UNITED STATES ENVIRONMENTAL PROTECTION AGENCY WASHINGTON, DC 20460

OFFICE OF CHEMICAL SAFETY
AND POLLUTION
PREVENTION

August 20, 2020

MEMORANDUM

Subject: Efficacy Review for MAQUAT® 710-HF; EPA Reg. No. 10324-159; DP Barcode: D456369; Submission #: 1045624; E-Sub # 45987.

From: Ibrahim Laniyan, Ph.D.
Microbiologist
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Thru: Thao Pham, Efficacy Team Leader
Product Science Branch
Antimicrobials Division (7510P)
Date Signed: September 23, 2020

To: Eric Miederhoff - RM 31 / Emilia Oiguenblik
Regulatory Management Branch I
Antimicrobials Division (7510P)

Applicant: Mason Chemical Company
9075 Centre Pointe Dr., Suite 400
West Chester OH, 45069

Formulation from the Label:

Active Ingredients	% by wt.
Alkyl (50% C_{14}, 40% C_{12}, 10% C_{16}) dimethyl benzyl ammonium chloride	4.0 %
Octyl decyl dimethyl ammonium chloride	3.0 %
Didecyl dimethyl ammonium chloride	1.5 %
Dioctyl dimethyl ammonium chloride	1.5 %
Other Ingredients:	90.0 %
Total	100.0 %

I. BACKGROUND

Product Description (as packaged, as applied): Liquid - Concentrate

Submission type: Label Amendment

Currently registered efficacy claim(s):

{Foaming} Disinfectant, bactericide and virucide
{Foaming} {Non-Food Contact} {Drain} Sanitizer

Requested action(s):

The label amendment revises the organism list and adds new hard water claims.
The marketing and directions for use have also been revised to address typos, redundancies, and recent concerns from the Agency.

Documents considered in this review:

- Letter from applicant to EPA dated January 14, 2020
- Application for Pesticide (EPA form 8570-1) dated 01/14/2020
- Six (6) Confidential Statement of Formula (EPA form 8570-4) dated 12/6/2019
- Certification with Respect to Citation of Data (EPA form 8570-34) dated 01/14/2020
- Generic Data Matrix (EPA Form 8570-35) dated March 30, 2015
- Data Matrix (EPA Form 8570-35) dated 01/14/2020
- Seventy-seven (77) efficacy studies (MRIDs 502575-05 through 50575-81)
- All studies were conducted at the LCL.
- Proposed label dated 01/13/2020
- Proposed label dated 9-8-20.

II. PROPOSED DIRECTIONS FOR USE (from label dated 1/13/20)

GENERAL/HOSPITAL/HEALTH CARE/MEDICAL/NON-MEDICAL DISINFECTION

FOR USE AS A {ONE-STEP} {GENERAL} {HOSPITAL} {MEDICAL} DISINFECTANT {VIRUCIDE*} {DEODORIZER} {CLEANER}:
1. Pre-clean visibly soiled areas.
2. To disinfect hard, non-porous, non-food contact surfaces, apply a use solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} with a sponge, brush, cloth, mop {by immersion}, {auto scrubber}, {{mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For spray applications, spray 6 - 8 inches from surface. Do not breathe spray}.
3. Treated surfaces must remain wet for 10 minutes.
4. [{Wipe dry} {with a clean cloth} {or} {allow to air dry}]. {Rinsing of floors is not necessary unless they are to be waxed or polished.}
5. Prepare a fresh solution daily or when visibly dirty.

FOR USE AS A {ONE-STEP NON-FOOD CONTACT SURFACE} {GENERAL} {HOSPITAL} {MEDICAL} DISINFECTANT {VIRUCIDE*} {DEODORIZER} {CLEANER}:
1. Pre-clean visibly soiled areas.
2. To disinfect hard, non-porous surfaces, apply a use solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} with a sponge, brush, cloth, mop {by immersion}, {auto scrubber}, {{mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For spray applications, spray 6 - 8 inches from surface. Do not breathe spray}.
3. Treated surfaces must remain wet for 10 minutes.

4. [{Wipe dry} {with a clean cloth} {or} {allow to air dry}]. {Rinsing of floors is not necessary unless they are to be waxed or polished.} Rinse with potable water after use on surfaces that come in contact with food.
5. Prepare a fresh solution daily or when visibly dirty.

SURGICAL INSTRUMENT PRESOAK: [{Add} {Mix}] 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} {(1350 ppm active)}. Place pre-cleaned surgical instruments in solution to presoak for a minimum of 10 minutes, then proceed with normal sterilization procedure.
Note: Plastic instruments can remain immersed until sterilization. Metal instruments must be removed after 10 minutes, rinsed, dried, and kept in a clean non-contaminated receptacle until sterilization. Prolonged soaking will cause damage to metal instruments. Surgical instruments must be sterilized before use.

FOAMING DISINFECTANT DIRECTIONS

FOAMING DISINFECTANT: Using either the Lafferty Equipment Manufacturing, Inc.'s HV Foamer, Model #916105, or the Model A-25/A-50 Airless Foamer, set equipment according to the manufacturers' instructions to deliver 1:73 dilution of this product with water {({1.75 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam onto hard, non-porous surface holding foaming [{[nozzle} {wand}] towards surface. Allow foam to sit on surface for 10 minutes. Let surface air dry or rinse. Do not mix other foam additives to the disinfecting solution.
(Use the following instructions when not using Lafferty equipment)
FOAMING DISINFECTANT: Using a foam generator or similar device, set equipment according to manufacturers' instructions to deliver a 1:73 dilution of this product with water {(1.75 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam onto hard, non-porous surface. Allow foam to sit on surface for 10 minutes, then let air dry or rinse. Do not mix other foam additives to the disinfecting solution.

FOAMING DISINFECTANT FOR {MEDICAL} SINK DRAINS, FLOOR DRAINS, TRUNK LINE SINKS AND DRAINAGE SYSTEMS: Thoroughly pre-clean drain with {a} [{brush applicator} {or} {{other} vigorous physical method}] prior to disinfection. {Brush applicator bristles must be 1 inch in diameter larger than the inner diameter of the drain pipe}. Disinfection will only occur on pre-cleaned surfaces of the drain. Using either Lafferty Equipment Manufacturing, Inc.'s HV Foamer, Model #916105 or the Model A-25/A-50 Airless Foamer, set equipment according to the manufacturers' instructions to deliver a 1:73 dilution of this product with water {({1.75 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam into drain by holding foaming nozzle (wand) to sink, floor drain or into drainage [{opening} {trough}]. Hold foaming discharge nozzle against or in drain opening to assure foam does not back up out of drain. Foam for at least 10 seconds or longer depending upon length of drainpipe to disinfect. Foam must completely fill pipe and push water through the (J) trap or other such catch device. Allow foam to sit on drain surface for 10 minutes, then let air dry or rinse. Do not mix other foam additives to the disinfecting solution. A small amount of water must be flushed down the drain to refill the (J) trap. Repeat use at least weekly or as needed to control {listed} organism growth.
(Use the following instructions when not using Lafferty equipment)

FOAMING DISINFECTANT FOR {MEDICAL} SINK DRAINS, FLOOR DRAINS, TRUNK LINE SINKS, AND DRAINAGE SYSTEMS: Thoroughly pre-clean drain with {a} [{brush applicator} {or} {{other} vigorous physical method}] prior to disinfection. {Brush applicator bristles must be 1 inch in diameter larger than the inner diameter of the drain pipe.} Disinfection will only occur on pre-cleaned surfaces of the drain. Using a foam generator or similar device, set equipment according to the manufacturers' instructions to deliver a 1:73 dilution of this product with water {({1.75 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam into drain by holding foaming [{nozzle} {wand}] to sink, floor drain, or drainage [{opening} {trough}]. Hold foaming discharge nozzle against or in drain opening to assure foam does not back up out of drain. Foam for at least 10 seconds or longer depending upon length of drainpipe to disinfect. Foam must completely fill pipe and push water through the (J) trap or other such catch device. Allow foam to sit on drain surface for 10 minutes, then let air dry or rinse. Do not mix other foam additives to the disinfecting solution. A small amount of water must be flushed down the drain to refill the (J) trap. Repeat use at least weekly or as needed to control {listed} organism growth.

{DILUTION LIST}

1.5 oz. of this product per 4 gal. of water {(or equivalent use dilution)} {(300 ppm active)} for a contact time of 5 minutes
(OR)
2.5 oz. of this product per 4 gal. of water {(or equivalent use dilution)} {(500 ppm active)} for a contact time of 3 minutes

NON-FOOD CONTACT SURFACE SANITIZING: Pre-clean visibly soiled surfaces. Add *(insert appropriate non-food contact dilution from table or list)*. Apply solution to hard, non-porous surfaces with a sponge, brush, cloth, mop, {by immersion}, {auto scrubber}, {{mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For spray applications, spray 6 - 8 inches from surface. Do not breathe spray}. Treated surfaces must remain wet for *(insert corresponding contact time for chosen dilution)*. Prepare a fresh solution daily or when visibly dirty.
[{SHOE} {BOOT} {ENTRYWAY}] {BATH} SANITIZER DIRECTIONS: To reduce cross contamination on treated surfaces [{from} {area to area,} {in} {animal areas,} {entryways} {and} {the packaging and storage areas of food plants,}] shoe baths containing 1 inch of freshly made sanitizing solution must be placed at all entrances to buildings, hatcheries and at all the entrances to the production and packaging rooms. [{Scrape} {or} {brush}] waterproof shoes and place in a use solution of *(insert appropriate non-food contact dilution from table or list)* {or allow to remain wet} for *(insert corresponding contact time for chosen dilution)* prior to entering area. Prepare a fresh solution daily or when visibly dirty.
FOR FOOT DIP OF WATERPROOF FOOTWEAR: Use this product at *(insert appropriate non-food contact dilution from table or list)* in foot dip tray. Shoe baths must contain at least 1 inch of freshly made solution and be placed at the entrances to buildings. [{Scrape} {or} {brush}] shoes and [{place in diluted solution} {or} {allow to remain wet}] for *(insert corresponding contact time for chosen dilution)* before entering building. Prepare a fresh solution daily or when visibly dirty.
SHOE FOAM DIRECTIONS: To reduce cross contamination on treated surfaces [{from area to area} {in} {animal areas} {entryways} {and} {the packaging and storage areas of food plants}], apply a foam layer approximately 0.5 - 2 inches thick made from a solution of *(insert appropriate non-food contact dilution from table or list)* at all entrances to buildings, hatcheries, and production and packaging rooms by using a foam generating machine or aerator to apply foam layer. Follow the foaming directions as specified by the manufacturer of the foam generator/aerator. [{Scrape} {or} {brush}] waterproof shoes. Stand and/or walk through foamed area {or allow to remain wet} for *(insert corresponding contact time for chosen dilution)* prior to entering area. Foam area must be washed and replaced daily or when it appears visibly soiled or dirty.
SHOE SPRAY SANITIZING DIRECTIONS: For visibly soiled [{work boots} {shoes} {footwear}], [{scrape} {wipe}] with brush, sponge, {or} cloth {or Neat Feet Clean Solution Welcome Mat} to remove excess dirt.
1. Prepare a spray bottle by adding *(insert appropriate non-food contact dilution from table or list).*
2. Lightly spray sole of {waterproof} [{work boot} {shoe} {footwear}] 6 – 8 inches away from surface to thoroughly wet.
3. Repeat procedure on other sole.
4. Treated surfaces must remain wet for *(insert corresponding contact time for chosen dilution)*.
5. [{Allow to air dry} {[{Wipe up} {Absorb}] excess product {with clean cloth} {by stepping on Neat Feet Clean Shoe Solution Welcome Mat}}].

(For food processing or other facilities that have installed entryway sanitizing systems.)
ENTRYWAY SANITIZING SYSTEMS: To reduce cross contamination on treated surfaces from area to area, set the system to deliver a sanitizing solution of *(insert appropriate non-food contact dilution from table or list)*. The [{spray} {foam}] must cover the entire path of the doorway. Set the system so that a continuous wet blanket of sanitizer solution is delivered to the floor.
Do not mix other foam additives with the sanitizing solution.

FLOOR DRAIN AND DRAINAGE SYSTEMS FOAMING SANITIZER: Thoroughly pre-clean drain with {a} [{brush} {applicator} {sponge,} { rag,} {or} {other means as specified on the cleaner product label} {other} {vigorous physical method}] prior to sanitization. Sanitization will occur only on pre-cleaned surfaces of the drain. Using either Lafferty Equipment Manufacturing, Inc.'s HV Foamer, Model #916105 or the Model A-25/A-50 Airless Foamer, set equipment according to the manufacturers' instructions to deliver a 1:256 dilution of this product with water {({0.5 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam into drain by holding foaming [{nozzle} {wand}] to floor drain or into drainage [{opening} {trough}]. Hold foaming discharge

nozzle with attached drain cover footplate snug against drain opening to ensure foam does not back up out of drain. Foam for at least 6 seconds or longer depending upon length of drainpipe to sanitize. Lafferty foaming equipment will fill an 8-ft. run of 4-inch pipe for every 6 seconds of application. Foam must completely fill pipe and push water through the (J) trap or other such catch device. Allow the drain to sit for a minimum of 5 minutes before use. The drain can then be returned to service with or without rinsing. It is recommended that a small amount of water be flushed down the drain to refill the (J) trap. Repeat use at least weekly or as may be needed to control (listed) organism growth. Do not mix other foam additives to the sanitizing solution.

(Use the following instructions when not using Lafferty equipment)

FLOOR DRAIN AND DRAINAGE SYSTEMS FOAMING SANITIZER: Thoroughly pre-clean drain with {a} [{brush} {applicator} {sponge,} {rag,} {or} {other means as specified on the cleaner product label} {other} {vigorous physical method}] prior to sanitization. Sanitization will occur only on pre-cleaned surfaces of the drain. Using a foam generator or similar device, set equipment according to manufacturers' instructions to deliver a dilution of 1:256 dilution of this product with water {({0.5 oz. of this product per gal. of water} {or equivalent use dilution})}. Apply foam into drain by holding foaming [{nozzle} {wand}] to drain or drainage [{opening} {trough}]. {Hold foaming discharge nozzle with attached drain cover footplate snug against drain opening to ensure foam does not back up out of drain.} Foam for at least 10 seconds or longer depending upon length of drain pipe to sanitize. Check with foam equipment manufacturer for exact time to fill length of drain pipe requiring sanitizing. Foam must completely fill pipe and push water through the (J) trap or other such catch device. Allow the drain to sit for a minimum of 5 minutes before use. The drain can then be returned to service with or without rinsing. It is recommended that a small amount of water be flushed down the drain to refill the (J) trap. Repeat use at least weekly or as may be needed to control (listed) organism growth. Do not mix other foam additives to the sanitizing solution.

FOOD PROCESSING PREMISES

FOR USE AS A DISINFECTANT {CLEANER} IN [{FOOD PROCESSING PLANTS/PREMISES} {TOBACCO PREMISES} {FOOD SERVICE ESTABLISHMENTS} {FOOD STORAGE AREAS AND EQUIPMENT}]:
1. Pre-clean visibly soiled areas.
2. Apply use solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} to disinfect hard, non-porous surfaces with a sponge, brush, cloth, mop, {by immersion}, {auto scrubber}, {{mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For spray applications, spray 6-8 inches from surface. Do not breathe spray}.
3. Treated surfaces must remain wet for 10 minutes.
4. [{Wipe dry} {with a clean cloth} {or} {allow to air dry}.] {Rinsing of floors is not necessary unless they are to be waxed or polished.}
5. When disinfecting food contact surfaces used for food preparation, rinse surfaces thoroughly with potable water. This product must not be used to treat the following surfaces: utensils, glassware, dishes or interior surfaces of processing equipment.

Note: All food contact surfaces such as appliances and kitchen countertops must be rinsed with potable water after treatment.

ANIMAL PREMISES

{ANIMAL PREMISES:}
(Note to reviewer: *The following statement will be used on all labels with use directions for animal premises.)*
Prior to use of this product, remove all [{animals} {poultry}] and feeds from [{premises} {areas to be treated}], animal transportation [{vehicles} {trucks} {cars}], and [{enclosures} {coops} {crates} {kennels} {stables}. Remove all litter, droppings and manure from floors, walls and surfaces of barns, pens, stalls, chutes and other surfaces of facilities and fixtures occupied or traversed by animals. Empty all troughs, racks and other feeding and watering appliances. Thoroughly clean surfaces with soap or detergent and rinse with water.

FOR USE AS AN ANIMAL PREMISE DISINFECTANT/VIRUCIDE*: To disinfect hard, non-porous surfaces, prepare a use solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)}. {To kill avian adenovirus, use a solution of 3 oz. of this product per gal. of water}.

Apply use solution with a sponge, brush, cloth, {by immersion}, {{mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For spray applications, spray 6-8 inches from surface. Do not breathe spray}. Immerse all halters and other types of equipment used in handling and restraining animals, as well as forks, shovels, and scrapers used for removing litter and manure in the use solution. Treated surfaces must remain wet for 10 minutes. Ventilate buildings, coops, and other closed spaces. Do not house [{animals} {poultry} {livestock}] or employ equipment until treatment has set or dried. Thoroughly scrub all treated feed racks, troughs, automatic feeders, fountains, waterers, and other treated equipment which can contact food or water with soap or detergent, and rinse with potable water before reuse.

HATCHERIES: Use to treat hatchers, setters, trays, racks, carts, sexing tables, delivery trucks and other hard, non-porous surfaces. Use 1.75 oz. of this product per gal. of water. {To kill avian adenovirus, use 3 oz. of this product per gal. of water}. Leave all treated surfaces wet for 10 minutes or more. Allow to air dry.

VEHICLES: To [{clean} {and} {disinfect}] hard, non-porous surfaces on vehicles including mats, crates, cabs, and wheels, use 1.75 oz. of this product per gal. of water. Apply use solution to treat hard, non-porous vehicle surfaces. Leave treated surfaces wet for 10 minutes or more. Allow to air dry.

DRESSING {/RENDERING} PLANT: To disinfect equipment, utensils, walls, and floors in poultry and animal dressing plants {including offal rooms, exterior walls, and loading platforms}. Remove all visible soils prior to application. Saturate all hard, non-porous surfaces with a solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} and scrub to loosen all soils. Surfaces must remain wet for 10 minutes, and then be thoroughly rinsed with potable water before operations are resumed.

FOAM DISINFECTANT OF POULTRY/TURKEY EQUIPMENT, SWINE QUARTERS, EQUINE QUARTERS, ANIMAL QUARTERS AND KENNELS: [{Prepare 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} {(1350 ppm active)} into bottle and attach bottle to spray nozzle (wand). {Follow manufacturer instructions to deliver a 1:73 dilution {({1.75 oz. of this product per gal. of water} {or equivalent use dilution})}}. {To kill avian adenovirus, use [{3 oz. of this product per gal. of water} {a 1:42 dilution}].} Apply foam onto walls, floors, ceilings, and other hard, non-porous surfaces. Surfaces must remain wet for 10 minutes. Scrub using a brush, mop, sponge, or cloth as necessary. Rinse surfaces thoroughly and let air dry.

SANITIZER DIRECTIONS FOR HARD, NON-POROUS NON-FOOD CONTACT SURFACES IN ANIMAL PREMISES

FOAM SANITIZER OF POULTRY/TURKEY EQUIPMENT, SWINE QUARTERS, EQUINE QUARTERS, ANIMAL QUARTERS AND KENNELS: [{Prepare a use solution of *(insert appropriate non-food contact dilution from table or list)* into bottle and attach bottle to spray [{nozzle} {wand}]}. {Follow manufacturer instructions to deliver a [{1:341} {1:204}] dilution {({*(insert appropriate non-food contact dilution from table or list)*} {or equivalent use dilution)}}]. Apply foam onto walls, floors, ceilings, and other hard, non-porous surfaces. Surfaces must remain wet for *(insert corresponding contact time for chosen dilution)*. Scrub using a brush, mop, sponge, or cloth as necessary. Rinse surfaces thoroughly and let air dry.

RESTROOM/BATHROOM

NON-ACID TOILET BOWL {AND URINAL} DISINFECTANT {/CLEANING} DIRECTIONS
Remove visible soil prior to disinfection.
From a Concentrate: Add 1.75 oz. of this product directly into the water in the toilet bowl. Brush thoroughly over exposed surfaces and under the rim with a toilet [{brush} {mop}], cloth, or sponge. Allow solution to stand for 10 minutes and flush.

From a Use Solution: Empty water out of toilet bowl or urinal and apply a use solution prepared by adding 1.75 oz. of this product per gal. of water to exposed surfaces, including under the rim with a toilet [{brush} {mop}], cloth, {or} sponge, {or} {[{hand pump} {coarse}] trigger spray device}. {For spray applications, spray 6 - 8 inches from surface. Do not breathe spray.} Brush or swab thoroughly, then allow solution to stand for 10 minutes and flush.

FOR HEAVY DUTY CLEANING OF TOILET BOWLS AND URINALS: Pre-clean visibly soiled areas. Empty toilet bowl or urinal and apply 2.5 oz. of this product to exposed surfaces including under the rim with toilet [{brush} {mop}], cloth, {or} sponge, {or} {mechanical spray device,} {[{hand pump} {coarse}] trigger spray device}. For sprayer application, spray 6-8 inches from surface. Do not breathe spray}. To aid in soil removal, allow to soak. Brush or swab thoroughly and allow solution to stand for 10 minutes, then flush.

{DEEP} CLEANING/DISINFECTING [{WATERFREE} {WATERLESS}] URINALS: Pre-clean visibly soiled surfaces. Remove and properly dispose of cartridge according to manufacturer's directions. Deep clean or disinfect the entire urinal by applying a use solution of 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} directly onto surface. [{Brush} {Scrub}] surfaces and let solution stand for 10 minutes. Wipe surface to clean. Change cartridge as needed. The unit is ready for use.

TO CLEAN WATERFREE {/WATERLESS} URINALS: Remove any debris from the urinal. Spray 0.5 - 1 oz. of use solution onto urinal surface. To prepare use solution: add 1.75 oz. of this product per gal. of water {(or equivalent use dilution)} {(1350 ppm active)}. DO NOT spray product directly onto cartridge. Wipe surface to clean. Change cartridge as needed. The unit is ready for use.

FOR USE TO CLEAN AND DISINFECT SHOWER ROOMS, LOCKER ROOMS AND OTHER LARGE, OPEN AREAS WITH FLOOR DRAINS:

1. Pre-clean visibly soiled areas.
2. Apply use solution of 1.75 oz. of this product per gal. of water {(1350 ppm active)} {(or equivalent use dilution)} to hard, non-porous surfaces {including floors, walls, and ceilings}, making sure not to over spray. To disinfect, surfaces must remain wet for 10 minutes.
3. Scrub using a deck brush or other coarse material as necessary.
4. Rinse surfaces thoroughly and let air dry.
5. Prepare a fresh solution daily or when visibly dirty.

III. STUDY SUMMARIES

1. MRID 502575-05, "AOAC Use-Dilution Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 17, 2019. Project Number A28172.

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.4. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 30.0 mL of test substance and 2169.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to sufficient 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (52.25 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully aspirated from the *Pseudomonas aeruginosa* culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.244) at 620 nm. The culture was then diluted by combining 35.0 mL of test organism suspension with 35.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A

3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.0-36.2°C) and 48.7-50.5% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (47 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

2. **MRID 502575-06, "AOAC Use-Dilution Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 15, 2019. Project Number A27882.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159)**,** was tested using Accuratus Protocol No. MC03051719.UD.5. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 20.0 mL of test substance and 1446.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.5ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to sufficient 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully aspirated from the *Pseudomonas aeruginosa* culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.259) at 620 nm. The culture was then diluted by combining 35.0 mL of test organism suspension with 35.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.0-36.1°C) and 48.1-50.4% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.5°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

Note: Protocol amendments in this study were reviewed.

3. **MRID 502575-07, "AOAC Use-Dilution Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 18, 2019. Project Number A27955.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159)**,** was tested using Accuratus Protocol No. MC03051719.UD.6. An

equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 28.0 mL of test substance and 2024.4 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to sufficient 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (52.5 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully aspirated from the *Pseudomonas aeruginosa* culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.253) at 620 nm. The culture was then diluted by combining 35.0 mL of test organism suspension with 35.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (35.8-36.1°C) and 47.6-52.1% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (47 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. On 7/11/19, representative test and positive control subculture tubes showing growth were subcultured to Tryptic Soy Agar + 5% Sheep's blood and incubated at 35-37°C (36°C) for 1 day. The resultant growth was visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

4. **MRID 502575-08, "AOAC Use-Dilution Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 22, 2019. Project Number A28171.**

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.7. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 30.0 mL of test substance and 2169.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (50.75 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.244) at 620 nm. The culture was then diluted by combining 7.0 mL of test organism suspension with 63.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.1-36.2°C) and 49.9% relative humidity. Inoculated carriers

were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (46.75 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

5. **MRID 502575-09, "AOAC Use-Dilution Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 22, 2019. Project Number A27881.**

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.8. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 10.0 mL of test substance and 723.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (21.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (52.25 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.240) at 620 nm. The culture was then diluted by combining 7.0 mL of test organism suspension with 63.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.1-36.2°C) and 48.8-49.5% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 21.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (47.75 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

Note: Protocol amendments in this study were reviewed.

6. **MRID 502575-10, "AOAC Use-Dilution Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 22, 2019. Project Number A27954.**

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.9. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 28.0 mL of test substance and 2024.4 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of

culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (50.75 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.246) at 620 nm. The culture was then diluted by combining 7.0 mL of test organism suspension with 63.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.1°C) and 48.1-53.1% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (47.5 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

7. **MRID 502575-11, "AOAC Use-Dilution Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 15, 2019. Project Number A28176.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.1. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 30.0 mL of test substance and 2169.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (50.75 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.260) at 620 nm. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (35.9-36.1°C) and 47.5-49.1% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

8. **MRID 502575-12, "AOAC Use-Dilution Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – October 15, 2019. Project Number A27883.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Protocol No. MC03051719.UD.2. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 20.0 mL of test substance and 1446.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (20.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.252) at 620 nm. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.1-36.2°C) and 48.7-50.3% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 20.0°C. Each medicated carrier was then transferred by wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

Note: Protocol amendments in this study were reviewed.

9. **MRID 502575-13, "AOAC Use-Dilution Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Thomas Breyen, B.S. Study completion date – October 31, 2019. Project Number A28151.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.UD. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 10.0 mL of test substance and 723.0 mL of 400 ppm AOAC Synthetic Hard Water. The prepared test substance was used within three hours of preparation. Ten (10.0 mL) aliquots of the test substance were transferred to sterile 25 x 100 mm tubes and placed in a water bath at 20±1ºC (21.0ºC) and allowed to equilibrate for ≥10 minutes prior to testing. A 10 µL aliquot of thawed, vortex mixed stock culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (51 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.256) at 620 nm. The final test culture was mixed thoroughly prior to use. A 3.5 mL aliquot of fetal bovine serum was added to 66.5 mL of prepared culture to achieve a 5% organic soil load. After siphoning off the water, the test culture was transferred to stainless steel penicylinders and immersed for 15±2 minutes in a prepared suspension at a ratio of one carrier per one mL of culture. The inoculated carriers were transferred to sterile Petri dishes matted with filter paper after tapping to remove excess inoculum. The carriers were dried for 38 minutes at 35-37°C (36.1°C) and 49.1-53.8% relative humidity. Inoculated carriers were used for testing within 2 hours after drying. Each contaminated and dried carrier was placed into a separate tube containing 10 mL of the test substance and the tube was swirled gently for 2-3 rotations. The carriers were exposed for 9.5 minutes at 21.0°C. Each medicated carrier was then transferred by

wire hook at staggered intervals to 10 mL of neutralizing medium (Letheen Broth) and each tube was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for purity, sterility, viability, carrier population, and neutralization confirmation.

10. **MRID 502575-14, "AOAC Germicidal Spray Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – October 24, 2019. Project Number A28447.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.3. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 4.0 mL of test substance and 289.2 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). The final test culture was incubated for 48-54 hours (52.5 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was vacuum aspirated from the *Pseudomonas* culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.245) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.0-36.2°C) and at 48.5-51.1% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 56% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46.25 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

Note: Protocol amendments in this study were reviewed.

11. **MRID 502575-15, "AOAC Germicidal Spray Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – October 24, 2019. Project Number A28477.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.4. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 4.0 mL of test substance and 289.2 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was vacuum

aspirated from the *Pseudomonas* culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.255) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.0-36.1°C) and at 48.9-54.9% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 53% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46.5 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

12. **MRID 502575-16, "AOAC Germicidal Spray Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – October 23, 2019. Project Number A28446.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.1. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 4.0 mL of test substance and 289.2 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). The final test culture was incubated for 48-54 hours (52.25 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.251) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.0-36.1°C) and at 48.3-48.7% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 52% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

Note: Protocol amendments in this study were reviewed.

13. **MRID 502575-17, "AOAC Germicidal Spray Method". Test Organism: *Staphylococcus aureus***

(ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – October 23, 2019. Project Number A28478.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159)**,** was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.2. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 4.0 mL of test substance and 289.2 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.240) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.2°C) and at 48.8-50.9% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 53% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46.5 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

14. **MRID 502575-18, "AOAC Germicidal Spray Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – October 25, 2019. Project Number A28515.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159)**,** was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.8. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 13.0 mL of test substance and 939.9 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully vacuum aspirated from the culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.240) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes

at 35-37°C (36.1°C) and at 52.1-56.3% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (20°C) and 53% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (49.25 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

15. **MRID 502575-19, "AOAC Germicidal Spray Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Tanner Barnharst, M.S. Study completion date – October 31, 2019. Project Number A28565.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159)**,** was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.9. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the *Pseudomonas* culture, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully vacuum aspirated from the culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.240) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.2°C) and at 49.3-51.0% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (20°C) and 35% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (47 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

16. **MRID 502575-20, "AOAC Germicidal Spray Method". Test Organism: *Pseudomonas aeruginosa* (ATCC 15442) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Tanner Barnharst, M.S. Study completion date – October 29, 2019. Project Number A28587.**

This study was conducted against *Pseudomonas aeruginosa* (ATCC 15442). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159)**,** was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.10. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, without vortex mixing the

Pseudomonas culture, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). On the day of use, the pellicle was carefully vacuum aspirated from the culture and the upper portion was transferred to a sterile tube. The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.254) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1-36.3°C) and at 49.1-52.3% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 32% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (47 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

17. **MRID 502575-21, "AOAC Germicidal Spray Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – November 14, 2019. Project Number A28516.**

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.11. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 13.0 mL of test substance and 939.9 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.251) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1-36.2°C) and at 48.3-51.2% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at room temperature (20°C) and 53% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (48.5 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

18. **MRID 502575-22, "AOAC Germicidal Spray Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab**

Group-Midwest by Tanner Barnharst, M.S. Study completion date – November 8, 2019. Project Number A28566.

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.12. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (48.75 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.256) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1-36.2°C) and at 49.4-49.5% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (20°C) and 35% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46.25 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

19. **MRID 502575-23, "AOAC Germicidal Spray Method". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Tanner Barnharst, M.S. Study completion date – November 21, 2019. Project Number A28586.**

This study was conducted against *Salmonella enterica* (ATCC 10708). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.13. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.249) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1°C) and at 50.0-51.0% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes

at 20±1°C (19°C) and 33% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (47.25 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

20. **MRID 502575-24, "AOAC Germicidal Spray Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – October 25, 2019. Project Number A28514.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.5. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 13.0 mL of test substance and 939.9 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). One additional daily transfer was prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.259) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.2-36.3°C) and at 51.8-52.6% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (20°C) and 55% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (48 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

21. **MRID 502575-25, "AOAC Germicidal Spray Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Tanner Barnharst, M.S. Study completion date – October 24, 2019. Project Number A28564.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.6. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). Four additional daily transfers were prepared. The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.249) at 620 nm.

The culture was diluted by combining 1.00 mL of test organism suspension with 2.00 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1-36.2°C) and at 49.6-58.0% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (20°C) and 35% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (46 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

22. **MRID 502575-26, "AOAC Germicidal Spray Method". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Tanner Barnharst, M.S. Study completion date – October 29, 2019. Project Number A28588.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.GS.7. An equivalent dilution of 1:73.3 defined as 1 part test substance + 72.3 parts diluent, was prepared using 12.0 mL of test substance and 867.6 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. A 10 µL aliquot of a thawed, vortex mixed cryovial of stock broth culture was transferred to an initial 10 mL tube of Synthetic Broth growth medium. The tube was mixed and incubated for 24±2 hours at 35-37ºC (36ºC). Following incubation, a 10 µL aliquot of culture was transferred to 20 x 150 mm Morton Closure tubes containing 10 mL of culture medium (1st daily transfer). The final test culture was incubated for 48-54 hours (48 hours) at 35-37ºC (36ºC). The test culture was vortex mixed (3-4 seconds) and allowed to stand for ≥10 minutes prior to use. The upper portion was removed and pooled in a sterile vessel and mixed. The culture was adjusted using sterile growth medium to target a spectrophotometer absorbance reading between 0.240 and 0.260 (0.245) at 620 nm. The culture was diluted by combining 1.00 mL of test organism suspension with 2.00 mL of sterile growth medium. The final test culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Individual glass slide carriers (18 mm x 36 mm) were inoculated with 10 µL of culture using a calibrated pipettor, each in a Petri dish matted with two pieces of filter paper. Inoculum was uniformly spread over the entire surface of the slide contained in the Petri dish and covered immediately. This procedure was repeated until all slides were individually inoculated. The slides were allowed to dry for 30 minutes at 35-37°C (36.1°C) and at 47.7-48.2% relative humidity. Test carriers were sprayed in a horizontal position, at staggered intervals with the test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to remain in contact with the prepared test substance for 9.5 minutes at 20±1°C (19°C) and 33% relative humidity. Following the exposure period, excess liquid was drained off the carrier and the treated carriers were transferred using sterile forceps at identical staggered intervals to 20 mL of neutralizing subculture medium (Letheen Broth) and the vessel was shaken thoroughly. All subcultures were incubated for 48±2 hours (47.25 hours) at 35-37°C (36°C). Following incubation, the subcultures were examined for the presence or absence of visible growth. On 10/16/19, representative test and positive control subculture tubes showing growth were subcultured to Tryptic soy Agar + 5% Sheep's Blood and incubated at 35-37°C (36°C) for 1 day. The resultant growth was visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for carrier population, purity, sterility, viability, and neutralization confirmation.

23. **MRID 502575-27 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Avian Adenovirus type 2 for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Analytical Lab Group-Midwest (ALG) by Mary J. Miller, M.T. Study completion date – November 7, 2019. Project Number A28635.**

This study was conducted against the Fontes strain of Avian Adenovirus type 2 (ATCC VR-280) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using ALG Protocol No. MC03081519.AADV.2 (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lab Services Lot AA27) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Avian Adenovirus on chicken embryo fibroblast (CEF) cells. Indicator CEF cells originally obtained from Charles River were propagated by ALG personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, 5% (v/v) tryptose phosphate broth and 2.0 mM L-glutamine. Test substance was diluted 1:51.3, defined as 1 part test substance + 50.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 50.30 mL water). The hard water was prepared, titrated (at 404 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 50% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

24. **MRID 502575-28 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Avian Influenza A (H3N2) Reassortant virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – November 15, 2019. Project Number A28268.**

This study was conducted against the A/Washington/897/80 x A/Mallard/New York/6750/78 strain of Avian Influenza A (H3N2) Reassortant virus (ATCC VR-2072) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.AFLU (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot IA-87) was thawed, maintained at a refrigerated temperature until used in the assay, and was adjusted to contain 5% fetal bovine serum (FBS) as the organic soil load. The stock virus demonstrated cytopathic effects (CPE) typical of Influenza virus on MDCK (canine kidney) cells. Indicator MDCK cells originally obtained from ATCC (ATCC CCL-34) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Dulbecco's Modified Eagle Medium (D-MEM) supplemented with 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, and 2 µg/mL TPCK trypsin. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.00 mL product + 72.3 mL water). The hard water was prepared, titrated (at 394 ppm) and used on the day of testing. Test substance appeared to be in solution and was equilibrated to exposure temperature prior to use. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00

mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were then incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

25. **MRID 502575-29 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Avian Reovirus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Matt Cantin, B.S. Study completion date – November 19, 2019. Project Number A28331.**

This study was conducted against the 2177 strain of Avian Reovirus (ATCC VR-2449) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.AREO (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot AR-11) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Avian Reovirus on chicken embryo fibroblast (CEF) cells. Indicator CEF cells originally obtained from Charles River were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, 5% (v/v) tryptose phosphate broth and 2.0 mM L-glutamine. Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 72.30 mL water). The hard water was prepared, titrated (at 399 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

26. **MRID 502575-30 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Avian Infectious Bronchitis virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Matt Cantin, B.S. Study completion date – December 19, 2019. Project Number A28332.**

This study was conducted against the Beaudette IB42 strain of Avian Infectious Bronchitis virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.IBV (copy provided). Stock virus obtained from Solvay Animal Health was prepared by collecting the allantoic fluid from 10 day old fertilized, embryonated chicken eggs that had been inoculated via the allantoic route with the test virus. The allantoic fluid was centrifuged at 1500 RPM for 10 minutes at approximately 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. (*On 8/26/2019 Batch 924-167 only demonstrated neutralization at 2.00 log_{10}/0.1 mL, therefore the test log reduction was only 2.50 log_{10}, which*

doesn't meet the protocol acceptance criteria. So testing was done again for that batch on 9/30/2019 and a valid result was obtained. This explains the different testing dates below.) On the day of testing, an aliquot of stock virus (Accuratus Lab Services Lot IBV-36 {8/26/19} and Lot IBV-37 {9/30/19}) was was thawed, maintained at a refrigerated temperature until used in the assay, and was adjusted to contain 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated death of an embryo typical of Avian Infectious Bronchitis virus in fertilized embryonated chicken eggs. Fertilized, embryonated chicken eggs obtained from Charles River Laboratories were maintained at 34-38°C in a humidified atmosphere of 40-80%. The eggs were 10 days old when used in the study. Test medium used for this assay was Phosphate Buffered Saline (PBS). Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 72.30 mL water). The hard water was prepared, titrated (at 404 ppm on 8/26/2019 and at 397 ppm on 9/30/19) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. On each day of testing, films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40-50% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. On each day of testing, ten day old fertilized, embryonated chicken eggs were used in the infectivity assays. Individual eggs were inoculated in quadruplicate via the allantoic route with 0.1 mL of the dilutions prepared from the test and control groups. The eggs were incubated at 34-38°C in a relative humidity of 40-80% for four days. The eggs were candled daily to determine the viability of the embryo. Death of an embryo within 24 hours following inoculation is considered death due to trauma during the inoculation procedure and was not used in the calculation of viral titers. Controls included those for dried virus film recovery, toxicity, neutralization.

Note: Protocol amendments reported in this study were reviewed.

27. **MRID 502575-31 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Infectious Laryngotracheitis virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Analytical Lab Group-Midwest (ALG) by Matt Cantin, B.S. Study completion date – December 4, 2019. Project Number A28718.**

This study was conducted against the LT-IVAX strain (Modified live vaccine) of Infectious Laryngotracheitis virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using ALG Protocol No. MC03091819.ILGT.3 (copy provided). Stock virus obtained from Poultry Health and Specialties (St. Cloud, MN) was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lab Services Lot LT-31) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Infectious Laryngotracheitis virus on chicken embryo kidney (CEK) cells. Indicator CEK cells originally obtained from Charles River were propagated by ALG personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 1.0 mM sodium pyruvate, 100 units/mL penicillin, 10 µg/mL gentamicin and 2.5 µg/mL amphotericin B. Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 72.30 mL water). The hard water was prepared, titrated (at 412 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for

the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The inoculum was allowed to adsorb for 65 minutes at at 36-38°C in a humidified atmosphere of 5-7% CO_2. Following the adsorption period, a 1.0 mL aliquot of test medium was added to each well of the cell cultures, and the cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

Note: Protocol amendments reported in this study were reviewed.

28. **MRID 502575-32 "Virucidal Hard Surface Efficacy Test." Test organism: Newcastle Disease Virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Microbac Laboratories by Semhar Fanuel. Study completion date – December 3, 2019. Project Number 362-616.**

This study was conducted against the LaSota strain of Newcastle Disease Virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Microbac Protocol No. 362.1.07.01.19 (copy provided). Frozen stock virus obtained from Charles River was thawed on the day of the test and contained (or was adjusted to contain) a 5% serum organic load. Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water. The hard water was titrated at 390 ppm and the diluted test substance was used for testing within three hours of preparation. For each lot of the test substance, an aliquot of 0.4 mL of stock virus was spread over an area of approximately 4 in^2 that had been marked on the underside of a pre-sterilized glass Petri dish. Then the virus was allowed to dry at ambient temperature (20°C) in humidity of 57% for 34 minutes. For each lot of test substance, 2.0 mL of diluted test substance was added to the carrier, completely covering the virus film. These were exposed for 9.5 minutes at 20°C and 55-57% relative humidity. The test substance-virus mixture was then neutralized, scraped off from the surface, collected. This post-neutralized sample (PNS) was considered approximately a 10^{-1} dilution. Neutralizer used was Minimum Essential Medium (MEM) + 1% FBS + 0.5% Polysorbate 80 + 0.5 % Lecithin. Dilution Medium (DM) used in this study was Minimum Essential Medium (MEM) + 1.0 µg/mL Trypsin. If Sephacryl columns were used to aid in neutralization of the test substance, each portion was passed through individual columns and the eluate was serially diluted ten-fold in DM. If columns were not used, each portion was directly diluted using serial ten-fold dilutions in DM. For the Infectivity Assay, host cells used in this study were Vero cells obtained from ATCC (ATCC CCL-81). Infectivity assay: selected dilutions of the neutralized inoculum/test substance mixture were added to cultured host cells (at least four wells per dilution, per reaction mixture) and incubated at 36±2°C with 5±3% $C0_2$ for 5 to 9 days. The host cells may have been washed twice with phosphate buffered saline prior to inoculation. The inoculated culture was observed and refed with fresh media as necessary during the incubation period. The host cells were then examined microscopically for presence of infectious virus. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

29. **MRID 502575-33 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Porcine Respiratory & Reproductive Syndrome (PRRS) virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – November 15, 2019. Project Number A28265.**

This study was conducted against the NVSL strain of Porcine Respiratory & Reproductive Syndrome (PRRS) virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.PRRS (copy provided). Stock virus obtained from the University of Kentucky was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot PRR-30) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The stock virus demonstrated cytopathic effects

(CPE) typical of Porcine Respiratory & Reproductive Syndrome virus on MARC-145 cells. Indicator MARC-145 cells originally obtained from the National Veterinary Services Laboratory (Ames, IA) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin and 2.5 µg/mL amphotericin B. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.00 mL product + 72.3 mL water). The hard water was prepared, titrated (at 394 ppm) and used on the day of testing. Test substance appeared to be in solution and was equilibrated to exposure temperature prior to use. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were then incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

30. **MRID 502575-34 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Porcine Rotavirus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – November 14, 2019. Project Number A28266.**

This study was conducted against the OSU (attenuated) strain of Porcine Rotavirus (ATCC VR-893) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.PROT (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot PRO-8) was thawed, maintained at a refrigerated temperature until used in the assay, and was adjusted to contain 5% fetal bovine serum (FBS) as the organic soil load. The virus was diluted to target 4.8-5.8 log_{10}/carrier by making a 1:100 dilution of the stock virus with test medium containing 5% fetal bovine serum. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, 0.5 µg/mL trypsin, and 2.0 mM L-glutamine. The stock virus demonstrated cytopathic effects (CPE) typical of Rotavirus on MA-104 (Rhesus monkey kidney) cells. Indicator MA-104 cells originally obtained from ATCC (ATCC CRL-2378.1) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.00 mL product + 72.3 mL water). The hard water was prepared, titrated (at 404 ppm) and used on the day of testing. Test substance appeared to be in solution and was equilibrated to exposure temperature prior to use. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The inoculum was allowed to adsorb for 60 minutes at 36-38°C in a humidified atmosphere of 5-7% CO_2 and then a 1.0 mL aliquot of test medium was added to each well. The cultures were then incubated at 36-38°C

in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

31. **MRID 502575-35 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Pseudorabies virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Matt Cantin, B.S. Study completion date – November 18, 2019. Project Number A28328.**

This study was conducted against the Aujeszky strain of Pseudorabies virus (ATCC VR-135) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.PSRV (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (ATS Labs Lot PR-14) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Pseudorabies virus on CRFK (feline kidney) cells. Indicator CRFK cells originally obtained from ATCC (ATCC CCL-94) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin and 2.5 µg/mL amphotericin B. Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 72.30 mL water). The hard water was prepared, titrated (at 394 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 50% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

32. **MRID 502575-36 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Swine Influenza A (H1N1) virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Matt Cantin, B.S. Study completion date – November 18, 2019. Project Number A28329.**

This study was conducted against the A/Swine/Iowa/15/30 strain of Swine Influenza A (H1N1) virus (ATCC VR-333) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.SFLU (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot SF-38) was thawed, maintained at a refrigerated temperature until used in the assay, and was adjusted to contain 5% fetal bovine serum (FBS) as the organic soil load. The stock virus demonstrated cytopathic effects (CPE) typical of Influenza virus on MDCK (canine kidney) cells. Indicator MDCK cells originally obtained from ATCC (ATCC CCL-34) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Dulbecco's Minimum Essential Medium (D-MEM) supplemented with 2 µg/mL TPCK trypsin, 10 units/mL penicillin, 10 µg/mL gentamicin and 2.5 µg/mL amphotericin B. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400

ppm AOAC Synthetic Hard Water (1.00 mL product + 72.3 mL water). The hard water was prepared, titrated (at 394 ppm) and used on the day of testing. Test substance appeared to be in solution and was equilibrated to exposure temperature prior to use. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were then incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

33. **MRID 502575-37 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Transmissible Gastroenteritis virus (TGE) for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – November 15, 2019. Project Number A28267.**

This study was conducted against Transmissible Gastroenteritis virus (TGE) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.TGE (copy provided). Stock virus obtained from the University of Minnesota was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot TGE-19) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The stock virus demonstrated cytopathic effects (CPE) typical of Transmissible Gastroenteritis virus on ST (porcine fetal testes) cells. Indicator ST cells originally obtained from ATCC (ATCC CRL-1746) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin and 2.5 µg/mL amphotericin B. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.00 mL product + 72.3 mL water). The hard water was prepared, titrated (at 404 ppm) and used on the day of testing. Test substance appeared to be in solution and was equilibrated to exposure temperature prior to use. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were then incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

34. **MRID 502575-38 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Vesicular stomatitis virus for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Accuratus Lab Services by Matt Cantin, B.S. Study completion date – November 18, 2019. Project Number A28330.**

This study was conducted against the Indiana strain of Vesicular stomatitis virus (ATCC VR-158) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using Accuratus Protocol No. MC03052019.VSTV

(copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lot VS-10) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Vesicular stomatitis virus on LLC-MK_2 (Rhesus monkey kidney) cells. Indicator LLC-MK_2 cells originally obtained from ATCC (ATCC CCL-7.1) were propagated by Accuratus personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin and 2.5 µg/mL amphotericin B. Test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (1.0 mL product + 72.30 mL water). The hard water was prepared, titrated (at 404 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to a 2.00 mL aliquot of diluted test substance and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

35. **MRID 502575-39 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Porcine Rotavirus for product Maquat 710-HF (Batch 924-165 and Batch 924-167) Study conducted at Analytical Lab Group-Midwest (ALG) by Mary J. Miller, M.T. Study completion date – November 25, 2019. Project Number A28660.**

This study was conducted against the OSU (attenuated) strain of Porcine Rotavirus (ATCC VR-893) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using ALG Protocol No. MC03100719.PROT (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lab Services Lot PRO-8) was thawed, maintained at a refrigerated temperature until used in the assay. The stock virus was adjusted to contain 5% fetal bovine serum (FBS) as the organic soil load, and was diluted 1:100 with Minimal Essential Medium (MEM) containing 5% FBS to target 4.8-5.8 log_{10}/carrier. Test medium used for this assay was MEM supplemented with 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, 0.5 µg/mL trypsin, and 2.0 mM L-glutamine. The stock virus demonstrated cytopathic effects (CPE) typical of Rotavirus on MA-104 (Rhesus monkey kidney) cells. Indicator MA-104 cells originally obtained from ATCC (ATCC CRL-2378.1) were propagated by ALG personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Each lot of test substance was diluted 1:73.3, defined as 1 part test substance + 72.3 parts 400 ppm AOAC Synthetic Hard Water (2.00 mL product + 144.60 mL water). The hard water was prepared, titrated (at 397 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation.. Each batch of the test substance was prepared in an individual ALG bottle with a Sponsor provided Noble Chemical 10" Foaming Spray Trigger (IMP 7029) spray head. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 40% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to the amount of spray released under use conditions. The carriers were sprayed using 3 pumps of foam, until thoroughly wet, from a distance of 6-8 inches and held covered for the

exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The inoculum was allowed to adsorb for 60 minutes at 36-38°C in a humidified atmosphere of 5-7% CO_2 and then a 1.0 mL aliquot of test medium was added to each well. The cultures were then incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 7 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

36. **MRID 502575-40 "Virucidal Efficacy of a Disinfectant for Use on Inanimate Environmental Surfaces." Test organism: Avian Adenovirus type 2 for product Maquat 710-HF (Batch 924-165 and Batch 924-167). Study conducted at Analytical Lab Group-Midwest (ALG) by Mary J. Miller, M.T. Study completion date – December 18, 2019. Project Number A28805.**

This study was conducted against the Fontes strain of Avian Adenovirus type 2 (ATCC VR-280) for product Maquat 710-HF (Batch 924-165 and Batch 924-167) using ALG Protocol No. MC03101119.AADV.1 (copy provided). Stock virus obtained from ATCC was prepared by collecting the supernatant culture fluid from 75-100% infected culture cells. The cells were disrupted and cell debris removed by centrifugation at approx. 2000 RPM for 5 minutes at approx. 4°C. The supernatant was removed, aliquoted and the high titer stock virus was stored at ≤-70°C. On the day of use, an aliquot of stock virus (Accuratus Lab Services Lot AA27) was thawed, maintained at a refrigerated temperature until used in the assay, and contained 5% fetal bovine serum (FBS) as the organic soil load. The culture demonstrated cytopathic effects (CPE) typical of Avian Adenovirus on chicken embryo fibroblast (CEF) cells. Indicator CEF cells originally obtained from Charles River were propagated by ALG personnel, seeded into multiwell culture plates, maintained at 36-38°C in a humidified atmosphere of 5-7% CO_2, and were observed as having proper cell integrity and confluency on the day of testing. Test medium used for this assay was Minimum Essential Medium (MEM) supplemented with 5% (v/v) heat-inactivated FBS, 10 µg/mL gentamicin, 100 units/mL penicillin, 2.5 µg/mL amphotericin B, 5% (v/v) tryptose phosphate broth and 2.0 mM L-glutamine. Test substance was diluted 1:42.8, defined as 1 part test substance + 41.8 parts 400 ppm AOAC Synthetic Hard Water (3.0 mL product + 125.4 mL water). The hard water was prepared, titrated (at 401 ppm) and used on the day of testing. Test substance appeared to be in solution, was equilibrated to exposure temperature prior to use, and was used on the day of preparation. Each batch of the test substance was prepared in an individual ALG bottle with a Sponsor provided Noble Chemical 10" Foaming Spray Trigger (IMP 7029) spray head. Films of dried virus were prepared by spreading 200 µL of virus inoculum uniformly over the bottoms of 3 separate 100 x 15 mm sterile glass petri dishes, then dried at 20.0°C in relative humidity of 50% until visibly dry (20 minutes). For each lot of test substance, one dried virus film was individually exposed for 9.5 minutes at room temperature (20.0°C) to the amount of spray released under use conditions. The carriers were sprayed using 3 pumps of foam, until thoroughly wet, from a distance of 6-8 inches and held covered for the exposure time. Just prior to end of exposure time, the plates were individually scraped with a cell scraper to re-suspend the contents, and at the end of exposure time the mixtures immediately passed through individual Sephadex LH-20 gel columns to detoxify the mixtures. The filtrates (10^{-1} dilution) were then titered by 10-fold serial dilution. To aid in reducing the cytotoxic effects of the test substance to the indicator cell cultures, the 10^{-2} dilution, for each batch of test substance, was passed through an individual Sephadex column following titration, and assayed for infectivity and/or cytotoxicity. Indicator cells were inoculated in quadruplicate with 100 µL of the dilutions prepared from the test and control groups. The cultures were incubated at 36-38°C in a humidified atmosphere of 5-7% CO_2 and scored periodically for 6 days for the absence or presence of CPE, cytotoxicity and for viability. Controls included those for dried virus film recovery, cytotoxicity, neutralization.

37. **MRID 502575-41, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – November 22, 2019. Project Number A28523.**

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No.

MC03091319.NFS. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (49 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 25 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 41-43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 43% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10-15 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (45.75 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

38. MRID 502575-42, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – December 4, 2019. Project Number A28408.

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Lab Protocol No. MC03052119.NFS.5. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 15 mL of culture was concentrated to 3.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.2°C) and 49.1-51.6% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 53% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46 hours). Following incubation, the subcultures were visually enumerated. On 9/13/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and

biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

39. MRID 502575-43, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – December 3, 2019. Project Number A28493.

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Lab Protocol No. MC03052119.NFS.6. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 15 mL of culture was concentrated to 3.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 52.4-53.4% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 53% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10-15 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.5 hours). The subcultures were placed at 2-8°C for 1 day prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 9/23/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

40. MRID 502575-44, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Accuratus Lab Services by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28424.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Lab Protocol No. MC03052119.NFS.1. A dilution of 1:513 defined as 1 part test substance + 512 parts diluent, was prepared using 1.00 mL of test substance and 512 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0-36.1°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of

prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 40-41% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 43% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47 hours). Following incubation, the subcultures were visually enumerated. On 9/6/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

41. **MRID 502575-45, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Accuratus Lab Services by Thomas Breyen, B.S. Study completion date – December 20, 2019. Project Number A28410.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Lab Protocol No. MC03052119.NFS.2. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.75 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 35-44% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 54% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46 hours). Following incubation, the subcultures were visually enumerated. On 9/13/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

42. **MRID 502575-46, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Accuratus Lab Services by**

Thomas Breyen, B.S. Study completion date – December 2, 2019. Project Number A28492.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Accuratus Lab Protocol No. MC03052119.NFS.3. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (35.1-36.1°C) and 43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 58% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10-15 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.5 hours). The subcultures were placed at 2-8°C for 1 day prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 9/23/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

43. **MRID 502575-47, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Campylobacter jejuni* (ATCC 29428) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Rick Shimshock, M.S. Study completion date – December 12, 2019. Project Number A28638.**

This study was conducted against *Campylobacter jejuni* (ATCC 29428). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.7. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From frozen stock, a stock culture plate of test organism was created on Tryptic Soy Agar with 5% Sheep Blood (BAP) and incubated for 2-5 days (2 days) at 35-37°C (36.0°C) under microaerophilic conditions (CampyPak™ Plus). Following incubation, a bacterial culture suspension was prepared by swabbing bacterial growth and placing the swab in Fluid Thioglycollate Medium (FTM) to yield ~ 1.0 x 10^8 CFU/mL. The suspension was adjusted with FTM to an absorbance value of 0.470 at 620 nm. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 25-30°C (27.0-27.7°C) and 64% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 43% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10-15 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and

0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) in microaerophilic (CampyPak™ Plus) conditions for 2-7 days (2 days). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

44. MRID 502575-48, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Escherichia coli* O157:H7 (ATCC 35150) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Jamie Herzan, B.S. Study completion date – December 9, 2019. Project Number A28609.

This study was conducted against *Escherichia coli* O157:H7 (ATCC 35150). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.8. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Synthetic Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 1.00 mL of test organism suspension with 2.00 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.4°C) and 49.1-71.7% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 44% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (49.25 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

45. MRID 502575-49, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Listeria monocytogenes* (ATCC 19117) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Kristin Hunt, B.S. Study completion date – December 3, 2019. Project Number A28584.

This study was conducted against *Listeria monocytogenes* (ATCC 19117). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.9. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Brain Heart Infusion Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel

for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 10.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.4°C) and 39.3-49.8% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 41% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.25 hours). Following incubation, the subcultures were visually enumerated. On 10/11/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

46. MRID 502575-50, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Rick Shimshock, M.S. Study completion date – December 12, 2019. Project Number A28637.

This study was conducted against *Salmonella enterica* (ATCC 10708). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.10. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (53 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 10.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.2°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 52% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.25 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 10/14/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

47. MRID 502575-51, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate

Non-Food Contact Surfaces". Test Organism: *Salmonella enteritidis* (ATCC 4931) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Jamie Herzan, B.S. Study completion date – December 9, 2019. Project Number A28620.

This study was conducted against *Salmonella enteritidis* (ATCC 4931). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.11. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (53 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 2.00 mL of test organism suspension with 2.00 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 49% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.5 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

48. **MRID 502575-52, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Shigella dysenteriae* (ATCC 11835) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by James Walrath, B.S. Study completion date – November 27, 2019. Project Number A28630.**

This study was conducted against *Shigella dysenteriae* (ATCC 11835). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.12. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (52 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 2500 RPM for 10 minutes. A total of 30.0 mL of culture was concentrated to 3.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.2-36.3°C) and 48.8-54.7% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test

substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 28% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.25 hours). The subcultures were placed at 2-8°C for 1 day prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

49. **MRID 502575-53, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Yersinia enterocolitica* (ATCC 23715) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Accuratus Lab Services by Kristin Hunt, B.S. Study completion date – December 12, 2019. Project Number A28582.**

This study was conducted against *Yersinia enterocolitica* (ATCC 23715). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Accuratus Lab Protocol No. MC03052119.NFS.13. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock, sufficient agar plates were inoculated with the test organism and incubated for 2-3 days (2 days) at 35-37°C (36°C). Following incubation, the organism was suspended in Butterfield's buffer to match a 4.0 McFarland turbidity standard. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-44% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 20% relative humidity for 4.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (49.25 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

50. **MRID 502575-54, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28430.**

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.4. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0-36.1°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 40.0 mL of culture was concentrated to 8.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers

were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (35.0-36.2°C) and 40-45% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 49% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.5 hours). Following incubation, the subcultures were visually enumerated. On 9/6/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

51. **MRID 502575-55, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Thomas Breyen, B.S. Study completion date – December 9, 2019. Project Number A28412.**

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.5. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (53 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 25.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 40-41% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 55% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (45.5 hours). Following incubation, the subcultures were visually enumerated. On 9/13/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

52. **MRID 502575-56, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product**

Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Thomas Breyen, B.S. Study completion date – December 16, 2019. Project Number A28495.

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.6. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (51 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 25.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 43-44% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 56% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (44 hours). The subcultures were placed at 2-8°C for 1 day prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 9/23/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

53. **MRID 502575-57, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 12, 2019. Project Number A28429.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.1. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (20°C) and 44% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10-15 seconds to suspend the surviving organisms. Within

30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.5 hours). Following incubation, the subcultures were visually enumerated. On 9/6/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

54. MRID 502575-58, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Thomas Breyen, B.S. Study completion date – December 4, 2019. Project Number A28411.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.2. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (52.25 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 54% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (45.25 hours). Following incubation, the subcultures were visually enumerated. On 9/13/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol amendments in this study were reviewed.

55. MRID 502575-59, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Thomas Breyen, B.S. Study completion date – December 4, 2019. Project Number A28494.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.3. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (51 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and

allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 56% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (44 hours). The subcultures were placed at 2-8°C for 1 day prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 9/23/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

56. **MRID 502575-60, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Campylobacter jejuni* (ATCC 29428) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Rick Shimshock, M.S. Study completion date – December 12, 2019. Project Number A28639.**

This study was conducted against *Campylobacter jejuni* (ATCC 29428). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.7. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From frozen stock, a stock culture plate of test organism was created on Tryptic Soy Agar with 5% Sheep Blood (BAP) and incubated for 2-5 days (2 days) at 35-37°C (36.0°C) under microaerophilic conditions (CampyPak™ Plus). From the stock culture BAP plate, multiple BAP was inoculated and incubated for 2-3 days (2 days) at 35-37°C (36.0°C) under microaerophilic conditions (CampyPak™ Plus). Following incubation, a bacterial culture suspension was prepared by swabbing bacterial growth and placing the swab in Fluid Thioglycollate Medium (FTM) to yield ~ 1.0 x 10^8 CFU/mL. The suspension was adjusted with FTM to an absorbance value of 0.587 at 620 nm. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 25-30°C (27.0-27.8°C) and 63-64% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 42% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) in microaerophilic (CampyPak™ Plus) conditions for 2-7 days (2 days). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

57. **MRID 502575-61, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Escherichia coli* O157:H7 (ATCC 35150) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – December 9, 2019. Project Number A28610.**

This study was conducted against *Escherichia coli* O157:H7 (ATCC 35150). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.8. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Synthetic Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 2.00 mL of test organism suspension with 4.00 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.3°C) and 49.1-62.4% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 51% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.5 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

58. MRID 502575-62, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Listeria monocytogenes* (ATCC 19117) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28585.

This study was conducted against *Listeria monocytogenes* (ATCC 19117). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.9. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Brain Heart Infusion Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 10.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 50.1-54.7% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 43% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5%

Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (45.75 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. On 10/14/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

59. **MRID 502575-63, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Salmonella enterica* (ATCC 10708) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Rick Shimshock, M.S. Study completion date – December 12, 2019. Project Number A28636.**

This study was conducted against *Salmonella enterica* (ATCC 10708). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159)**,** were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.10. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 10.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 43-46% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 52% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol deviations in this study were reviewed.

60. **MRID 502575-64, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Salmonella enteritidis* (ATCC 4931) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Jamie Herzan, B.S. Study completion date – December 9, 2019. Project Number A28619.**

This study was conducted against *Salmonella enteritidis* (ATCC 4931). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159)**,** were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.11. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and

allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 2.00 mL of test organism suspension with 2.00 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 26 minutes at 35-37°C (36.0-36.1°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (18°C) and 52% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.75 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

61. **MRID 502575-65, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Shigella dysenteriae* (ATCC 11835) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 3, 2019. Project Number A28806.**

This study was conducted against *Shigella dysenteriae* (ATCC 11835). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159)**,** were tested using Analytical Lab Group-Midwest Protocol No. MC03110519.NFS.1. A dilution of 1:205.3 defined as 1 part test substance + 204.3 parts diluent, was prepared using 1.00 mL of test substance and 204.3 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 20.0 mL of culture was concentrated to 4.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.7°C) and 45.8-54.2% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 26% relative humidity for 2 minutes 45 seconds. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.75 hours). Following incubation, the subcultures were visually enumerated. On 11/20/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

62. **MRID 502575-66, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces". Test Organism: *Yersinia enterocolitica* (ATCC 23715) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab**

Group-Midwest by Kristin Hunt, B.S. Study completion date – January 2, 2020. Project Number A28583.

This study was conducted against *Yersinia enterocolitica* (ATCC 23715). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159)**,** were tested using Analytical Lab Group-Midwest Protocol No. MC03071919.NFS.13. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From stock, sufficient agar plates were inoculated with the test organism. The plates were incubated for 2-3 days (2 days) at 35-37°C (36.0°C). Following incubation, the organism was suspended in sterile Butterfields buffer to match a 4.0 McFarland turbidity standard. The final test culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0°C) and 52.7-53.4% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, 5.0 mL of prepared test substance was transferred to individual sterile 2 oz. (60 mL) polypropylene jars at staggered intervals. The carriers were allowed to expose at room temperature (19°C) and 41% relative humidity for 2.5 minutes. Following exposure, 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) was transferred to the jars using identical staggered intervals. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (49.0 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.
Note: No protocol amendments were required; protocol deviations in this study were reviewed and found to be acceptable.

63. **MRID 502575-67, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 3, 2019. Project Number A28547.**

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159)**,** was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.3. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 25.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-46% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 51% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5%

Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

64. MRID 502575-68, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 10, 2019. Project Number A28626.

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.4. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.75 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 15.0 mL of culture was concentrated to 3.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 43.9-50.0% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 39% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.25 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

65. MRID 502575-69, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 5, 2019. Project Number A28546.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.1. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.25 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of

the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 40-41% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 52% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.75 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

66. MRID 502575-70, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 4, 2019. Project Number A28625.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.2. A dilution of 1:342 defined as 1 part test substance + 341 parts diluent, was prepared using 1.00 mL of test substance and 341 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (52 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.1°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 39% relative humidity for 4.5 minutes. Following exposure, each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.5 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

67. MRID 502575-71, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 12, 2019. Project Number A28549.

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.7. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original

stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.25 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 15.0 mL of culture was concentrated to 3.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.0-36.8°C) and 49.4-66.4% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 53% relative humidity for 2.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.75 hours). Following incubation, the subcultures were visually enumerated. On 10/3/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

68. **MRID 502575-72, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Klebsiella pneumoniae* (ATCC 4352) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 17, 2019. Project Number A28628.**

This study was conducted against *Klebsiella pneumoniae* (ATCC 4352). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.8. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (53 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 25.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 40% relative humidity for 2.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46 hours). Following

incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

69. **MRID 502575-73, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 11, 2019. Project Number A28548.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.5. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 51.4-53.3% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 52% relative humidity for 2.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.25 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

70. **MRID 502575-74, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by James Walrath, B.S. Study completion date – December 12, 2019. Amended report date – December 20, 2019. Project Number A28627.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.6. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (53 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 0.10 mL aliquot of fetal bovine serum was added to 1.90 mL of prepared culture to achieve a 5% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (35.6-35.7°C) and 42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification

conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 44% relative humidity for 2.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.5 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

Note: Protocol deviations in this study were reviewed.

71. MRID 502575-75, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Enterobacter aerogenes* (ATCC 13048) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 11, 2019. Project Number A28451.

This study was conducted against *Enterobacter aerogenes* (ATCC 13048). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03081319.NFS.1. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 25-32°C (29.0°C) for 24±2 hours using Tryptic Soy Broth growth medium. A 48-54 hour (48.25 hour) culture that was incubated at 25-32°C (29.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 24 minutes at 35-37°C (36.2°C) and 54.5-57.8% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 56% relative humidity for 4 minutes 45 seconds. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 25-32°C (29.0°C) for 48±4 hours (46.5 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

72. MRID 502575-76, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Enterobacter aerogenes* (ATCC 13048) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 12, 2019. Project Number A28475.

This study was conducted against *Enterobacter aerogenes* (ATCC 13048). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03081319.NFS.2. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared

using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 25-32°C (29.0°C) for 24±2 hours using Tryptic Soy Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 25-32°C (29.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (35.1°C) and 43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 58% relative humidity for 4 minutes 45 seconds. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 25-32°C (29.0°C) for 48±4 hours (45.25 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

73. MRID 502575-77, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Enterobacter aerogenes* (ATCC 13048) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 11, 2019. Project Number A28517.

This study was conducted against *Enterobacter aerogenes* (ATCC 13048). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03081319.NFS.3. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 2.00 mL of test substance and 511.0 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 25-32°C (29.0°C) for 24±2 hours using Tryptic Soy Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 25-32°C (29.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 1.00 mL of test organism suspension with 4.0 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.3°C) and 50.4-51.2% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 48% relative humidity for 4 minutes 45 seconds. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 25-32°C (29.0°C) for 48±4 hours (44.5 hours). The

subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

74. MRID 502575-78, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-040. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28452.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-040) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.9. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was diluted by combining 1.00 mL of test organism suspension with 1.00 mL of sterile growth medium. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 26 minutes at 35-37°C (36.0-36.3°C) and 51.6-55.9% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 56% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (47.5 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

75. MRID 502575-79, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-165. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28476.

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-165) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.10. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of

the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1-36.2°C) and 51.5-51.8% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (19°C) and 59% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.5 hours). Following incubation, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

76. **MRID 502575-80, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Staphylococcus aureus* (ATCC 6538) for product Maquat 710-HF (10324-159), Lot # 924-167. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 12, 2019. Project Number A28518.**

This study was conducted against *Staphylococcus aureus* (ATCC 6538). One lot (Lot No. 924-167) of the product, Maquat 710-HF (10324-159), was tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.11. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 2.00 mL of test substance and 511.0 mL of 400 ppm AOAC Synthetic Hard water. The prepared test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Nutrient Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 41-42% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 46% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (46.25 hours). The subcultures were placed at 2-8°C for 2 days prior to examination. Following incubation and storage, the subcultures were visually enumerated. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

77. **MRID 502575-81, "Standard Test Method for Efficacy of Sanitizers Recommended for Inanimate Non-Food Contact Surfaces" (Modification for Spray Product Application). Test Organism: *Listeria monocytogenes* (ATCC 19117) for product Maquat 710-HF (10324-159), Lots # 924-165 and # 924-167. Study conducted at Analytical Lab Group-Midwest by Kristin Hunt, B.S. Study completion date – December 13, 2019. Project Number A28552.**

This study was conducted against *Listeria monocytogenes* (ATCC 19117). Two lots (Lot Nos. 924-165 and 924-167) of the product, Maquat 710-HF (10324-159), were tested using Analytical Lab Group-Midwest Protocol No. MC03080619.NFS.15. A dilution of 1:256.5 defined as 1 part test substance + 255.5 parts diluent, was prepared using 1.00 mL of test substance and 255.5 mL of 400 ppm AOAC Synthetic Hard water. The prepared

test substance was used within three hours of preparation. From a stock slant, no more than 5 transfers from original stock and ≤1 month old, 10 mL of culture broth was inoculated. From this initial broth suspension, a minimum of 3 daily transfers using 1 loopful (10 µL) of culture into 10 mL of culture media was performed on consecutive days prior to use. Each daily transfer was incubated at 35-37°C (36.0°C) for 24±2 hours using Brain Heart Infusion Broth growth medium. A 48-54 hour (48.5 hour) culture that was incubated at 35-37°C (36.0°C) was vortex-mixed and allowed to settle for ≥15 minutes. The upper 2/3rds of the culture was removed and transferred to a sterile vessel for use in testing. The culture was centrifuge concentrated at 3500 RPM for 10 minutes. A total of 10.0 mL of culture was concentrated to 5.0 mL. The culture was mixed thoroughly prior to use. A 1.00 mL aliquot of fetal bovine serum was added to 1.00 mL of prepared culture to achieve a 50% organic soil load. Sterile carriers were inoculated with 0.02 mL (20.0 µL) of culture using a calibrated pipettor spreading the inoculum to within ~ 3 mm of the edge of the carrier. The inoculated carriers were dried for 20 minutes at 35-37°C (36.1°C) and 40-43% relative humidity with the Petri dish lids slightly ajar. A constant humidity chamber was used to ensure uniform humidification conditions and overcome slow re-equilibration. After drying, test carriers were sprayed using staggered intervals with test substance at a distance of 6-8 inches from the carrier surface using 3 pumps of foam, until thoroughly wet. The carriers were allowed to expose at room temperature (20°C) and 47% relative humidity for 4.5 minutes. Following exposure, the carriers appeared covered in foam and each carrier was transferred to 20 mL of neutralizer (Letheen Broth + 0.07% Lecithin + 0.5% Tween 80) using identical staggered intervals. The excess foam was not transferred to the neutralizer. The jars were vortex-mixed for 10 seconds to suspend the surviving organisms. Within 30 minutes of neutralization, duplicate 1.00 mL and 0.100 mL aliquots of the neutralized solution (10^0) were plated onto the recovery agar plate medium (Tryptic Soy Agar with 5% Sheep Blood, BAP). The plates were incubated at 35-37°C (36.0°C) for 48±4 hours (45.5 hours). Following incubation, the subcultures were visually enumerated. On 10/23/19, representative test and positive control subcultures showing growth, were visually examined, Gram stained and biochemically assayed to confirm or rule out the presence of the test organism. Controls included those for purity, sterility, neutralization confirmation, carrier population, and inoculum count.

V. RESULTS

MRID Number	Organism	Batch No.	No. of Carriers Exhibiting Growth/ Total No. Tested	Carrier Population CFU/carrier (Average Log_{10})
9.5 Minute Exposure / (5% Soil Load; Dilution 1:73.3 in 400 ppm Hard Water)				
502575-05	*Pseudomonas aeruginosa* (ATCC 15442)	924-040	0/60	6.09
502575-06	*Pseudomonas aeruginosa* (ATCC 15442)	924-165	0/60	6.84
502575-07	*Pseudomonas aeruginosa* (ATCC 15442)	924-167	5/60	6.70
502575-08	*Salmonella enterica* (ATCC 10708)	924-040	0/60	5.75
502575-09	*Salmonella enterica* (ATCC 10708)	924-165	0/60	5.45
502575-10	*Salmonella enterica* (ATCC 10708)	924-167	0/60	5.31
502575-11	*Staphylococcus aureus* (ATCC 6538)	924-040	0/60	6.77
502575-12	*Staphylococcus aureus* (ATCC 6538)	924-165	0/60	6.56

MRID Number	Organism	Batch No.	No. of Carriers Exhibiting Growth/ Total No. Tested	Carrier Population CFU/carrier (Average Log_{10})
9.5 Minute Exposure / (5% Soil Load; Dilution 1:73.3 in 400 ppm Hard Water)				
502575-13	*Staphylococcus aureus* (ATCC 6538)	924-167	0/60	6.78
502575-14	*Pseudomonas aeruginosa* (ATCC 15442)	924-165	0/10	5.68
502575-15	*Pseudomonas aeruginosa* (ATCC 15442)	924-167	0/10	5.58
502575-16	*Staphylococcus aureus* (ATCC 6538)	924-165	0/10	5.43
502575-17	*Staphylococcus aureus* (ATCC 6538)	924-167	0/10	5.62

MRID Number	Organism	Batch No.	No. of Carriers Exhibiting Growth/ Total No. Tested	Carrier Population CFU/carrier (Average Log_{10})
9.5 Minute Exposure (50% Soil Load; 1:73.3 Dilution in 400 ppm Hard Water; Foam Spray Application)				
502575-18	*Pseudomonas aeruginosa* (ATCC 15442)	924-040	0/60	5.22
502575-19	*Pseudomonas aeruginosa* (ATCC 15442)	924-165	0/60	5.18
502575-20	*Pseudomonas aeruginosa* (ATCC 15442)	924-167	0/60	5.05
502575-21	*Salmonella enterica* (ATCC 10708)	924-040	0/60	4.88
502575-22	*Salmonella enterica* (ATCC 10708)	924-165	0/60	4.65
502575-23	*Salmonella enterica* (ATCC 10708)	924-167	0/60	4.55
502575-24	*Staphylococcus aureus* (ATCC 6538)	924-040	0/60	5.43
502575-25	*Staphylococcus aureus* (ATCC 6538)	924-165	0/60	5.57
502575-26	*Staphylococcus aureus* (ATCC 6538)	924-167	0/60	5.45

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Geometric Mean Average CFU / Carrier (Log_{10})
4.5 Minute Exposure (5% Soil Load; Diluted 1:342 in 400 ppm Hard Water)					
502575-41	*Klebsiella pneumoniae* (ATCC 4352)	924-040	<2.51×10^1 <1.40	>99.9981%	1.32×10^6 (6.12)
502575-42	*Klebsiella pneumoniae* (ATCC 4352)	924-165	<8.32×10^2 <2.92	>99.985%	5.37×10^6 (6.73)
502575-43	*Klebsiella pneumoniae* (ATCC 4352)	924-167	9.77×10^1 1.99	99.9986%	6.92×10^6 (6.84)
502575-44	*Staphylococcus aureus* (ATCC 6538)	924-040	<2.04×10^2 <2.31	>99.9929%	2.88×10^6 (6.46)
502575-45	*Staphylococcus aureus* (ATCC 6538)	924-165	<3.80×10^1 <1.58	>99.99902%	3.89×10^6 (6.59)
502575-46	*Staphylococcus aureus* (ATCC 6538)	924-167	5.75×10^1 1.76	99.9981%	3.02×10^6 (6.48)
502575-47	*Campylobacter jejuni* (ATCC 29428)	924-165	<2.51×10^1 <1.40	>99.9952%	5.25×10^5 (5.72)
		924-167	<2.51×10^1 <1.40	>99.9952%	
502575-48	*Escherichia coli* O157:H7 (ATCC 35150)	924-165	2.51×10^1 <1.40	>99.987%	1.86×10^5 (5.27)
		924-167	2.51×10^1 <1.40	>99.987%	
502575-49	*Listeria monocytogenes* (ATCC 19117)	924-165	<3.63×10^1 <1.56	>99.9924%	4.79×10^5 (5.68)
		924-167	<2.51×10^1 <1.40	>99.9948%	
502575-50	*Salmonella enterica* (ATCC 10708)	924-165	<4.27×10^1 <1.63	>99.954%	9.33×10^4 (4.97)
		924-167	<2.88×10^1 <1.46	>99.969%	
502575-51	*Salmonella enteritidis* (ATCC 4931)	924-165	<2.51×10^1 <1.40	>99.979%	1.20×10^5 (5.08)
		924-167	<2.51×10^1 <1.40	>99.979%	
502575-52	*Shigella dysenteriae* (ATCC 11835)	924-165	7.24×10^2 2.86	99.972%	2.57×10^6 (6.41)
		924-167	4.47×10^2 2.65	99.983%	
502575-53	*Yersinia enterocolitica* (ATCC 23715)	924-165	<2.51×10^1 <1.40	>99.9928%	3.47×10^5 (5.54)
		924-167	<2.51×10^1 <1.40	>99.9928%	

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
2.5 Minute Exposure (5% Soil Load; Diluted 1:256.5 in 400 ppm Hard Water)					
502575-54	*Klebsiella pneumoniae* (ATCC 4352)	924-040	2.40×10^2 2.38	99.9917%	2.88×10^6 (6.46)
502575-55	*Klebsiella pneumoniae* (ATCC 4352)	924-165	2.63×10^2 2.42	99.9926%	3.55×10^6 (6.55)
502575-56	*Klebsiella pneumoniae* (ATCC 4352)	924-167	$<3.39 \times 10^2$ <2.53	>99.965%	9.77×10^5 (5.99)
502575-57	*Staphylococcus aureus* (ATCC 6538)	924-040	6.76×10^2 2.83	99.963%	1.82×10^6 (6.26)
502575-58	*Staphylococcus aureus* (ATCC 6538)	924-165	6.46×10^2 2.81	99.9927%	8.91×10^6 (6.95)
502575-59	*Staphylococcus aureus* (ATCC 6538)	924-167	2.57×10^2 2.41	99.9944%	4.57×10^6 (6.66)
502575-60	*Campylobacter jejuni* (ATCC 29428)	924-165	$<2.51 \times 10^1$ <1.40	>99.9953%	5.37×10^5 (5.73)
		924-167	$<2.51 \times 10^1$ <1.40	>99.9953%	
502575-61	*Escherichia coli* O157:H7 (ATCC 35150)	924-165	$<2.51 \times 10^1$ <1.40	>99.9933%	3.72×10^5 (5.57)
		924-167	$<2.51 \times 10^1$ <1.40	>99.9933%	
502575-62	*Listeria monocytogenes* (ATCC 19117)	924-165	$<3.16 \times 10^1$ <1.50	>99.9989%	2.88×10^6 (6.46)
		924-167	$<2.51 \times 10^1$ <1.40	>99.99913%	
502575-63	*Salmonella enterica* (ATCC 10708)	924-165	$<2.51 \times 10^1$ <1.40	>99.958%	6.03×10^4 (4.78)
		924-167	$<2.51 \times 10^1$ <1.40	>99.958%	
502575-64	*Salmonella enteritidis* (ATCC 4931)	924-165	$<2.51 \times 10^1$ <1.40	>99.943%	4.37×10^4 (4.64)
		924-167	$<2.51 \times 10^1$ <1.40	>99.943%	
502575-66	*Yersinia enterocolitica* (ATCC 23715)	924-165	$<2.51 \times 10^1$ <1.40	>99.965%	7.24×10^4 (4.86)
		924-167	$<2.51 \times 10^1$ <1.40	>99.965%	

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
2 Minute 45 Second Exposure (5% Soil Load; Diluted 1:205.3 in 400 ppm Hard Water)					

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
502575-65	*Shigella dysenteriae* (ATCC 11835)	924-165	<4.90×10^1 <1.69	>99.9953%	1.05×10^6 (6.02)
		924-167	<9.33×10^1 <1.97	>99.9911%	

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
4.5 Minute Exposure (5% Soil Load; Diluted 1:342 in 400 ppm Hard Water; Foam Spray Application)					
502575-67	*Klebsiella pneumoniae* (ATCC 4352)	924-165	<2.00×10^1 <1.30	>99.99979%	9.55×10^6 (6.98)
502575-68	*Klebsiella pneumoniae* (ATCC 4352)	924-167	<2.00×10^1 <1.30	>99.99989%	1.82×10^7 (7.26)
502575-69	*Staphylococcus aureus* (ATCC 6538)	924-165	<2.00×10^1 <1.30	>99.99945%	3.63×10^6 (6.56)
502575-70	*Staphylococcus aureus* (ATCC 6538)	924-167	<2.00×10^1 <1.30	>99.99964%	5.62×10^6 (6.75)

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
2.5 Minute Exposure (5% Soil Load; Diluted 1:256.5 in 400 ppm Hard Water; Foam Spray Application)					
502575-71	*Klebsiella pneumoniae* (ATCC 4352)	924-165	<2.29×10^1 <1.36	>99.999917%	2.75×10^7 (7.44)
502575-72	*Klebsiella pneumoniae* (ATCC 4352)	924-167	<2.00×10^1 <1.30	>99.99974%	7.76×10^6 (6.89)
502575-73	*Staphylococcus aureus* (ATCC 6538)	924-165	<2.00×10^1 <1.30	>99.99937%	3.16×10^6 (6.50)
502575-74	*Staphylococcus aureus* (ATCC 6538)	924-167	<2.00×10^1 <1.30	>99.99946%	3.72×10^6 (6.57)

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
4 Minute 45 Second Exposure (50% Soil Load Diluted 1:256.5 in 400 ppm Hard Water; Foam Spray Application)					

MRID Number	Organism	Batch	CFU / Carrier Geometric Mean Average Log_{10}	Percent Reduction	Carrier Population Average CFU / Carrier (Log_{10})
502575-75	*Enterobacter aerogenes* (ATCC 13048)	924-040	<2.00 x 10^1 <1.30	>99.9988%	1.66 x 10^6 (6.22)
502575-76	*Enterobacter aerogenes* (ATCC 13048)	924-165	<2.00 x 10^1 <1.30	>99.99956%	4.57 x 10^6 (6.66)
502575-77	*Enterobacter aerogenes* (ATCC 13048)	924-167	<2.00 x 10^1 <1.30	>99.99984%	1.26 x 10^7 (7.10)
4.5 Minute Exposure (50% Soil Load Diluted 1:256.5 in 400 ppm Hard Water; Foam Spray Application)					
502575-78	*Staphylococcus aureus* (ATCC 6538)	924-040	<2.00 x 10^1 <1.30	>99.9974%	7.76 x 10^5 (5.89)
502575-79	*Staphylococcus aureus* (ATCC 6538)	924-165	<2.00 x 10^1 <1.30	>99.99911%	2.24 x 10^6 (6.35)
502575-80	*Staphylococcus aureus* (ATCC 6538)	924-167	<2.00 x 10^1 <1.30	>99.9983%	1.20 x 10^6 (6.08)
502575-81	*Listeria monocytogenes* (ATCC 19117)	924-165	<3.31 x 10^1 <1.52	>99.9974%	1.29 x 10^6 (6.11)
		924-167	<2.00 x 10^1 <1.30	>99.9984%	

9.5 Minute Exposure (5% Soil Load; 400 ppm Hard Water; Liquid Application)						
MRID	**Organism**	**Results**				
		Dilutions	**Lot # or Batch #**	**Inactivation ($TCID_{50}$/ carrier)**	**Dried Virus Control (Log_{10}/ carrier)**	**Log_{10} Reduction**
Dilution 1:51.3						
502575-27	Avian Adenovirus type 2 (ATCC VR-280)	10^{-1} to 10^{-6} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.30	≥3.50
			924-167			
Dilution 1:73.3						
502575-28	Avian Influenza A (H3N2) Reassortant virus (ATCC VR-2072)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.55	≥4.75
			924-167			
502575-29	Avian Reovirus (ATCC VR-2449)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	$10^{1.55}$	6.30	4.75
			924-167			
502575-30	Avian Infectious Bronchitis virus,	10^{-1} to 10^{-6} LD_{50}/0.1 mL	924-165	≤$10^{0.80}$	4.80	≥3.25

9.5 Minute Exposure (5% Soil Load; 400 ppm Hard Water; Liquid Application)						
MRID	Organism	Results				
		Dilutions	Lot # or Batch #	Inactivation ($TCID_{50}$/ carrier)	Dried Virus Control (Log_{10}/ carrier)	Log_{10} Reduction
	Strain Beaudette 1842		924-167		5.633	≥4.58
502575-31	Infectious Laryngotracheitis virus, Strain LT-IVAX	10^{-1} to 10^{-6} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.05	≥4.25
			924-167			
502575-32	Newcastle Disease Virus, Strain LaSota	10^{-1} to 10^{-7} $TCID_{50}$/mL	924-165	≤$10^{3.10}$	6.85	≥3.75
			924-167			
502575-33	Porcine Respiratory & Reproductive Syndrome (PRRS) virus, Strain NVSL	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.55	≥4.75
			924-167			
502575-34	Porcine Rotavirus (ATCC VR-893)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	6.05	≥5.25
			924-167			
502575-35	Pseudorabies virus (ATCC VR-135)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	7.05	≥6.25
			924-167			
502575-36	Swine Influenza A (H1N1) virus (ATCC VR-333)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	7.05	≥6.25
			924-167			
502575-37	Transmissible Gastroenteritis virus (TGE)	10^{-1} to 10^{-6} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.05	≥4.25
			924-167			
502575-38	Vesicular stomatitis virus (ATCC VR-158)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	6.55	≥5.75
			924-167			

9.5 Minute Exposure (5% Soil Load; 400ppm Hard Water; Foam Spray Application)						
MRID	Organism	Results				
		Dilutions	Lot # or Batch #	Complete Inactivation	Dred Virus Control (Log_{10})	Viral Titer Reduction (Log_{10})
Dilution 1:73.3						
502575-39	Porcine Rotavirus (ATCC VR-893)	10^{-1} to 10^{-7} $TCID_{50}$/100 µL	924-165	≤$10^{0.80}$	5.55	≥4.75
			924-167			
Dilution 1:42.8						
502575-40	Avian Adenovirus type 2 (ATCC VR-280)	10^{-1} to 10^{-6} $TCID_{50}$/100 µL	924-165	≤$10^{1.80}$	5.30	≥3.50
			924-167			

VI. CONCLUSIONS

MRID	Claim	Surface Type	Application Method(s) and Dilution	Contact Time	Soil load	Diluent	Organism(s)	Data support Label Claims?
502575-05 502575-06 502575-07 502575-08 502575-09 502575-10 502575-11 502575-12 502575-13 502575-14 502575-15 502575-16 502575-17	**Disinfectant Bactericidal**	Hard, non-porous surfaces	(tested at the LCL) 1:73.3 UDM GSM (RT: 19-21°C)	9-minute 30-second	5% FBS	400 ppm hard water	*Pseudomonas aeruginosa* (ATCC 15442) *Staphylococcus aureus* (ATCC 6538) *Salmonella enterica* (ATCC 10708)	**Yes**
502575-18 502575-19 502575-20 502575-21 502575-22 502575-23 502575-24 502575-25 502575-26			(tested at the LCL) 1:73.3 **Foam Spray Application** (RT: 19-21°C)		**50% FBS**		*Pseudomonas aeruginosa* (ATCC 15442) *Staphylococcus aureus* (ATCC 6538) *Salmonella enterica* (ATCC 10708)	**Yes, for in-drain application**
502575-27	**Disinfectant Virucidal**	Hard, non-porous surfaces	(tested at the LCL) **1:51.3** Non-Foaming (RT: 20°C	9-minute 30-second	5% FBS	400 ppm hard water	Avian Adenovirus (VR-280)	**Yes**
502575-28 502575-29 502575-30 502575-31 502575-32 502575-33 502575-34 502575-35 502575-36 502575-37 502575-38			(tested at the LCL) 1:73.3 Non-Foaming (RT: 20°C)				Avian Influenza A (Reassortant) Virus (H3N2) (VR-2072) Avian Reovirus (VR-2449) Avian Infectious Bronchitis Virus (Strain Beaudette) Infectious Laryngotracheitis Virus (Strain LT-IVAX) Newcastle Disease Virus (Strain LaSota) Porcine Respiratory	**Yes**

							and Reproductive Syndrome Virus (PRRSV) (Strain NVSL) Porcine Rotavirus (VR-893) Pseudorabies Virus (VR-135) Swine Influenza A Virus (H1N1) (VR-333) Transmissible Gastroenteritis Virus (TGE) Vesicular Stomatitis Virus (VR-158)	
502575-39	**Disinfectant Virucidal**	Hard, non-porous surfaces	(tested at the LCL) **1:73.3** Foaming (RT: 20°C)	9-minute 30-second	5% FBS	400 ppm hard water	Porcine Rotavirus (VR-893)	**Yes**
502575-40			(tested at the LCL) **1:42.8** Foaming (RT: 20°C)				Avian Adenovirus {(VR-280)	**Yes**
502575-41 502575-42 502575-43 502575-44 502575-45 502575-46 502575-47 502575-48 502575-49 502575-50 502575-51 502575-52 502575-53	**Non-Food Contact Sanitization**	Hard, non-porous surfaces	(tested at the LCL) 1:342 Non-Foaming (RT: 19-20°C)	4-minute 30-second	5% FBS	400 ppm hard water	*Klebsiella pneumoniae* (ATCC 4352) *Staphylococcus aureus* (ATCC 6538) *Campylobacter jejuni* (ATCC 29428) *Escherichia coli* O157:H7 (ATCC 35150) *Listeria monocytogenes* (ATCC 19117) *Salmonella enterica* (ATCC 10708) *Salmonella enteritidis* (ATCC 4931) *Shigella dysenteriae* (ATCC 11835)	**Yes**

							Yersinia enterocolitica (ATCC 23715)	
502575-67 502575-68 502575-69 502575-70			(tested at the LCL) 1:342 **Foaming** (RT: 19°C)				*Klebsiella pneumoniae* (ATCC 4352) *Staphylococcus aureus* (ATCC 6538)	**Yes**
502575-52 502575-54 502575-55 502575-56 502575-57 502575-58 502575-59 502575-60 502575-61 502575-62 502575-63 502575-64 502575-66	**Non-Food Contact Sanitization**	Hard, non-porous surfaces	(tested at the LCL) 1:256.5 **Non-Foaming** (RT: 18-20°C)	2-minute 30-second	5% FBS	400 ppm hard water	*Klebsiella pneumoniae* (ATCC 4352) *Staphylococcus aureus* (ATCC 6538) *Campylobacter jejuni* (ATCC 29428) *Escherichia coli* O157:H7 (ATCC 35150) *Listeria monocytogenes* (ATCC 19117) *Salmonella enterica* (ATCC 10708) *Salmonella enteritidis* (ATCC 4931) *Yersinia enterocolitica* (ATCC 23715)	**Yes**
502575-71 502575-72 502575-73 502575-74			(tested at the LCL) 1:256.5 **Foaming** (RT: 19-20°C)				*Klebsiella pneumoniae* (ATCC 4352) *Staphylococcus aureus* (ATCC 6538)	**Yes**
502575-65	**Non-Food Contact Sanitization**	Hard, non-porous surfaces	(tested at the LCL) **1:205.3** Non-Foaming (RT: 19°C)	2-minute 45-second	5% FBS	400 ppm hard water	*Shigella dysenteriae* (ATCC 11835)	**Yes**
502575-75 502575-76 502575-77	**Non-Food Contact Sanitization**	Hard, non-porous surfaces	(tested at the LCL) **1:256.5** Foaming (RT: 19-20°C)	**4-minute 45-second**	**50% FBS**	400 ppm hard water	*Enterobacter aerogenes* (ATCC 13048)	**Yes, for in-drain application**
502575-78 502575-79 502575-80 502575-81		Hard, non-porous surfaces	(tested at the LCL) **1:256.5** Foaming (RT: 19-20°C)	**4-minute 30-second**	**50% FBS**	400 ppm hard water	*Staphylococcus aureus* (ATCC 6538) *Listeria monocytogenes* (ATCC 19117)	

VII. LABEL COMMENTS

Proposed Label dated 9-8-20

1. The proposed label claims that at 1.75 oz. per gal. of 400 ppm hard water (1:73.1), the product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is a general hospital disinfectant against the following bacteria on, hard non-porous surfaces with a 5% soil load for a 10-minute contact time:

Pseudomonas aeruginosa (ATCC 15442)
Salmonella enterica (ATCC 10708)
Staphylococcus aureus (ATCC 6538)

These claims are acceptable as they are supported by the submitted data.

2. The proposed label claims that at 1.75 oz. per gal. of 400 ppm hard water (1:73.1), the product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is a disinfectant against the following bacteria (in drains using a foaming application) on, hard non-porous surfaces with a 50% soil load for a 10-minute contact time:

Pseudomonas aeruginosa (ATCC 15442)
Salmonella enterica (ATCC 10708)
Staphylococcus aureus (ATCC 6538)

These claims are acceptable as they are supported by the submitted data. However, registrant must add precleaning instructions for visibly soiled hard non-porous surfaces.

3. The label claims that at 1.75 oz. per gal. of 400 ppm hard water (1:73.1) the product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is a disinfectant against the following viruses on, hard non-porous surfaces (non-foaming application) with a 5% soil load for a 10-minute contact time:

Avian Influenza A (Reassortant) Virus (H3N2) (VR-2072)
Avian Reovirus (VR-2449)
Avian Infectious Bronchitis Virus (Strain Beaudette)
Infectious Laryngotracheitis Virus (Strain LT-IVAX)
Newcastle Disease Virus (Strain LaSota)
Porcine Respiratory and Reproductive Syndrome Virus (PRRSV) (Strain NVSL)
Porcine Rotavirus (VR-893)
Pseudorabies Virus (VR-135)
Swine Influenza A Virus (H1N1) (VR-333)
Transmissible Gastroenteritis Virus (TGE)
Vesicular Stomatitis Virus (VR-158)

These claims are acceptable as they are supported by the submitted data.

4. The label claims that at 3 oz. per gal. of 400 ppm hard water (1:42.66) the product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is a disinfectant against the following virus on, hard non-porous surfaces (non-foaming application) with a 5% soil load for a 10-minute contact time:

Avian Adenovirus (VR-280)

This claim is acceptable as it is supported by the submitted data.

5. The label claims that this product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is an effective one-step sanitizer with 5% soil load against the following bacteria at 2.5 oz. per 4 gal. of 400 ppm hard water (1: 204.8;

with foaming application) on, hard non-porous, non-food contact surfaces for a **3-minute contact time**:

Klebsiella pneumoniae (ATCC 4352)
Staphylococcus aureus (ATCC 6538)

This claim is acceptable as it is supported by the submitted data.

6. The label claims that this product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is an effective one-step sanitizer (5% soil load) against the following bacteria at 2.5 oz. per 4 gal. of 400 ppm hard water (1: 204.8; **with non-foaming application**) on, hard non-porous, non-food contact surfaces for a **3-minute contact time**:

Klebsiella pneumoniae (ATCC 4352)
Staphylococcus aureus (ATCC 6538)
Campylobacter jejuni (ATCC 29428)
Escherichia coli O157:H7 (ATCC 35150)
Listeria monocytogenes (ATCC 19117)
Salmonella enterica (ATCC 10708)
Salmonella enteritidis (ATCC 4931)
Shigella dysenteriae (ATCC 11835)
Yersinia enterocolitica (ATCC 23715)

These claims are acceptable as they are supported by the submitted data. <u>However, registrant must add cleaning instructions for visibly soiled hard non-porous surfaces.</u>

7. The label claims that this product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is an effective one-step sanitizer (5% soil load) against the following bacteria at 1.5 oz. per 4 gal. of 400 ppm hard water (1: 341.3; **with non-foaming application**) on, hard non-porous, non-food contact surfaces for a **5-minute contact time**:

Klebsiella pneumoniae (ATCC 4352)
Staphylococcus aureus (ATCC 6538)
Campylobacter jejuni (ATCC 29428)
Escherichia coli O157:H7 (ATCC 35150)
Listeria monocytogenes (ATCC 19117)
Salmonella enterica (ATCC 10708)
Salmonella enteritidis (ATCC 4931)
Shigella dysenteriae (ATCC 11835)
Yersinia enterocolitica (ATCC 23715)

These claims are acceptable as they are supported by the submitted data. <u>However, registrant must add cleaning instructions for visibly soiled hard non-porous surfaces.</u>

8. The label claims that this product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is an effective one-step sanitizer (5% soil load) against the following bacteria at 1.5 oz. per 4 gal. of 400 ppm hard water (1: 341.33; **with foaming application**) on, hard non-porous, non-food contact surfaces for a **5-minute contact time**:

Klebsiella pneumoniae (ATCC 4352)
Staphylococcus aureus (ATCC 6538)

This claim is acceptable as it is supported by the submitted data.

9. The label claims that this product, MAQUAT® 710-HF (EPA Reg. No. 10324-159), is an effective one-step sanitizer (50% soil load) against the following bacteria at 2. oz. per 4 gal. of 400 ppm hard water (1: 256; **with foaming application in drains**) on, hard non-porous, non-food contact surfaces for a **5-minute contact time**:

Enterobacter aerogenes (ATCC 13048)

Listeria monocytogenes (ATCC 19117)
Staphylococcus aureus (ATCC 6538)

These claims are acceptable as they are supported by the submitted data.

10. Registrant must make the following additional changes to the proposed label:

- On pages 2, 4, 6 and 7, replace (or add to) all "organic soil" and/or "% blood serum" claims with "Visibly clean surface" as this is a clearer indicator for the end user. In addition, do not make these claims optional.
- On page 6 of the label, remove "is of prime importance" from "is of prime importance in reducing cross-contamination on treated surfaces" as this may imply enhanced efficacy.
- On pages 6-7 of the label, remove "high" from "generates "high foam" or "high foaming" or further define this claim.
- On page 7 of the label, remove "meets efficacy standards" as all registered products must meet agency standards to support public health claims. Including this language may imply agency endorsement.
- On page 8, remove or further define the actions intended by "one-step cleaner" (e.g. cleans stains and deodorizes in one step). The standalone claim may be misleading to end users.
- On page 10, add preclean instruction to foaming disinfection for visibly soiled surfaces or otherwise specify that surfaces should be visibly clean for treatment.
- On pages 13,
    - add precleaning instruction to foam disinfection and sanitization of poultry/Turkey Equipment, Swine Quarters, Equine Quarters, Animal Quarters and Kennels.
    - For toilet bowl disinfection, treatment using the use solution should be limited to "above the water line" or external surfaces only.

Note to PM:

- On page 8 of the label, there is a claim for small fruit fly ovicidal treatment. This is not an antimicrobial claim.
- On page 15 of the label, there are claims for control of "drosophila spp. and phoridae family of flies on non-food contact surfaces" and "small flies in drains". Please confirm acceptability.