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of the invention, with the attainment of some or all of its advantages and without departing from the spirit and scope of the present invention. For example, the chitosan dry vapor steam treatment has many uses and applications. The surfaces in surgical rooms, athletic locker rooms, and military barracks may be sterilized/sanitized by the chitosan dry vapor steam treatment. The surfaces of the objects, devices, equipment, and countertops therein may also be sterilized/sanitized. The steam may be pressurized or unpressurized. The steam can be delivered through any kind of hose, wand, nozzle, and the like. Any type of steam generating device can be used to implement the chitosan dry vapor steam treatment, including, for example, the ordinary consumer clothes iron.

It will be understood that various changes in the details, materials, and arrangements of the parts which have been described above in order to explain the nature of this invention may be made by those skilled in the art without departing from the principle and scope of the invention as recited in the following claims.

TABLE-US-00001 TABLE 1 Contact Replicate CFU/ Average Percent Time* Sample Number Carrier
 CFU/Carrier Reduction Time Zero Control 1 2.25E+07 2.36E+07 N/A 2 2.46E+07 Treated 1 2.00E+00
 1.50E+00 99.999994% 2 1.00E+00 2 hours Control 1 1.41E+07 1.37E+07 N/A 2 1.32E+07 Treated 1 1.18E+02
 6.00E+01 99.999560% 2 2.00E+00 6 hours Control 1 9.30E+06 1.06E+07 N/A 2 1.18E+07 Treated 1 2.00E+00
 1.50E+00 99.999986% 2 1.00E+00 24 hours Control 1 8.10E+07 8.20E+07 N/A 2 8.30E+07 Treated I 2.00E+00
 4.00E+00 99.999995% 2 6.00E+00 *Test microorganism S. aureus ATCC 6538

TABLE-US-00002 TABLE 2 Surface Replicate Average Percent Contact Time* Sample Type Number
 CFU/Carrier CFU/Carrier Reduction Time Zero Control glass 1 1.00E+05 1.05E+05 N/A 2 1.10E+05 cotton 1
 1.70E+04 2.08E+04 2 2.45E+04 24 hours Control glass 1 1.90E+05 1.98E+05 2 challenges 2 2.05E+05 cotton 1
 2.25E+04 3.43E+04 2 4.60E+04 Treated glass 1 <2.00E+00 <2.00E+00 >99.9990% 2 <2.00E+00 cotton 1
 <2.00E+00 <2.00E+00 >99.994% 2 <2.00E+00 48 hours Control glass 1 1.80E+05 1.93E+05 N/A 3 challenges
 2 2.05E+05 cotton 1 8.45E+04 9.73E+04 2 1.10E+05 Treated glass 1 <2.00E+00 <2.00E+00 >99.9990% 2
 <2.00E+00 cotton 1 <2.00E+00 <2.00E+00 >99.998% 2 <2.00E+00 72 hours Control glass 1 2.00E+05
 2.55E+05 N/A 4 challenges 2 3.10E+05 cotton 1 2.45E+04 1.75E+04 2 1.05E+04 Treated glass 1 <2.00E+00
 <2.00E+00 >99.9992% 2 2.00E+00 cotton 1 <2.00E+00 <2.00E+00 >99.989% 2 <2.00E+00 1 week Control
 glass 1 1.70E+05 N/A 5 challenges cotton 1 5.70E+04 Treated glass 1 <2.00E+00 >99.9994% cotton 1
 <2.00E+00 >99.998% 2 weeks Control glass 1 3.00E+05 N/A 6 challenges cotton 1 7.00E+04 N/A Treated glass
 1 <2.00E+00 >99.9997% cotton 1 <2.00E+00 >99.9986% 3 weeks Control glass 1 3.30E+05 N/A 7 challenges
 cotton 1 5.05E+04 Treated glass 1 <2.00E+00 >99.9997% cotton 1 <2.00E+00 >99.998% *Test microorganism
 S. aureus ATCC 6538

TABLE-US-00003 TABLE 3 Surface Replicate Average Log10 Percent Sample Contact Time* Type Number
 CFU/Carrier CFU/Carrier Reduction Reduction Untreated Time-Zero glass 1 1.55E+05 1.33E+05 N/A (control)
 2 1.10E+05 cotton 1 1.40E+05 1.30E+05 2 1.20E+05 10 min glass 1 1.35E+05 1.25E+05 2 1.15E+05 cotton 1
 7.30E+04 9.90E+04 2 1.25E+05 Treated 10 min glass 1 <5.00E+00 <5.00E+00 >4.40 >99.996% (Test) 2
 <5.00E+00 cotton 1 1.00E+01 <7.50E+00 >4.12 >99.992% 2 <5.00E+00 *Test microorganism S. aureus ATCC
 33592 (MRSA); samples aged for 4 months.

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