he did not know how fast he was going. Berg detected an odor of alcohol coming from the truck and noted his eyes were red and watery. Defendant admitted he had consumed two glasses of wine earlier that evening. Berg called for backup and turned the matter over to two other officers, Gerald Guzman and Jacob Sanchez, who arrived at 2:58 a.m.

Officer Guzman began his DUI evaluation, while Officer Sanchez provided scene security. Guzman gave Vangelder field sobriety tests (FST), including the horizontal gaze nystagmus test, the Romberg FST (close eyes, tilt head back, and estimate the passage of 30 seconds), the one-legged stand-and-count FST, and the "hand pat test" (measuring impairment of fine motor skills). Defendant exhibited little signs of any impairment on these tests, except for an occasional pause or sway. He told Guzman he had about three glasses of white zinfandel at dinner. Guzman thought he smelled like alcohol and his eyes were red and glassy, and he looked like a normal nice man.

At 3:09 a.m., Guzman gave defendant the PAS test, a hand-held breath test. Vangelder tested at a blood-alcohol content (BAC) of .095 and .086 on the PAS tests. Standard testing protocol required that defendant be observed for 15 minutes before the PAS test was administered, but Officer Guzman had waited only 9 or 10 minutes, reasoning that the sergeant had already stopped defendant earlier. (Cal. Code Regs., tit. 17, §§ 1220 et seq., 1220.4, subd. (f).)

Guzman believed defendant was under the influence, arrested him and transported him to county jail. At the jail, Vangelder did not need assistance walking and although he spoke slowly, he did not have any difficulty answering questions. He consented to a breath test on the EC/IR machine. The first breath test (taken at 3:37 a.m.) registered a level that was equivalent to a .08 BAC level, and the second (taken at 3:39 a.m.) produced the same result.

Vangelder next consented to a blood test, taken at 3:52 a.m. The first reading of his blood test showed a blood-alcohol level of .088 and the second showed a level of .087.

B. Charges and Prosecution Case

The city attorney filed a misdemeanor criminal complaint charging defendant in two DUI counts, driving under the influence of alcohol and driving with a blood-alcohol concentration of 0.08 or more, in violation of section 23152, subdivisions (a) and (b), respectively, as well as a count of speeding. Before trial, defendant filed motions in limine to exclude evidence of the PAS tests to establish blood-alcohol content (as unreliable), and to allow partition ratio evidence to be admitted regarding both blood and breath tests. The People's motions sought to exclude partition ratio evidence.³

At the three-day trial held in April-May 2009, the court addressed the motions in limine, deferring ruling on the PAS and partition ratio issues. The jury heard from the

³ This trial was conducted before the Supreme Court issued its opinion in July 2009, *McNeal, supra*, 46 Cal.4th 1183, clarifying that partition ratio evidence may be admissible on a generic DUI charge under section 23152, subdivision (a).

detaining and arresting officers, and from the People's expert, Marissa Ochoa, a criminologist at the city police lab. Ochoa testified about her expertise on the effect of alcohol on the human body, leading her to conclude that based on the results of the EC/IR breath tests and the blood tests, and normal bodily processing of alcohol, Vangelder's blood-alcohol level would have been .09 at the time of driving. This was based on a hypothetical question, asking her to assume that a healthy male weighing 200 pounds had consumed three glasses of wine with a hearty meal at 8:00 p.m.-9:00 p.m., was pulled over at 2:45 a.m., and had an EC/IR breath test result of .08 BAC at 3:37 a.m., and a similar blood test 15 minutes later. On cross-examination, Ochoa also admitted that a person drinking at that time would have had to have approximately 11 drinks in order to have a .08 blood-alcohol level 7 1/2 hours later, considering the absorption and elimination processes.

Ochoa's records showed that both the EC/IR breath test and the blood test analytical devices were in working order that night. The EC/IR breath test device has an operational range of error, plus or minus .01 from the known range, and its gas tank was replaced two days after this test was conducted.

The jury also heard testimony at trial from Officer Brandon Garland, the officer in charge of maintaining and calibrating PAS breath test devices for the police department. He testified about the requirements for successfully completing a PAS test, including a waiting period of 15 minutes to avoid mouth-alcohol contamination. His records showed that the PAS machine was recently tested successfully for accurate operation, within an

operational range of error, plus or minus .010 from the known range. It was sent out for servicing two weeks after this test was conducted.

C. Defense Case, Verdict and Appeal

At the conclusion of the prosecution's case, defendant called an expert on the effects of alcohol on the body, Dr. Michael P. Hlastala, who is a medical school professor with a doctorate in physiology. The prosecutor did not dispute his expertise in the field. Vangelder started to have his expert testify that even if breath tests are operating as designed, they do not give a scientifically accurate test. The expert stated that physiological factors in the human body have an influence with respect to the quality and nature of the breath expelled into the device, and these factors affect the absorption of alcohol from airway tissue, including bronchial blood vessels, into the sampled breath. On the objection of the prosecutor, the trial court held a hearing under Evidence Code section 403 regarding admissibility.⁴ As will be further described in the discussion portion of this opinion, the trial court ultimately refused to let the expert testify on this point, finding that only partition ratio evidence was actually involved, and it was irrelevant to the per se charge, and not required as to the generic charge. (But see fn. 3, *ante*.)

⁴ Evidence Code section 403, subdivision (a), places upon the proponent of the proffered evidence "the burden of producing evidence as to the existence of the preliminary fact, and the proffered evidence is inadmissible unless the court finds that there is evidence sufficient to sustain a finding of the existence of the preliminary fact, when: [¶] (1) The relevance of the proffered evidence depends on the existence of the preliminary fact"

Defendant called his 16-year-old son to testify that they had dinner together at a Mongolian barbecue around 8:00 p.m. or 9:00 p.m. that night, and defendant had two or three glasses of white zinfandel. They then went for a night hike and returned home around 2:00 a.m., where defendant had a beer and the son went to bed.

Defendant next testified to the same course of events over the evening, their return home and his having a beer. Around 2:00 a.m. he got hungry and went out again, driving his high performance vehicle on Interstate 15 and Highway 163. It was a moonlit night and traffic was very light, so he put on a burst of speed, over 100 miles an hour. When he saw the red lights of the police car, he reduced speed and pulled over, providing his license, registration, and proof of insurance. There was an odor of alcohol in the car because he left a backpack in it, and earlier, while he was out running, beer had leaked onto the backpack.

During deliberations, the jury sent out several notes, including one inquiring, "hypothetically," whether they were allowed to find a defendant guilty of driving with a blood-alcohol level above .08, but also not guilty for driving under the influence (generic DUI). Finally, the jury notified the judge that it could not reach a verdict on generic DUI, but it found defendant guilty of driving with 0.08 percent or more by weight of alcohol in his blood, in violation of section 23152, subdivision (b). The jury also found Vangelder guilty of speeding over 100 miles per hour.

After denying a motion for new trial, the court sentenced defendant as follows. The court suspended the imposition of sentence on the per se DUI for five years and

imposed fines and standard alcohol conditions. The fine and educational course (MADD) imposed for the per se DUI count were stayed pending appeal, although the fine on the speeding count was not stayed. The remaining generic DUI count was set for trial, but the trial date was continued pending appeal.

Appellant filed his notice of appeal to the appellate division of the superior court, and the matter was fully briefed. The appeal was denied and a request to transfer the case to this court was denied. This court granted defendant's application for certification for transfer of the case. (Cal. Rules of Court, rule 8.1005.) We allowed the parties to submit, and we have considered supplemental briefs on the issues presented.

DISCUSSION

Where, as here, a case is certified for transfer to settle important and recurring questions of law, this court has power to review any matter and make orders and judgments similar to that of the superior court in an appellate case. (Cal. Const., art. VI, § 11; Code Civ. Proc., § 911; *People v. Niebauer* (1989) 214 Cal.App.3d 1278, 1284.) "We, therefore, review the record and arguments before the [trial] court as if on direct appeal to this court." (*Ibid.*)

The question presented on review of this per se DUI conviction is whether the trial court prejudicially erred in refusing to allow scientific testimony to be presented that would have raised doubts about the reliability of the EC/IR and PAS breath testing devices, with respect to the physiological variables that can affect the sample of breath or air taken. Under section 23610, subdivision (c), the presumptions about chemical test

results, established by other subdivisions in the section, "shall not be construed as limiting the introduction of any other competent evidence bearing upon the question of whether the person ingested any alcoholic beverage or was under the influence of an alcoholic beverage at the time of the alleged offense." Defendant contends he can provide such other competent expert testimony, beyond the presumptions of section 23610, subdivisions (a) or (b).⁵

To determine whether the trial court correctly ruled that all of this proposed testimony was, in reality, impermissible partition ratio evidence under the standards of *Bransford, supra*, 8 Cal.4th 885 and *McNeal, supra*, 46 Cal.4th 1183, we set forth our standards of review and identify the different types of chemical tests taken in this case, for the purpose of assessing the sufficiency of the record support for the per se conviction, in light of the claims of prejudicial evidentiary error.

⁵ In pertinent part, section 23610, subdivisions (a)(3) and (b) provide: "Upon the trial of any criminal action, or preliminary proceeding in a criminal action, arising out of acts alleged to have been committed by any person while driving a vehicle while under the influence of an alcoholic beverage in violation of subdivision (a) of Section 23152 . . . , the amount of alcohol in the person's blood at the time of the test as shown by chemical analysis of that person's blood, breath, or urine shall give rise to the following presumptions affecting the burden of proof: [¶] . . . [¶] (3) If there was at that time 0.08 percent or more, by weight, of alcohol in the person's blood, it shall be presumed that the person was under the influence of an alcoholic beverage at the time of the alleged offense. [¶] (b) Percent, by weight, of alcohol in the person's blood shall be based upon grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath."

STANDARDS OF REVIEW; EVIDENTIARY ISSUES

"Broadly speaking, an appellate court applies the abuse of discretion standard of review to any ruling by a trial court on the admissibility of evidence." (*People v. Waidla* (2000) 22 Cal.4th 690, 718.) We examine the decision on admissibility that turned upon the relevance of the evidence in question. That "underlying determination as to relevance itself" was discretionary, but required to meet statutory standards: "Evidence is relevant if it has any tendency in reason to prove a disputed material fact." (Evid. Code, § 210; *Waidla, supra*, at p. 718.)

" 'As a general matter, the "[a]pplication of the ordinary rules of evidence . . . does not impermissibly infringe on a defendant's right to present a defense." [Citations.]' [Citation.]" (*McNeal, supra*, 46 Cal.4th 1183, 1203; *People v. Fudge* (1994) 7 Cal.4th 1075, 1102-1103.) Defendant asserts both federal and state constitutional prejudicial error in restricting his expert evidence. (See, e.g., *Chapman v. California* (1967) 386 U.S. 18, 24 [federal constitutional error harmless only if reviewing court finds it harmless beyond a reasonable doubt].) Where the trial court has rejected some evidence concerning a defense, but did not preclude the presentation of the defense, "any error is one of state law and is properly reviewed under *People v. Watson* [(1956) 46 Cal.2d 818, 836 (*Watson*)]." (*McNeal, supra*, at p. 1203.)

We are required to determine whether it is reasonably probable defendant would have achieved a more favorable result absent the exclusion of the proffered evidence

disputing the reliability of the breath test devices, with regard to the quality of the air sample the device took in, even before the application of any partition ratio to the breath data obtained from the devices. (*Watson, supra*, 46 Cal.2d at p. 836.) The ultimate issues before the jury, in deciding the effect of the three types of intoxication tests given, were (1) whether defendant was under the influence of alcohol when he was speeding down the highway (generic count), or (2) if his blood-alcohol, as partially proven by the breath sample, was of the given prohibited weight (per se count). We inquire into the fine distinctions between the proposed evidence that was offered, and the nature of partition ratio evidence, while acknowledging these two types of evidence are very similar in nature, but nonetheless different in function.

II

BACKGROUND: COMPARING PARTITION RATIO EVIDENCE TO PROFFERED TESTIMONY

Reliability of breath test results has repeatedly been challenged on the theory that partition ratio variability, from person to person, or relating to one person at different times, should be taken into greater account. (*McNeal, supra*, 46 Cal.4th 1183, 1194.) The purpose of the per se DUI definition is to avoid such arguments, by setting legal limits on permissible blood alcohol and defining how that limit is to be measured in a breath sample: "If the limit, measured as the statute sets out, is exceeded, the statute has been violated. Because section 23152(b) now defines the offense of per se DUI as the presence of a prohibited level of alcohol in either 100 milliliters of blood or 210 liters of

breath, a conversion from breath to blood-alcohol concentration is no longer required to establish guilt. Accordingly, evidence attacking the standard partition ratio is no longer relevant in a per se DUI prosecution because the Legislature has codified the 2,100-to-1 ratio as part of the offense." (*McNeal, supra*, at p. 1196, italics omitted; *Bransford, supra*, 8 Cal.4th at pp. 890-892.)

In a generic DUI prosecution, it is now permissible to bring in evidence about partition ratio variability, because it is relevant in such a case to rebut the presumption of intoxication in section 23610. (*McNeal, supra*, 46 Cal.4th 1183, 1200.) For a generic DUI prosecution "the central disputed fact" is whether the defendant was under the influence of alcohol while driving, and "[t]he chemical test result is circumstantial evidence that supports an inference regarding that disputed fact. Specifically, when a defendant's breath test result is equivalent to 0.08 percent or more of blood alcohol, section 23610 permits the jury to infer he was indeed under the influence of alcohol. The defendant is entitled to challenge this inference and can do so by, among other things, raising a reasonable doubt as to whether the test result was an accurate measure of his blood-alcohol level. Evidence casting doubt on the accuracy of the breath-to-blood conversion ratio is just as relevant as other evidence rebutting the presumption of intoxication from a breath test result, such as evidence that the defendant had a high tolerance for alcohol or performed well in field sobriety testing." (*McNeal, supra*, at p. 1200.)

Regarding the per se offense and its definitions, a defendant may not bring in partition ratio evidence to rebut the presumptions in section 23610, where there is solid evidence of a .08 BAC. Nevertheless, the Supreme Court holdings in *McNeal, supra*, 46 Cal.4th 1183 and *Bransford, supra*, 8 Cal.4th 885, seemed to leave the door open to new developments in the science of breath testing, by acknowledging that expert testimony in the area must meet the standards of *People v. Kelly, supra*, 17 Cal.3d 24, 30-32. "[T]he proffered evidence must still satisfy standards of competence and all other applicable evidentiary requirements," including a determination of "whether evidence [of the subject theory] . . . has gained sufficient acceptance in the scientific community to be admissible." (*McNeal, supra*, 46 Cal.4th at p. 1202.) Also, it must be timely offered. (*Ibid.*) Our issue is whether the expert should have been allowed to testify about his criticisms of the reliability of the breath test data, to rebut the presumption of intoxication in section 23610, when the validity of the data is considered, before any conversion to blood-alcohol content is made by utilizing the partition ratio calculation.

III

LIMITATIONS ON ISSUES PRESENTED

Here, both per se and generic DUI were charged, and at the time the expert witness testimony was offered, the question was whether it was competent and relevant to the ultimate issues in the case, under the standards of Evidence Code section 210: " 'Relevant evidence' means evidence . . . having any tendency in reason to prove or disprove any disputed fact that is of consequence to the determination of the action."

At the outset, we disagree with the People's assertion in its supplemental brief that since this appeal arises only from the per se conviction, that any evidence regarding both breath tests and partition ratio must be irrelevant to this appeal. The People argue that because there is a .08 blood test result from a sample taken from defendant approximately 1 hour and 15 minutes after the traffic stop was made, the per se conviction is fully supported, regardless of any breath test data. However, that argument disregards defendant's presentation of some evidence that he might have had a rising blood-alcohol level at the time that the blood test was taken, because of his 2:00 a.m. beer drinking, which might not have been fully processed by his body as of the time of the 2:45 a.m. traffic stop, thus raising some possibility that his blood-alcohol level was lower at the time of the traffic stop. Defendant states that he has no quarrel with the blood test accuracy as of the time it was taken, but he continues to challenge its reliability with respect to the earlier time of driving.

Further, it was not disputed that the PAS results were somewhat unreliable, because the officer did not wait the regulation amount of time before administering the tests (15 minutes), and there was therefore a possibility of mouth-alcohol contamination (as the trial court expressly recognized, and as the prosecutor admitted in closing argument). Moreover, defendant additionally challenges the admissibility of the PAS testimony, for two reasons: First, he thinks that partition ratio evidence should have been admissible regarding that portion of the breath test evidence, due to its preliminary character, and second, he claims that the trial court should not have allowed the full three

decimal point reading of the PAS tests to be admitted, on the grounds that such a detailed version of the data gave the jury a false sense of reliability of that information. We will address those issues only as necessary in part V, *post*.

The main issues presented, however, concern the reliability of the EC/IR tests, because the different alleged problems with the accuracy of the PAS breath test and the blood test, as described above, made the EC/IR tests particularly important in this case. It must be emphasized that defendant is not arguing that the EC/IR breath test device was malfunctioning, out of order, or incorrectly operated, but instead, he challenges the validity of its design, operation, and sampling method. We also emphasize that the prosecutor conceded the expert qualifications of this witness, and the court agreed. Nevertheless, the trial court seemed to assume that the .08 breath test result could not be rebutted in any fashion, for either of these DUI charges. We disagree with the People's reply argument that the court was merely commenting, in that respect, that the definition of the per se DUI crime was not rebuttable. Instead, the evidentiary support for both counts was at issue, and the .08 blood alcohol reading had to be fully supported either by the blood or the breath test results, and it is not clear on this record that it was. (See *People v. Warlick* (2008) 162 Cal.App.4th Supp. 1, 7 [statutory presumption does not preclude prosecution from introducing retrograde extrapolation evidence, where blood-alcohol test result is lower than 0.08 percent].)

We accordingly consider whether the court had an adequate basis to exclude the evidence, for the stated reasons of (1) lack of foundation or speculative nature, or (2)

because it actually addressed the prohibited topic of individualized or population-based partition ratio evidence. We next provide more scientific background, summarize the testimony, and apply accepted standards to determine its admissibility.

IV

PRESUMPTIONS; OTHER COMPETENT EVIDENCE; TYPES OF TESTS

For a "per se DUI" conviction, the prosecution no longer must prove "the accused driver was actually impaired at the time of the offense, but only that he drove with a blood-alcohol level at or exceeding [0.08] percent." (*McNeal, supra*, 46 Cal.4th 1183, 1193; *Burg v. Municipal Court* (1983) 35 Cal.3d 257, 265.) But if other chemical tests are not dispositive, and if the air sample taken by the EC/IR breath test device is defective or inaccurate, how can the blood-alcohol level be correctly calculated, even with the use of a standardized partition ratio?

A. Scientific Background

The basic science of breath testing devices is described as follows in an annotation: "[T]hese devices all operate on the basis of a principle called Henry's Law, which states that the concentration of a volatile substance dissolved in a liquid is directly proportional to the vapor pressure of the volatile substance above the liquid. . . . 'The trick is how to formulate the proper ratio of alcohol found in the breath to the alcohol found in the blood.' [¶] Breath testers apply Henry's Law to the question of whether a driver is intoxicated by measuring the amount of alcohol in a known amount of deep-lung (alveolar) breath, and calculating from that figure the amount of alcohol in the subject's

blood. *As blood flows through the deep lungs, the very function of which is to exchange gases between the blood and the atmosphere, alcohol in the blood will escape into the exhaled breath, where it may be measured by a breath tester. Theoretically, Henry's Law allows one to calculate the concentration of alcohol in the blood from the amount that escapes into the breath.* To precisely apply it, however, in the manner of a physicist in the laboratory, one would have to control the variable factors, such as temperature and atmospheric pressure, or account for them in the calculations." (90 A.L.R.4th 155, § 2, pp. 159-160, fns. omitted, italics added.)

To calculate blood-alcohol concentration, the standardized partition ratio is used. (90 A.L.R.4th 155, § 2, p. 160; § 23610, subd. (b).) "Despite the constancy of the legally presumed ratio, it has been shown, as might be expected, that a host of factors, such as body temperature, sex . . . hematocrit levels, and medical conditions, may affect the ratio between blood-alcohol levels and breath-alcohol levels. . . . In other words, the partition ratio is not in fact constant among the population at large. It has been said that the ratio is 'contrary to the laws of physics in its artificial rigidity.' " (90 A.L.R.4th 155, § 2, p. 160, fns. omitted.) Referring specifically to mechanical or design problems in breath test machines, the authors state: "As can readily be seen, a small error could conceivably turn a marginally legal reading into an illegal reading. Based on statements made by expert witnesses and agreed with by some of the courts represented in this annotation, that type of error is definitely possible, although perhaps very rare." (90 A.L.R.4th 155, § 2, p. 161.)

Other recognized concerns in interpreting chemical test results relate to the margin of error, plus or minus .01 for breath tests. (See *People v. Campos* (1982) 138 Cal.App.3d Supp. 1; 2 Witkin, Cal. Evidence, *supra*, Demonstrative, Experimental, and Scientific Evidence, § 54, pp. 65-67.) Additional identifiable defects in breath tests might include "margins of error arising from causes other than the partition ratio, asserted impurities in the chemicals used, susceptibility to radio frequency interference, and a host of other alleged defects and inaccuracies" (See 90 A.L.R.4th 155, § 1, pp. 158-159, fn. 1, annotation on partition ratio authorities, that expressly omits such other topics within its scope.)

B. Proffered Evidence

In the case before us, Dr. Hlastala raised concerns about physical variabilities that affect the delivery of breath to the deep lung area, from which breath test devices are taking a sample to measure alcohol content of the breath, that will then be converted to a blood-alcohol reading. Specifically, the expert initially described the way that the airways provide air to the lungs, explaining: "The concept is that this alcohol in this air, it's equal to what's down in here, hence related to whatever's in the blood. We know, now, that it's not quite that simple because alcohol is quite soluble, it goes into water quite easily. And we have, in the airway, a lot of mucus and water and that mucous lining in the airway plays an important role in protecting us from particles and things we inhale . . . but if we have alcohol, there are little blood vessels . . . called 'bronchial vessels.' And so they bring alcohol so there's a lot of alcohol if you have alcohol in your

bloodstream. Now, what happens is if we inhale and we pick up alcohol from this mucus and by the time we pick it up here, and by the time we get down to this air sac [alveolar], *it's already filled up and saturated.*" (Italics added.)

At that point, the prosecution objected and the sidebar was held. The court referred to *Bransford, supra*, 8 Cal.4th 885, and asked if the expert was talking about mouth alcohol. Defense counsel replied that mouth alcohol was only one example of a problem with breath testing, and the other problem being testified to was "the manner in which [a person] blows into the instrument." The court and counsel acknowledged that when a person with alcohol in the system breathes in and breathes out, the mucous membranes in the mouth and trachea are exuding alcohol, from the blood into all portions of the airway. From that information, the defense expert expressed a belief that the deep lung breath that is being measured does not properly reflect the blood-alcohol levels, due to its ability to pick up other alcohol from various parts of the physiology.

In colloquy, the trial court stated its belief that the .08 breath-alcohol level was not rebuttable on the per se count, even though it might be rebuttable on the generic count. The court tentatively concluded that this expert testimony was equivalent to partition ratio testimony, because the claim was that the breath testing devices were overstating the converted blood-alcohol level from a breath sample, but the court nevertheless agreed to hear the expert testify in more detail.

Defense counsel then elicited expert testimony that several physical factors will cause a breath test not to be scientifically accurate, including the pattern of breathing,

body temperature, or hematocrit, and that these factors were not directly related to partition ratio (blood-breath ratio). The expert stated that instead, those variables affect the breath value, "but they're not utilizing the concept of equilibrium process, which the partition ratio visits." By this, the expert meant that the human body is never in equilibrium in terms of alcohol, such as a partition ratio in a closed container would reflect, so that the breath tests might be inaccurate based on human physical variability and how the alcohol comes out of the mouth. Thus, he said "the factors in the human body influence how much alcohol comes out of the mouth to be measured," even where the machine is working accurately. The reason given was that a breath test is an indirect test, and it is relatively remote from the actual blood-alcohol content.

The expert continued to claim he was not talking about the partition ratio, and was not comparing breath alcohol to blood, but instead was talking about how valid the breath sample was, and how it would change under different circumstances. The court then inquired whether the expert believed that the breath sample of this defendant would be overstated or understated as far as blood-alcohol content was concerned, and the expert declined to give an opinion, stating that he could only identify a possibility one way or the other.

The court heard further argument, and decided that the per se driving offense basically criminalized having a certain breath level, or a blood level, and therefore, the physical variability identified was irrelevant, and also speculative. However, the court refused to strike the expert testimony already given before the jury, about how alcohol

came into the breath from the blood and the trachea and other sources. The final ruling proscribed any questions to the expert "which will solicit any testimony by him to be a fact that the breath sample that was measured here was not representative other than if it had contained mouth alcohol."

C. Analysis

Dr. Hlastala testified that the technology commonly employed to convert a reading of alcohol in the breath to a reading of blood alcohol has certain problems, which he is studying, regarding whether the breath getting down to the alveolar air sacs, and being measured, is "*already filled up and saturated*," by alcohol elsewhere in the airways. He referred to the variability in measurements of breath alcohol by the testing devices, rather than variations in the partition ratio in the population (generally or individually).

Although his challenges to the reliability of the breath testing device rely on some of the same variable factors as have been argued elsewhere about partition ratio (e.g., individual breathing patterns, body or breath temperature, and hematocrit), those variances are separately said to affect the ability of the device to read alcohol levels in a gaseous form, in the breath, before any conversion to blood-alcohol concentration is performed. It is not dispositive that similar variables must be considered, when different types of analyses are concerned. Here, there is evidence suggesting that conversion of the alveolar breath results into an equivalent blood-alcohol percentage was unreliable. (See *McNeal, supra*, 46 Cal.4th 1183, 1193-1194 at fn. 7 [" 'A breath alcohol concentration shall be converted to an equivalent blood-alcohol concentration by a

calculation based on the relationship: the amount of alcohol in 2,100 milliliters of alveolar breath is equivalent to the amount of alcohol in 1 milliliter of blood.' "]; Cal. Code Regs., tit. 17, § 1220.4, subd. (f); § 23610, subd. (b).)

Although breath test results are admissible if a reliable foundation for them is laid, we think that such competent evidence of their potential inaccuracy, because of physical variabilities leading to poor data in sampling, should have been allowed to be considered, as going to the weight to be accorded the testing results. (See 90 A.L.R.4th 155, § 2, p. 164.) In light of the authorities described above, we conclude that the trial court was mistaken in stating that this expert testimony was completely irrelevant as an attempt to rebut the breath test result, for either the per se or generic DUI counts. Under section 23610, subdivision (c), this expert provided enough of a foundation to explain why he believes that the breath test samples were not representative, based upon the problems in obtaining the samples that were inherent within the identified variables of an individual's physiology. The expert was proposing that even a correctly operating breath test device would take in samples that were essentially inaccurate and nonrepresentative of breath-alcohol content, which was ultimately to be converted into a blood-alcohol reading through the use of the partition ratio. He did not have to indicate which way the potential inaccuracy would point, as a foundational matter, in order to cast doubt on this part of the testing method. Even a small error could possibly turn a marginally legal reading into an illegal reading. (See 90 A.L.R.4th 155, § 2, p. 161.)

When the court excluded this expert evidence, the error was not harmless because it was "reasonably probable that a result more favorable to [defendant] would have been reached" had such evidence been admitted. (*Watson, supra*, 46 Cal.2d 818, 836.) First, defendant performed well on the physical field sobriety tests. He was driving skillfully and pulled over as soon as the red lights went on. There were identifiable problems with the other two chemical tests given, the PAS test and the blood test, with reference to the timing of administration and the time of driving. Defendant gave a revised drinking history. The jury questioned whether it could convict on a per se count but not a generic count, showing they had some confusion. All of those factors point to probable prejudice in the exclusion of this expert testimony, since it could have shed light upon the accuracy of the EC/IR breath test results or the PAS tests, as they affected the proof of each DUI count charged.

V

REMAINING PAS ISSUES

Defendant makes two further evidentiary contentions with regard to the admission of the PAS breath tests results. He claims that the trial court incorrectly excluded all partition ratio evidence, which he seems to concede might have been correct regarding the per se count, as to the more sophisticated EC/IR breath tests, but which he continues to argue was incorrect as to the PAS. This is a somewhat surprising argument, in light of the care that defendant has taken to distinguish his proffered expert testimony about the unreliability of breath test devices, with respect to their sampling process, as opposed to

the eventual utilization of that data through the partition ratio formula. Nevertheless, defendant argues that the PAS results might have been given undue weight in this case, for two reasons.

First, he argues that the PAS is only a field test, and should be treated differently than any more sophisticated version of the breath tests. He relies on *People v. Wilson* (2003) 114 Cal.App.4th 953, 959-960, in which the court stated that the Legislature has treated the PAS as a field sobriety test, to be used by an officer as a further investigative tool, upon proper advisement. (§ 23612, subds. (h), (i).) Participation in a PAS test does not serve as a functional equivalent of the mandatory blood-alcohol level test required under section 23612, subdivision (a). (§ 23612, subd. (i); *Roze v. Department of Motor Vehicles* (2006) 141 Cal.App.4th 1176, 1189 (*Roze*.)

Because of its preliminary nature, the PAS breath procedure is subject to regulatory protections for its reliability. A trial court must require either a showing of compliance with California Code of Regulations, title 17, or independent proof of the three foundational requirements for test result reliability, which are described as follows: (1) the testing device was in proper working order, (2) the test was properly administered, and (3) the operator was competent and qualified. (*People v. Adams* (1976) 59 Cal.App.3d 559, 561 (*Adams*); *People v. Bury* (1996) 41 Cal.App.4th 1194, 1202; *People v. Williams* (2002) 28 Cal.4th 408, 412, 414, fn. 2 (*Williams*) [these title 17 regulations "apply to PAS tests that determine the concentration of alcohol in the blood but not those that determine only its presence," italics omitted].)

As further explained in *Williams, supra*, 28 Cal.4th 408, 414: "Essential to *Adams* [*supra*, 59 Cal.App.3d 559] was the principle that admissibility depends on the reliability and consequent relevance of the evidence, not the precise manner in which it was collected. *Compliance with regulations is sufficient to support admission, but not necessary. Noncompliance goes only to the weight of the evidence, not its admissibility.*" (*Williams, supra*, at p. 414; italics added.) In *Williams*, the court further acknowledged that " 'laxity in complying with the regulations may undermine the reliability of the test.' " (*Roze, supra*, 141 Cal.App.4th 1176, 1187, citing *Williams, supra*, at p. 418; original italics.)

Regarding the per se count, defendant can show no justification for adding an additional type of challenge to the PAS, by bringing in continued partition ratio challenges to those results, in light of the regulatory safeguards already in place. Rather, a clear distinction between determining the legal question of admissibility of such evidence, "as opposed to the factual question concerning the weight it warrants" (*Roze, supra*, 141 Cal.App.4th 1176, 1186-1187), has been established, so that noncompliance with the exact terms of the regulation does not conclusively show the results were unreliable, and an alternative foundational showing may be made. (*Williams, supra*, 28 Cal.4th at p. 417; *Adams, supra*, 59 Cal.App.3d at p. 567.)

Here, defendant was allowed to show that the regulatory requirements were not met, in terms of timing before the PAS was administered (less than a 15-minute observation). He can show no prejudice regarding the per se DUI count by the exclusion

of the partition ratio evidence in this respect. We need not express any opinion on how the trial court must distinguish, on remand, between the generic and per se counts regarding partition ratio evidence in the PAS context.

Moreover, to the extent defendant now argues the trial court erred by permitting the PAS results to be stated up to three decimal points, whereas the other chemical test results were stated in only two decimal points, we need not now decide whether that was error. The Supreme Court did not expressly forbid such detailed evidence in *Williams, supra*, 28 Cal.4th at page 411, and at page 418, footnote 8. (See also *People v. Wood* (1989) 207 Cal.App.3d Supp. 11, 17.) At any further proceedings, evidence about the reliability of the PAS test and the statement of its results, under the standards set forth in *Adams, supra*, 59 Cal.App.3d 559, and in the requirements of title 17, will remain subject to the trial court's discretionary determinations on foundational matters, including the decimal issue. At this time, we decide only that defendant's conviction of the per se DUI count must be reversed for prejudicial evidentiary error.

DISPOSITION

The order of the superior court appellate division affirming the convictions is reversed and the case is remanded for the appellate division to issue its remittitur and to direct the trial court to enter a different order to vacate the judgment of conviction of

count 2, while count 3 remains in effect, and to allow such further proceedings as may be conducted in accordance with the principles set forth in this opinion. (Cal. Rules of Court, rule 8.1018.)

HUFFMAN, J.

WE CONCUR:

BENKE, Acting P. J.

NARES, J.