

**UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION**

**ENVIROTECH CHEMICAL
SERVICES, INC.,**

Plaintiff

v.

CLEAN CHEMISTRY, INC.,

Defendant

**CASE NO. 1:24-CV-01313-ADA
JURY TRIAL DEMANDED**

**PLAINTIFF ENVIROTECH CHEMICAL SERVICES, INC.’S
PRELIMINARY INFRINGEMENT CONTENTIONS**

Pursuant to the STANDING ORDER GOVERNING PROCEEDINGS (OGP) 4.4—PATENT CASES dated January 23, 2024, and based on the information reasonably available to it, Plaintiff Envirotech Chemical Services, Inc. (“EnviroTech” or “Plaintiff”), hereby provides the following Preliminary Infringement Contentions (“Preliminary Contentions”) to Defendant Clean Chemistry, Inc. (“Clean Chemistry” or “Defendant”).

Plaintiff provides these Preliminary Contentions without prejudice to supplement or revise these Preliminary Contentions, including but not limited to Plaintiff’s right to assert additional claims or theories, based on additional analysis of the sources cited herein, and/or further information obtained during discovery, which has not yet begun. Plaintiff reserves the right to supplement these Preliminary Contentions in view of any claim constructions adopted by the Court, and any non-infringement or invalidity positions asserted by Defendant. Plaintiff also reserves the right to submit expert opinions and analyses of Defendant’s infringement of the patents in suit in accordance with the schedule for expert discovery, which has not yet been set by the Court. To the extent any element of an asserted claim is found not to be present literally,

Plaintiff reserves its right to amend these Preliminary Contentions, including based on discovery from Defendant or third parties, to detail the manner in which any such claim element is present under the doctrine of equivalents. Furthermore, the references to Defendant's FCN or to its U.S. Patent No. included in these Preliminary Contentions are exemplary rather than exhaustive, and are listed without prejudice to Plaintiff's right to rely on other materials not cited herein.

As detailed in the attached claim chart, publicly available information lacks certain critical information relevant to infringement under some of the claims of the patents-in-suit and Plaintiff has not had the benefit of discovery. Thus, Plaintiff currently lacks sufficient information to provide a detailed infringement analysis of:

- Claims 3, 7,8, 12, 13, 17, 20, 22, and 23 of the 8,546,449 patent;
- Claims 2, 5, 7, 8, 11, and 12 of the 9,363,997 patent;
- Claim 3 of the 9,730,443 patent; and
- Claims 2 and 3 of the 9,737,072 patent.

The limited information currently available to Plaintiff does not appear to be inconsistent with infringement of the claims of the patents in suit, either literally or under the doctrine of equivalents. Plaintiff reserves the right, therefore, to supplement these contentions after detailed disclosure to it of relevant information from Defendant.

Plaintiff also reserves the right to adduce additional evidence in support of its current or future infringement positions, including, but not limited to, analyses and test data of samples of Defendant's technologies.

I. APPLICABLE LAW

A. Direct Infringement

A patent is directly infringed when a person “without authority makes, uses, offers to sell, or sells any patented invention, within the United States or imports into the United States . . . during the term of the patent.” 35 U.S.C. § 271(a). To determine if a patent is infringed, a two-step analysis is employed. First, the Court construes the scope and meaning of the asserted patent claims. Second, the accused product is compared to the properly construed claims. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 976 (Fed. Cir. 1995) (en banc). A product directly infringes a patent if the accused device or method includes every claim limitation. *Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 19 (1997).

Even in the absence of literal infringement, a patentee may establish infringement under the doctrine of equivalents if the difference between the claim element of the accused product or method are “insubstantial.” *Id.* at 40. One way (but not the only way) of showing that an element is insubstantially different is to show that it performs substantially the same function, in substantially the same way, to achieve substantially the same result as would be achieved by the element if literally present. *Id.* Further, to establish equivalence, the asserted patent need not disclose “a claim element’s function, way, and result in order for the doctrine of equivalents to apply as to that element.” *Intendis GmbH v. Glenmark Pharm. Inc., USA*, 822 F.3d 1355, 1362 (Fed. Cir. 2016). Rather, “[w]hen the claims and specification of a patent are silent as to the result of a claim limitation, . . . [the courts] should turn to the ordinary skilled artisan.” *Id.* (quotation omitted).

A single entity that performs only some of the steps of a patented method can be liable for direct infringement if, for example, (1) the single entity "directs or controls" performance of the remaining step or steps by the other entities, by conditioning their participation in an activity or receipt of a benefit upon their performance and establishing the manner or timing of that

performance, or (2) if all entities form a joint enterprise. *Akamai Techs., Inc. v. Limelight Networks, Inc.*, 797 F.3d 1020, 1022 (Fed. Cir. 2015) (en banc).

C. Indirect Infringement

A party is liable for indirect infringement under 35 U.S.C. § 271(b) and/or (c) if a third party, such as a customer, commits direct infringement and the Defendant actively induces, encourages, aids, or abets this infringement as defined under § 271(b) and/or (c).

II. DEFENDANT’S INFRINGEMENT

A. Asserted Patents and Claims

Plaintiff asserts all claims of the following patents: U.S. Patent Nos. 8,546,449; 9,363,997; 9,730,443 and 9,737,072 (the “Asserted Claims”). Based on the evidence available to it, the priority date (*i.e.*, the earliest date of invention) of each asserted claim is not earlier than June 18, 2008. Plaintiff reserves the right to assert other patents if discovery uncovers evidence to support such a claim.

B. Infringement Contentions

Plaintiff contends that Defendant infringes, and will infringe in the future, the Asserted Claims under 35 U.S.C. § 271(a), by practicing within the United States each step of each method disclosed in the Asserted Claims, either literally or under the Doctrine of Equivalents. Plaintiff’s current information regarding Defendant’s operations indicates that the Defendant itself is conducting the activities that practice the methods covered by the asserted claims of the patents-in-suit. If, however, Defendant’s customers or other third parties are practicing some or all of the steps of one or more of the Asserted Claims, and Defendant is actively inducing, encouraging, aiding, and/or abetting direct infringement by those persons, then Defendant is liable for indirect infringement under 35 U.S.C. § 271(b) and/or (c).

Plaintiff submits detailed preliminary infringement contentions with respect to each asserted claim in the charts attached hereto as **Exhibit A**. Plaintiff includes in the attached charts exemplary references to public information reasonably available to the Plaintiff that appears to disclose the methods that Defendant uses in its operations. Plaintiff reserves the right to amend, modify, or otherwise supplement these grounds for infringement, especially after it has taken fact discovery from Defendant.

DATED: March 4, 2025

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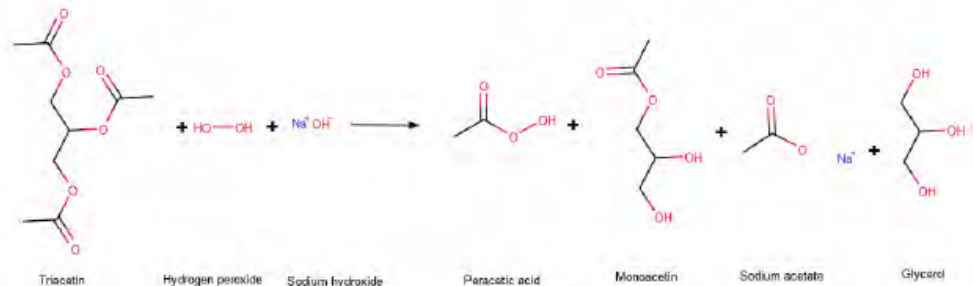
Exhibit A

In the analysis below, the FCN referenced is available at the following link - [FCN Link](#).

U.S. Patent No. 8,546,449

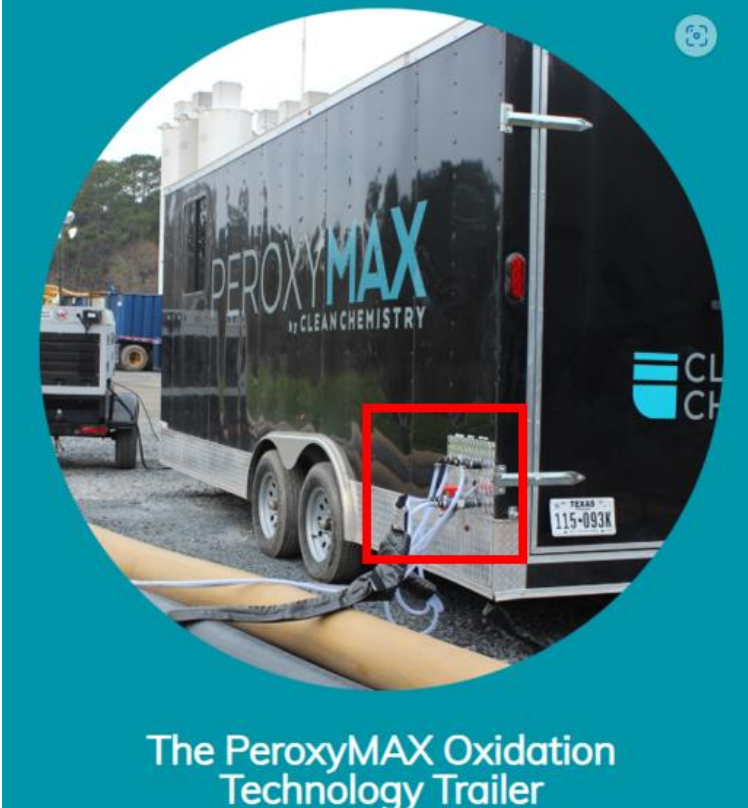
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 1	
A method of generating non-equilibrium solution of peracetic acid, comprising:	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. FCN at pg. 9: "[t]he FCS is prepared in a non-equilibrium process that produces PAA" On-demand generation of the FCS eliminates the need to incorporate a stabilizer such as 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) in the formulation. As described below, the FCS is prepared in a non-equilibrium process that produces PAA that is immediately applied in the desired concentration. No stabilizers are contained in this FCS since it is produced and used on-demand. US 9,517,955 to Clean Chemistry Inc, at col. 10: 10 embodiment, the acyl or acetyl donor is a nitrogen-acyl or nitrogen-acetyl donor as shown in Equation 2b below: $\text{HOO}^-\text{AcNR}_2 \rightarrow \text{AcOO}^-\text{RNH} \quad [2b]$ Where Ac is acyl [$-\text{C}(\text{O})\text{R}'$] or acetyl [$-\text{C}(\text{O})\text{CH}_3$] and R and R' are hydrocarbon-based substituents. In Equations 2a/2b above, the reaction between an acyl or acetyl donor 106 and hydrogen peroxide 122 occurs at alkaline pH by nucleophilic attack of the acyl carbonyl carbon atom by the hydrogen peroxide anion, which displaces the donor molecule fragment as an alcohol or amine in a manner analogous to saponification. In some embodiments, the non-equilibrium reactions generalized in Equations 2a/2b are conducted between pH 10 and pH 13. The use of non-equilibrium reaction in Equations 2a/2b produces alkaline peracid concentrate 122' with concentrations of less than approximately 5 wt % peroxyacetic acid and other organic peracids that are produced efficiently and rapidly. Using the non-equilibrium reaction allows the hydrogen peroxide residual to be minimized if necessary.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
1a. providing water;	FCN at pg. 9: “[w]ater is fed into the generator/mixer” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
1b. introducing a hydrogen peroxide-triacetin solution to the water;	FCN at pg. 9: “Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.” b. Process Step 2: Addition of hydrogen peroxide $2\text{NaOH} + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{O}_2 + 2\text{H}_2\text{O}$ Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution. FCN at pg. 10: “In the next step, under continuous agitation, triacetin is added to the process.” c. Process Step 3: Addition of triacetin The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. On the left, the reactants are triacetin (a glycerol molecule with three acetyl groups), hydrogen peroxide (H₂O₂), and sodium hydroxide (NaOH). An arrow points to the right, leading to the products: peracetic acid (a peroxide-linked acetic acid), monoacetin (a glycerol molecule with one acetyl group), sodium acetate (Na⁺ and CH₃COO⁻), and glycerol (a three-carbon chain with three hydroxyl groups). Below each chemical structure is its name: Triacetin, Hydrogen peroxide, Sodium hydroxide, Peracetic acid, Monoacetin, Sodium acetate, and Glycerol. In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O₂²⁻ and HO⁻ compete in the reaction with triacetin’s acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
1c. mixing the hydrogen peroxide-triacetin solution and the water to form a mixture;	FCN at pg. 10: “under continuous agitation, triacetin is added to the process.” c. Process Step 3: Addition of triacetin  The diagram illustrates the chemical reaction where triacetin (a triglyceride with three acetyl groups) reacts with hydrogen peroxide ($\text{HO}-\text{OH}$) in the presence of sodium hydroxide ($\text{Na}^+ \text{OH}^-$). The products are peracetic acid (an acetyl group with a peroxide linkage), monoacetin (a diglyceride with one acetyl group), sodium acetate (an acetyl group with a carboxylate group), and glycerol (a three-carbon chain with three hydroxyl groups). In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH ($\text{pH} > 10$) is used to accelerate the reaction since the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.
1d. adding an aqueous source of an alkali metal or earth alkali metal hydroxide to the mixture; and	FCN at pg. 9: “[w]ater is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
1e. forming a reaction medium comprising a non-equilibrium solution of peracetic acid.	FCN at pg. 10: “[t]riacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. FCN at pg. 10: “[t]he reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA” FCN at pg. 10: “[t]he hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid”

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.
Claim 2	
2. The method of claim 1, further comprising, prior to step (b), a step of providing the hydrogen peroxide-triacin solution comprising: introducing triacetin to a solution of aqueous hydrogen peroxide; and allowing the triacetin and the solution of aqueous hydrogen peroxide to mix to form the hydrogen peroxide-triacetin	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 10: "In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA." In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.

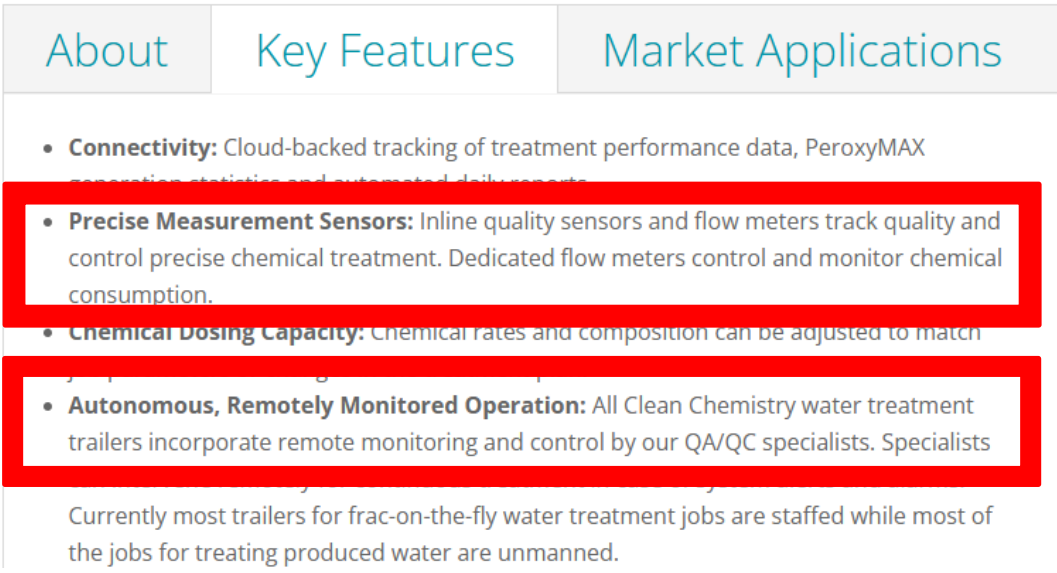
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
solution.	
Claim 3	
3. The method of claim 1, wherein the hydrogen peroxide-triacetin solution has a mole ratio of hydrogen peroxide to triacetin of about 2.98:1 to about 12.84:1.	<i>See supra</i> Claim 1. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 4	
4. The method of claim 1, wherein the provided water is an aqueous stream.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: "Water is fed into the generator/mixer" a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 The PeroxyMAX Oxidation Technology Trailer See https://cleanchemi.com/deployment

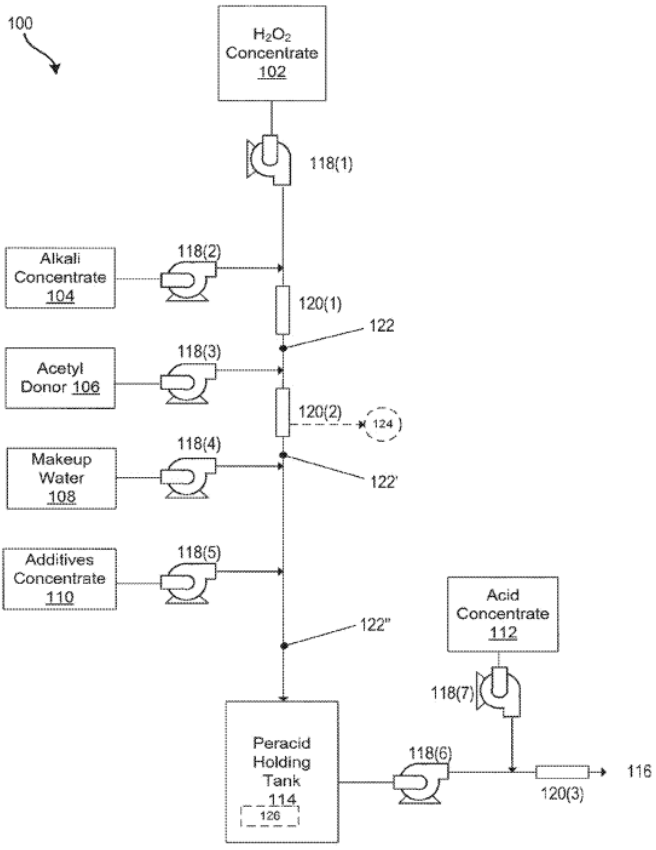
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	About Key Features Market Applications - Simple installation into existing water treatment system - Low power requirements compared to current systems - Operates at near atmospheric pressure - Contains less than four liters of product solution - Standard 3-ft by 4-ft system produces 400 to 2000 pounds of PeroxyMAX (measured as peracetate) a day See https://cleanchemi.com/deployment
Claim 5	
5. The method of claim 1, wherein the provided water is contained in a mixing tank or other vessel.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: "Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps." a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
Claim 6	
6. The method of	When this claim is properly construed, Defendant's process literally infringes this claim. Under other

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
claim 1, wherein the aqueous source of the alkali metal or earth alkali metal hydroxide is sodium hydroxide.	constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: "Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps." a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
Claim 7	
7. The method of claim 6, wherein the sodium hydroxide is about 1.82% to about 7.28%.	<i>See supra</i> Claim 6. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 8	
8. The method of claim 1, wherein step (d) is performed simultaneously with step (b).	<i>See supra</i> Claim 1. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 9	
9. The method of claim 1, further comprising allowing the	<i>See supra</i> Claim 1. FCN at pg. 10: "The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA."

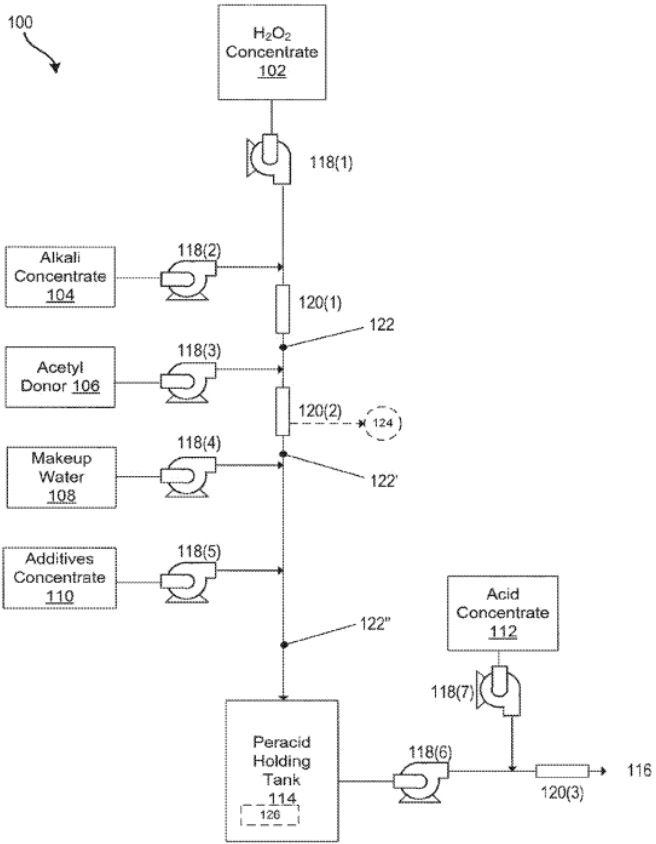
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
reaction medium sufficient time to maximize the conversion of the hydrogen peroxide triacetin into peracetic acid.	In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid. FCN at pg. 12: "The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent." In the current reaction scheme associated with this FCS, a mixture of hydrogen peroxide is blended with sodium hydroxide and dilution water. Triacetin is then added to this diluted mixture. The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent. The
Claim 10	
10. The method of claim 9, wherein the time to maximize the conversion of the hydrogen peroxide triacetin into peracetic acid is about 30 seconds to about five minutes.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 9. FCN at pg. 10: "The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA." In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	FCN at pg. 12: “The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent.” In the current reaction scheme associated with this FCS, a mixture of hydrogen peroxide is blended with sodium hydroxide and dilution water. Triacetin is then added to this diluted mixture. The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent. The
Claim 11	
11. The method of claim 10, further comprising, after step (e), a step of sampling the reaction medium to determine the time required to maximize the amount of hydrogen peroxide triacetin that are converted into peracetic acid.	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 10.  The screenshot shows a website with three tabs: 'About', 'Key Features', and 'Market Applications'. Under 'Key Features', there are three bullet points, each highlighted with a red box: Connectivity: Cloud-backed tracking of treatment performance data, PeroxyMAX generation statistics and automated daily reports. Precise Measurement Sensors: Inline quality sensors and flow meters track quality and control precise chemical treatment. Dedicated flow meters control and monitor chemical consumption. Chemical Dosing Capacity: Chemical rates and composition can be adjusted to match Below these, another red box highlights: Autonomous, Remotely Monitored Operation: All Clean Chemistry water treatment trailers incorporate remote monitoring and control by our QA/QC specialists. Specialists At the bottom, it says: 'Currently most trailers for frac-on-the-fly water treatment jobs are staffed while most of the jobs for treating produced water are unmanned.' <i>See</i> https://cleanchemi.com/deployment

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 12	
12. The method of claim 9, wherein and the percent of triacetin that is converted into peracetic acid is about 40.9% to about 85.7%.	<i>See supra</i> Claim 9. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 13	
13. The method of claim 7, wherein the mole ratio of the sodium hydroxide to the hydrogen peroxide to the triacetin is about 4.2:3.8:1.	<i>See supra</i> Claim 7. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 14	
14. The method of claim 1, wherein steps (a) through (e) are performed on a continuous basis.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. US 9,517,955 to Clean Chemistry Inc extensively discusses a potentially-continuous process for the production of PAA. For example,

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 FIG. 1 The following evidence also supports the use of a continuous process:

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	Flexible Deployment Options PeroxyMAX can be safely generated on-demand, near the point of application, and injected into the water stream where it is most needed: at the wellsite, at a pulp mill bleaching plant or on a food processing production line. In these applications, other oxidants are more challenging to use due to safety, odor, corrosion or chemical compatibility limitations. See https://cleanchemi.com/deployment
Claim 15	
15. The method of claim 1, wherein steps (a) through (e) are performed on an intermittent basis.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. The following evidence supports the use of an intermittent basis process: Flexible Deployment Options PeroxyMAX can be safely generated on-demand, near the point of application, and injected into the water stream where it is most needed: at the wellsite, at a pulp mill bleaching plant or on a food processing production line. In these applications, other oxidants are more challenging to use due to safety, odor, corrosion or chemical compatibility limitations. See https://cleanchemi.com/deployment US 9,517,955 to Clean Chemistry Inc extensively discusses processes that can be performed on an intermittent basis. For example:

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 FIG. 1
Claim 16	
16. The method of claim 1, wherein the peracetic acid	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
solution is for immediate use.	<i>See supra</i> Claim 1. FCN at pg. 10: “Once generated, PeroxyMAX is collected in a small buffer tank from which it is drawn and conveyed by a chemical feed pump to its point of use immediately after preparation.” d. Process Step 4: Collection of PeroxyMAX Once generated, PeroxyMAX is collected in a small buffer tank from which it is drawn and conveyed by a chemical feed pump to its point of use immediately after preparation.
Claim 17	
17. The method of claim 1, further comprising, after step (e), a step of adding a source of acid to stabilize the non-equilibrium solution of peracetic acid for storing and using throughout a working day.	<i>See supra</i> Claim 1. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 18	
18. The method of claim 1, wherein the peracetic acid solution is prepared on a site having a point-of-use.	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 10: “Once generated, PeroxyMAX is collected in a small buffer tank from which it is drawn and conveyed by a chemical feed pump to its point of use immediately after preparation.”

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	d. Process Step 4: Collection of PeroxyMAX Once generated, PeroxyMAX is collected in a small buffer tank from which it is drawn and conveyed by a chemical feed pump to its point of use immediately after preparation. Also: PeroxyMAX website, February 24, 2025, https://cleanchemi.com/DEPLOYMENT  The PeroxyMAX Oxidation Technology Trailer Utilizes smart technology, enhanced automation, data driven quality control and adaptable chemical dosing for improved onsite operations. Quick setup, fast deployment and full cloud-backed connectivity allow PeroxyMAX technology to be deployed to any application location. Flexible Deployment Options PeroxyMAX can be safely generated on-demand, near the point of application, and injected into the water stream where it is most needed: at the wellsite, at a pulp mill bleaching plant or on a food processing production line. In these applications, other oxidants are more challenging to use due to safety, odor, corrosion or chemical compatibility limitations. See https://cleanchemi.com/deployment
Claim 19	

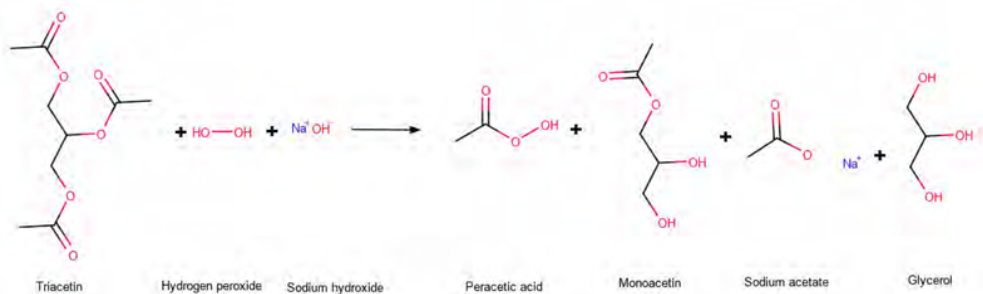
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
19. The method of claim 2, wherein the liquid is triacetin defining a hydrogen peroxide-triacetin solution.	<i>See supra</i> Claim 2. FCN at pg. 10: “In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA.” <i>In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.</i>
Claim 20	
20. The method of claim 19, wherein the hydrogen peroxide-triacetin solution has a mole ratio of hydrogen peroxide to triacetin of about 2.98:1 to about 12.84:1.	<i>See supra</i> Claim 19. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 21	
21. The method of claim 19, wherein the aqueous source of the alkali metal or earth alkali metal hydroxide is sodium hydroxide.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 19. FCN at pg. 9: “Water is fed into the generator/mixer followed by concentrated sodium hydroxide”

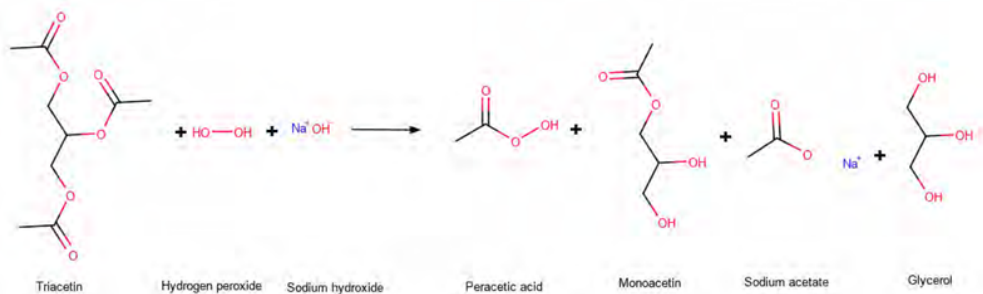
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
Claim 22	
22. The method of claim 21, wherein the sodium hydroxide is about 1.82% to about 7.28%.	<i>See supra</i> Claim 21. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 23	
23. The method of claim 22, wherein the mole ratio of the sodium hydroxide to the hydrogen peroxide to the triacetin is about 4.2:18:1.	<i>See supra</i> Claim 22. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.

U.S. Patent No. 9,363,997

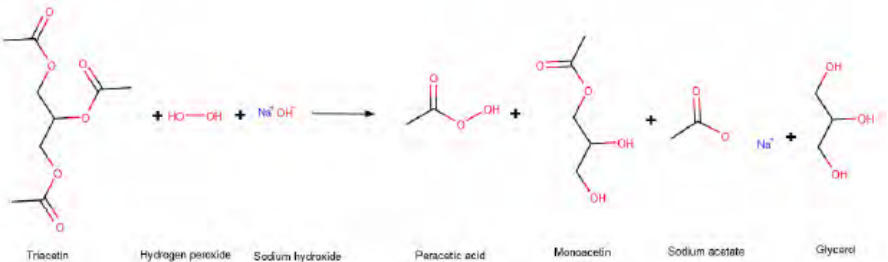
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 1	
1. A method of generating a non-equilibrium solution of peracetic acid, comprising:	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. FCN at pg. 9: "[t]he FCS is prepared in a non-equilibrium process that produces PAA"

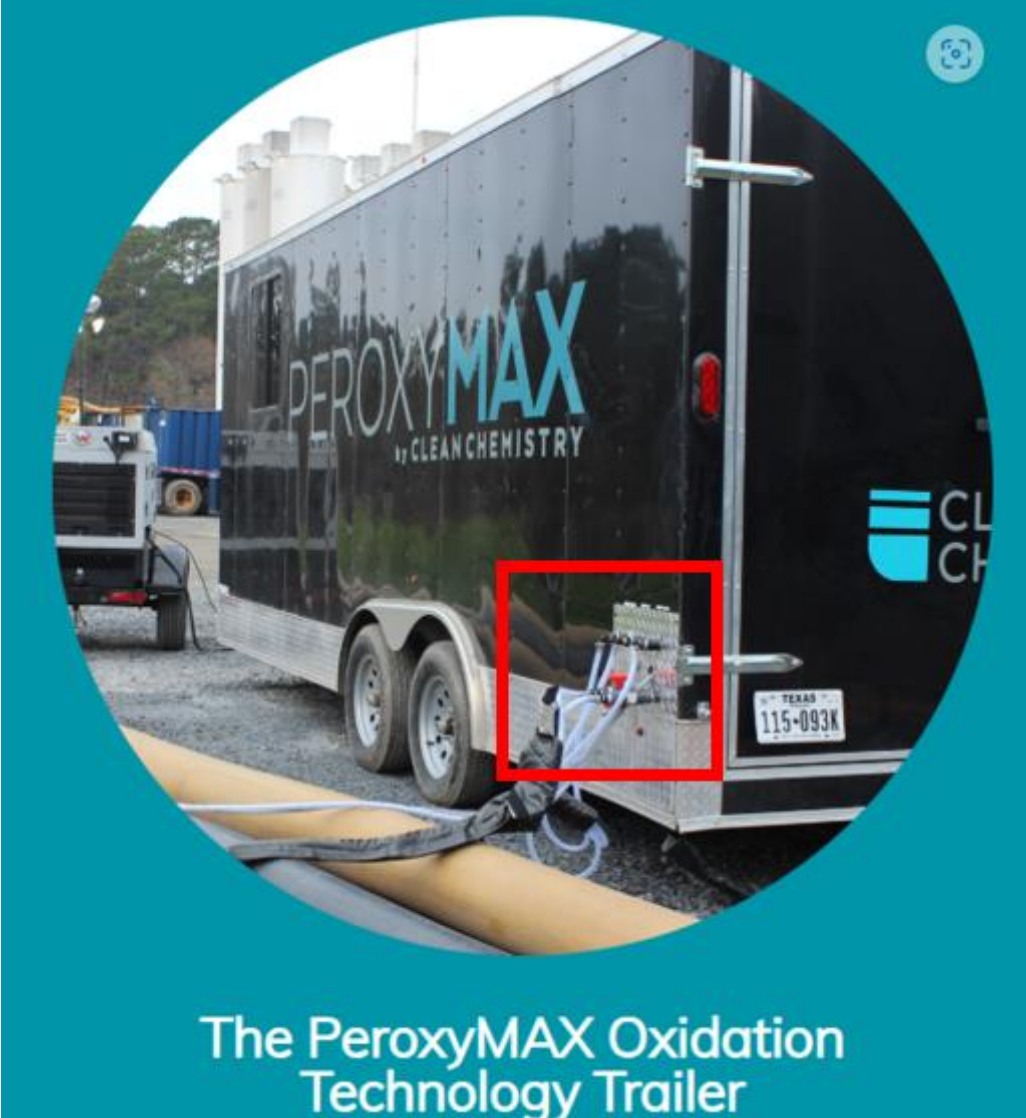
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	On-demand generation of the FCS eliminates the need to incorporate a stabilizer such as 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) in the formulation. As described below, the FCS is prepared in a non-equilibrium process that produces PAA that is immediately applied in the desired concentration. No stabilizers are contained in this FCS since it is produced and used on-demand.
1a. providing water;	FCN at pg. 9: “[w]ater is fed into the generator/mixer” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
1b. introducing triacetin and aqueous hydrogen peroxide to the water;	FCN at pgs. 9 and 10: “hydrogen peroxide is blended into the mixer’s alkaline solution” and “under continuous agitation, triacetin is added to the process” b. Process Step 2: Addition of hydrogen peroxide $2\text{NaOH} + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{O}_2 + 2\text{H}_2\text{O}$ Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	c. Process Step 3: Addition of triacetin  The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. Triacetin (a glycerol triacetate) reacts with hydrogen peroxide (H₂O₂) and sodium hydroxide (NaOH) to produce peracetic acid (PAA), monoacetin (a glycerol monoacetate), sodium acetate (NaOAc), and glycerol. The reaction is shown with chemical structures and labels for each component. In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O₂²⁻ and HO⁻ compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.
1c. mixing the triacetin and the aqueous hydrogen peroxide with the water to form a mixture;	FCN at pgs. 9 and 10: “hydrogen peroxide is blended into the mixer’s alkaline solution” and “under continuous agitation, triacetin is added to the process” b. Process Step 2: Addition of hydrogen peroxide $2\text{NaOH} + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{O}_2 + 2\text{H}_2\text{O}$ Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	c. Process Step 3: Addition of triacetin  The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. Triacetin (a glycerol triacetate) reacts with hydrogen peroxide ($\text{HO}-\text{OH}$) and sodium hydroxide ($\text{Na}^+ \text{OH}^-$) to produce peracetic acid, monoacetin, sodium acetate, and glycerol. The reaction is shown with chemical structures and labels for each component. In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH ($\text{pH} > 10$) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.
1d. adding an aqueous source of an alkali metal or earth alkali metal hydroxide to the mixture; and	FCN at pg. 9: “[w]ater is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
1e. forming a reaction medium comprising a non-equilibrium solution of peracetic acid.	FCN at pg. 10: “[t]riacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. FCN at pg. 10: “[t]he reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA” FCN at pg. 10: “[t]he hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid” The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 2	
2. The method of claim 1, wherein the triacetin and the aqueous hydrogen peroxide are introduced simultaneously.	<i>See supra</i> Claim 1. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 3	
3. The method of claim 1, wherein the triacetin and the aqueous hydrogen peroxide are introduced sequentially with either one first.	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pgs. 9 and 10 — (emphasis added) • “Water is fed into the generator/mixer followed by concentrated sodium hydroxide” • “Next, <u>hydrogen peroxide</u> is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.” • “In the next step, under continuous agitation, <u>triacetin</u> is added to the process.” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps. b. Process Step 2: Addition of hydrogen peroxide $2\text{NaOH} + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{O}_2 + 2\text{H}_2\text{O}$ Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.

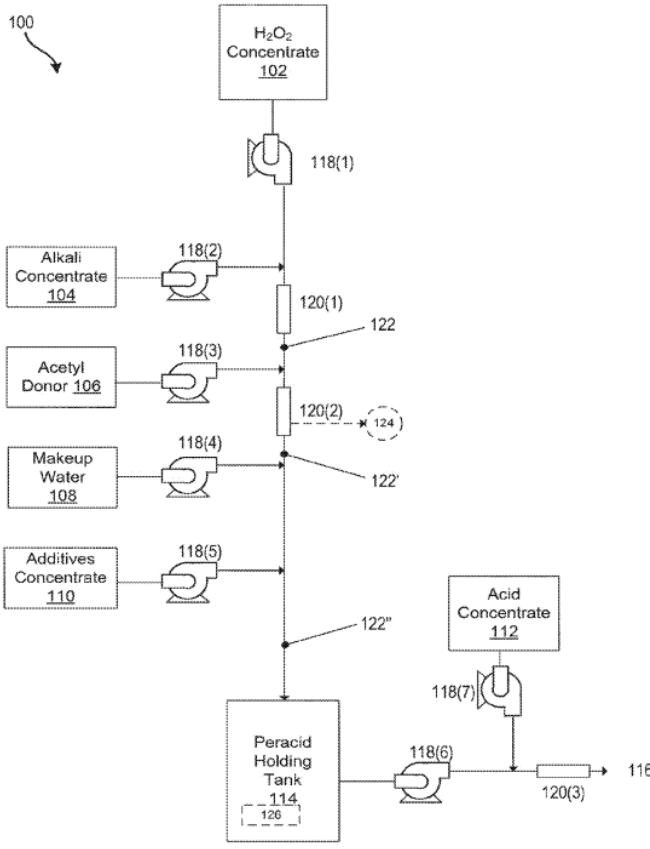
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	c. Process Step 3: Addition of triacetin  The diagram illustrates the chemical reaction for Process Step 3. On the left, the reactants are Triacetin (a glycerol molecule with three acetyl groups), Hydrogen peroxide ($\text{HO}-\text{OH}$), and Sodium hydroxide ($\text{Na}^+ \text{OH}^-$). An arrow points to the right, leading to the products: Peracetic acid (an acetyl group with a peroxide linkage), Monoacetin (a glycerol molecule with one acetyl group and two hydroxyl groups), Sodium acetate (an acetyl group with a carboxylate group), and Glycerol (a glycerol molecule with three hydroxyl groups). Below each chemical structure is its name: Triacetin, Hydrogen peroxide, Sodium hydroxide, Peracetic acid, Monoacetin, Sodium acetate, and Glycerol. In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH ($\text{pH} > 10$) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.
Claim 4	
4. The method of claim 1, wherein the provided water is an aqueous stream.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: "Water is fed into the generator/mixer" a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 The PeroxyMAX Oxidation Technology Trailer See https://cleanchemi.com/deployment

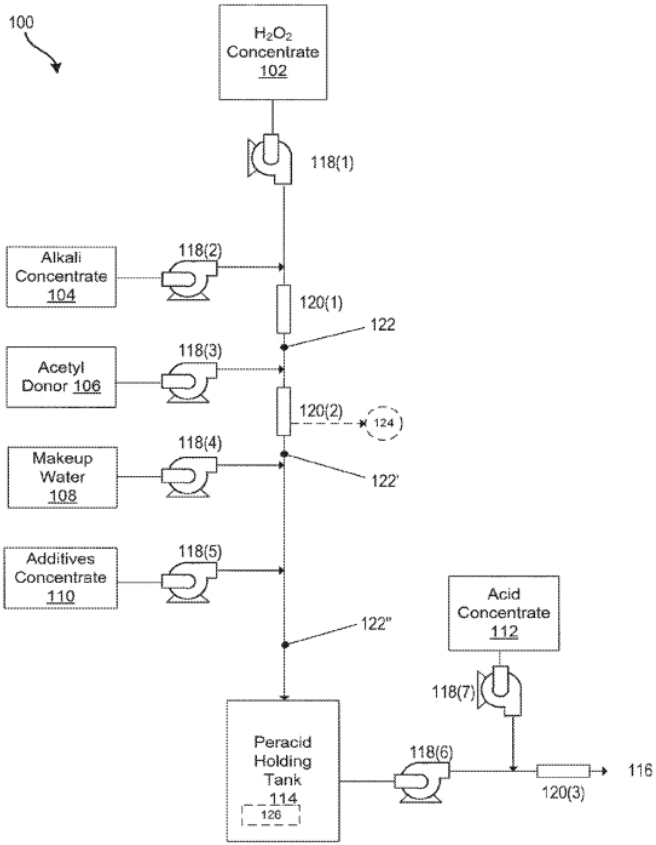
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 5	
5. The method of claim 1, wherein the provided water is contained in a mixing tank or other vessel.	<i>See supra</i> Claim 1. FCN at pg. 9: “Water is fed into the generator/mixer followed by concentrated sodium hydroxide” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 6	
6. The method of claim 1, wherein the aqueous source of the alkali metal or earth alkali metal hydroxide is sodium hydroxide.	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: “Water is fed into the generator/mixer followed by concentrated sodium hydroxide” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps.
Claim 7	
7. The method of claim 6, wherein, the sodium hydroxide is about 1.82% to about 7.28%.	<i>See supra</i> Claim 6. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 8	
8. The method of	<i>See supra</i> Claim 1.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
claim 1, wherein step (d) is performed simultaneously with step (b).	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 9	
9. The method of claim 1, further comprising allowing the reaction medium sufficient time to maximize the conversion of the hydrogen peroxide and the triacetin into peracetic acid.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 10: "The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA." In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O₂²⁻ and HO⁻ compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid. FCN at pg. 12: "The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent." In the current reaction scheme associated with this FCS, a mixture of hydrogen peroxide is blended with sodium hydroxide and dilution water. Triacetin is then added to this diluted mixture. The resulting reaction converts the three available acetyl groups on triacetin into PAA with a resulting aqueous solution having a PAA purity of greater than 94 percent. The
Claim 10	
10. The method of claim 9, wherein	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
the time to maximize the conversion of the hydrogen peroxide and the triacetin into peracetic acid is about 30 seconds to about five minutes.	<i>See supra</i> Claim 9. FCN at pg. 10: “The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA.” The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.
11. The method of claim 10, wherein the percent of triacetin that is converted into peracetic acid is about 40.9% to about 85.7%.	<i>See supra</i> Claim 10. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 12	
12. The method of claim 6, wherein the mole ratio of the sodium hydroxide to the hydrogen peroxide to the triacetin is about 4.2:3.8:1.	<i>See supra</i> Claim 6. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 13	
13. The method of claim 1, wherein said steps (a) through (e) are	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1.

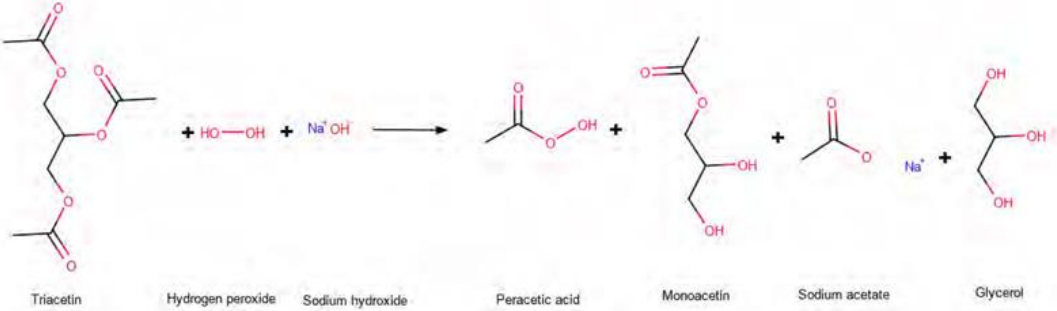
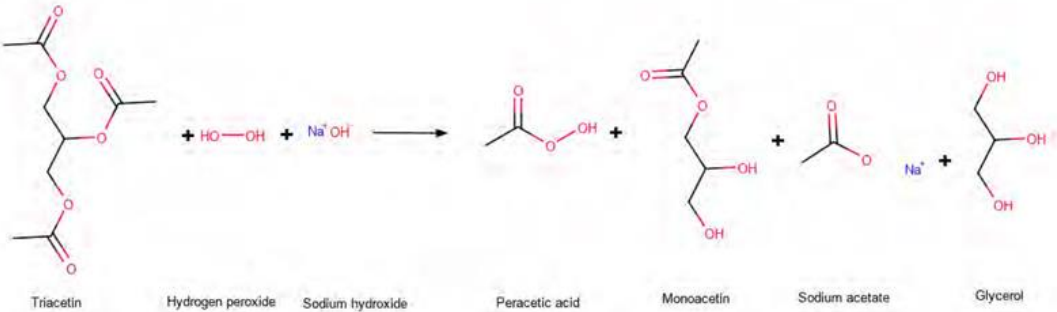
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
performed on a continuous basis.	US 9,517,955 to Clean Chemistry Inc extensively discusses a potentially-continuous process for the production of PAA. For example,  FIG. 1

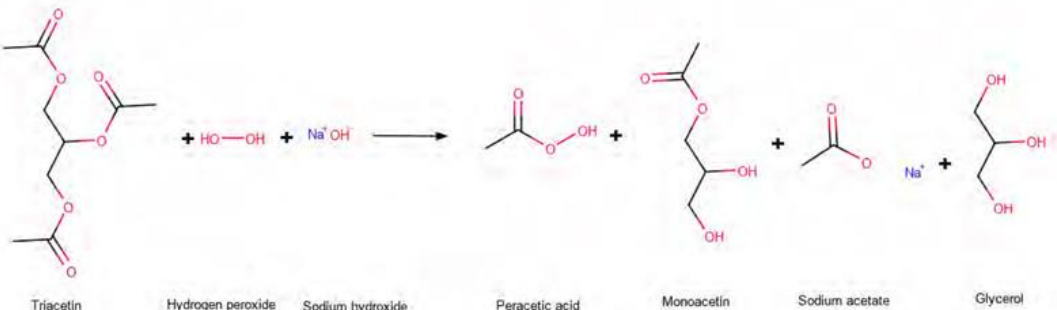
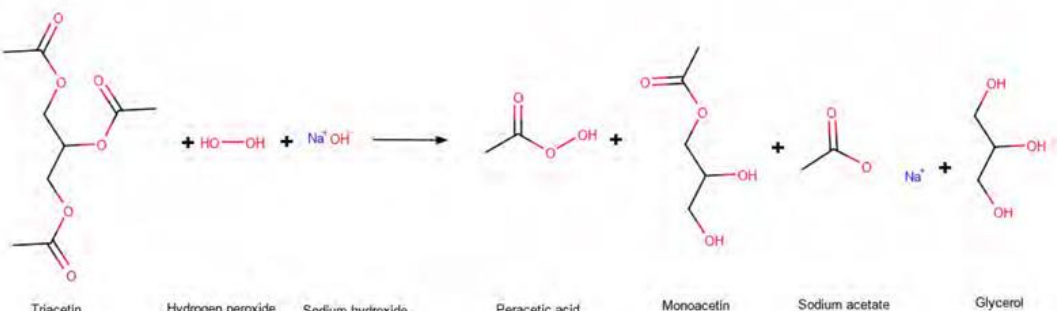
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	The following evidence also supports the use of a continuous process: Flexible Deployment Options PeroxyMAX can be safely generated on-demand, near the point of application, and injected into the water stream where it is most needed: at the wellsite, at a pulp mill bleaching plant or on a food processing production line. In these applications, other oxidants are more challenging to use due to safety, odor, corrosion or chemical compatibility limitations. See https://cleanchemi.com/deployment
Claim 14	
14. The method of claim 1, wherein said steps (a) through (e) are performed on an intermittent basis.	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. The following evidence supports the use of an intermittent basis process: Flexible Deployment Options PeroxyMAX can be safely generated on-demand, near the point of application, and injected into the water stream where it is most needed: at the wellsite, at a pulp mill bleaching plant or on a food processing production line. In these applications, other oxidants are more challenging to use due to safety, odor, corrosion or chemical compatibility limitations.

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	See https://cleanchemi.com/deployment US 9,517,955 to Clean Chemistry Inc extensively discusses processes that can be performed on an intermittent basis. For example:  FIG. 1

U.S. Patent No. 9,730,443

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 1	
1. A non-equilibrium solution of peracetic acid, comprising:	When this claim is properly construed, Defendant's process literally infringes this claim. Under other constructions, Defendant's process infringes under the Doctrine of Equivalents. FCN at pg. 9: "[t]he FCS is prepared in a non-equilibrium process that produces PAA" On-demand generation of the FCS eliminates the need to incorporate a stabilizer such as 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) in the formulation. As described below, the FCS is prepared in a non-equilibrium process that produces PAA that is immediately applied in the desired concentration. No stabilizers are contained in this FCS since it is produced and used on-demand. Each of the claimed elements of this claim are present within Clean Chemistry Inc.'s process described in the FCN at least during the reaction of the feedstock materials to form the aqueous mixture of PAA.
1a. peracetic acid;	FCN at pg. 10: "[p]eracetic [a]cid" The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. On the left, the reactants are Triacetin (a glycerol triacetate), Hydrogen peroxide (H₂O₂), and Sodium hydroxide (NaOH). An arrow points to the right, indicating the reaction. On the right side, the products are Peracetic acid (CH₃COOOH), Monoacetin (a glycerol monoacetate), Sodium acetate (CH₃COONa), and Glycerol (C₃H₈O₃). The chemical structures are drawn in a skeletal format with red and black lines.
1b. hydrogen peroxide;	FCN at pg. 10: "[h]ydrogen [p]eroxide"

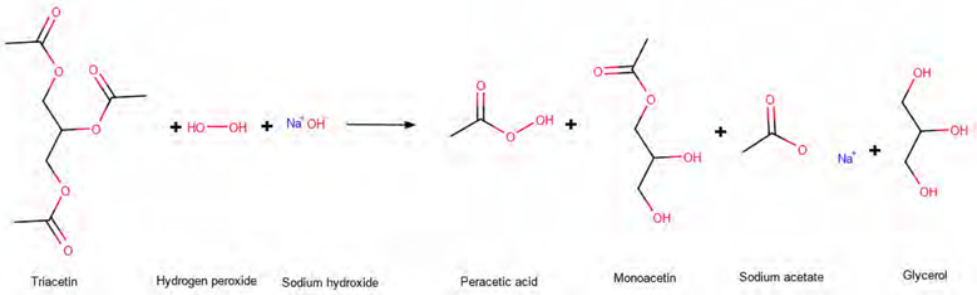
Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. On the left, the reactants are triacetin (a glycerol molecule with three acetyl groups), hydrogen peroxide (HO-OH), and sodium hydroxide (Na⁺ OH⁻). An arrow points to the right, where the products are listed: peracetic acid (CH₃COOOH), monoacetin (a glycerol molecule with one acetyl group and two hydroxyl groups), sodium acetate (CH₃COO⁻ Na⁺), and glycerol (a glycerol molecule with three hydroxyl groups). Below each chemical structure is its name: Triacetin, Hydrogen peroxide, Sodium hydroxide, Peracetic acid, Monoacetin, Sodium acetate, and Glycerol.
1c. triacetin;	FCN at pg. 10: “[t]riacetin”  This diagram is identical to the one in the first row, showing the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide to produce peracetic acid, monoacetin, sodium acetate, and glycerol. The reactants are triacetin, hydrogen peroxide, and sodium hydroxide. The products are peracetic acid, monoacetin, sodium acetate, and glycerol. The names of the compounds are listed below their respective chemical structures.
1d. 1,2,3-propanetriol;	FCN at pg. 10: “[g]lycerol”

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
	 The diagram illustrates the chemical reaction of triacetin with hydrogen peroxide and sodium hydroxide. Triacetin (a triglyceride with three acetyl groups) reacts with hydrogen peroxide (HO-OH) and sodium hydroxide (Na⁺ OH⁻) to produce peracetic acid (CH₃COOOH), monoacetin (a diglyceride with one acetyl group), sodium acetate (CH₃COO⁻ Na⁺), and glycerol (a triol). The chemical structures are shown with their respective labels below them.
1e. an aqueous source of an alkali metal or earth alkali metal hydroxide; and	FCN at pg. 10: “[s]odium [h]ydroxide”  This diagram is identical to the one in the first row, showing the reaction of triacetin with hydrogen peroxide and sodium hydroxide to form peracetic acid, monoacetin, sodium acetate, and glycerol.
1f. water.	FCN at pgs. 9 and 10: “aqueous mixture” In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH (pH>10) is
Claim 2	

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
2. The solution of claim 1, wherein said solution has a pH of about 11.2 to about 13.37.	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. <i>See supra</i> Claim 1. FCN at pg. 9: “Water is fed into the generator/mixer followed by concentrated sodium hydroxide” a. Process Step 1: Preparation of the alkaline substrate Water is fed into the generator/mixer followed by concentrated sodium hydroxide providing the alkaline environment needed for the next steps. US 9,551,076 to Clean Chemistry Inc, col 35, ln 39-42, discusses generation of PAA at pH 12.2: Step 2—activation solution flush: The power supply was turned off and the air feed reduced to 1 liter per minute while an activation solution was fed into the catholyte feed line in place of the original catholyte. A 400 mL activation solution containing 0.1 molar sodium sulfate, 0.2 molar sodium hydroxide and approximately 2.4 millimolar peroxyacetic acid was flushed through the cathode chamber of the electrochemical reactor over 30 minutes. The peroxyacetic acid was made by mixing 3.2 mL of 1.0% hydrogen peroxide solution at pH 12.2 with 0.10 g of triacetin at room temperature and adding that solution to the activation solution.
3. The solution of claim 1, wherein said peracetic acid is about 1% to about 7.1%.	<i>See supra</i> Claim 1. Public information regarding Defendant’s practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.

U.S. Patent No. 9,737,072

Claim Language	Elements of the Method(s) Practiced by the Defendant that Meet Claim Limitations
Claim 1	
1. A hydrogen peroxide-acetyl precursor solution, comprising:	When this claim is properly construed, Defendant’s process literally infringes this claim. Under other constructions, Defendant’s process infringes under the Doctrine of Equivalents. FCN at pg. 9: “[t]he FCS is prepared in a non-equilibrium process that produces PAA” On-demand generation of the FCS eliminates the need to incorporate a stabilizer such as 1-hydroxyethylidene-1, 1-diphosphonic acid (HEDP) in the formulation. As described below, the FCS is prepared in a non-equilibrium process that produces PAA that is immediately applied in the desired concentration. No stabilizers are contained in this FCS since it is produced and used on-demand.
1a. aqueous hydrogen peroxide;	FCN at pg. 9 – “hydrogen peroxide is blended into the mixer’s alkaline solution” b. Process Step 2: Addition of hydrogen peroxide $2\text{NaOH} + \text{H}_2\text{O}_2 \rightarrow \text{Na}_2\text{O}_2 + 2\text{H}_2\text{O}$ Next, hydrogen peroxide is blended into the mixer’s alkaline solution and forms an alkaline peroxide solution.
1b. triacetin;	FCN at pg. 10: “under continuous agitation, triacetin is added to the process”

	c. Process Step 3: Addition of triacetin  The diagram illustrates the chemical reaction for Process Step 3. On the left, the reactants are Triacetin (a glycerol molecule with three acetyl groups), Hydrogen peroxide ($\text{HO}-\text{OH}$), and Sodium hydroxide (Na^+OH^-). An arrow points to the right, leading to the products: Peracetic acid (an acetyl group with a peroxide linkage), Monoacetin (a glycerol molecule with one acetyl group and two hydroxyl groups), Sodium acetate (an acetyl group with a carboxylate group and a sodium ion), and Glycerol (a glycerol molecule with three hydroxyl groups). Below each chemical structure is its name: Triacetin, Hydrogen peroxide, Sodium hydroxide, Peracetic acid, Monoacetin, Sodium acetate, and Glycerol. In the next step, under continuous agitation, triacetin is added to the process. Triacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. Alkaline pH ($\text{pH} > 10$) is used to accelerate the reaction since the hydrogen peroxide anion is a much better nucleophile than hydrogen peroxide. Both the hydrogen peroxide anion, O_2^{2-} and HO^- compete in the reaction with triacetin's acetyl groups, the former producing a PAA and the latter producing acetate. The reaction takes place at ambient temperature and pressure.
1c. a trace amount of peracetic acid; and	FCN at pg. 10: “[t]riacetin rapidly reacts with the alkaline peroxide to form an aqueous mixture of PAA. The reaction medium that is formed in this step almost instantaneously forms a non-equilibrium solution of PAA. The hydrogen peroxide reacts with triacetin, the acetyl precursor, to form peracetic acid.
1d. water.	FCN at pgs. 9 and 10: “aqueous mixture”
Claim 2	
2a. The solution of claim	See <i>supra</i> Claim 1.

1, wherein said aqueous hydrogen peroxide is about 23% to about 40% and	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
2b. said triacetin is about 20% to about 53%, and further	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
2c. wherein the mole ratio of said hydrogen peroxide to said triacetin is about 2.98:1 to about 12.84:1.	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
Claim 3	
3a. The solution of claim 2, wherein said aqueous hydrogen peroxide is about 27% and	<i>See supra</i> Claim 2. Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
3b. said triacetin is about 46%, and further	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.
3c. wherein said mole ratio of said hydrogen peroxide to said triacetin is about 3.8:1.	Public information regarding Defendant's practices does not contain this level of detail. Plaintiff expects to be able to confirm whether the accused process falls within the scope of this claim during the discovery phase.