

DISINFECTANT EFFICACY ON METAL SURFACES

Product : CPD

Sample No : S:20:06:6001

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Aim : To study Efficacy of Disinfectant sprayed on metal surfaces to remove microbes and pathogens. Disinfectants are generally used to sanitize area and/or object which may have enough bacteriological load that create health risks / damages to people who comes in contact with such objects / areas. When Disinfectant is sprayed on metal surfaces, efficiency of disinfectant with respect to removal of microbes / pathogens and sensitization rate is studied in this project.

Objective : Efficacy study of disinfectant is important tool to closely monitor effectiveness of the product to remove dangerous pathogens and microbes so as to eliminate causes of disease spread and illness. Disinfectant is generally used on different surfaces which are common contact points to sanitize the required area. However its efficiency, in terms of rate of killing microbes / pathogens vis- à-vis time required, is need to be monitored before launching the product or apply the product in day to day use. Generally common surfaces / touch points provide favourable conditions for the growth of microbes and viruses which are to be disinfected. Disinfectant validation studies are performed to demonstrate that the disinfectants used on the surfaces are effective in inactivation or removal of disease causing pathogens.

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Procedural Details : This particular project is done to see removal of microbial load when disinfectant is applied on metal surfaces such as door handles, knobs and other common metal contact points in the office area. It covers two studies – before loading and after loading. Different contact points of Metals surfaces when sprayed with disinfectant and then exposed to touching of hands may kill or mitigate microbial loads that are transferred through human intervention (touching metals surfaces by different human beings). Experiments are conducted on randomized volunteers (without washing hands by sanitizers) by making them handle different touch points / contact points so as to study the potency of the said disinfectant. Similar experiments are conducted after loading microbial culture, purposely, on common touch points and then swabs are taken at regular time intervals. This is done to study potency of disinfectant to remove purposely spread microbial culture.

1) Before Loading :

To study the efficacy, Disinfectant is sprayed on touch point / contact point of metal surfaces i.e. door handle, in the office premises which is normally being touched by pushing while entering in to the office. Separate Swabs are taken before and after spraying disinfectant. Randomized volunteers (without washing hands by sanitizers) are allowed to touch the door handle. During the time, Swabs are taken at regular time intervals i.e. 2 hours, 4 hours, 6 hours, 8 hours and at 10 hours to study the presence of microbial load after free exposure of the said surface for users (touching handle frequently to open the door).

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2) After Loading :

To study the efficacy, Disinfectant is sprayed on metal surfaces i.e. door knob. Then the same door knob is loaded purposely with Microbes. i.e. microbial culture of E.coli is spread on knob. Swabs are taken to study the presence of microbial load before disinfectant treatment, after disinfectant treatment and after microbial load spraying. Then Swabs are taken at regularized time intervals i.e. after 2 hours, 4 hours, 6 hours, 8 hours and 10 hours to study efficacy of disinfectant after exposing metal surfaces with fully loaded microbes (microbial culture of E.coli.)

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Protocol followed :

Test Before Loading		
Material	Metal (Steel Door Knob)	Handle which is being used frequently by people
No.of tests	Test for E.coli and TPC	
1	Swab as such	Test
2	Spray Disinfectant on Knob	After 1 min take a swab and test
3	Allow several people to touch the Knob	Take a swab after 2 hours and test
4		Take a swab after 4 hours and test
5		Take a swab after 6 hours and test
6		Take a swab after 8 hours and test
7		Take a swab after 10 hours and test
Study efficacy of Disinfectant without Loading		

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Protocol followed :

Test After Loading		
Material	Metal (Steel Door Knob)	Knob which is not being used by people
No. of tests	Test for E.coli and TPC	
1	Swab as such	Test
2	Spray Disinfectant on Knob	After 1 min take a swab and test
3	Spray liquid having E.coli culture on Knob	After 1 min take a swab and test
4		Take a swab after 2 hours and test
5		Take a swab after 4 hours and test
6		Take a swab after 6 hours and test
7		Take a swab after 8 hours and test
8		Take a swab after 10 hours and test
Study efficacy of Disinfectant with Loading		

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Results:

Before Loading			
Metal	Handle which is being used frequently by people	TPC (cfu / swab)	E.Coli (cfu / swab)
Swab as such	Test	910	<10
Spray Disinfectant on Knob	After 1 min take a swab and test	<10	<10
Allow several people to touch the Knob	Take a swab after 2 hours and test	<10	<10
	Take a swab after 4 hours and test	<10	<10
	Take a swab after 6 hours and test	<10	<10
	Take a swab after 8 hours and test	<10	<10
	Take a swab after 10 hours and test	<10	<10
	Percentage reduction (after allowing exposure to the surface)	98.90%	-

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Results:

After Loading			
Metal	Knob which is not being used by people	TPC (cfu/ swab)	E.Coli (cfu/ swab)
Swab as such	Test	870	<10
Spray Disinfectant on Knob	After 1 min take a swab and test	<10	<10
Spray liquid having E.Coli culture on Knob	After 1 min take a swab and test	2.5 X10 ³	2.1 X 10 ³
	Take a swab after 2 hours and test	<10	<10
	Take a swab after 4 hours and test	<10	<10
	Take a swab after 6 hours and test	<10	<10
	Take a swab after 8 hours and test	<10	<10
	Take a swab after 10 hours and test	<10	<10
	Percentage Reduction After loading Microbial culture	99.60%	99.16%

Conclusion :

The said disinfectant is efficient to remove microbes and pathogens from metal surfaces even and its potency is valid upto 10 hours.

1) After deliberate exposure i.e. frequent human intervention to the metal surface, disinfectant sprayed is proven to be 99.8% efficient for removing microbes and pathogens. Its efficacy is valid for 10 hours.

2) Also after, purposely loading the metal surface with microbes, disinfectant is proven to eliminate the microbes and pathogens with 99.16% efficiency for a long duration of 10 hours.

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Testing before loading	TPC (cfu / swab)	E.Coli (cfu / swab)
Testing as such	910	280
Swab after 1 min	<10	<10
Swab after 2 hours	<10	<10
Swab after 4 hours	<10	<10
Swab after 6 hours	<10	<10
Swab after 8 hours	<10	<10
Swab after 10 hours	<10	<10

TPC and E.Coli reduction

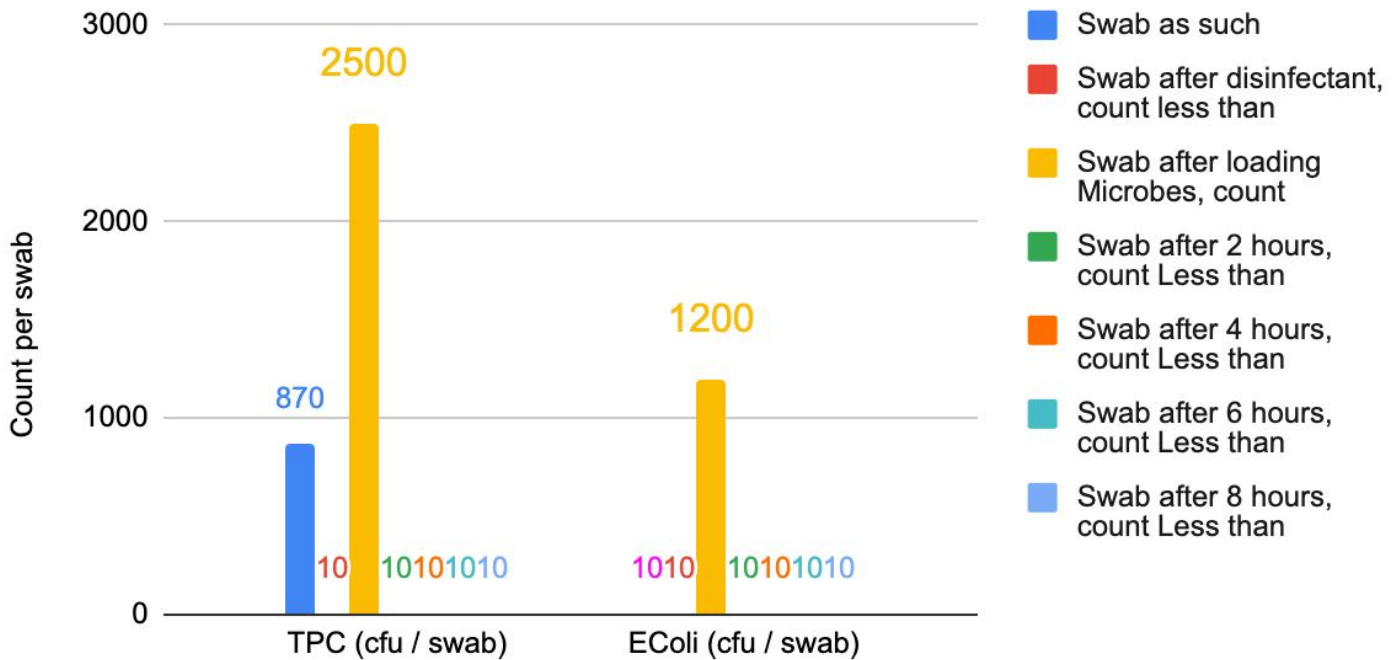


Efficacy on Metal Surface before Loading

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Testing after loading	TPC (cfu / swab)	E.Coli (cfu / swab)
Swab as such	870	<10
Swab after disinfectant, count less than	<10	<10
Swab after loading Microbes, count	2500	1200
Swab after 2 hours	<10	<10
Swab after 4 hours	<10	<10
Swab after 6 hours	<10	<10
Swab after 8 hours	<10	<10
Swab after 10 hours	<10	<10

TPC and E.Coli reduction



Efficacy on Metal Surface after Loading

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Remarks :

The said disinfectant is efficient to remove microbes from metal surface and its potency is valid up to 10 hours after spraying.

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