Filed 11/19/13 Consumer Advocay Group v. Poolmaster CA1/4

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IN THE COURT OF APPEAL OF THE STATE OF CALIFORNIA

FIRST APPELLATE DISTRICT

DIVISION FOUR

CONSUMER ADVOCACY GROUP, INC., Plaintiff and Appellant, v. POOLMASTER, INC., et al., Defendants and Respondents.	A129796, A130903, A131227 (Alameda County Super. Ct. No. RG07331650)

Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, prohibits businesses from knowingly exposing anyone to a chemical "known to the state to cause cancer or reproductive toxicity" without a warning. (Health & Safety Code[1] § 25249.6.) A private party may bring an enforcement action against a business that violates Proposition 65. (§ 25249.7.)

Plaintiff Consumer Action Group sued various businesses[2] alleging their products (pool water test kits) contained the carcinogen ortho-Tolidine and failed to provide a warning label. After two years of litigation, defendants proved to the trial court's satisfaction that their products contained, not ortho-Tolidine, but ortho-Tolidine *dihydrochloride* (the "salt form" of ortho-Tolidine) which is also a chemical "known to

[1] All undesignated statutory references are to the Health and Safety Code.

[2] The parties agree that the defendants remaining at the time of trial were Aqua Tri, Chem Lab Products, Inc., Home Depot U.S.A., Inc., Leslie's Poolmart, Inc., Oreq Corporation, Poolmaster, Inc., Pool Water Products, and Valterra Products, Inc.

the state to cause cancer." The trial court entered judgment in defendants' favor because plaintiff failed to prove that the carcinogen alleged in the complaint (ortho-Tolidine) was precisely the same carcinogen that is contained in defendants' products (ortho-Tolidine dihydrochloride).

We conclude the trial court erred in ruling, as a matter of law, that plaintiff's failure to prove defendants' products contained ortho-Tolidine was a material failure of proof of a Proposition 65 violation. We therefore reverse and remand for further proceedings.

I. BACKGROUND

A. Proposition 65

In 1986, the voters adopted Proposition 65. Among other things, Proposition 65 prohibits businesses from knowingly exposing consumers to chemicals known by the state to cause cancer or reproductive toxicity without a warning. (§ 25249.6.) If, however, the business can show the exposure to a carcinogen poses "no significant risk assuming lifetime exposure at the level in question," it is exempt from the warning requirement. (§ 25249.10, subd. (c).)

The Governor is required to publish annually an updated list of chemicals that are known by the state to cause cancer or reproductive toxicity. (§ 25249.8, subd. (a).) These are referred to as "listed chemicals." (See, e.g., Cal. Code Regs., tit. 27, § 25903 (b)(2)(A).) Two chemicals that appear on the Governor's Proposition 65 list are at issue here: The first is "3,3'-Dimethylbenzidine (ortho-Tolidine)," which has a Chemical Abstract Service (CAS) number of 119-93-7 and was listed in 1988; the second is "3,3-Dimethylbenzidine dihydrochloride" (ortho-Tolidine dihydrochloride), which has a CAS number of 612-82-8 and was listed in 1992. (Cal. Code Regs., tit.27, § 27001.) Ortho-

Tolidine dihydrochloride is sometimes referred to as the "salt form" or "dihydrochloride form" of ortho-Tolidine.[3]

A private party may bring an enforcement action against a person who violates Proposition 65, subject to certain procedural requirements. (§ 25249.7.) One such requirement is that, more than 60 days prior to the filing of an action, the party must send a notice of the alleged violation to "the Attorney General and the district attorney, city attorney, or prosecutor in whose jurisdiction the violation is alleged to have occurred, and to the alleged violator." (§ 25249.7, subd. (d)(1).) The notice must include, among other things: (1) the name, address and telephone number of the person or entity giving notice, (2) the name of the alleged violator, (3) the approximate time period during which the violation is alleged to have occurred, and (4) "the name of each listed chemical involved in the alleged violation." (Cal. Code Regs., tit. 27, § 25903, subd. (b)(2)(A).) The regulation further provides that it "shall not be interpreted to require more than reasonably clear information, expressed in terms of common usage and understanding, on each of the indicated topics." (Cal. Code Regs., tit. 27, § 25903, subd. (b)(2).)

The prelitigation notice is designed to accomplish two things: (1) to give the public prosecutor the means to assess whether to intervene on the public's behalf, and (2) to give the target of the notice the opportunity to avoid litigation by settling with the plaintiff or by curing any violation. (*Consumer Advocacy Group, Inc. v. Kintetsu Enterprises of America* (2007) 150 Cal.App.4th 953, 963–964 (*Kintetsu*).)

B. Procedural History

Plaintiff filed two complaints. The first was filed in June 2007, against Oreq Corporation, Poolmaster, Inc., Home Depot U.S.A., Inc., and other defendants. The second was filed in March 2008 against Aqua Tri, Pool Water Products, Leslie's

[3] We shall on occasion refer to ortho-Tolidine as OTO or orthotolidine, and to ortho-Tolidine dihydrochloride as OTO dihydrochloride or orthotolidine dihydrochloride. Ortho-Tolidine is sometimes identified in the scientific literature as "o-tolidine."

Poolmart, Inc., Valterra Products, Inc., Chem Lab Products and other defendants; it also named Oreq Corporation again. The two actions were consolidated.

For purposes of this appeal, the complaints were essentially identical in alleging that defendants manufacture or distribute a consumer product designed to test the concentration of chlorine in swimming pool, spa and potable water, and that these products contain, and expose users to 3,3' Dimethylbenzidine (ortho-Tolidine), a carcinogen. Plaintiff alleged that ortho-Tolidine "first appeared on the Governor's Proposition 65 list of Chemicals known to cause cancer" on January 1, 1988, and thus became subject to Proposition 65 warning requirements 20 months thereafter, pursuant to section 25249.9, subdivision (a).

Plaintiff also alleged that the requisite prelitigation notices were given. With respect to the first complaint, the notices were sent on December 12, 2006. The second complaint was preceded by notices sent out on various dates, but it appears that each defendant was sent two notices, one on June 28, 2007 and another on November 9, 2007.[4] The record contains three of the notices: a December 2006 notice and two November 2007 notices. The 2006 and 2007 notices are different with respect to the identification of the chemicals in question. The 2006 notice states that "[t]he chemical known to the State to cause cancer relevant to this Notice is 3,3-Dimethylbenzidine (ortho-Tolidine)." The 2007 notices state that the relevant chemicals are "3,3'-Dimethylbenzidine (ortho-Tolidine) and 3,3'-Dimethylbenzidine dihydrochloride."

Defendants' answers and the parties' early case management statements are not included in the record. It appears, however, that at some point, "based on discovery," defendants took the position that their products did not contain orthotolodine, but rather, orthotolidine dihydrochloride. Defendants characterized this as a "different chemical"

[4] The first notice of the second complaint was sent to Oreq Corporation on October 2, 2007.

which, they argued, was not included in the prelitigation notices or the complaint. Plaintiff contended that "there is no discernable difference between [ortho-Tolidine] and ortho-Tolidine dihydrochloride . . . [because ortho-Tolidine] is just the free base form of ortho-Tolidine dihydrochloride and, conversely, ortho-Tolidine dihydrochloride is merely the salt form of . . . [ortho-Tolidine]."[5]

Defendants thereafter requested a bifurcated trial on the issue of "what's in the bottle," i.e., what is the chemical content of defendants' products.[6] The court ordered a "Phase I bifurcated trial" on the "core issue" of whether or not defendants' products "contain the chemical 3,3' Dimethylbenzidine (ortho-Tolidine), CAS No. 119-93-7, first appearing on the Proposition 65 List on January 1, 1988." Although plaintiff has not provided to us the portions of the record that explain how the "core issue" came to be formulated, the record shows that plaintiff objected to this narrow articulation of the issue, arguing that "[d]efendants seek to obstruct the purpose and intent of Proposition 65 . . . by asking the court to construe the notice requirements in an inappropriate and artificially strict manner." In its pre-trial brief, plaintiff contended that, because Proposition 65 is a remedial statute to be construed broadly in favor of its goal of public protection, the law did not require plaintiff to identify separately the salt (dihydrochloride) form of OTO in addition to OTO in its notice and complaint because OTO in one form or another exists in defendants' products, and both are listed as

[5] In a discovery response to Pentair Water Pools & Spa's request for documents, plaintiff went further, stating "[a]lthough [plaintiff] maintains that there is no discernible difference between the two Listed Chemicals, both of which are insidious carcinogens, neither [plaintiff's] complaint nor the 60 Day Notice of Violation upon which it is premised allege that [Pentair's] Product contains [orthotolidine dihydrochloride]. [Plaintiff], therefore, has not premised its case on this chemical. It is not material, in dispute and not applicable to this case." Pentair Water Pools & Spa was not a defendant in the Phase One trial and defendants objected to the introduction of evidence relating to Pentair's products.

[6] Defendants' motion for a bifurcated trial is not in the record; we infer from the parties' December 2008 joint case management statement that such a motion was filed.

carcinogenic. According to plaintiff, the question should be whether the notices and complaints provided adequate information from which defendants could assess the nature of the alleged violation.

Defendants, on the other hand, focused narrowly on the regulatory requirement that the prelitigation notice must identify " 'the name of ***each*** listed chemical involved in the alleged violation.' [Citing] Cal. Code of Regulations . . . Title 27, § 25903(b)(2)(A)4 (emphasis added)[.]" Defendants argued that both the 60-day notices and the complaints must "clearly identify the chemical in the consumer product that allegedly triggered a warning obligation," and "[p]ursuant to Prop 65 enforcement requirements, only . . . this specific chemical [is] the subject of the lawsuits." Therefore, defendants concluded, plaintiff's actions must be dismissed because it cannot prove that defendants' products contain the named chemical OTO, rather than OTO dihydrochloride.

After a two-day trial, the court ruled in defendants' favor. The court rejected out of hand plaintiff's foundational argument that the statute is a remedial one which must be construed broadly. "However laudable serving the policy behind Proposition 65 may be," the court wrote, "it does not alter the burden of proof on the core issue." After reviewing the evidence presented at trial, the court found that plaintiff had failed to prove that defendants' products contained orthotolidine, and that this was a "*material failure of proof* on the part of Plaintiff whereas Defendants presented a more persuasive and coherent body of the evidence to the contrary [showing the presence of OTO dihydrochloride]." (Emphasis added.)

Plaintiff appealed from the judgment entered in favor of defendants.[7]

[7] In these consolidated appeals, plaintiff challenges not only the trial court's finding on the merits, but also the post-trial award of expert witness fees pursuant to Code of Civil Procedure section 998, which was based on plaintiff's failure to accept defendants' pretrial offer to compromise. In their appeal, defendants contend the trial court erred in denying their post-trial challenge to the certificate of merit plaintiff submitted before filing this action. (§ 25249.7, subd. (h)(2).) Our reversal of the underlying judgment renders moot the parties' appeals on these issues.

C. Standard of Review

The selection of the correct standard of review on appeal depends upon the question or questions before the court. Defendants argue that "the issue dispositive of [plaintiff's] appeal . . . is whether substantial evidence supports the superior court's finding that the products contained no orthotolidine." Plaintiff argues there are two questions on appeal: (1) whether, in the Proposition 65 context, the term "chemical" should be construed broadly to include different iterations of a chemical compound where the chemical's core carcinogenic structure exists in both iterations, and (2) whether the trial court erred in determining that plaintiff had not proven that defendants' products contained the carcinogen orthotolidine.

Stated more generically, the first question posed is whether the trial court erred in concluding that because plaintiff failed to prove defendants' products contained orthotolidine, as alleged in the complaint, rather than orthotolidine dihydrochloride as proven by defendants, there was a "material failure of proof" warranting dismissal. We agree that this question is central to the appeal, and is an issue of law to be reviewed de novo. (*California Teachers Assn. v. San Diego Community College Dist.* (1981) 28 Cal.3d 692, 699.)

II. DISCUSSION

A. Defendants' Contention

Defendants' contention concerning the requirements for pleading and proof of a Proposition 65 violation is brief; we quote it here: "Prelitigation notices and complaints must identify exactly the chemical in the consumer product that allegedly triggered a warning obligation. The Proposition 65 regulations require 'the name of *each* listed chemical involved in the alleged violation.' (Cal. Code Regs., tit. 27, § 25903 subd. (b)(2)(A)4, emphasis added; see [*Kintetsu, supra*,] 150 Cal.App.4th 953, 973[).] . . . The complaints on which [plaintiff] went to trial were based on [two different] prelitigation notices, but charged only orthotolidine as a chemical present in the products without

warning. . . . [¶] [Plaintiff] failed to make a prima facie showing that respondents' products contain orthotolidine."

Defendants' argument conflates two different questions, which are: (1) the adequacy of a prelitigation notice, and (2) the requirements for pleading and proving a prima facie case under Section 25249.6. We examine each, in turn.

As we have described, the Proposition 65 regulations require a private plaintiff to serve a prelitigation notice, and in that notice to identify "[t]he name of each listed chemical involved in the alleged violation." (Cal. Code Regs., tit. 27, § 25903, subd. (b)(2)(A)4.) The identification of each chemical as to which the plaintiff intends to sue is necessary to serve the purposes of the prelitigation notice, which are: (1) to give the public prosecutor the means to assess whether to intervene on the public's behalf, and (2) to give the target of the notice the opportunity to avoid litigation by settling with the plaintiff or by curing any violation. (*Kintetsu*, *supra*, 150 Cal.App.4th at pp. 963–964.) Thus, for example, in *Kintetsu* some of the pre-litigation notices alleged exposure to smokeless tobacco and cigars but did not differentiate the chemicals in each product, and the record did not show whether the chemicals were the same in both, as argued by the plaintiff. Under the circumstances, the court ruled the plaintiff "may proceed only with respect to those chemicals contained in the notice [but to] the extent they are the same, no need exists to list them twice." (*Id.* at p. 972.) Similarly, a private plaintiff would not be permitted to identify one chemical in the prelitigation notice, such as toluene, and then to sue upon an entirely different or additional chemical, such as dioxin. "Because of their different properties, different chemicals raise very different issues in determining whether there is a violation." (Office of Environmental Health Hazard Assessment (OEHHA), Final Statement of Reasons: Adopt Section 12903, *Notices of Violation*, Title 22, Division 2, California Code of Regulations [now at tit. 27, § 25903], available online at <http://oehha.ca.gov/prop65/law/pdf_zip/903FSR.pdf.> at p. 9. [as of Nov. 1, 2013].)

Defendants, however, take these tenets even further. They argue that "[p]relitigation notices and complaints must identify *exactly* the chemical . . . that allegedly triggered a warning obligation." (Emphasis added.) But the requirement of

exactitude is not found in the regulation or in any authority construing it. What the regulation does state is that the notice "shall provide adequate information from which to allow the recipient to assess the nature of the alleged violation," and that its requirements "shall not be interpreted to require more than reasonably clear information, expressed in terms of common usage and understanding, on each of the indicated topics." (Cal. Code Regs., tit. 27, § 25903, subd. (b)(2).)

Fortunately, we need not engage in calibrating the level of precision required to meet the notice requirement because that is not the question before us. Defendants do not claim that the identification of orthotolidine in the notices failed to provide adequate information to allow defendants and the attorney general to "assess the nature of the alleged violation." (Cal. Code Regs., tit. 27, § 25903, subd. (b)(2).) Nor do they contend that the notice was so deficient that "[n]either settlement nor an official investigation [was] likely to result."[8] (*Yeroushalmi v. Miramar Sheraton* (2001) 88 Cal.App.4th 738, 750.) Defendants' contention, rather, is that plaintiff did not prove *exactly* what it pled—that defendants' products contain orthotolidine—and therefore their case fails as a matter of law. In so arguing, defendants simply import into pleading and proof requirements their own strict interpretation of what is required for the prelitigation notice. We disagree with this analysis. There is no authority for the proposition that prelitigation notice requirements also control the principles of pleading and proof in a Proposition 65 case, and, as we explain, we see no reason in such actions to deviate from the general principles of pleading and proof applicable to civil cases.

B. Prima Facie Evidence of Proposition 65 Violation

We start with basic principles pertinent to Proposition 65.

It is well-established that the purpose and intent of Proposition 65 is to protect the public from toxic contamination, and it must be construed broadly to accomplish that purpose. (*People ex rel. Lungren v. Superior Court* (1996) 14 Cal.4th 294, 314–315

[8] We observe that, of the defendants in this appeal, only Home Depot and Poolmaster, Inc. did not receive the second set of notices that identified both orthotolidine and orthotolidine dihydrochloride.

(*Lungren*) ["[W]e consider Proposition 65 to be a remedial statute intended to protect the public from, among other things, toxic contamination of its drinking water. We construe the statute broadly to accomplish that protective purpose."].) Consequently, our courts have uniformly applied a liberal construction when assessing various issues arising under Proposition 65. (*See, e.g., California Chamber of Commerce v. Brown* (2011) 196 Cal.App.4th 233 [methods for listing chemicals]; *Consumer Cause, Inc. v. SmileCare* (2001) 91 Cal.App.4th 454, 461–462 [exposure to product containing reproductive toxin]; *As You Sow v. Conbraco Industries* (2005) 135 Cal.App.4th 431, 451 (*As You Sow*) [construction of term " 'specific medium' " in regulation].)

"Proposition 65 adopts a dual-pronged approach based on protection and information. The Act accomplishes these twin objectives by prohibiting any person in the course of doing business from knowingly discharging or releasing a listed toxic chemical into a source of drinking water (discharge provision) or from knowingly and intentionally exposing any individual to such chemicals without first providing a warning (warning requirement)." (*As You Sow, supra,*135 Cal.App.4th at p. 437.) Additionally, the statutory scheme "establishes a series of shifting burdens." (*Mateel Environmental Justice Foundation v. Edmund A. Gray Co.* (2003) 115 Cal.App.4th 8, 18 (*Mateel*).) Thus, in an action to enforce the discharge provision (section 25249.5), "[i]n the first instance, a plaintiff must show that a discharge has occurred. Once this burden has been met, the defendant may show, inter alia, that the amount of the discharge is not significant [pursuant to section 25249.9]." (See *ibid.*; *As You Sow, supra,* 135 Cal.App.4th at p. 437.) By parity of reasoning, in an action to enforce the warning requirement (section 25249.6), a plaintiff must show, in the first instance, that a defendant's product exposed individuals to a listed chemical without a warning. Once that burden is met, a defendant may prove the warning is not required by showing, *inter alia*, that the level of exposure poses no significant risk, pursuant to section 25249.10.

We find nothing in the provisions of Proposition 65 or its regulations that requires or even suggests that a Proposition 65 claim fails as a matter of law if the chemical identified in the complaint is not "exactly" the same chemical contained in defendants'

products. Nor has our research unearthed any case construing section 25249.5 et seq. that imposes any particularized proof standards. We therefore look to the general standards of pleading and proof.

It is a fundamental principle of civil jurisprudence that "[n]o variance between the allegation in a pleading and the proof is to be deemed material, unless it has actually misled the adverse party to his prejudice in maintaining his action or defense upon the merits." (Code Civ. Proc., § 469; *Thrifty-Tel, Inc. v. Bezenek* (1996) 46 Cal.App.4th 1559, 1572.) Thus, the correct question is not whether plaintiff can prove defendants' products contain the precise carcinogen alleged in the complaint, but whether plaintiff can prove that defendants' products exposed individuals to a listed chemical without a warning, and did not mislead the defendants to their prejudice as to the nature of their claim. Defendants offer no basis for applying a more exacting standard in a Proposition 65 case, and we can divine no policy reason to set a higher bar. To the contrary, a more rigid interpretation of the proof requirements for a Proposition 65 action could well frustrate its remedial purpose—protection of the public from toxins—by blocking an enforcement action based on a technical dispute as to the precise form of a chemical where the difference is not relevant for purposes of a prima facie violation of Proposition 65. "A court should not adopt a statutory construction that will lead to results contrary to the Legislature's apparent purpose.' [Citation.]" (*Lungren, supra,* 14 Cal.4th at p. 305.)

The cases construing Proposition 65 support this commonsense approach. Our courts regularly interpret the provisions of the statute and the regulations reasonably, and reject attempts by both enforcers and businesses to impose higher proof standards. (See, e.g., *Mateel, supra,* 115 Cal.App.4th at pp. 21–24 [court rejected defendant's attempt to hold a plaintiff to an inappropriate standard of testing for lead]; *Baxter Healthcare Corp. v. Denton* (2004) 120 Cal.App.4th 333, 364–368 (*Baxter*) [court rejected attempt by OEHHA to require alleged violator to prove affirmative defense by clear and convincing evidence]; *Exxon Mobil Corp. v. Office of Environmental Health Hazard Assessment* (2009) 169 Cal.App.4th 1264, 1278–1285 [court rejected an attempt by potential violators to remove a chemical from the list by applying an overly strict interpretation of

the regulations governing listing]; *DiPirro v. Bondo Corp.* (2007) 153 Cal.App.4th 150, 190–192 [court upheld defense where defendant proved no observable effect of chemical on 75 to 85 percent of the population, and rejected as "extreme" plaintiff's proffered standard of no effect on " 'any consumer' "].)

Defendants also assert, without citation to authority, that because plaintiff did not seek leave to amend the complaints after learning that defendants claimed their products contain OTO dihydrochloride (as opposed to OTO), the "issue dispositive of [plaintiff's] appeal" is whether substantial evidence supports the trial court's finding that plaintiff failed to prove that defendants' products contain OTO. This argument merely restates in different procedural terms the trial court's formulation of the "core issue" to be tried—whether defendants' products contain orthotolidine, *vel non*. But the question raised by plaintiffs below and on appeal is whether that formulation is erroneous because it rests on too rigid an interpretation of the statute for purposes of proving a Proposition 65 violation. Rather than addressing that question, defendants assert, without more, that a failure to amend means plaintiff must prove *exactly* what it pled. As has been discussed, this is not a correct statement of the law.[9]

In sum, we reject defendants' contention and the trial court's requirement that a Proposition 65 plaintiff must prove that the chemical alleged in the complaint is the *exact* chemical in defendants' products. Rather, a plaintiff can meet its burden if the evidence as a whole establishes a violation of the statute, unless there is a material variance

[9] Defendants also cite *Consumer Cause, Inc. v. Weider Nutrition Internat., Inc.* (2001) 92 Cal.App.4th 363 (*Weider*) for the proposition that "combining a product with another chemical [which] may produce a Proposition 65 listed chemical does *not* require a Proposition 65 warning on the product." That holding is misstated. *Weider* actually holds that a product which *itself* does not contain a carcinogen does not require a warning if it becomes a carcinogen (testosterone) when ingested. (*Id.* at pp. 369–370.) *Weider* has no bearing on the issues before us.

between the pleading and the proof.[10] (Code Civ. Proc., § 469.) This standard serves both due process requirements and the protective goals of Proposition 65.

We turn now to a review of the evidence to determine whether plaintiff has satisfied this burden.

C. The Evidence at Trial[11]

As we have stated, the trial court set for hearing the narrow issue of "whether or not [defendants'] products contain the chemical [ortho-Tolidine]." Consequently, the parties' evidence related only to that scientific question.

1. Matters of Agreement

We begin by summarizing the substantial areas of agreement between the parties.

Defendants' products are designed to measure the chlorine levels in swimming pools and spas. Their manner of use was described by the vice president and a founder of one of the defendants: "The vial for testing the chlorine content of pool or spa water is filled [with that water] to a level that's marked on the vial. Then five drops of . . . what we commonly called the OTO solution are dropped into the vial, the cap is replaced on the vial, the vial is inverted a few times so the mixture is mixed. And there is a color

[10] In stating this conclusion we do not presuppose that plaintiff has proven or will be able to prove the other elements of a prima facie Proposition 65 cause of action; we address here only the narrow question of whether there was a failure of proof as a matter of law because plaintiff did not prove that the chemical in defendants' products is precisely the same chemical alleged in the complaint.

[11] Courts are sometimes called upon to make decisions about scientific matters, such as occurred here, based entirely on adversarial expert opinion. This may not be the best, or most accurate manner in which to settle scientific disputes. As we recently stated, "[i]t bears contemplating . . . whether the truth about complex, threshold scientific issues encompassed within Proposition 65 . . . is best derived by application of the substantial evidence rule to the testimony and opinions of dueling experts serving partisan commitments." (*People ex rel. Brown v. Tri-Union Seafoods, LLC* (2009) 171 Cal.App.4th 1549, 1573.) We think it would be helpful if the Legislature were to authorize the O to adopt an administrative process by which such threshold scientific issues might be determined. This process could be imposed as a requirement for exhaustion of administrative remedies, or might be optional such that, in the proper case, the court could invoke the doctrine of primary jurisdiction. (See, e.g., *South Bay Creditors Trust v. General Motors Acceptance Corp.* (1999) 69 Cal.App.4th 1068.)

comparison between the water [in] the vial and what are called the colored chips on the side of the vial. And that gives a reading on the chlorine content of the water and whether or not more chlorine is needed."[12]

The chemical formula for orthotolidine is $C_{14}H_{16}N_2$ (14 carbon atoms, 16 hydrogen atoms, and two nitrogen atoms). Orthotolidine is an "aromatic amine" the elements of which are bonded "covalently," that is, they have very strong bonds. The formula for orthotolidine dihydrochloride is $C_{14}H_{16}N_2$.2HCL. Thus, the two formulas are the same, except the dihydrochloride form of OTO has an addition of .2HCL. The ".2HCL" indicates the presence of hydrochloric acid which has a weak, or "ionic," bond to the orthotolidine molecule. Because of the ionic bond, the .2HCL portion of OTO dihydrochloride "dissociates" when the solid form of the dihydrochloride is placed in a liquid solution, while the covalently bonded $C_{14}H_{16}N_2$—or orthotolidine—remains intact.

In an aqueous acidic solution, the hydrogen protons from the HCL or acid attach to the orthotolidine in a transitory manner; this is described as moving on and off, or "hopping on and off" the orthotolidine molecules very rapidly. The orthotolidine is then said to be "protonated." Therefore, in an acidic aqueous solution, such as in defendants' products (which contain hydrochloric acid), orthotolidine exists in the protonated form. The chloride (.2HCL) remains in the solution, but is dissociated from the OTO.

The frequency of the protonation depends on the pH of the solution. At a highly acidic pH of about three the OTO will be protonated almost all of the time; at a more basic pH of about six (in plain water) the OTO will not be protonated at all. The result is the same whether OTO or OTO dihydrochloride is placed in solution. In defendants' products, which are highly acidic, both will become protonated OTO, meaning that the OTO molecules will almost always have hydrogen protons with transient bonds. If, however, either OTO or OTO dihydrochloride are placed in a very basic solution, they

[12] Plaintiff alleged in the complaints that consumers using defendants' products "sustained exposure by dermal contact" to the OTO by using a bare thumb or other finger rather than the cap to cover the vial containing the pool water and the OTO solution before mixing. Plaintiff also alleged, in the second complaint, that "[e]xposure also occurs by way of spillage."

"end up fully as the free base [OTO]." According to defendants' expert, one can start with OTO, convert it to OTO dihydrochloride by placing it in a highly acidic solution, and then reconvert it to OTO by making the solution basic.

Orthotolidine and the dihydrochloride form have different solubility, corrosivity and melting points. The dihydrochloride form is more corrosive because it is acidic. The hydrochloride is added for the purpose of making OTO highly soluble. The two compounds also have "different spectra in NMR"[13] and absorb light in the ultraviolet spectrum at a different frequencies.[14]

2. Matters of Disagreement

a. What is the proper testing method?

The Environmental Protection Agency has approved an analysis known as Method 8270C to test for the presence of orthotolodine in media (soil, water, etc.).[15] According to plaintiff's expert, an analysis of defendants' products using this method showed the presence of orthotolidine. This method does not distinguish between the protonated and unprotonated forms of OTO because, during the preparation of the solution for analysis, the pH is changed from acid to a base which changes any protonated form of OTO into its unprotonated, or neutral, form in order to extract it from the solution for analysis. According to plaintiff's expert this method is the proper one to use to determine the presence of OTO because it was designed to identify the presence of OTO in any medium, such as water that is acidic or basic, including in defendants' aqueous acidic products.

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[13] NMR is Nuclear Magnetic Resonance.

[14] Plaintiff's expert explained that protonated aromatic compounds will have a different UV spectrum because the protonation affects the electrons that are in the molecule. "It's not a chemical effect. It's just a charge effect."

[15] Method 8270C is described in the record as a "gas chromatography/mass spectrometry" method "used to determine the concentration of semivolatile organic compounds in extracts prepared from many types of solid waste matrices, soils, air sampling media and water samples."

According to defendants' expert, method 8270C cannot distinguish between orthotolidine and OTO dihydrochloride, and therefore was "completely inappropriate" to determine which of the two chemicals was present in defendants' products. Thus, if OTO dihydrochloride is present in an acidic solution, the test method, by making the solution basic, chemically alters the OTO dihydrochloride and changes it into the free amine (orthotolidine). As a result, a test using Method 8270C can show the presence of orthotolidine even if the original sample—before the pH was adjusted in preparation for extraction—contained only OTO dihydrochloride.

Plaintiff's expert explained, however, that altering the pH before extracting the OTO does nothing that would not otherwise have occurred naturally. As he explained, due to the nature of ionic bonds and applying Le Chatelier's Principle—by which chemical equilibrium will continue to adjust itself after any extraction or dilution occurs—"if you just shook the extraction flask up and didn't adjust the pH and let it sit for hours, maybe days . . . this neutral form would be what you end up with in the extraction solvent." He testified that Method 8270C was designed to take the differences between OTO and OTO dihydrochloride into account, "[a]nd the pH adjustment just makes it faster and more uniform in how it behaves."

According to defendant's expert, NMR and UV spectroscopy were appropriate tests for the presence of orthotolidine or OTO dihydrochloride in solution because they do not change the nature of the solution. His laboratory tested defendants' products using NMR, and the test results showed the products contained the dihydrochloride form of OTO, but none of the free amine (OTO) form at all. Although the experts agreed that the molecules in solution shifted very rapidly from the protonated to unprotonated form, defendant's expert testified that at any point in time the amount of the unprotonated form—or orthotolidine—was below the detection limit of the NMR experiment. Based on theoretical calculations, he estimated the amount of the unprotonated form in solution at any point in time was .001 percent of the solution. A second defense expert offered similar opinions: that NMR spectroscopy is "uniquely suited to analyze molecules in solution[,]" and the NMR tests would have detected the free base form of orthotolidine if

it had been present, but showed only the dihydrochloride form and none of the free base form.

b. Is protonated orthotolidine the same as orthotolidine dihydrochloride?

Another area of dispute was whether the protonated form of orthotolidine—the form existing in defendants' acid solution—is the same chemical as orthotolidine dihydrochloride. Plaintiff's expert testified that orthotolidine dihydrochloride *cannot* be present in an aqueous solution but can only exist in its solid form. He testified that, once OTO dihydrochloride is dissolved in solution, it loses its structure, and what remains intact is the covalently bonded orthotolidine molecules, having only transitory bonds to the HCL protons (i.e., the protonated form of orthotolidine), with chloride atoms present in the solution but completely dissociated from the OTO.

Defendants' expert, on the other hand, testified that in the acidic environment of defendants' products, the protonated form of OTO is the same as orthotolidine dihydrochloride. Even though in its solid form, orthotolidine dihydrochloride did not "have protons hopping on and off of it," the expert opined, it was the same chemical as protonated orthotolidine in solution, when protons did "hop on and off the Orthotolidine," because in both the solid form and in solution, the chemical was protonated. They were the same compound in different physical forms. In the solid form, he testified, "[t]he hydrogens are attached to the nitrogen and the chlorides are nearby," fixed in position, but not attached. In solution, the chlorides are dissociated or "floating around hydrated," with the same number of chlorides as in the solid form. The distance between the nitrogen and the chlorine would depend on the concentration of the solution.[16]

Defendant's expert could not state, however, whether the utility of defendants' products in detecting the amount of chlorine in water would be different depending upon

[16] On this subject, defendant's second expert provided essentially the same opinions: In defendants' solutions there is no difference between protonated OTO and OTO dihydrochloride other than the fact that the distance between the nitrogen and chlorides was greater in the solution than in the solid structure. He also agreed that, although the chloride atoms remain in solution, they do not remain associated with the same OTO molecule but they "hop from one to the other."

whether it contained OTO or OTO dihydrochloride; he also could not state to what degree the addition of the product to the pool water would change the pH of the OTO, but agreed it would change toward neutral (unprotonated).[17]

In rebuttal, plaintiff's expert testified that in solution, the chloride and the protonated molecules were so far apart that it "conceptually doesn't really make sense" to say the positive and negative charges maintained an ionic association. He disagreed with the defendant's experts, explaining, "you can't have association and dissociation at the same time. When the molecules are put into water the chlorides dissociate completely, they're free to move throughout that solution," and therefore OTO dihydrochloride cannot exist in solution.

c. No testimony on materiality of differences

There was a total absence of testimony on the subject of whether the differences between the two forms of orthotolidine, as described by defendants, would or would not have a material impact on the carcinogenicity of defendants' products for purposes of prima facie proof of a Proposition 65 violation. We assume none was offered because the trial court's restrictive formulation of the issue to be tried—the sole question being whether the chemical in defendants' products was orthotolidine—precluded the introduction of any such evidence. [18]

3. Other Evidence

In addition to the expert testimony, the parties offered the following evidence:

a. The Governor's list

Both OTO and OTO dihydrochloride are listed on the Governor's Proposition 65 list as carcinogenic. OTO was placed on the list in 1988, based on the opinion of the Proposition 65 Scientific Advisory Panel of the California Health and Welfare Agency,

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[17] Plaintiff alleged dermal contact occurred after the OTO solution was added to the pool water—thus creating a far more basic solution in which, according to both experts, the OTO dihydrochloride shifts to OTO.

[18] When plaintiff's counsel posed such a question to defendant's expert ("Does an extra proton change the carcinogenicity of Orthotolidine?"), defendants' counsel objected and the objection was sustained.

after reviewing various documents, including the National Toxicology Program's Fourth Annual Report on Carcinogens. (§ 25249.8 subd. (b).) OTO dihydrochloride was placed on the Governor's list in 1992, based upon the lead agency's conclusion that an "authoritative body"—here the National Toxicology Program (NTP)—had formally identified OTO dihydrochloride as causing cancer. (§ 25249.8 subd. (b); Cal. Code Regs, tit. 27, § 25306.) There is no evidence that the method used by the agency to list a particular chemical has any significance.

The chemicals are listed by name and also by their "CAS" numbers. This refers to the Chemical Abstract Service, which was created to "make it easier for chemical researchers to find work relating to their own work." Neither party's experts assigned particular significance to the fact that OTO and OTO dihydrochloride had different CAS numbers.[19]

b. The NTP Fourth Annual Report on Carcinogens

This undated report states there is evidence of carcinogenicity of OTO in animals.[20] It describes the uses of OTO in making dyes, pigments and other products, including in swimming pool chlorine test kits. The report states that exposure to OTO can be through dermal absorption or ingestion if the test solutions are emptied into the pool. The report also describes the amounts of OTO and "its dihydrochloride" that have been produced and imported in 1978, 1979 and 1980.

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[19] Defendants contend that the CAS numbers are significant because they are used by the California Division of Occupational Safety and Health to identify chemicals on its Hazardous Substances List and are incorporated into the federal Occupational Safety and Health Administration regulations. The fact that the numbers are *used*, however, does not tend to prove anything about whether the *assignment* of different numbers to two compounds is significant. Defendant's expert testified that the difference in CAS numbers "may or may not be trivial." Plaintiff's expert testified a chemist would not ascribe any significance to the difference.

[20] The report uses the term "3,3'-dimethylbenzidine (DMB)" rather than orthotolidine.

c. The Merck index[21]

The 2006 version of the Merck Index (Fourteenth Edition), Monograph number 09514 identifies 3,3'-dimethylbenzidine as "o-Tolidine" and includes "Dihydrochloride" as a "Derivative Type" of OTO.

d. The IARC monograph[22]

In 1972, the International Agency for Research on Cancer (IARC) issued a monograph describing the carcinogenic properties of various chemicals, including "3,3'-dimethylbenzidine (o-tolidine)." The monograph describes OTO as "a weak base that forms salts with HCl . . . etc.," and states it is used, among other things, for the "colorimetric determination of chlorine in air and water." The IARC report concluded there was a "suspicion" of carcinogenicity, but supporting evidence was not available.

e. The federal occupational standards

In 1978 the National Institute for Occupational Safety and Health (NIOSH) issued a report providing "criteria for a recommended standard . . . occupational exposure to o-Tolidine." It states that o-tolidine is used, among other things, in tests for chlorine in water, and that "the term 'o-tolidine' refers to "various physical forms of the compound and its salts." It further states that skin contact with o-tolidine "shall be avoided." Although adherence to specific NIOSH standards is required if OTO is handled or stored

[21] The Merck Index is a reference book that lists a "huge number of chemicals," their properties, their synonyms, their empirical formulas, and illustrations of their structures. It is an "authoritative" and reliable source.

[22] The Monographs program is described in this way on the IARC website: "The IARC Governing Council adopted a resolution concerning the role of IARC in providing government authorities with expert, independent, scientific opinion on environmental carcinogenesis. As one means to that end, the Governing Council recommended that IARC should prepare monographs on the evaluation of carcinogenic risk of chemicals to man, which became the initial title of the series. [¶] . . . [¶] Through the *Monographs* programme, IARC seeks to identify the causes of human cancer." <http://monographs.iarc.fr/ENG/Preamble/currenta1background0706.php.>

in sealed containers, those standards do not apply to users of "test kits containing o-tolidine."

f. The Office of Environmental Health Hazard Assessment report[23]

In 2002, OEHHA published a report setting "No Significant Risk Levels (NSRLS) For the Proposition 65 Carcinogens 3,3'-Dimethylbenzidine and 3,3'-Dimethylbenzidine Dihydrochloride." The report reviewed various studies and their findings, assessing the results of tests conducted with OTO and with OTO dihydrochloride as a group. The OEHHA concluded that the cancer potencies ("mg/kg-day") of OTO and OTO dihydrochloride are, respectively, 16 and 12, and their NSRLs are, respectively, 0.044 and 0.059 "µg/day."[24] These estimates were derived from a 1991 NTP test in which male rats were exposed to OTO dihydrochloride via drinking water. "The cancer potency estimate obtained from studies of [OTO dihydrochloride] was used as the basis for [OTO] cancer potency after adjusting for differences in molecular weight."

g. Defendants' product labels and recipes

The defendants' products are uniformly labeled as containing orthotolidine or OTO, not orthotolidine dihydrochloride.[25] The record also includes what appear to be defendants' recipes for "OTO" or "OTO #1 Solution" the ingredients for which are

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[23] The OEHHA is the lead agency charged with implementing Proposition 65. (§ 25249.12; Cal. Code Regs., tit. 27, § 25102, subd. (o).) Among other things, it is authorized to determine "whether a level of exposure to a chemical known to the state to cause cancer poses no significant risk." (Cal. Code Regs., tit. 27, § 25701 et seq.) These determinations are referred to as "No Significant Risk Levels" or "NSRLs." (See, e.g., *Baxter, supra,* 120 Cal.App.4th at p. 358.)

[24] A "µg" is a microgram, one millionth of a gram, or one thousandth of a milligram. (McGraw-Hill Dictionary of Scientific and Technical Terms (4th ed. 1989), p. 1195.)

[25] An employee and officer of one of the defendants testified that "the label doesn't signify the chemical components of the product." He admitted, however, that the label also indicates that the product contains hydrochloric acid.

deionized water, orthotolidine powder and hydrochloric acid.[26] There is also a Material Safety Data Sheet for the product called "Aqua Chem OTO" which is described as "Ortho-tolidine dihydrochloride solution" and identifies the ingredients as Hydrochloric acid and Orthotolidine.

D. Analysis

The trial court ruled that plaintiff did not prove defendants' products contained orthotolidine because defendants "presented a more persuasive and coherent body of evidence" showing that the chemical was orthotolidine dihydrochloride. We agree with defendants that this finding is supported by substantial evidence. This fact, however, is not dispositive. The question remains whether this was a "material failure of proof" of the alleged violation of Proposition 65.

The evidence at trial indisputably demonstrates that defendants' products contain a "listed chemical." Yet it took two years of litigation, including a two-day trial with contested expert opinions before the question "what's in the bottle?" could be answered. This is not surprising, given that defendants themselves labeled their products as containing orthotolidine, and the evidence at trial showed the two chemicals are more similar than they are different: Orthotolidine dihydrochloride is the "salt form" or "the dihydrochloride form" of orthotolidine; both have the same core chemical structure, which remains intact in solution; both become "protonated orthotolidine" when in a highly acidic solution, such as found in defendants' products; both can be converted from protonated to unprotonated—according to defendants—simply by changing the pH of the solution in which they are placed; and both chemicals are carcinogens. Significantly, OEHHA estimated the cancer properties and NSRLs for both forms of orthotolidine in a single report, setting the cancer potency estimate for OTO based on a

[26] In one recipe, "O-Tolidine powder" is combined with hydrochloric acid; this is left to sit for three days, and creates an "acid mix." The acid mix is added to distilled water and more hydrochloric acid to create the solution. According to defendant's expert this means that OTO has been converted to OTO dihydrochloride before adding it to the other ingredients.

study of OTO dihydrochloride. Thus, the agency tasked with enforcing Proposition 65 appears to treat the two forms of orthotolidine as the same carcinogen and it assigned to them different NSRLs based *solely* on their differences in molecular weight.

These nuanced distinctions between orthotolidine and its dihydrochloride, coupled with defendants' own evidence that its products contain a listed chemical, demonstrate there was not a "material failure of proof" for purposes of Proposition 65. But due to the trial court's restrictive formulation of the dispositive issue—do defendants' products contain *orthotolidine*?—the question whether there was a material variance between pleading and proof did not and could not arise. Wholly absent from the trial court's expression of the "core issue" was whether the distinction between orthotolidine and its dihydrochloride was meaningful either for purposes of Proposition 65 or for purposes of defendants' due process rights. Indeed, the court expressly rejected plaintiff's argument that Proposition 65, as a remedial statute, necessitated more liberality in testing the sufficiency of plaintiff's proof; it concluded, instead, that plaintiff's burden was to prove that defendants' products contained *orthotolidine*, and if it could not, defendants were entitled to judgment. The court's formula left no room to consider whether plaintiff's proof was or was not a material variance from its pleading.[27]

As we have explained, to be material, a variance must have misled defendants to their prejudice in maintaining their defense on the merits, or put another way, " 'misled [them] as to the real issues of fact involved in the case.' " (*Frazier v. Yor-Way Market, Inc.* (1960) 185 Cal.App.2d 390, 399; Code Civ. Proc., § 469.) We cannot say on this record and in the first instance whether defendants were misled to their prejudice by plaintiff's allegations. We must therefore remand the matter so the parties will have the opportunity to present argument, and any relevant evidence, that the proof was or was not

[27] The court also tacitly rejected plaintiff's request that it be allowed to show, before the case is dismissed, that "in . . . terms of their carcinogenicity and the applicable (NSRL), there is absolutely no difference between OTO and Protonated . . . OTO" and that "the form of OTO consumers are exposed to is Unprotonated OTO" when defendants' products are used for their intended purposes.

a material variance from the pleading, in the context of Proposition 65 and its remedial purposes.[28]

III. DISPOSITION

The judgment is reversed, and the matter is remanded for proceedings consistent with this opinion. The post-judgment orders are vacated.

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Rivera, J.

We concur:

_____
Ruvolo, P.J.

_____
Humes, J.

[28] During argument in the trial court, defendants' counsel demonstrated his appreciation for the fact that the identification of a chemical needs its Proposition 65 context in order to be meaningful. As he explained, the differences in the two forms of orthotolidine "will become very important in phase two of the trial . . . because in that phase of the trial, defendants will be using these differences to establish that there is in fact no significant risk to consumers from exposure to this chemical as alleged in the complaint or from even the dihydrochloride as [the exposure is] alleged in the complaint." Thus, defendants themselves suggest, without necessarily conceding, that the differences between the chemicals relate more to the affirmative defenses described in Section 25249.10 than to the proof, in the first instance, of a violation. But as we have stated, the parties must be given the opportunity to present argument and any evidence needed for that analysis.