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“ESC” Ebola Preparedness Solution’s Proposal

OBJECTIVE: To provide a safer more effective preparedness & treatment protocol to contain Ebola Virus Disease with the use of polymer forming persistent antiviral film applied in a liquid form by immersion, fogging, spraying or wiping on surfaces in the hospital, treatment centers or any public environment or utility to include but not limited to: substrates, human skin, hair or tissue.

SCOPE: The existence of bacteria and virus species and their ability to evolve to become resistant to an antimicrobial, chemical actives (which now includes isopropanol and *Enterococcus faecium*) is a stunning reality but predictable. The probability of a few survivor species to overcome a chemical attack permits genetic responses to circumvent the chemicals ability to act as planned.

ESC Brands has developed the concept of multiple combined antimicrobial chemical actives in a liquid emulsion to affect the bacteria or viral species as in a combined attack and a defensive position.

The concept begins with a suitable carrier such as water to safely enable the chemical actives to be effectively transferred to the sight of a contamination of a surface or atomized into the infected space. A reduction of surface tension allows the actives to be spread over the surfaces and contact the bacteria or virus membranes. The carrier could be an alcohol where the handling of flammable liquid can be accomplished but water is preferred.

Technology: A monomer namely, 1-Octadecanaminium-N, N-Dimethyl-N-[(3-Trimethoxysilyl) propyl] chloride is included as a specialty film former for a surface. The ability of the 3-Trimethoxy functional group to bond (covalently) onto many surfaces substrates and human skin, tissue and hair while at ambient temperature and further begins to polymerize with itself into a film provides a unique second skin bearing antimicrobial properties.



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The concept includes single or multiple known quaternary ammonium chloride actives to provide quick and efficacious log kill rates. Benzalkonium chloride NF, Alkyl (C14 50%, C16 40%, C16 10%) Dimethyl Benzyl Ammonium Chloride, Octyl Decyl Dimethyl ammonium chloride, Dioctyl Dimethyl ammonium chloride, and Didecyl Dimethyl ammonium chloride are quats used which are effective for ebola virus.

The hand/body sanitizer and bath wipe active is Benzalkonium Chloride NF USP at 0.10 to 0.13% wt while the Disinfectant and sanitizing wipes uses Bardac 208M a mixture of 4 quats.

As condensation polymerization initiates the actives begin their coating of the bacteria or viral entity within their contact area. The polymer reduces the migration of actives and holds the actives within the polymer matrix or films of a 3-dimensional space on top of the environmental surface or human skin. The polymerization occurs rapidly and with the hand/body sanitizer surface dryness is within 60 seconds.

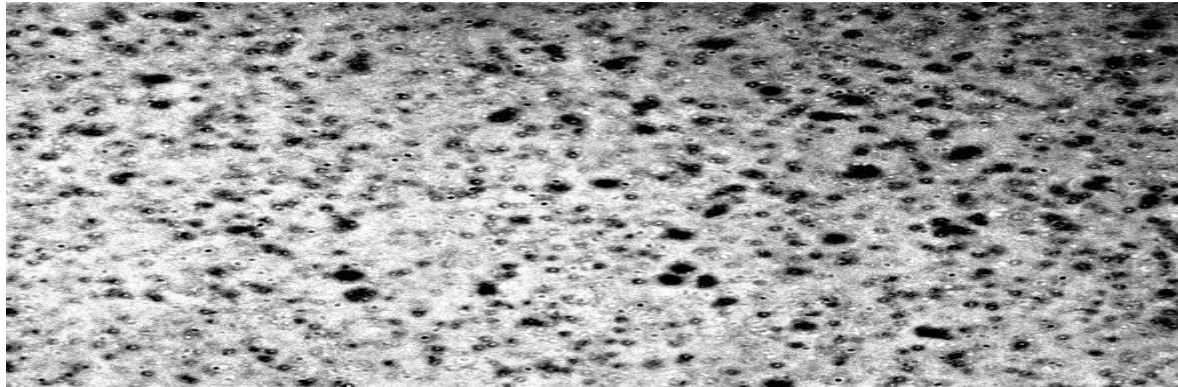
In some product formulations the use of polyamino biguanide hcl is incorporated as an additional polymer for surface coverage and an extremely effective active on *Pseudomonas aeruginosa*.

To review a liquid disinfectant is sprayed onto a surface or a liquid hand rub is applied to the skin in which the liquid carries the antiviral active molecules, wets out the surface and distribute the actives to resident bacteria or virus. In the product the use of cationic charged chemicals produces an electromagnetic field which effects the bacteria or virus. The bacteria and virus being anionic attracts the cationic molecules (actives). In addition, the cationic electromagnetic field will physically disrupt and move bacteria or virus tending to agglomerate them.

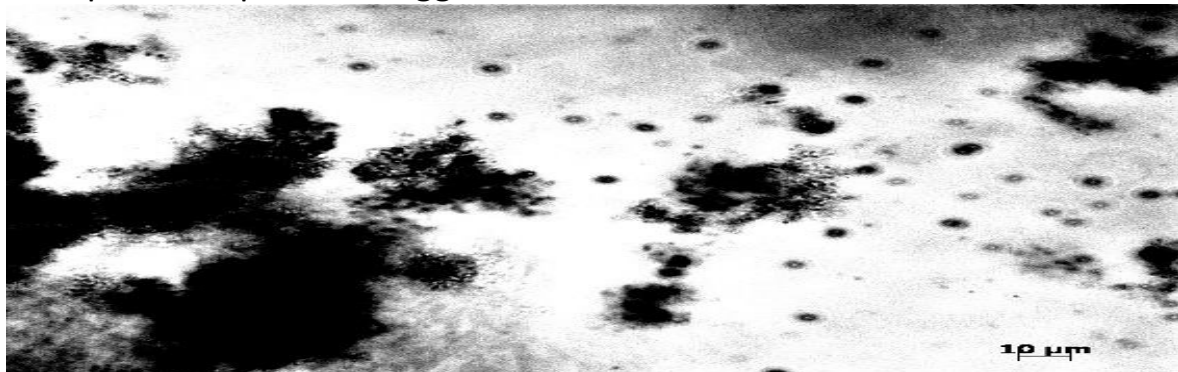


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Picture: 1 Bacillus spores too many to count viewed in a petri dish.



Picture: 2 Bacillus spores with addition of hand/body sanitizer showing disruption of space and agglomeration.

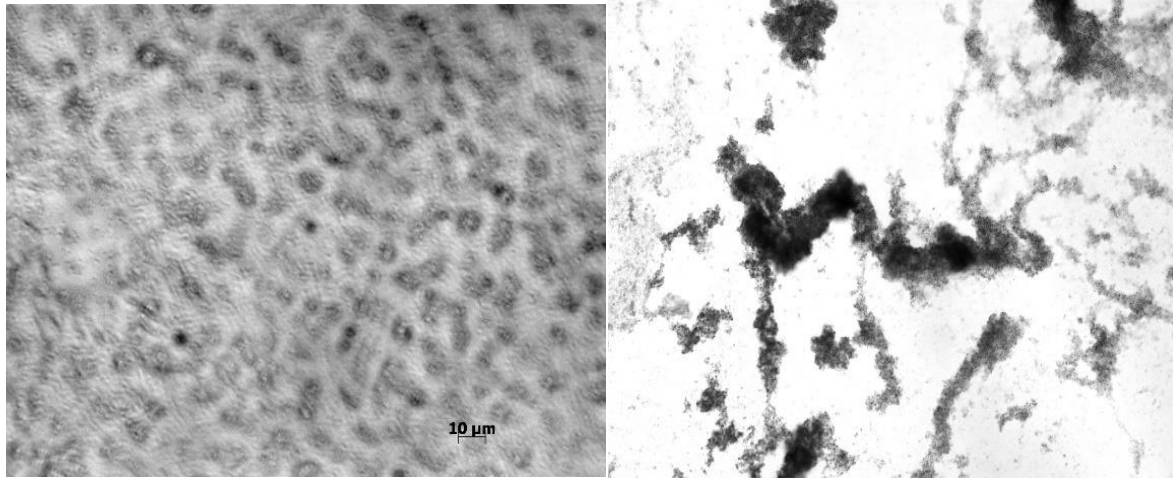


Film forming initiates as the water evaporates and the density of the liquid increases as well as the electromagnetic field potential.



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Picture: 3 Film dries and encapsulates **Picture: 4** Film dried encapsulation and Bacillus spores builds a protective skin barrier



The hydrocarbon chains in the actives penetrate the bacteria or viral membrane causing various porin to develop and allowing leakage of Potassium ions in some cases. There also is ionic disruption within the cell pending a high enough potential.

The active offensive actions depict reduction of bacteria and virus during the first 15 seconds to 10 minutes. The next advantage is the defensive action of providing an antimicrobial skin for sustained antimicrobial persistence. The film in Picture 4 shows a polymeric of 1-Octadecanaminium-N, N- Dimethyl-N-[(3-Trihydroxysilyl) propyl] chloride. Bacteria and virus which resided on top of the surface or skin have been treated with the liquid antimicrobial. Bacteria that remain within the film have been killed.

Bacteria and virus that will later settle and inoculate on top of the film will be affected over a given time. This settling virus or bacteria cannot penetrate the film. In theory it is believed will prevent bacterial adhesin and biofilm formation in addition to the 145 member protein legs of viral anchor mechanism.



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Proposed applications and product advantages: of the “my-shield” product range over current sanitizing & disinfection regimes

- **Hospital Grade Disinfectant:**

1. Wet kill
2. Dry Kill
3. Ease of application by either spraying or Electro static applicator
4. Persistence
5. Film forming & bonding to all substrates
6. Safely applied to all substrates

- **Surface Sanitizer:**

1. Wet kill
2. Dry Kill
3. Ease of application by either spraying or Electro static applicator
4. Persistence
5. Film forming & bonding to all substrates
6. Safely applied to all substrates
7. Can be applied in confined spaces (*example air conditioning ducts & air filters*)

- **Disinfectant Wipes:**

1. Wet kill
2. Dry Kill
3. Persistence
4. Safely wipe down all substrates

- **Hand & Body Sanitizer:**

1. Efficacy
2. Persistence
3. Can be applied safely to the skin, open wounds, skin lesions & abrasions
4. Film forming & bonding to the skin



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- **Sanitizing Bath/Body wipes:**

1. Efficacy
2. Persistence
3. Can be used to safely sanitizer, deodorize & bathe the skin, open wounds, skin lesions & abrasions.

- **Sanitizing Fabric treatment:**

1. Wet Kill
2. Persistence to the treated article
3. Deodorizes
4. Sensitive to the skin
5. Film forming bond to fabric's
6. Applications: Hospital linen, health care worker uniforms & patient clothing
7. Future application could include but not limited to: treated antimicrobial bandages & wound care dressing

Safety aspects of the concept of “**my-shield**” products use of the combination of multiple actives are seen in its uses as a topical antiseptic for some of the most damaging wounds. The formulation is the same as the hand sanitizer but an additional propriety additive for this product to compensate for Pseudomonas cytotoxins.

The patient on day 21 was advised to have the foot amputated but tried the my-shield as a last resort with his doctor's approval.

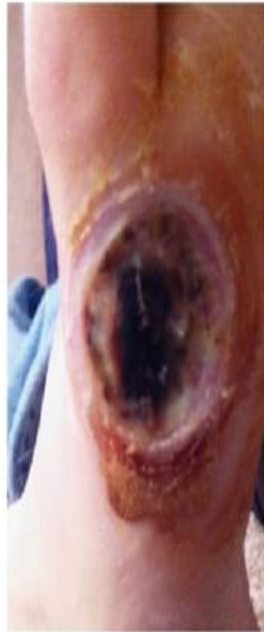
Complications of one active systems and resistance to antimicrobials have been developing as the bacteria or virus evolve quickly. Some cases are of Triclosan and many bacteria species, Chlorhexidine gluconate and Benzalkonium chloride used in wipes with *Burkholderia cepacia*, and isopropanol hand/body sanitizer with *Enterococcus faecium*.



Picture: 5 of diabetic ulcer prior to treating with my-shield of similar chemistry Picture 6 of diabetic ulcer on day 32 of treatment, with the use of “my-shield” Hand/Body Sanitizer Gel

The patient on day 21 was advised to have the foot amputated but was successfully treated with the my-shield where all other treatment packages had failed.

Day 21 of Diabecline use.
(5/25/2016)



After 10 I-V treatments recommended by Marion's physician. These treatments given while simultaneously using Diabecline.

Note the continuing loss of necrotic tissue (black area) as compared to photograph taken on Day 1 of Diabecline use. →

