**IN THE UNITED STATES DISTRICT COURT**
**FOR THE EASTERN DISTRICT OF TEXAS**
**SHERMAN DIVISION**

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| PURESHIELD, INC. AND VIACLEAN TECHNOLOGIES, LLC,<br><br>Plaintiffs,<br><br>v.<br><br>ALLIED BIOSCIENCE, INC.,<br><br>Defendant. | Case No. 4:20-CV-734<br><br>**JURY TRIAL DEMANDED** |

## COMPLAINT

Plaintiffs PureShield, Inc. ("PureShield") and ViaClean Technologies, LLC ("ViaClean") (collectively, "Plaintiffs") bring this Complaint against Defendant Allied BioScience, Inc. ("Allied BioScience" or "Defendant"), and hereby allege as follows:

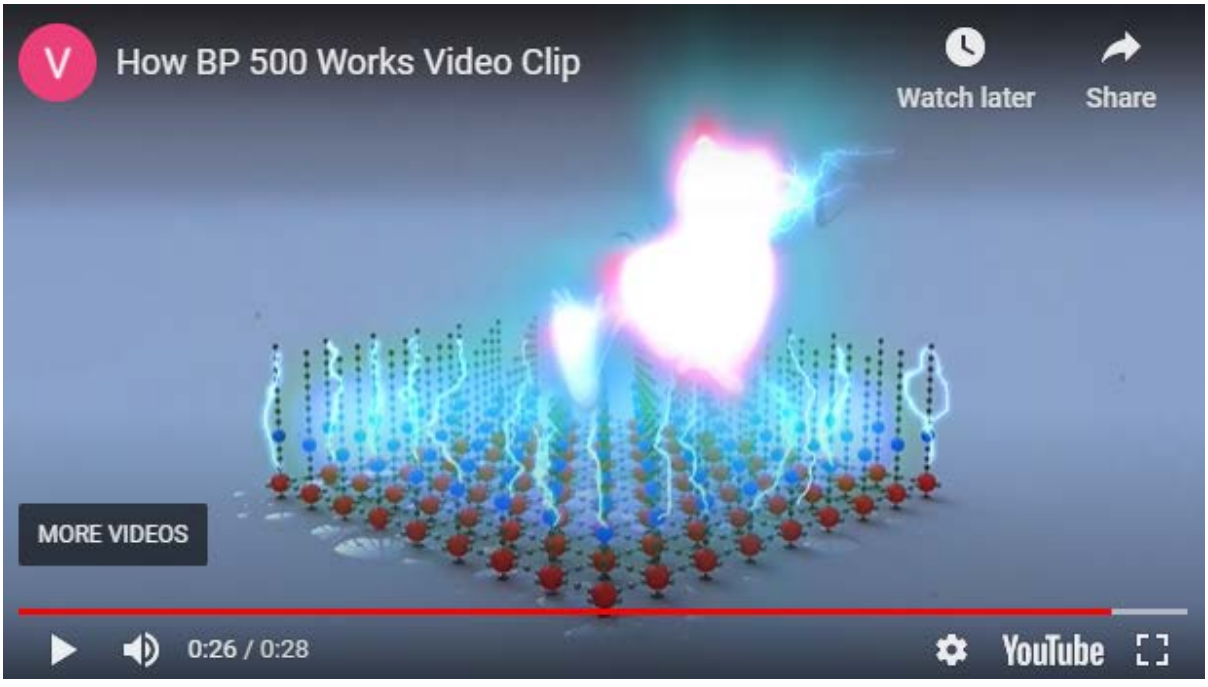
## NATURE OF THE ACTION

1. This is a civil action brought by Plaintiffs against Allied BioScience for (a) patent infringement arising under the patent laws of the United States 35 U.S.C. §§ 1 *et seq*.—and more particularly under 35 U.S.C. §§ 271 and 281 *et seq*.—of ten United States patents,[1] (b) false advertising arising under Section 43 of the Lanham Act 15 U.S.C §§ 1125 *et seq*., (c) unfair competition arising under Texas Unfair Competition common law, and (d) tortious interference with prospective business relations arising under Texas Tortious Interference common law.

[1] The ten (10) United States patents asserted in this action are: U.S. Patent No. 5,954,869 ("'869 patent"); U.S. Patent No. 6,113,815 ("'815 patent"); U.S. Patent No. 6,120,587 ("'587 patent"); U.S. Patent No. 6,762,172 ("'172 patent"); U.S. Patent No. 9,624,384 ("'384 patent); U.S. Patent No. 9,744,120 ("'120 patent"); U.S. Patent No. 10,010,080 ("'080 patent"); U.S. Patent No. 10,328,020 ("'020 patent"); U.S. Patent No. 10,405,553 ("'553 patent"); and U.S. Patent No. 10,531,664 ("'664 patent") (collectively, "Asserted Patents"). *See* Exs. A-J.

2. Plaintiffs are industry leaders in the field of sophisticated antimicrobial products that provide lasting protection against pathogens on applied surfaces. PureShield has been at the forefront of commercializing pioneering antimicrobial technologies, and more recently joined forces with its parent company ViaClean to combat the ubiquitous spread of pathogens that threaten everyday life—including dangerous viruses such as COVID-19. Together, Plaintiffs provide the nano surface protectants BIOPROTECT-500, -7200, and -RTU.

3. Plaintiffs' products are based on antimicrobial formulations registered with the Environmental Protection Agency ("EPA"), and the products are non-toxic, non-leaching, and highly durable. In other words, Plaintiffs' products are based on chemistry that is safe for humans and the environment alike. When applied to a surface or incorporated into a material, Plaintiffs' products bond strongly to the surface to create a micro-biostatic antimicrobial coating. This coating in turn forms a nano bed of spikes electrically charged to attract pathogens and destroy them by biomechanically piercing cells and rupturing their membranes.




*See* https://youtu.be/r2ZjGvJvdH4.

4. Plaintiffs' products have a shelf-life of at least 1 year, and can be applied to not only a variety of porous and non-porous surfaces, but can also be incorporated into manufacturing processes for textiles, plastics, and metals. When applied to surfaces, the formulations provide continuous protection against pathogens for up to 90 days. Plaintiffs' EPA registered products are used today in numerous environments, including medical facilities, schools, households, public transportation, aviation, automotive interiors, marine vessels, commercial facilities, hospitality, fitness centers, and correctional facilities. Unlike conventional products, the Plaintiffs' products do not include poisons, phenols, or heavy metals. Not only are the chemical formulations safe and effective, they also avoid the formation of super bugs inherent in the use of conventional antimicrobials.

5. Instead of developing its own technology, Allied BioScience has chosen to infringe Plaintiffs' licensed patent rights, unfairly compete, and engage in false advertising with its competing antimicrobial products, including without limitation SURFACEWISE and SURFACEWISE$^2$. Plaintiffs, therefore, file this action to protect their investments, patent rights, and good will as well as to encourage continued innovations in antimicrobial technologies.

**THE PARTIES**

6. PureShield, Inc. is a corporation organized and existing under the laws of the State of Florida, with its principal place of business at 5500 North Military Trail, Jupiter, Florida 33458. PureShield is a leading supplier of innovative and safe antimicrobial solutions that combat the spread of pathogens. PureShield is a wholly-owned subsidiary of ViaClean.

7. ViaClean Technologies, LLC is a limited liability company organized and existing under the laws of the State of Pennsylvania, with its principal place of business at 230 South Broad Street, Suite #1201, Philadelphia, Pennsylvania 19102. ViaClean is a leading supplier of innovative and safe antimicrobial solutions that combat the spread of pathogens.

8. Upon information and belief, Allied BioScience, Inc. is a corporation organized and existing under the laws of the State of Nevada, with a principal place of business at 7800 Dallas Parkway, Suite #650, Plano, Texas 75024. Allied BioScience is a manufacturer of antimicrobial products.

## JURISDICTION AND VENUE

9. This Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338(a), 15 U.S.C. § 1121(a), and 28 U.S.C. §§ 1332 and 1367.

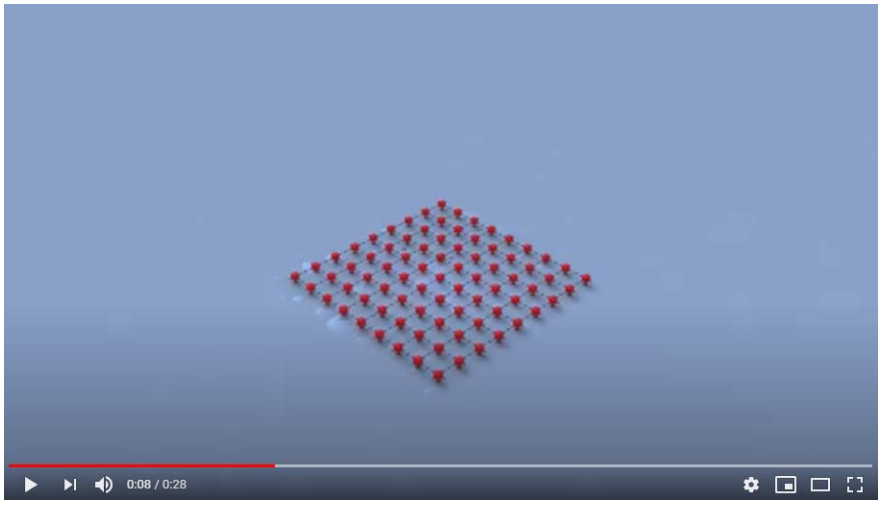
10. This Court has personal jurisdiction over Allied BioScience. Allied BioScience has established minimum contacts within this forum such that the exercise of jurisdiction over it would not offend traditional notions of fair play and substantial justice. Specifically, Allied BioScience maintains its international headquarters and principal place of business in Plano, Texas, and thus is subject to this Court's jurisdiction. Moreover, Allied BioScience regularly transacts business in this Judicial District and has committed and continues to commit in this Judicial District acts of patent infringement, false advertising, unfair competition, and tortious interference with prospective business relations as alleged in this Complaint.

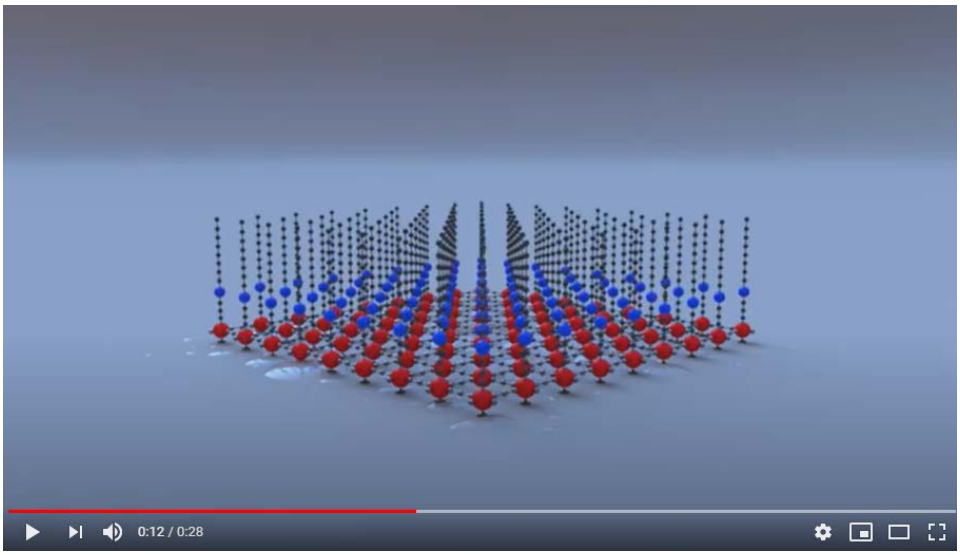
11. Venue is proper in this Judicial District pursuant to 28 U.S.C. §§ 1391(b) and (c), as well § 1400(b). Allied BioScience maintains a regular and established place of business in this Judicial District and has committed in this Judicial District acts of patent infringement, false advertising, unfair competition, and tortious interference with prospective business relations as alleged in this Complaint.

## FACTUAL BACKGROUND

12. Plaintiffs are industry leaders in the field of antimicrobial surface coatings that are long-lasting, non-toxic, can be applied on virtually all surfaces, and provide biochemical nano structures for protection against pathogens.

13. Plaintiffs' products are applied to surfaces or incorporated into products during the manufacturing process. A micro-biostatic antimicrobial coating binds to the surface and is designed to fight off pathogens. This coating is based on molecules made up of several sections with different functionalities. One section forms a strong bond to the surface it is applied on or incorporated into. The other section forms a nano bed of spikes that are only about one thousandth the diameter of a human hair, yet large enough to pierce the cell walls of pathogens. These chains of atoms attract pathogens, pierces their cell walls, and permanently destroys them in the process. This process is generally illustrated in the below-reproduced images from Plaintiffs' marketing videos. *See* https://youtu.be/r2ZjGvJvdH4 :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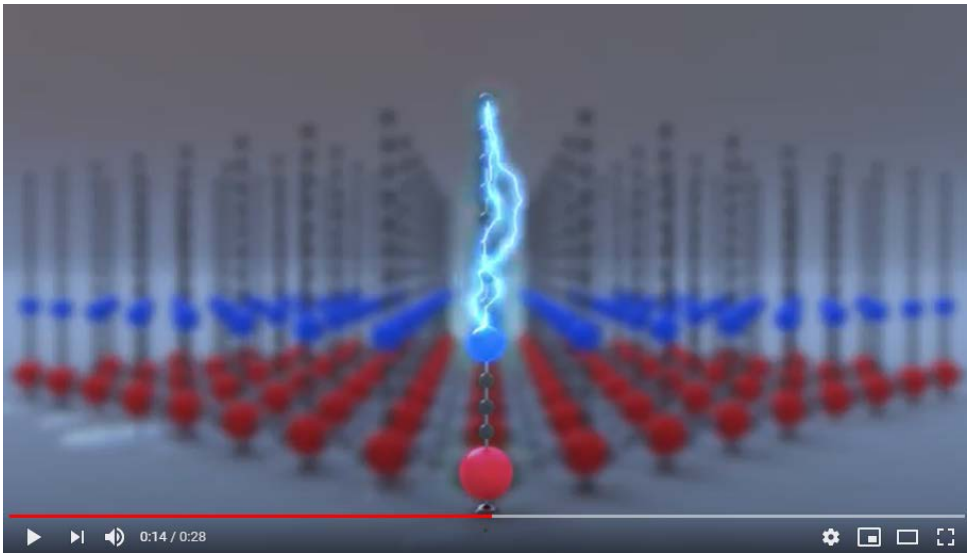
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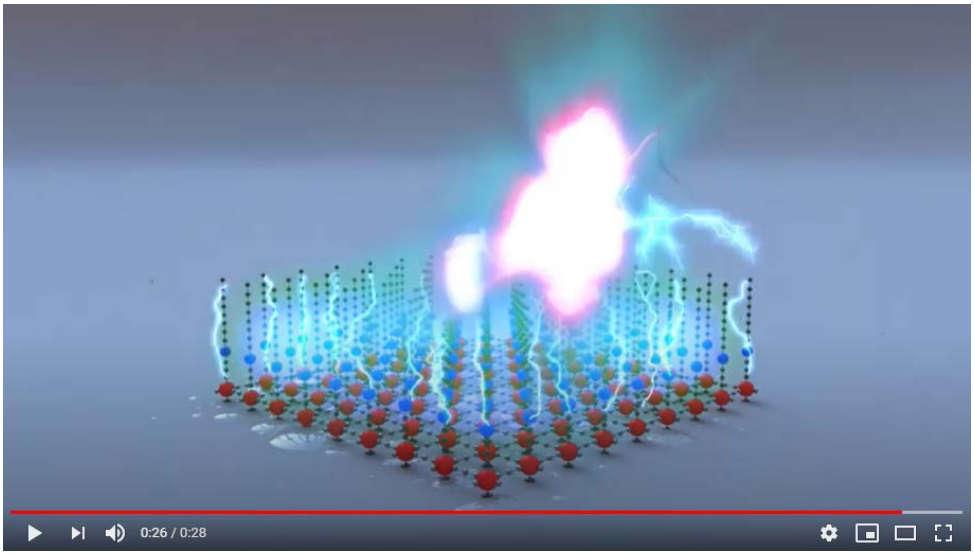
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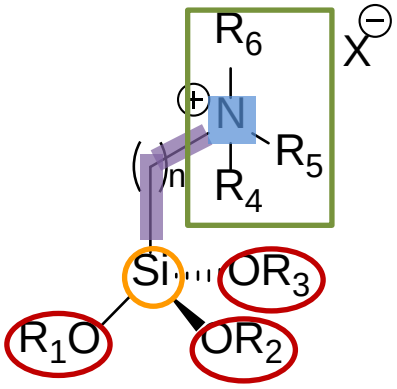
14. More specifically, Plaintiffs' products are based on intricate chemical processes that utilize silanol quaternary ammonium compounds ("SQACs"). SQACs are organic compounds and a category of organosilanes that comprise a quaternary ammonium group as shown in the general structure (I):

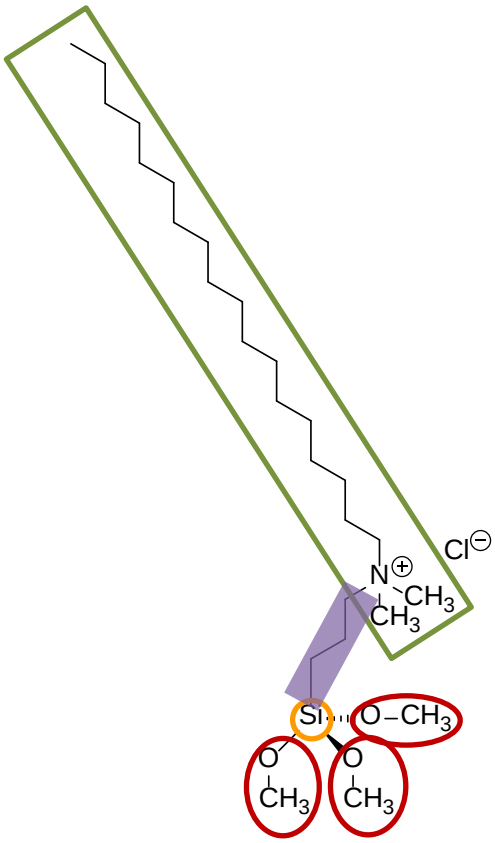



(I)

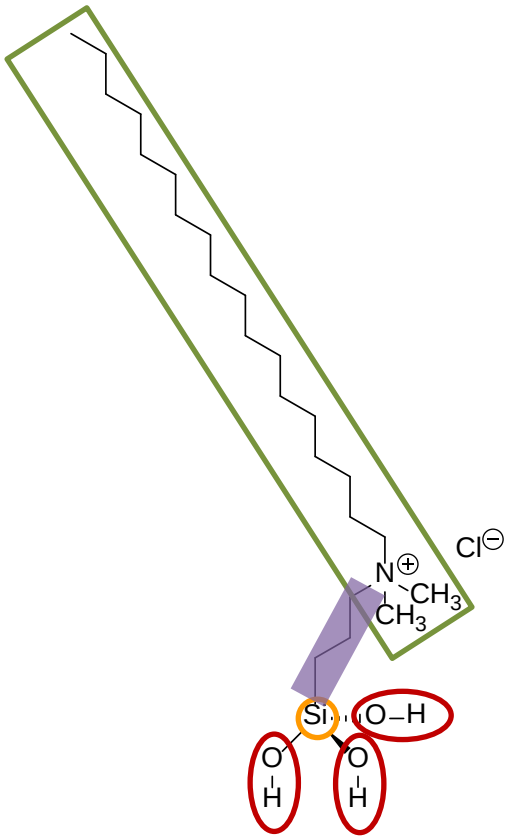
15. As shown in general structure (I), SQACs comprise a silicon atom (orange) that is bound to three alkoxy or hydroxy groups (red). In the case of alkoxy groups, groups $R_1$ through $R_3$ represent alkyl groups (*i.e.*, hydrocarbon groups), such as methyl ($CH_3$–) groups or ethyl ($CH_3$-$CH_2$–) groups. In the case of hydroxy groups, groups $R_1$ through $R_3$ represent hydrogen atoms.

16. The silicon atom is also bound, via an alkylene bridge (*i.e.*, a hydrocarbon bridge, highlighted in purple), to a quaternary ammonium group (shown in green box). The quaternary ammonium group is made up of a nitrogen atom (highlighted in blue) that has a permanent positive charge and that is bound to three groups, labeled as groups $R_4$ through $R_6$. These groups $R_4$ through $R_6$ are typically alkyl (*i.e.*, hydrocarbon) groups or aromatic (*i.e.*, cyclic hydrocarbon groups with conjugated double bonds). Because the nitrogen atom in SQACs has a permanent positive charge, SQACs will be accompanied by a negatively charged counterion, represented by $X^-$ in general structure (I). These counterions are typically halides, such as chloride ($Cl^-$), bromide ($Br^-$), or iodide ($I^-$).

17. Certain SQACs including 3-(trimethoxysilyl)propyl octadecyldimethyl ammonium chloride ("Trimethoxy") and 3-(trihydroxysilyl)propyl octadecyldimethyl ammonium chloride ("Trihydroxy") can be used as antimicrobial agents.




Trimethoxy

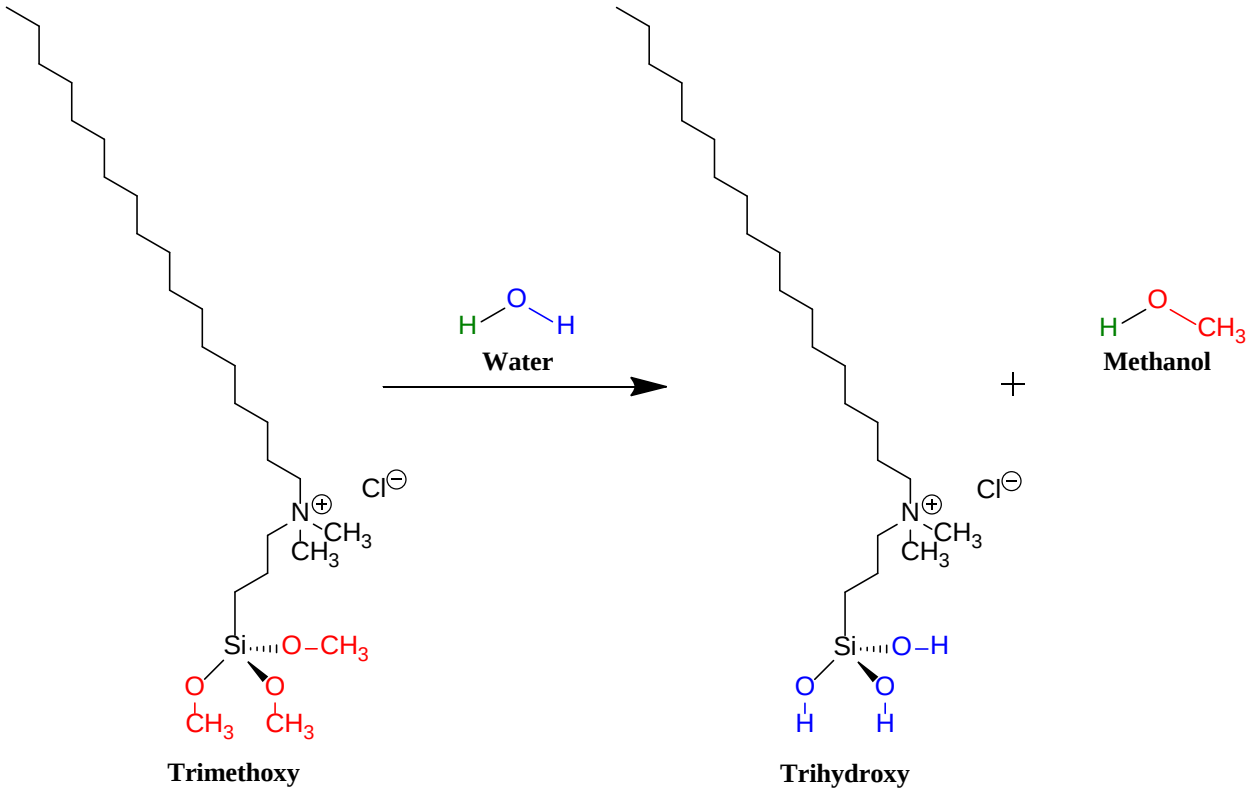



Trihydroxy

*See generally* Asserted Patents.

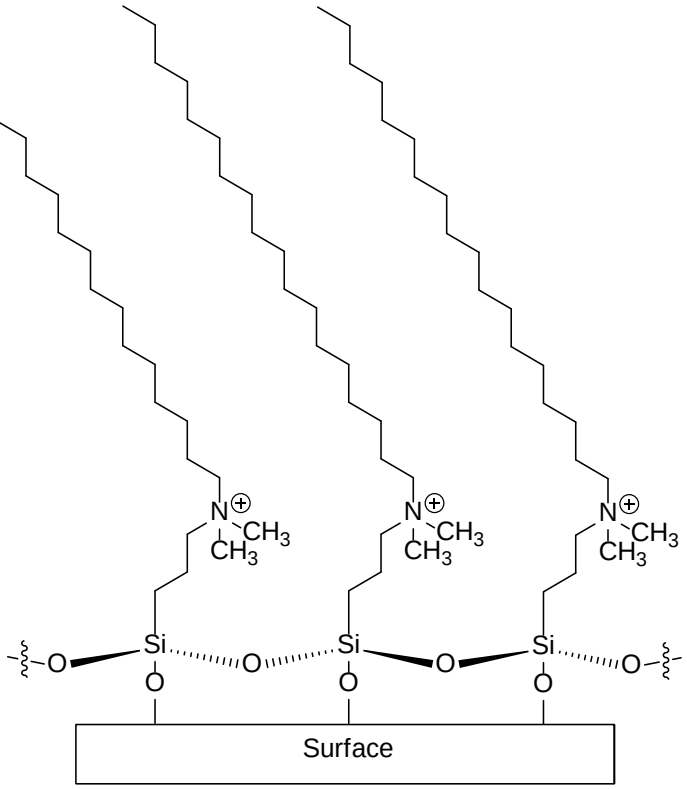
18. In the case of Trimethoxy, the silicon atom (orange) is bound to three methoxy groups (red) and to an N,N-dimethyl-N-octadecyl ammonium group (green) via a propylene bridge (highlighted in purple). In the case of Trihydroxy, the silicon atom (orange) is bound to three hydroxy groups (red) and to an N,N-dimethyl-N-octadecyl ammonium group (green) via a propylene bridge (highlighted in purple).

19. The structures of Trimethoxy and Trihydroxy are nearly identical—the only difference being that Trimethoxy has three methoxy (–O-$CH_3$) groups and Trihydroxy has three hydroxy (–OH) groups. In fact, Trihydroxy is the direct result of Trimethoxy being in water or an aqueous solution. *See*, *e.g.*, Ex. A at 1:51-56. In other words, providing Trimethoxy in an aqueous solution will hydrolyze it and thus turn it into Trihydroxy:




20. SQACs like Trimethoxy and Trihydroxy bind to surfaces to form a thin, durable coating on various surfaces, like metal, plastic, textiles, and wood. *See*, *e.g.*, H. Nikawa *et al.*, "Immobilization of Octadecyl Ammonium Chloride on the Surface of Titanium and Its Effect on Microbial Colonization *In Vitro*," Dental Mater. J. 2005, 24(4), 570-582 ("Ex. K") at 579-80; *see also* M. Andresen *et al.*, "Nonleaching Antimicrobial Films Prepared from Surface-Modified Microfibrillated Cellulose," Biomacromolecules 2007, 8, 2149-2155 ("Ex. L") at 2151.

21. The SQACs can bind to surfaces because the silanol portion (1) covalently binds to the hydroxide or oxide moieties on surfaces and (2) homopolymerizes via a condensation mechanism to form a durable, three-dimensional cross-linked polymer matrix. *Id*.




22. The resulting SQAC coatings are antimicrobial because the quaternary ammonium portion attracts pathogens and disrupts their electrical equilibrium. *See* Y. Jiao *et al*., "Quaternary Ammonium-Based Biomedical Materials: State-of-the-Art, Toxicological Aspects and Antimicrobial Resistance," *Prog. Polym. Sci.* 2017, 71, 53-90 ("Ex. M") at 56, 59. Such disruption causes the death of pathogen cells. Moreover, SQACs can bind to natural and synthetic substrates to produce an antimicrobial coating on those substrates. *See*, *e.g.*, Ex. A at 1:47-63. That is, organosilane compounds like SQACs can attach to the surface of various materials and form an antimicrobial layer on the surface of those materials.

23. SQACs are applied to substrates by dissolving them in a solvent, such as methanol, and applying the resulting SQAC solution to a substrate. *See, e.g.*, Ex. A at 2:32-52. However, these SQAC solutions can be toxic because of the solvent selected to dissolve the SQAC. *See id.* at 2:32-43. To avoid solvent-associated toxicity, dissolving organosilane compounds like SQACs in water is preferable. *See id.* at 2:52-59.

24. SQACs are, however, unstable in water. *See id.* at 2:7-10. As a result, SQACs in water begin to lose effectiveness within a few hours. *See id.* at 2:10-13. Moreover, SQACs self-condense—that is, SQAC molecules react with each other—which increases the viscosity of SQAC formulations and makes them difficult to apply to surfaces. *See id.* at 2:7-10, 2:13-15; *see also* Ex. E at 2:29-36.

25. Over the years, Plaintiffs have commercialized and EPA-registered SQAC formulations that are stable in an aqueous solution, have a long shelf-life, are non-toxic, and are long-lasting. The Asserted Patents disclose and claim the use of stabilizers in the SQAC aqueous formulations so as to achieve stabilization and prevent self-condensation. *See, e.g.*, Ex. E at 2:50-53, 3:5-21. By way of non-exhaustive examples, these stabilizers include polyols, ethers, esters, carbonates, and essential oils. *See, e.g.*, Ex. A at 3:1-11; Ex. B at 3:6-13; Ex. D at 3:6-10; Ex. E at 3:11-21. By including a stabilizer, the resulting aqueous SQAC formulations are stable and have a long shelf-life.

26. Plaintiffs' products are also effective in combatting pathogens—including COVID-19. Plaintiffs have expended considerable time and resources in obtaining appropriate approvals both to supply their products and to develop the SQAC market in the United States. PureShield has obtained EPA registrations for its products since at least 2011. *See, e.g.*, EPA Registration Nos. 87583-1 ("Ex. N"), 87583-2 ("Ex. O"), 87583-3 ("Ex. P").

27. Since as early as 2008, Allied BioScience has been making, using, offering for sale, and selling in the United States, and importing into the United States, antimicrobial SQAC products that compete with Plaintiffs' products and infringe the Asserted Patents. To date, Allied BioScience's antimicrobial products have included, without limitation, GERMMAX, SURFACEWISE, and SURFACEWISE$^2$ ("Accused Products").

28. Allied BioScience marketed its SQAC formulations under the initial brand name GERMMAX as "a long-lasting, non-visible, self-cleaning surface coating for most any surface. Professionally applied GERMMAX$^{TM}$ coatings keep surfaces safe from germs for months!" Ex. Q (https://web.archive.org/web/20130910113315/http://www.alliedbioscience.com/). Allied BioScience's marketing materials further described the antimicrobial surface coating product as being able to "continually inhibit the growth of a wide array of bacteria, mold, algae and fungi for months, when professionally applied and up to 90 days when self-administered." Ex. R (https://web.archive.org/web/20130808142841/http://alliedbioscience.com/germmax.html). In other words, Allied BioScience's marketing materials extolled the same benefits as Plaintiffs' SQAC formulations, including:

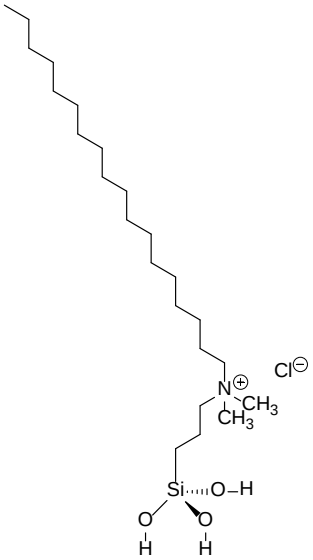
- Commercial applications keep killing germs on surfaces for months.
- ***Environmentally friendly, non-toxic, non-leaching, barrier on most any surface***.
- Eliminates odor caused by bacteria, fungi and VOCs.
- Prevents staining and deterioration caused by bacteria, fungi, mold and mildew.
- Eliminates adaptive organisms or "super bugs"
- ***Water-based, non-toxic antimicrobial technology***. Odorless & colorless.
- Meets OSHA standards and is ***EPA registered***.

*Id.* (emphases added).

29. Notably, upon information and belief, GERMMAX has never been EPA registered. Nor did Allied BioScience submit any EPA applications until years later. If anything, Allied BioScience's unregistered sales of SQAC-based formulations violated the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA").

30. Allied BioScience later marketed its antimicrobial surface coating product as SURFACEWISE. Its marketing materials described the product as "a long-lasting antimicrobial surface coating that reduces the spread of pathogens on surfaces at a microscopic level . . . demonstrated to combat germs on a variety of surfaces for more than three months after the initial application, creating safer and healthier environments for everyone." Ex. S (https://web.archive.org/web/20141226113125/http://www.alliedbioscience.com/abs-science-based-technology/surface-wise/). Allied BioScience's marketing materials further explained that "*SurfaceWise*™ is a transparent coating that binds to surfaces and creates a long-lasting hostile microscopic barrier that makes it difficult for pathogens to live and multiply. These antibacterial surface coatings have been demonstrated to combat the bacteria that cause infections. As surfaces are touched (recontaminated), the coating continues to fight the threat." *Id.*

31. Years later, Allied BioScience applied for and obtained EPA Registration No. 92082-1 for SURFACEWISE. EPA records list the active ingredient in SURFACEWISE as "3-(trihydroxysilyl)propyldimethyloctadecyl ammonium chloride." Ex. T (EPA Registration No. 92082-1, Issued October 5, 2018). That is, the active ingredient in SURFACEWISE is Trihydroxy with the following chemical structure:




32. The EPA records indicate that 99.25% in SURFACEWISE are other ingredients. No publicly available information identifies the other ingredients. The Trihydroxy in SURFACEWISE, however, is provided in an aqueous solution. As discussed extensively above, it is well-established that Trihydroxy in water would be unstable and ineffective without a stabilizing agent. Upon information and belief, SURFACEWISE therefore necessarily includes a stabilizer. Such stabilizers, which have been extensively studied, are polyols, ethers, esters, carbonates, essential oils, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result.

33. Earlier this year, Allied Bioscience began marketing its formulation as SURFACEWISE[2]. Reports indicate that Allied Bioscience maintains the specific formulation as "a trade secret." Ex. U (https://www.washingtonpost.com/climate-environment/2020/08/26/epa-coronavirus-cleaner/); Ex. V (https://liveandletsfly.com/american-airlines-coronavirus-disinfectant/). EPA records, however, show that the active ingredient in SURFACEWISE[2] remains Trihydroxy—*i.e.*, the same SQAC used in SURFACEWISE. Ex. W (https://www.epa.gov/sites/production/files/2020-08/documents/20tx05-aa-auth_8-24-2020.pdf); Ex. X (https://www.epa.gov/sites/production/files/2020-08/documents/20tx04-toss-auth-8-24-2020.pdf); Ex. Y (Revised

Label 20TX04); Ex. Z (Revised Label 20TX05).

34. Allied BioScience has also recently sought and obtained an emergency regulatory exemption to use its SURFACEWISE$^2$ without undergoing a full EPA registration process. Ex. AA (https://www.epa.gov/newsreleases/trump-epa-approves-first-ever-long-lasting-antiviral-product-use-against-covid-19). The exemption lasts until August 24, 2021. *Id*. With this limited exemption, EPA has authorized SURFACEWISE$^2$ to be used "on non-porous, non-food-contact surfaces to control the novel coronavirus . . . at 27 American Airlines aircraft and airport facilities in Texas" (Ex. W), and "at two Total Orthopedics Sports and Spine facilities in Texas" (Ex. X).

35. Relying on this limited EPA exemption, Allied BioScience has been falsely advertising SURFACEWISE$^2$ as the first ever EPA-registered protectant effective against pathogens. *See, e.g.*, Ex. AB (https://www.surfacewise.com). EPA records, however, clearly state that SURFACEWISE$^2$ remains an "unregistered product." Exs. W-Z. Moreover, PureShield's antimicrobial products have been registered with the EPA since at least 2011. *See, e.g.*, EPA Registration Nos. 87583-1, 87583-2, 87583-3.

36. Allied BioScience's website also includes a section titled "Competitors" that disparages its competition—including Plaintiffs—with false statements. Ex. AB. By way of non-exhaustive examples, Allied BioScience falsely advertises "SurfaceWise$^2$ is the ***only EPA-approved product*** that offers long-lasting sanitization," and "[t]here are ***no other EPA-registered products*** that offer lasting sanitization." *Id.* (emphases added). It continues by stating that "[m]any companies offer products that make similar claims of long-lasting effectiveness" and that "their claims are unverified, not supported by research and not sanctioned by the U.S. EPA." *Id.* Plaintiffs' EPA-registered antimicrobial formulations, however, are verified to be effective and supported by research.

37. Allied BioScience, in fact, represents that "SurfaceWise[2] claims have been proven through third-party testing and are validated by EPA approval." *Id.* SURFACEWISE[2] has not, however, undergone any EPA regulatory approval protocols. Finally, Allied BioScience misleadingly proclaims that "[c]ompanies claiming their products offer residual control of viruses and coronaviruses are doing so illegally." *Id.* Plaintiffs are fully authorized to sell their EPA-registered antimicrobial products, which have been confirmed to inhibit the growth of a variety of pathogens.

38. Upon information and belief, and as further alleged below, Allied BioScience has infringed the Asserted Patents, engaged in false advertising against Plaintiffs, unfairly competed against Plaintiffs, and tortiously interfered with Plaintiffs' prospective business relations.

**THE ASSERTED PATENTS**

**(The '869 patent)**

39. PureShield has all substantial rights to enforce the '869 patent, titled "WATER-STABILIZED ORGANOSILANE COMPOUNDS AND METHODS FOR USING THE SAME," pursuant to a license agreement. The '869 patent issued on September 21, 1999, and expired on May 7, 2017. A true and correct copy of the '869 patent is attached as Exhibit A.

40. The '869 patent is generally directed to water-stable organosilane compositions and to methods of treating substrates with such water-stable organosilane compositions. Ex. A at Abstract, 1:7-13. The organosilanes in the water-stable organosilane compositions of the '869 patent include SQACs. *Id.* at 15: 46-16:25. The '869 patent further discloses and claims the use of stabilizing agents to stabilize the organosilane compositions in aqueous solutions. *Id.* at 3:1-11. Such stabilizers include, for instance, polyols that contain "at least two hydroxy groups wherein any two hydroxy groups of the at least two hydroxy groups present are separated by less than three

intervening atoms." *Id*. at 3:27-30. By way of non-exhaustive examples, these polyols can include sugars and nucleic acids. *Id.* at 3:30-39.

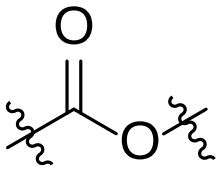
41. The resulting aqueous organosilane compositions have a long shelf-life and can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 7:33-49, 8:39-44, 26:35-27:46.

**(The '815 patent)**

42. PureShield has all substantial rights to enforce the '815 patent, titled "ETHER-STABILIZED ORGANOSILANE COMPOSITIONS AND METHODS FOR USING THE SAME," pursuant to a license agreement. The '815 patent issued on September 5, 2000, and expired on July 16, 2018. A true and correct copy of the '815 patent is attached as Exhibit B.

43. The '815 patent is generally directed to water-stable organosilane compositions and to methods of treating substrates with such water-stable organosilane compositions. Ex. B at Abstract, 1:14-22. The organosilanes in the water-stable organosilane compositions of the '815 patent include SQACs. *Id.* at 13: 49-14:44. The '815 patent further discloses and claims the use of stabilizing agents to stabilize the organosilane compositions in aqueous solutions. Such stabilizers include, for instance, "compounds having a[t] least one ether group and hydroxyl or ester functionality." *Id*. at 3:6-13.

44. The compounds having at least one ether group and hydroxyl or ester functionality generally have a "formula R–O–R, where R is, independently an organic group and where the ether has either a hydroxy functionality or a carboxylic ester functionality." *Id*. at 3:28-30. That is, such exemplary stabilizing compounds comprise an oxygen atom flanked by two hydrocarbon groups. These stabilizing compounds further comprise a hydroxy (–OH) group or a carboxylic ester functionality:



45. Such polyols can include glycols and polymers thereof. *Id*. at 8:60-9:23. The resulting aqueous organosilane compositions have a long shelf-life and can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 7:11-31, 8:21-26, 22:66-23:17.

**(The ’587 patent)**

46. PureShield has all substantial rights to enforce the ’587 patent, titled “WATER-STABILIZED ORGANOSILANE COMPOUNDS AND METHODS FOR USING THE SAME,” pursuant to a license agreement. The ’587 patent issued on September 19, 2000, and expired on May 17, 2017. A true and correct copy of the ’587 patent is attached as Exhibit C.

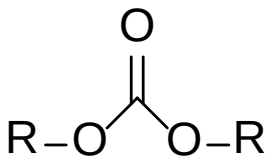
47. The ’587 patent is generally directed to water-stable organosilane compositions and to methods of treating substrates with these water-stable organosilane compositions. Ex. C at Abstract, 1:10-16. The organosilanes in the water-stable organosilane compositions of the ’587 patent include SQACs. *Id.* at 15: 43-16:34. The ’587 patent further discloses and claims the use of stabilizing agents to stabilize the organosilane compositions in aqueous solutions. *Id*. at 3:6-16. Such stabilizers include, for instance, polyols that contain “at least two hydroxy groups wherein any two hydroxy groups of the at least two hydroxy groups present are separated by less than three intervening atoms.” *Id*. at 3:32-35. By way of non-exhaustive examples, these polyols can include alcohols, sugars, and nucleic acids. *Id*. at 3:35-43.

48. The resulting aqueous organosilane compositions have a long shelf-life and can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 7:35-50, 8:41-46, 26:49-27:61.

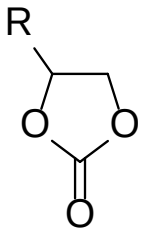
**(The ’172 patent)**

49. PureShield has all substantial rights to enforce the ’172 patent, titled “WATER-STABILIZED ORGANOSILANE COMPOUNDS AND METHODS FOR USING THE SAME,” pursuant to a license agreement. The ’172 patent issued on July 13, 2004, and expired on July 17, 2018. A true and correct copy of the ’172 patent is attached as Exhibit D.

50. The ’172 patent is generally directed to water-stable organosilane compositions and to methods of treating substrates with these water-stable organosilane compositions. Ex. D at Abstract, 1:15-21. The organosilanes in the water-stable organosilane compositions of the ’172 patent include SQACs. *Id.* at 13: 6-14:2. The ’172 patent further discloses and claims the use of stabilizing agents to stabilize the organosilane compositions in aqueous solutions. Such stabilizers include, for instance, “compounds having at least one carbonate group.” *Id*. at 3:6-10. By way of non-exhaustive examples, the compounds having at least one carbonate group can be organic carbonates such as propylene carbonate. *Id*. at 3:24-25. The ’172 patent discloses the following general formulas for structures of exemplary carbonate stabilizers that can be used in the aqueous organosilane compositions:




(Ia)




(Ib)

*Id*. at 8:34-44.

51. The resulting aqueous organosilane compositions have a long shelf-life and can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 5:59-6:11, 8:1-6, 23:60-24:38.

**(The ’384 patent)**

52. PureShield has all substantial rights to enforce the ’384 patent, titled “WATER STABLE ANTIMICROBIAL SILANOL QUATERNARY AMMONIUM COMPOUNDS,” pursuant to a license agreement. The ’384 patent issued on April 18, 2017, from U.S. Patent Application No. 14/680,689, filed April 7, 2015. A true and correct copy of the ’384 patent is attached as Exhibit E.

53. The ’384 patent is generally directed to water-stable SQAC compositions. Ex. E at Abstract, 1:8-12. The ’384 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. Such stabilizers include, for instance, essential oils “chosen from the collective group of volatile essential oils that are commonly obtained by steam distillation or cold pressing of stems, bark, leaves, fruit, peels and flowers of various plants species throughout the world.” *Id*. at 3:27-31. In addition to being useful in stabilizing SQAC aqueous compositions, such essential oils may possess low toxicity, low flammability, good volatility, and antimicrobial properties of their own. *Id*. at 3:11-21.

54. When SQACs are mixed with essential oils in water, the resulting SQAC aqueous compositions are microemulsions. *Id*. at 3:37-39. These microemulsions prevent SQACs from polymerizing, and therefore the aqueous SQAC compositions do not exhibit an increase in viscosity or polymer precipitation. *Id*. at 3:40-45. As a result, the aqueous SQAC compositions of the ’384 patent have a long shelf-life. *Id.* at Table 1, 9:21-39 and 10:21-39, 3:37-45.

55. The aqueous SQAC compositions of the ’384 patent can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 2:63-3:21.

**(The ’120 patent)**

56. PureShield has all substantial rights to enforce the ’120 patent, titled “DURABLE SKIN SANITIZERS CONTAINING WATER STABLE ANTIMICROBIAL SILANOL

QUATERNARY AMMONIUM COMPOUNDS," pursuant to a license agreement. The '120 patent issued on August 29, 2017, from U.S. Patent Application No. 14/724,364, filed May 28, 2015. A true and correct copy of the '120 patent is attached as Exhibit F.

57. The '120 patent is generally directed to water-stable SQAC compositions. Ex. F at Abstract, 1:20-27. The '120 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. *Id.* at 6:12-18. Such stabilizers include, for instance, essential oils used "chosen from the collective group of essential oils and extracts that are commonly obtained by steam distillation or cold pressing of stems, bark, leaves, fruit, peels and flowers of various plants species throughout the world." *Id*. at 6:14-18. In addition to being useful in stabilizing SQAC aqueous compositions, such essential oils may possess low toxicity, low flammability, good volatility, and antimicrobial properties of their own. *Id*. at 6:1-8.

58. When SQACs are mixed with essential oils in water, the resulting SQAC aqueous compositions are microemulsions. *Id*. at 6:24-26. These microemulsions prevent SQACs from polymerizing, and therefore the aqueous SQAC compositions do not exhibit an increase in viscosity or polymer precipitation. *Id*. at 6:27-32. As a result, the aqueous SQAC compositions of the '120 patent have a long shelf-life. *Id.* at 6:24-32. The aqueous SQAC compositions of the '120 patent can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 4:45-58, 5:59-6:8.

**(The '080 patent)**

59. PureShield has all substantial rights to enforce the '080 patent, titled "PROCESS FOR THE PRODUCTION OF PARTIALLY POLYMERIZED ANTIMICROBIAL SILANOL QUATERNARY AMMONIUM COMPOUNDS," pursuant to a license agreement. The '080 patent issued on July 3, 2018, from U.S. Patent Application No. 14/852,874, filed September 14, 2015. A true and correct copy of the '080 patent is attached as Exhibit G.

60. The ’080 patent is generally directed to water-stable partially-polymerized SQAC compositions. Ex. G at Abstract, 1:26-33. The ’080 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. Such stabilizers include, for instance, essential oils to stabilize partially-polymerized SQAC compositions in aqueous solutions. *Id*. at 7:30-36. By way of non-exhaustive examples, these essential oils can be “chosen from the collective group of essential oils and extracts that are commonly obtained by steam distillation or cold pressing of stems, bark, leaves, fruit, peels and flowers of various plants species throughout the world.” *Id*. at 7:33-37. In addition to being useful in stabilizing SQAC aqueous compositions, such essential oils may possess low toxicity, low flammability, good volatility, and antimicrobial properties of their own. *Id*. at 6:10-18.

61. When partially polymerized SQACs are mixed with essential oils in water, the resulting partially-polymerized SQAC aqueous compositions are microemulsions. *Id*. at 10:35-38, 10:55-59, 11:13-17. The essential oils will stop or slow down the partially polymerized SQACs from further polymerizing. *Id*. at 11:38-65. Polymerization in the aqueous partially-polymerized SQAC compositions, therefore, can be controlled. *Id.* at 11:38-65. As a result, the aqueous partially-polymerized SQAC compositions of the ’080 patent have a long shelf-life. *Id.* at Abstract. The aqueous partially-polymerized SQAC compositions of the ’080 patent can be applied to various substrates to form an antimicrobial coating. *Id.* at 6:63-7:26.

**(The ’020 patent)**

62. PureShield has all substantial rights to enforce the ’020 patent, titled “DURABLE SKIN SANITIZERS CONTAINING WATER STABLE ANTIMICROBIAL SILANOL QUATERNARY AMMONIUM COMPOUND,” pursuant to a license agreement. The ’020 patent issued on June 25, 2019, and claims priority to U.S. Patent Application No. 14/724,364, filed May 28, 2015. A true and correct copy of the ’020 patent is attached as Exhibit H.

63. The ’020 patent is generally directed to water-stable SQAC compositions. Ex. H at Abstract, 1:13-20. The ’020 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. Such stabilizers include, for instance, essential oils to stabilize SQAC compositions in aqueous solutions. *Id*. at 5:56-62. By way of non-exhaustive examples, the essential oils can be “chosen from the collective group of essential oils and extracts that are commonly obtained by steam distillation or cold pressing of stems, bark, leaves, fruit, peels and flowers of various plants species throughout the world.” *Id*. at 5:58-62. In addition to being useful in stabilizing SQAC aqueous compositions, such essential oils may possess low toxicity, low flammability, good volatility, and antimicrobial properties of their own. *Id*. at 5:45-52.

64. When SQACs are mixed with essential oils in water, the resulting SQAC aqueous compositions are microemulsions. *Id*. at 6:1-3. These microemulsions prevent SQACs from polymerizing, and therefore the aqueous SQAC compositions do not exhibit an increase in viscosity or polymer precipitation. *Id*. at 6:3-8.

65. As a result, the aqueous SQAC compositions of the ’020 patent have a long shelf-life. *Id.* at 6:1-8. The aqueous SQAC compositions of the ’020 patent can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 4:21-34, 5:36-52.

**(The ’553 patent)**

66. PureShield has all substantial rights to enforce the ’553 patent, titled “ANTIMICROBIAL ARTICLES AND COMPOUNDS THEREFOR,” pursuant to a license agreement. The ’553 patent issued on September 10, 2019, and claims priority to U.S. Patent Application No. 14/680,689, filed April 7, 2015. A true and correct copy of the ’553 patent is attached as Exhibit I.

67. The ’553 patent is generally directed to water-stable SQAC compositions. Ex. I at Abstract, 1:11-15. The ’553 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. Such stabilizers include, for instance, essential oils and extracts to stabilize SQAC compositions in aqueous solutions. *Id*. at 7:52-8:7. By way of non-exhaustive examples, the essential oils and extracts used can be derived from antimicrobial phytochemical plant species. *Id*. at 3:28-30.

68. When SQACs are mixed with essential oils or extracts in water, the resulting SQAC aqueous compositions are microemulsions. *Id*. at 7:52-8:7. These microemulsions prevent SQACs from polymerizing, and therefore the aqueous SQAC compositions do not exhibit an increase in viscosity or polymer precipitation. *Id.* at 9:1-12:45, 13:56-67. As a result, the aqueous SQAC compositions of the ’553 patent have a long shelf-life. *Id.* at Table 1, 13:1-19 and 10: 1-19, 13:56-67. The aqueous SQAC compositions of the ’553 patent can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id*. at 14:24-67.

**(The ’664 patent)**

69. PureShield has all substantial rights to enforce the ’664 patent, titled “WATER STABLE ANTIMICROBIAL SILANOL QUATERNARY AMMONIUM COMPOUNDS,” pursuant to a license agreement. The ’664 patent issued on January 14, 2020, claims priority to U.S. Patent Application No. 14/680,689, filed April 7, 2015. A true and correct copy is attached as Exhibit J.

70. The ’664 patent is generally directed to water-stable SQAC compositions. Ex. J at Abstract, 1:15-19. The ’664 patent further discloses and claims the use of stabilizing agents to stabilize the SQAC compositions in aqueous solutions. Such stabilizers include, for instance, essential oils “chosen from the collective group of volatile essential oils that are commonly obtained by steam distillation or cold pressing of stems, bark, leaves, fruit, peels and flowers of

various plants species throughout the world." *Id*. at 3:36-40. In addition to being useful in stabilizing SQAC aqueous compositions, such essential oils may possess low toxicity, low flammability, good volatility, and antimicrobial properties of their own. *Id*. at 3:21-30.

71. When SQACs are mixed with essential oils in water, the resulting SQAC aqueous compositions are microemulsions. *Id*. at 3:47-49. These microemulsions prevent SQACs from polymerizing, and therefore the aqueous SQAC compositions do not exhibit an increase in viscosity or polymer precipitation. *Id*. at 3:50-55. As a result, the aqueous SQAC compositions of the '664 patent have a long shelf-life. *Id.* at Table 1, 9:29-49 and 10:29-49, 3:47-55. The aqueous SQAC compositions of the '664 patent can be applied to various substrates to form an antimicrobial coating on the surface of the substrates. *Id.* at 3:5-3:30.

72. PureShield has all substantial rights and standing to enforce the Asserted Patents by way of a license agreement. As PureShield's parent company and successor-in-interest, ViaClean has the same rights under the license agreement. Allied BioScience has had knowledge of the Asserted Patents at least as early as July 27, 2020, by way of an infringement notice letter from PureShield. To the extent discovery reveals earlier knowledge of one or more of the Asserted Patents, Plaintiffs reserve all rights to amend the pleadings accordingly.

**COUNT I: INFRINGEMENT OF THE '869 PATENT**

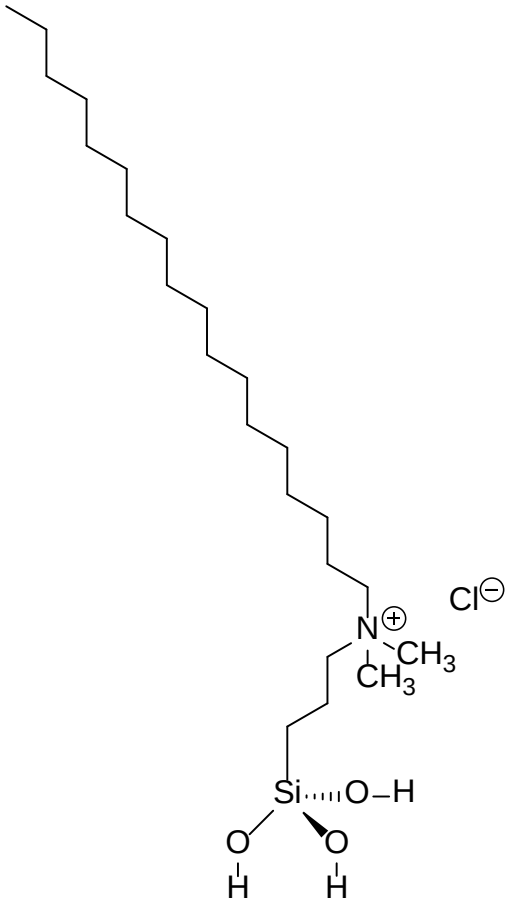
73. Each of the allegations set forth in Paragraphs 1-72 of this Complaint is incorporated by reference and realleged.

74. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '869 patent under 35 U.S.C. § 271(a), and indirectly infringed one or more claims of the '869 patent at least under 35 U.S.C. § 271(b).

75. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '869 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its GERMMAX and SURFACEWISE products during the term of the '869 patent.

76. The '869 patent expired on May 7, 2017. Upon information and belief, Allied BioScience has been selling its infringing GERMMAX product since at least 2012. Ex. AC (https://web.archive.org/web/20120914000448/http://www.alliedbioscience.com/germmax.html). Upon information and belief, Allied BioScience has been selling its infringing SURFACEWISE product since at least 2014. Ex. AD (Allied BioScience's Statement of Use under 15 U.S.C. § 1051(d) to the USPTO); Ex. AE (https://www.prnewswire.com/news-releases/new-self-cleaning-surface-technology-proven-to-significantly-reduce-pathogens-in-hospital-environment-281760551.html); Ex. AF (https://www.bizjournals.com/dallas/blog/2014/12/allied-bioscience-attacks-hos_pital-acquired.html). Allied BioScience, therefore, made and sold its infringing GERMMAX and SURFACEWISE products during the term of the '869 patent. PureShield is entitled to recover damages for Allied BioScience's past infringement during the term of the '869 patent.

77. Upon information and belief, these Accused Products are compositions that include an organosilane in accordance with at least claim 1 of the '869 patent—*i.e.*, an organosilane of the formula $R_nSiX_{4-n}$ where n is an integer of from 0 to 3; and R is, independently, a nonhydrolizable organic group; and each X is, independently, a hydrolyzable group. Such organosilanes include, for instance, Trimethoxy and Trihydroxy. The active ingredient in SURFACEWISE is Trihydroxy. Exs. T, W-Z. Upon information and belief, the same is true for GERMMAX. Trihydroxy has the below-illustrated chemical structure:




78. More specifically, Trihydroxy has one (n = 1) non-hydrolyzable R group that is represented by the N,N-dimethyloctadecyl ammonium group shown in the upper portion. In the lower portion, Trihydroxy has three (4-n, n = 1) hydrolyzable X groups represented by the three hydroxy (-OH) groups attached to the silicon atom. The Trihydroxy in the Accused Products, therefore, is an organosilane in accordance with claim 1 of the ’869 patent.

79. Upon information and belief, the Trihydroxy in the Accused Products is provided in water, as required by claim 1 of the ’869 patent. It has been scientifically well-established that Trihydroxy and other organosilanes are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

80. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

81. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the Accused Products include a stabilizing agent in the form of a polyol containing at least two hydroxy groups—wherein at least two of the least two hydroxy groups are separated by less than three intervening atoms, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result in accordance with claim 1 of the ’869 patent.

82. Moreover, the Trihydroxy amounts to approximately 0.75% of the composition in the Accused Products. *See* Ex. T (EPA Registration No. 92082-1, Issued October 5, 2018). The organosilane in the Accused Product, therefore, amounts to about 20% or less by weight of said composition, as required by claim 1 of the ’869 patent.

83. The Accused Products thus have infringed at least claim 1 of the ’869 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’869 patent directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

84. Upon information and belief, Allied BioScience also indirectly infringed the ’869 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience was aware of the ’869 patent and related patents during the period of its infringement. The ’869 patent was, in fact, cited during prosecution of Allied BioScience’s own U.S. Patent Application No. 15/432,567. Allied BioScience’s marketing materials and labels specifically instruct and direct customers to use the Accused Products for purposes of inhibiting growth and spread of pathogens. *See, e.g.*, Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. Allied BioScience’s directions and instructions induce customers to infringe the ’869 patent. Allied BioScience’s active and knowing inducement is in violation of 35 U.S.C. § 271(b).

85. Allied BioScience’s has profited from its infringement of the ’869 patent. As a direct and proximate result of Allied BioScience’s infringement, PureShield has been irreparably and monetarily harmed.

**COUNT II: INFRINGEMENT OF THE ’815 PATENT**

86. Each of the allegations set forth in Paragraphs 1-85 of this Complaint is incorporated by reference and realleged.

87. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’815 patent under 35 U.S.C. § 271(a), and indirectly infringed one or more claims of the ’815 patent at least under 35 U.S.C. § 271(b).

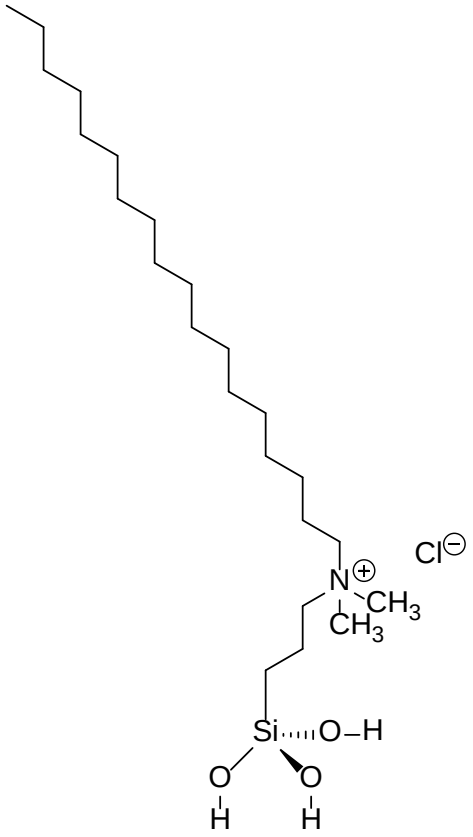
88. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’815 patent by making, using,

offering for sale, and selling in the United States, and importing into the United States, its GERMMAX and SURFACEWISE products during the term of the ’815 patent.

89. The ’815 patent expired on July 16, 2018. Upon information and belief, Allied BioScience has been selling its infringing GERMMAX product since at least 2012. Ex. AC. Upon information and belief, Allied BioScience has been selling its infringing SURFACEWISE product since at least 2014. *See, e.g.*, Exs. AD-AF. Allied BioScience, therefore, made and sold its infringing GERMMAX and SURFACEWISE products during the term of the ’815 patent. PureShield is entitled to recover damages for Allied BioScience’s past infringement with respect to the accused GERMMAX and SURFACEWISE products.

90. Upon information and belief, these Accused Products are compositions that include an organosilane in accordance with at least claim 1 of the ’815 patent—*i.e.*, an organosilane of the formula $R_nSiX_{4-n}$ where n is an integer of from 0 to 3; and R is, independently, a nonhydrolyzable organic group; and each X is, independently, a hydrolyzable group. Organosilanes of the claimed formula include, for instance, Trimethoxy and Trihydroxy. The active ingredient SURFACEWISE is Trihydroxy. Exs. T, W-Z. Upon information and belief, the same is true for GERMMAX.

91. More specifically, Trihydroxy has one (n = 1) non-hydrolyzable R group that is represented by the N,N-dimethyloctadecyl ammonium group shown in the upper portion. In the lower portion, Trihydroxy has three (4-n, n = 1) hydrolyzable X groups represented by the three hydroxy (-OH) groups attached to the silicon atoms. The Trihydroxy in the Accused Products, therefore, is an organosilane in accordance with claim 1 of the ’815 patent.




92. Upon information and belief, the Trihydroxy in the Accused Products is provided in water. It has been scientifically well-established that Trihydroxy and other organosilanes are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

93. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

94. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the Accused Products include a stabilizing agent in the form of an ether as required by claim 1 of the '815 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result.

95. The Accused Products thus have infringed at least claim 1 of the '815 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience's unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the '815 patent directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

96. Upon information and belief, Allied BioScience also indirectly infringed the '815 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience was aware of the '815 patent and related patents during the period of its infringement. The related '869 patent was, in fact, cited during prosecution of Allied BioScience's own U.S. Patent Application No. 15/432,567. Allied BioScience's marketing materials and labels specifically instruct and direct customers to use the Accused Products for purposes of inhibiting growth and spread of pathogens. *See, e.g.*, Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. Allied BioScience's directions and instructions induce customers to infringe the '815 patent. Allied BioScience's active and knowing inducement is in violation of 35 U.S.C. § 271(b).

97. Allied BioScience's has profited from its infringement of the '815 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been irreparably and monetarily harmed.

**COUNT III: INFRINGEMENT OF THE '587 PATENT**

98. Each of the allegations set forth in Paragraphs 1-97 of this Complaint is incorporated by reference and realleged.

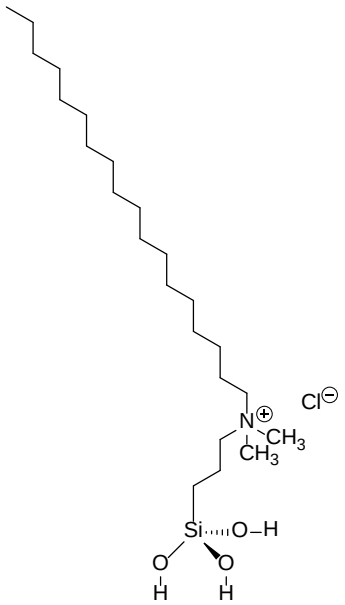
99. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '587 patent under 35 U.S.C. § 271(a), and indirectly infringed one or more claims of the '587 patent at least under 35 U.S.C. § 271(b).

100. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '587 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its GERMMAX and SURFACEWISE products during the term of the '587 patent.

101. The '587 patent expired on May 17, 2017. Upon information and belief, Allied BioScience has been selling its infringing GERMMAX product since at least 2012. Ex. AC. Upon information and belief, Allied BioScience has been selling its infringing SURFACEWISE product since at least 2014. *See, e.g.*, Exs. AD-AF. Allied BioScience, therefore, made and sold its infringing GERMMAX and SURFACEWISE products during the term of the '587 patent. PureShield is entitled to recover damages for Allied BioScience's past infringement with respect to the accused GERMMAX and SURFACEWISE products.

102. Upon information and belief, these Accused Products are compositions that include an organosilane in accordance with at least claim 4 of the '587 patent—*i.e.*, an organosilane of the formula $R_nSiX_{4-n}$ where n is an integer of from 0 to 3; each R is, independently, a nonhydrolyzable

organic group; and each X is, independently, a hydrolyzable group. Organosilanes of the claimed formula include, for instance, Trimethoxy and Trihydroxy. The active ingredient SURFACEWISE is Trihydroxy. Exs. T, W-Z. Upon information and belief, the same is true for GERMMAX.




103. More specifically, Trihydroxy has one (n = 1) non-hydrolyzable R group that is represented by the N,N-dimethyloctadecyl ammonium group shown in the upper portion. In the lower portion, Trihydroxy has three (4-n, n = 1) hydrolyzable X groups represented by the three hydroxy (-OH) groups attached to the silicon atoms. The Trihydroxy in the Accused Products, therefore, is an organosilane in accordance with claim 4 of the ’587 patent.

104. Upon information and belief, the Trihydroxy in the Accused Products is provided in an aqueous solution in accordance with claim 4 of the ’587 patent. It has been scientifically well-established that Trihydroxy and other organosilanes are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

105. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

106. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the Accused Products include a stabilizing agent in the form of a polyol containing at least two hydroxy groups—wherein any two of the at least two hydroxy groups are separated by no more than two intervening atoms, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result in accordance with claim 4 of the ’587 patent.

107. Moreover, the Trihydroxy amounts to approximately 0.75% of the composition in the Accused Products. *See* Ex. T (EPA Registration No. 92082-1, Issued October 5, 2018). The organosilane in the Accused Product, therefore, amounts to about 20% or less by weight of the composition, as required by claim 4 of the ’587 patent.

108. Upon information and belief, Allied BioScience has used and sold the Accused Products for use to antimicrobially treat a variety of the surfaces recited in claim 4 of the ’587 patent. By way of non-exhaustive examples, the Accused Products have been used to antimicrobially treat plastics, metals, textiles, painted surfaces, textiles, and HVAC air systems in accordance with the claimed method in claim 4 of the ’587 patent. *See, e.g.*, Ex. AG

(https://www.alliedbioscience.com/surface-wise/); Ex. AH (http://signalhygiene.com/long-lasting-antimicrobial-protection/).

109. Allied BioScience has thus infringed at least claim 4 of the ’587 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’587 patent directly infringed at least claim 4 in violation of 35 U.S.C. § 271(a).

110. Upon information and belief, Allied BioScience also indirectly infringed the ’587 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience was aware of the ’587 patent and related patents during the period of its infringement. The related ’869 patent—to which the ’587 patent claims priority—was, in fact, cited during prosecution of Allied BioScience’s own U.S. Patent Application No. 15/432,567. Allied BioScience’s marketing materials and labels specifically instruct and direct customers to perform the method of claim 4. *See, e.g.*, Exs. R-T, AB, AG. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. Allied BioScience’s directions and instructions induce customers to infringe the ’587 patent. Allied BioScience’s active and knowing inducement is in violation of 35 U.S.C. § 271(b).

111. Allied BioScience’s has profited from its infringement of the ’587 patent. As a direct and proximate result of Allied BioScience’s infringement, PureShield has been irreparably and monetarily harmed.

**COUNT IV: INFRINGEMENT OF THE ’172 PATENT**

112. Each of the allegations set forth in Paragraphs 1-111 of this Complaint is incorporated by reference and realleged.

113. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’172 patent under 35 U.S.C. § 271(a), and indirectly infringed one or more claims of the ’172 patent at least under 35 U.S.C. § 271(b).

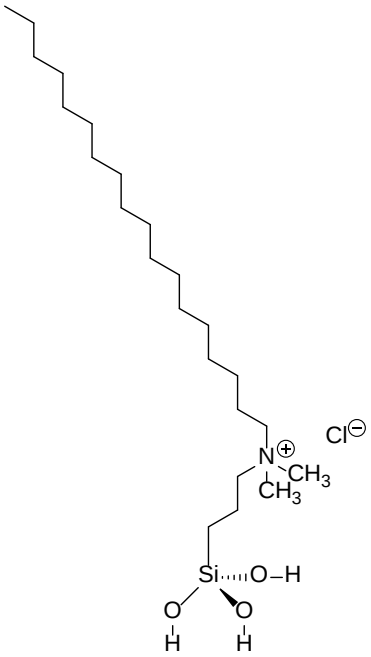
114. Upon information and belief, Allied BioScience directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’172 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its GERMMAX and SURFACEWISE products during the term of the ’172 patent.

115. The ’815 patent expired on July 17, 2018. Upon information and belief, Allied BioScience has been selling its infringing GERMMAX product since at least 2012. Ex. AC. Upon information and belief, Allied BioScience has been selling its infringing SURFACEWISE product since at least 2014. *See, e.g.*, Exs. AD-AF. Allied BioScience, therefore, made and sold its infringing GERMMAX and SURFACEWISE products during the term of the ’172 patent. PureShield is entitled to recover damages for Allied BioScience’s past infringement with respect to the accused GERMMAX and SURFACEWISE products.

116. Upon information and belief, these Accused Products are compositions that include an antimicrobial organosilane in accordance with at least claim 1 of the ’172 patent—*i.e.*, an organosilane of the formula $R_nSiX_{4-n}$ wherein n is an integer of from 0 to 3; and R is, independently, a nonhydrolizable organic group, and each X is, independently, a hydrolyzable group. Organosilanes of the claimed formula include, for instance, Trimethoxy and Trihydroxy.

The active ingredient SURFACEWISE is Trihydroxy. Exs. T, W-Z. Upon information and belief, the same is true for GERMMAX.

117. More specifically, Trihydroxy has one (n = 1) non-hydrolyzable R group that is represented by the N,N-dimethyloctadecyl ammonium group shown in the upper portion. In the lower portion, Trihydroxy has three (4-n, n = 1) hydrolyzable X groups represented by the three hydroxy (-OH) groups attached to the silicon atoms. The Trihydroxy in the Accused Products, therefore, is an organosilane in accordance with claim 1 of the '172 patent.




118. Upon information and belief, the Trihydroxy in the Accused Products is provided in water. It has been scientifically well-established that Trihydroxy and other organosilanes are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

119. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

120. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the Accused Products include a stabilizing agent in the form of an organic carbonate as required by claim 1 of the ’172 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result.

121. The Accused Products thus have infringed at least claim 1 of the ’172 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’172 patent directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

122. Upon information and belief, Allied BioScience also indirectly infringed the ’172 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience was aware of the ’172 patent and related patents during the period of its infringement. The related ’869 patent was, in fact, cited during prosecution of Allied BioScience’s own U.S. Patent Application No. 15/432,567. Allied BioScience’s marketing materials and labels specifically instruct and direct customers to use the

Accused Products for purposes of inhibiting growth and spread of pathogens. *See, e.g.*, Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. Allied BioScience's directions and instructions induce customers to infringe the '172 patent. Allied BioScience's active and knowing inducement is in violation of 35 U.S.C. § 271(b).

123. Allied BioScience's has profited from its infringement of the '172 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been irreparably and monetarily harmed.

**COUNT V: INFRINGEMENT OF THE '384 PATENT**

124. Each of the allegations set forth in Paragraphs 1-123 of this Complaint is incorporated by reference and realleged.

125. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '384 patent under 35 U.S.C. § 271(a), and has indirectly infringed one or more claims of the '384 patent at least under 35 U.S.C. § 271(b).

126. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '384 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

127. Upon information and belief, these Accused Products are stabilized aqueous solutions that include a mixture formed from Trihydroxy in accordance with at least claim 1 of the '384 patent. All versions of SURFACEWISE include the active ingredient Trihydroxy in an aqueous solution. Exs. T, W-Z.

128. Upon information and belief, the Trihydroxy in the Accused Products is provided in demineralized water in accordance with claim 1 of the ’384 patent. It has been scientifically well-established that Trihydroxy and other organosilanes are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

129. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

130. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the Accused Products include a stabilizing agent in the form of an essential oil as required by claim 1 of the ’384 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result. *See, e.g.*, Ex. AI (International Patent Publication No. WO2019212718A1). The presence of a stabilizing agent, such as an essential oil, necessarily prevents premature polymerization as required by claim 1 of the ’384 patent. *Id.*

131. The SURFACEWISE and SURFACEWISE$^2$ thus have infringed at least claim 1 of the ’384 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons

above, Allied BioScience's unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the '384 patent has directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

132. Upon information and belief, Allied BioScience has also indirectly infringed the '384 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience has been aware of the '384 patent and related patents during the period of its infringement. At a minimum, Allied BioScience has been aware of the '384 patent since July 27, 2020, by way of an infringement notice letter from PureShield. Allied BioScience's marketing materials and labels specifically instruct and direct customers to use the Accused Products for purposes of inhibiting growth and spread of pathogens. *See, e.g.*, Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. *See, e.g.*, Exs. W-Z. Allied BioScience's directions and instructions induce customers to infringe the '384 patent. Allied BioScience's active and knowing inducement is in violation of 35 U.S.C. § 271(b).

133. Allied BioScience has profited and continues to profit from its infringement of the '384 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT VI: INFRINGEMENT OF THE '120 PATENT**

134. Each of the allegations set forth in Paragraphs 1-132 of this Complaint is incorporated by reference and realleged.

135. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '120 patent under 35 U.S.C. § 271(a), and has indirectly infringed one or more claims of the '120 patent at least under 35 U.S.C. § 271(b).

136. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '120 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

137. Upon information and belief, these Accused Products are stabilized solution containing a silanol quaternary ammonium compound in accordance with at least claim 1 of the '120 patent. All versions of SURFACEWISE include the active ingredient Trihydroxy in an aqueous solution. Exs. T, W-Z. Upon information and belief, Trihydroxy is formed in the aqueous solution as a result of hydrolyzing Trimethoxy.

138. Upon information and belief, the hydrolyzed Trimethoxy in the Accused Products is provided in demineralized water in accordance with claim 1 of the '120 patent. It has been scientifically well-established that Trimethoxy and Trihydroxy are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

139. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

140. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, one or more versions of the

Accused Products include a stabilizing agent in the form of an essential oil as required by claim 1 of the ’120 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result. *See, e.g.*, Ex. AI.

141. The presence of a stabilizing agent, such as an essential oil, necessarily forms a microemulsion and prevents premature polymerization of the organosilane as required by claim 1 of the ’120 patent. Upon information and belief, the Accused Products are applied to surfaces and form a covalent bond which creates an antimicrobial coating, as required by claim 1 of the ’120 patent. *See, e.g.*, Ex. AG.

142. The SURFACEWISE and SURFACEWISE$^2$ thus have infringed at least claim 1 of the ’120 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’120 patent has directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

143. Upon information and belief, Allied BioScience has also indirectly infringed the ’120 patent by actively and knowingly inducing others to use the composition of claim 1 in violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience has been aware of the ’120 patent and related patents. At a minimum, Allied BioScience has been aware of the ’120 patent since July 27, 2020, by way of an infringement notice letter from PureShield. Allied BioScience’s marketing materials and labels specifically instruct and direct customers to use the Accused Products for purposes of inhibiting growth and spread of pathogens. *See, e.g.*, Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. *See, e.g.*, Exs. W-Z. Allied BioScience’s directions

and instructions induce customers to infringe the ’120 patent. Allied BioScience’s active and knowing inducement is in violation of 35 U.S.C. § 271(b).

144. Allied BioScience has profited and continues to profit from its infringement of the ’120 patent. As a direct and proximate result of Allied BioScience’s infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT VII: INFRINGEMENT OF THE ’080 PATENT**

145. Each of the allegations set forth in Paragraphs 1-144 of this Complaint is incorporated by reference and realleged.

146. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’080 patent under 35 U.S.C. § 271(a). Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the ’080 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

147. The active ingredient in these Accused Products is Trihydroxy, which is a SQAC that can partially polymerize in aqueous solution in accordance with claim 1 of the ’080 patent. The Trihydroxy is provided in an aqueous solution. Upon information and belief, the Trihydroxy mixture in the Accused Products is prepared in accordance with the method recited in claim 1 of the ’080 patent, or a method that performs substantially the same function, in substantially the same way, to obtain the same result. Upon information and belief, the Accused Products thus have infringed at least claim 1 of the ’080 patent, either literally or under the doctrine of equivalents, in violation of 35 U.S.C. § 271(a).

148. Upon information and belief, Allied BioScience uses the chlorosilanol compound 3-chloropropyltrimethoxysilane in the Accused Products. *See, e.g.*, Ex. AI. In addition, this

chlorosilanol compound is used to synthesize SQACs like Trimethoxy and Trihydroxy, and as a result is present as a residue. *See, e.g.*, U.S. Patent No. 6,376,696 ("Ex. AJ").

149. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. The active ingredient of the Accused Products is Trihydroxy. *See* Exs. T, W-Z. Thus, the Accused Products necessarily have residual 3-chloropropyltrimethoxysilane or other similar chlorosilanol compounds. For the Accused Products to retain the touted long-lasting properties and effectiveness in water, even in the presence of residual chlorosilanol compounds, the residual chlorosilanol necessarily needs to be partially polymerized to form a copolymer with the Trihydroxy active ingredient.

150. Allied BioScience has profited and continues to profit from its infringement of the '080 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT VIII: INFRINGEMENT OF THE '020 PATENT**

151. Each of the allegations set forth in Paragraphs 1-150 of this Complaint is incorporated by reference and realleged.

152. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '020 patent under 35 U.S.C. § 271(a) by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

153. Upon information and belief, these Accused Products are stabilized aqueous solutions that include a mixture formed from Trihydroxy in accordance with at least claim 1 of the '020 patent. All versions of SURFACEWISE include the active ingredient Trihydroxy in an

aqueous solution. Exs. T, W-Z. Upon information and belief, Trihydroxy is formed in the aqueous solution as a result of hydrolyzing Trimethoxy.

154. Upon information and belief, the hydrolyzed Trimethoxy in the Accused Products is provided in demineralized water in accordance with claim 1 of the ’020 patent. It has been scientifically well-established that Trimethoxy and Trihydroxy are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

155. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

156. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See*, *e.g.*, Exs. U, V. Upon information and belief, the Accused Products include a stabilizing agent in the form of an essential oil as required by claim 1 of the ’020 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result. *See*, *e.g.*, Ex. AI. The presence of a stabilizing agent, such as an essential oil, necessarily creates a microemulsion and prevents premature polymerization as required by claim 1 of the ’020 patent.

157. The SURFACEWISE and SURFACEWISE$^2$ thus have infringed at least claim 1 of the ’020 patent, either literally or under the doctrine of equivalents by performing substantially the

same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience's unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the '020 patent has directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

158. Allied BioScience has profited and continues to profit from its infringement of the '020 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT IX: INFRINGEMENT OF THE '553 PATENT**

159. Each of the allegations set forth in Paragraphs 1-158 of this Complaint is incorporated by reference and realleged.

160. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '553 patent under 35 U.S.C. § 271(a) by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

161. Upon information and belief, these Accused Products are stabilized aqueous solutions that include a mixture formed from Trihydroxy in accordance with at least claim 1 of the '553 patent. All versions of SURFACEWISE include the active ingredient Trihydroxy in an aqueous solution. Exs. T, W-Z. Upon information and belief, Trihydroxy is formed in the aqueous solution as a result of hydrolyzing Trimethoxy.

162. Upon information and belief, the hydrolyzed Trimethoxy in the Accused Products is provided in demineralized water in accordance with claim 1 of the '553 patent. It has been scientifically well-established that Trimethoxy and Trihydroxy are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within

just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

163. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

164. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See*, *e.g.*, Exs. U, V. Upon information and belief, the Accused Products include a stabilizing agent in the form of an essential oil as required by claim 1 of the ’553 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result. *See, e.g.*, Ex. AI. The presence of a stabilizing agent, such as an essential oil, necessarily creates a microemulsion and prevents premature polymerization as required by claim 1 of the ’553 patent.

165. The SURFACEWISE and SURFACEWISE$^2$ thus have infringed at least claim 1 of the ’553 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’553 patent has directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

166. Allied BioScience has profited and continues to profit from its infringement of the '553 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT X: INFRINGEMENT OF THE '664 PATENT**

167. Each of the allegations set forth in Paragraphs 1-166 of this Complaint is incorporated by reference and realleged.

168. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '664 patent under 35 U.S.C. § 271(a), and has indirectly infringed one or more claims of the '664 patent at least under 35 U.S.C. § 271(b).

169. Upon information and belief, Allied BioScience has directly infringed—either literally or under the doctrine of equivalents—one or more claims of the '664 patent by making, using, offering for sale, and selling in the United States, and importing into the United States, its Accused Products under the brand names SURFACEWISE and SURFACEWISE$^2$.

170. Upon information and belief, these Accused Products are stabilized aqueous solutions that include a mixture formed from Trihydroxy in accordance with at least claim 1 of the '664 patent. All versions of SURFACEWISE include the active ingredient Trihydroxy in an aqueous solution. Exs. T, W-Z. Upon information and belief, Trihydroxy is formed in the aqueous solution as a result of hydrolyzing Trimethoxy.

171. Upon information and belief, the hydrolyzed Trimethoxy in the Accused Products is provided in demineralized water in accordance with claim 1 of the '664 patent. It has been scientifically well-established that Trimethoxy and Trihydroxy are not stable in water without a stabilizing agent. As a result of being in water, organosilanes begin to lose effectiveness within

just a few hours. Moreover, organosilanes are prone to self-condensation resulting in increased viscosity that renders application of the composition to surfaces very difficult.

172. Allied BioScience has consistently advertised that its Accused Products are long-lasting and that its formulations effectively inhibit the growth of pathogens. *See* Exs. Q-S, AB. For organosilanes to retain such long-lasting properties and effectiveness in water, the formulation necessarily requires a stabilizing agent. Since the Accused Products include organosilanes in the form of Trihydroxy in water, they must necessarily also include a stabilizing agent to stabilize the organosilane composition in order to provide an effective as well as long-lasting formulation.

173. Allied BioScience has stated that it maintains formulations of its Accused Products as a trade secret. *See, e.g.*, Exs. U, V. Upon information and belief, the Accused Products include a stabilizing agent in the form of an essential oil as required by claim 1 of the ’664 patent, or substantially equivalent stabilizing agents that perform substantially the same function, in substantially the same way, to obtain the same result. *See, e.g.*, Ex. AI. The presence of a stabilizing agent, such as an essential oil, necessarily prevents premature polymerization as required by claim 1 of the ’664 patent. *Id*.

174. The Accused Products thus have infringed at least claim 1 of the ’664 patent, either literally or under the doctrine of equivalents by performing substantially the same function, in substantially the same way, to obtain the same result. For at least the reasons above, Allied BioScience’s unauthorized making, using, offering for sale, and selling of the Accused Products during the term of the ’664 patent has directly infringed at least claim 1 in violation of 35 U.S.C. § 271(a).

175. Upon information and belief, Allied BioScience has also indirectly infringed the ’664 patent by actively and knowingly inducing others to use the composition of claim 1 in

violation of 35 U.S.C. § 271(b). Upon information and belief, Allied BioScience has been aware of the '664 patent and related patents. At a minimum, Allied BioScience has been aware of the '664 patent since July 27, 2020, by way of an infringement notice letter from PureShield. Allied BioScience's marketing materials and labels specifically instruct and direct customers to use the Accused Products for purposes of inhibiting growth and spread of pathogens. *See* Exs. R-T, AB. Upon information and belief, Allied BioScience has also provided training to customers on the effective use of the Accused Products. *See, e.g.*, Exs. W-Z. Allied BioScience's directions and instructions induce customers to infringe the '664 patent. Allied BioScience's active and knowing inducement is in violation of 35 U.S.C. § 271(b).

176. Allied BioScience has profited and continues to profit from its infringement of the '664 patent. As a direct and proximate result of Allied BioScience's infringement, PureShield has been, is being, and will continue to be irreparably and monetarily harmed.

**COUNT XI: FALSE ADVERTISING UNDER THE LANHAM ACT**

177. Each of the allegations set forth in Paragraphs 1-176 of this Complaint is incorporated by reference and realleged.

178. Upon information and belief, Allied BioScience openly and explicitly deceives consumers by way of false advertisements in violation of 15 U.S.C. § 1125(a). Allied BioScience's false advertisement is both with respect to its own SURFACEWISE$^2$ product and with respect to products of competitors—such as Plaintiffs.

179. Allied BioScience has recently sought and obtained an emergency regulatory exemption under FIFRA Section 18 to use its SURFACEWISE$^2$ for emergency use against the virus that causes COVID-19, without undergoing a full EPA registration process for the time being. Ex. AA; Ex. AK (Letter to Commissioner of Texas Department of Agriculture). With this limited exemption, SURFACEWISE$^2$ can be used "on non-porous, nonfood-contact surfaces to

control the novel coronavirus . . . at 27 American Airlines aircraft and airport facilities in Texas" (Ex. W), and "at two Total Orthopedics Sports and Spine facilities in Texas" (Ex. X).

180. Allied BioScience now falsely markets its SURFACEWISE$^2$ product as "the only EPA-approved product" that offers "long-lasting sanitization" and "continuous control of viruses" and that "[t]here are no other EPA-registered products that offer lasting sanitization." Ex. AB. Allied BioScience further represents that "SurfaceWise$^2$ claims have been proven through third-party testing and are validated by EPA approval." *Id.*

181. These marketing statements are false and misleading with at least a tendency to deceive a substantial portion of consumers to base purchasing decisions on these misrepresentations. They are material misrepresentations with respect to Allied BioScience's own SURFACEWISE$^2$. Allied BioScience received an ***emergency exemption waiver*** for SURFACEWISE$^2$ and did not undergo full regulatory approval for an EPA registration. Its SURFACEWISE$^2$ is, therefore, not EPA approved, and is not the only EPA-approved antiviral product that offers lasting sanitization. There are, in fact, other EPA-approved antiviral product that offers lasting sanitization. Plaintiffs' products have been EPA-registered since 2011. EPA records also clearly state that SURFACEWISE$^2$ remains an "unregistered product." Exs. W-Z. Allied BioScience's product has not undergone long-term studies with regard to its efficacy against the virus that causes COVID-19 and has not been tested for its use in passenger planes. Ex. AK (Letter to Commissioner of Texas Department of Agriculture). The lack of data regarding SURFACEWISE$^2$ has, in fact, led experts to question its efficacy and safety. Exs. U, V; Ex. AL (https://www.seattletimes.com/nation-world/chemical-experts-question-epas-approval-of-coronavirus-disinfectant/).

182. Allied BioScience's marketing statements are also false with respect to competing products, such as Plaintiffs' antimicrobial products. Plaintiffs' BIOPROTECT products have, in fact, been registered with the EPA for the same active ingredient since at least 2011. *See*, *e.g.*, Exs N-P. Allied BioScience falsely proclaims that "[m]any companies offer products that make similar claims of long-lasting effectiveness" and that "their claims are unverified, not supported by research and not sanctioned by the U.S. EPA." Ex. AB. The effectiveness of Plaintiffs' antimicrobial formulations has been shown and has been supported by research. Allied BioScience's marketing statements even go so far as to declare competing antimicrobial products as being offered "illegally." *Id.* Plaintiffs are fully authorized to sell their EPA-registered antimicrobial products, which have been confirmed to inhibit the growth of a variety of pathogens.

183. Allied BioScience's false and misleading marketing statements have actually deceived or are likely to deceive a substantial portion of the marketplace, and are likely to influence purchasing decisions on products in interstate commerce. Those products include both Allied BioScience's own SURFACEWISE$^2$ products as well as Plaintiffs' EPA-registered antimicrobial products. Upon information and belief, sales are likely diverted from Plaintiffs to Allied BioScience based on its false advertisement.

184. Allied Bioscience's false advertisement is causing immediate and irreparable injury to Plaintiffs, both by direct diversion of sales and by harming Plaintiff's reputation and goodwill, and will continue to deceive consumers unless enjoined by this Court. Allied BioScience has profited and continues to profit from its false advertisement in violation of 15 U.S.C. § 1125(a).

**COUNT XII: UNFAIR COMPETITION**

185. Each of the allegations set forth in Paragraphs 1-184 of this Complaint is incorporated by reference and realleged.

186. Upon information and belief, Allied BioScience has been and continues to unfairly compete with Plaintiffs in violation of Texas Unfair Competition common law. As pleaded in Paragraphs 177-184 Allied BioScience has made and continues to make false and misleading marketing statements regarding its SURFACEWISE$^2$ product and competing products, such as those offered by Plaintiffs.

187. Allied Bioscience's false and misleading advertisements were and are being disseminated in Texas and nationwide in an effort to unfairly compete against Plaintiffs. Allied BioScience's false and misleading marketing statements have actually deceived or are likely to deceive consumers in Texas. Upon information and belief, sales are likely diverted from Plaintiffs to Allied BioScience based on its false marketing statements. Upon information and belief, Allied Bioscience's conduct is willful, deliberate, intentional and in bad faith.

188. Upon information and belief, Allied BioScience has also unfairly competed against Plaintiffs by selling its SURFACEWISE$^2$ product without indication of any testing, much less efficacy. Pursuant to FIFRA 40 C.F.R. §§ 150 *et seq*, pesticides—such as Allied BioScience's SURFACEWISE$^2$—ordinarily cannot be sold without undergoing proper testing and approval. While Allied BioScience has received an emergency exemption, upon information and belief, Allied BioScience has failed to provide the requisite data for an exemption under 40 C.F.R. §§ 166 *et seq*. Allied BioScience has instead claimed that the specific formulations for SURFACEWISE$^2$ are maintained as trade secrets. Exs. U, V.

189. By circumventing the requisite testing protocols, Allied BioScience has obtained a windfall from reduced costs, allowing it to compete unfairly against Plaintiffs. As a direct and proximate result of Allied BioScience's unfair competition, Plaintiffs have suffered a loss of market share, reduction in the value of its business, and extensive costs to counteract Allied

BioScience's improper circumvention of data requirements. Allied Bioscience's false marketing has caused, is causing, and continues to be causing immediate and irreparable injury to Plaintiffs, both by direct diversion of sales and by harming Plaintiff's reputation and goodwill.

**COUNT XII: TORTIOUS INTERFERENCE**

190. Each of the allegations set forth in Paragraphs 1-189 of this Complaint is incorporated by reference and realleged.

191. Upon information and belief, Allied BioScience has and continues to tortiously interfere with Plaintiffs' prospective business relations in violation of Texas's tortious interference common law.

192. As pleaded in Paragraphs 177-184 Allied BioScience has made and continues to make false and misleading marketing statements regarding its SURFACEWISE$^2$ product and competing products, such as those offered by Plaintiffs. Allied Bioscience's false and misleading advertisements were and are being disseminated in Texas and nationwide. Allied BioScience's false and misleading marketing statements have actually interfered and are likely to continue interfering with Plaintiffs' prospective business relations in the same market segment.

193. There was a reasonable probability that Plaintiffs would have entered into a business relationship with third parties, including customers or business partners, but for Allied BioScience's false and misleading marketing regarding competing products—such as those offered by Plaintiffs. Upon information and belief, Allied BioScience willfully, intentionally interfered with Plaintiffs' prospective business relations with customers by advertising false statements and misrepresentations.

194. As a direct and proximate result of Allied BioScience's misconduct, Plaintiffs are being and will continue to be suffering injury in the form of actual damages, including lost sales and lost profits.

**PRAYER FOR RELIEF**

WHEREFORE, Plaintiffs respectfully request that this Court enter judgment in Plaintiffs' favor as follows:

A. Finding that Allied BioScience has infringed each of the Asserted Patents;

B. Permanently enjoining and restraining Allied BioScience and their officers, agents, employees, and those acting in privity with them, from further infringement of the Asserted Patents under 35 U.S.C. § 283;

C. Awarding Plaintiffs damages, including enhanced damages, pursuant to 35 U.S.C. § 284, for Allied BioScience's infringement of the Asserted Patents, in an amount to be determined at trial, but in no event less than a reasonable royalty;

D. Finding that Allied BioScience has engaged in false advertising in violation of the Lanham Act under 15 U.S.C. §§ 1125 *et. seq.* and to the detriment of Plaintiffs;

E. Permanently enjoining and restraining Allied BioScience and their officers, agents, employees, and those acting in privity with them, from further engaging in false advertising against Plaintiffs;

F. Awarding Plaintiffs damages pursuant to 15 U.S.C. § 1117, for Allied BioScience's false advertisement, including Allied BioScience's profits, damages sustained by Plaintiffs, and treble damages;

G. Finding that Allied BioScience has unfairly competed against Plaintiffs in violation of Texas Unfair Competition common law;

H. Finding that Allied BioScience has tortiously interfered with Plaintiffs' prospective business relations in violation of Texas Tortious Interference common law;

I. Permanently enjoining and restraining Allied BioScience and their officers, agents, employees, and those acting in privity with them, from further unfairly competing

against Plaintiffs and from further tortiously interfering with Plaintiffs' prospective business relations;

J. Awarding Plaintiffs damages, including disgorgement of profits obtained by Allied BioScience, as a result of Allied BioScience's unfair competition and tortious interference;

K. Finding that this case is exceptional under 35 U.S.C. § 285 and 15 U.S.C. § 1117, respectively, and awarding Plaintiffs reasonable attorney fees, costs, and expenses

L. Awarding pre-judgment and post-judgment interest to compensate Plaintiffs for the damages it sustained; and

M. Awarding Plaintiffs any further relief the Court deems just and proper.

**JURY DEMAND**

Pursuant to Federal Rule of Civil Procedure 38(b), Plaintiffs hereby demand a trial by jury on all issues so triable.

Dated: September 28, 2020

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