



## PCS Hygienic Microfibre Cloth Cleaning with PCS 250 Oxidizing Disinfectant Cleaner.

**SAFE, Effective, Environmentally Responsible and Cleans Without Transferring Pathogens.**

**Apply and Dry Cleaning to Protect Public Health.**

- Apply PCS 250 Oxidizing Disinfectant Cleaner to surfaces then wipe dry with PCS Hygienic Microfibre cloth.
- Use to hygienically clean in Health Care, Long term Care, Schools, Institutions and at Home.
- At Home use to clean frequently touched surfaces. Keep a separate bottle of PCS 250 Oxidizing Disinfectant Cleaner and PCS Hygienic Microfibre cloth for washrooms, and kitchen areas.
- Just Spray and Wipe Dry. Rinse cloth with warm water after use or when cloth is saturated and squeeze excess water then allow cloth to air dry or continue cleaning.

There are no Hazards associated with this product in normal use.  
Safety Data Sheet Section 11



# PCS cleaning strategy involving surfactant free cleaning with safer, more dilute forms of PCS Stabilized Neutral pH Sodium Hypochlorite and Hypochlorous Acid.

## Cleaning Without Harming



### Neutral pH PCS 250 Oxidizing Disinfectant/Disinfectant Cleaner

Use to clean frequently touched surfaces. Apply to surface and wipe dry.

**DIN: 02314843**

#### Kills Bacteria • Kills Viruses • Kills Fungi

Oxidizing Disinfectant Cleaner for use on hard inanimate non-porous environmental surfaces in domestic, hospital and health care facilities, institutions, schools and hospitality industries, where organic soils may be present.

#### SAFE

Nonhazardous low concentration neutral pH Hypochlorous acid/sodium hypochlorite solution.

#### PCS QCT-3-9 Cleaning Process

Cleaning without transferring pathogens to cleaned surfaces. Use to clean frequently touched surfaces. Apply to surface and wipe dry with microfiber cloth or other clean dry absorbent cloth. Wiping surfaces with pre-moistened disinfecting wipes or cloths removes bacteria, viruses and C. difficile spores but in the process some are transferred to cleaned surfaces.

Using PCS QCT-3 -9 Cleaning Process of apply and dry removes large numbers of pathogens without transferring to cleaned surfaces, including vegetative bacteria, norovirus and C. difficile spores.

#### Health care

- Use to Clean frequently touched surfaces when staff, visitors or patients are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

#### Long term care

- Use to Clean frequently touched surfaces when staff, visitors or patients are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

#### Schools and public spaces

- Use to Clean frequently touched surfaces when staff, visitors or students are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

#### Homeless shelters and daycares

- Use to Clean frequently touched surfaces when staff, visitors or homeless are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

#### International corporations serving the public

- Use to Clean frequently touched surfaces when staff, visitors or clients are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

#### Home

- Use to clean frequently touched surfaces . Keep a separate bottle of PCS 250 and PCS Hygienic microfiber cloth in kitchen and bathrooms. Just spray and wipe surfaces dry with PCS Hygienic microfiber cloth. Rinse cloth with warm water after use squeeze water from cloth and allow to air dry.

#### Safety Data Sheet

11. Toxicological information

Routes of exposure: Eye, Skin contact, Inhalation, Ingestion.

Information on likely routes of exposure

Ingestion: May cause stomach distress, nausea or vomiting.

Inhalation: No adverse effects due to inhalation are expected.

Skin contact: No adverse effects due to skin contact are expected.

Eye contact: There was no ocular irritation observed in any treated eye during the study - OPPTS 870.2400 (1998)

Symptoms related to the physical, chemical and toxicological characteristics: There are no hazards associated with this product in normal use.





**PCS cleaning strategy involving surfactant free cleaning with safer, more dilute forms of PCS Stabilized Hypochlorous Water Cleaning Without Harming.**



## Neutral pH PCS 250 Oxidizing Disinfectant/Disinfectant Cleaner

Use to clean frequently touched surfaces.

Apply to surface and wipe dry. **DIN: 02314843**

### Kills Bacteria • Kills Viruses • Kills Fungi

Oxidizing Disinfectant Cleaner for use on hard inanimate non-porous environmental surfaces in domestic, hospital and health care facilities, institutions, schools and hospitality industries, where organic soils may be present.

**✓ SAFE**  
Nonhazardous low concentration neutral pH Hypochlorous acid/sodium hypochlorite solution.

**✓ EFFECTIVE CLEANING**  
Proven in three separate hospital trials to lower residual microbial bioburden to less than 1 colony forming unit per square centimeter after cleaning as compared to current hospital cleaning practices that averaged 2.797 CFU per square centimeter.

**✓ ENVIRONMENTALLY RESPONSIBLE**  
Leaves no toxic residue in waste water stream that add to the pollutants that can create antibiotic resistant bacteria in the environment. Hypochlorous acid and sodium hypochlorite decompose in sanitary sewer systems in seconds. Natural formulation contains no synthetic chemicals. Endorsed and certified by the Envirodesic™ Certification Program for Maximum Indoor Air Quality™ and minimum environmental health impact.

**✓ CLEANING WITHOUT TRANSFERRING PATHOGENS•**  
PCS Apply and Dry cleaning results demonstrated significantly better removal of pathogens and prevention of transfer of pathogens to adjacent surfaces. Previous QCT-3 studies demonstrated wiping high touch surfaces with pre moistened wipes or cloths transferred Murine norovirus and C.difficile.

Removal of hospital pathogens does not require high concentrations of chemicals with high alkali or acid pH values.

**✓ IT IS TIME MANUFACTURERS DISCLOSE ALL INGREDIENTS**  
Complete list of ingredients  
0.0250% Buffered Sodium Hypochlorite and Hypochlorous Acid.  
The following ingredients are present at concentrations less than 0.02% Sodium Hydroxide, Sodium Carbonates, Sodium Chloride, Acetic Acid.

**Disinfectant and detergent Residues Should Not Pollute and Linger in the environment adding to the pollutants that create Antimicrobial Resistant Bacteria.**

**Neutral PH PCS 250 Oxidizing Disinfectant/Disinfectant Cleaner**

**DIN 02314843**

Code	Description	Case Pack
#5908NPH-6	946 mL	6/cs
#5908NPH-2.5	2.5 L	4/cs.
#5908NPH-4	3.78 L	4/cs.

**Neutral PH PCS 250 Oxidizing Disinfectant/ Disinfectant Cleaner Wipe Kit**

Code	Description	Case Pack
#6048-6	70 container wipes 7" x 12" 500 mL container PCS 250 Oxidizing Disinfectant/ Disinfectant Cleaner	6/cs.



\*CLEANING WITHOUT TRANSFERRING INFECTIOUS DOSE OF PATHOGENS

## Cleaning to a Scientifically Validated Standard

Testing PCS Apply and Dry cleaning process with CREM CO labs newly developed third tier of Quantitative Carrier Test Method(QCT-3 )to asses decontamination of high touch environmental surfaces(HITES) with the incorporation of field –relevant wiping.

PCS Apply and Dry results demonstrated significantly better removal of pathogens and prevention of transfer of pathogens to adjacent surfaces . Previous QCT-3 studies demonstrated wiping high touch surfaces with pre moistened wipes or cloths transferred Murine norovirus and C.difficile spores to clean surfaces , this occurred with all major classes of disinfectants.

QCT-3 Field relevant laboratory testing data needed to be confirmed under actual use conditions in the patient care environment.PCS contracted NSF International to do microbial audits pre and post cleaning in three separate health care facilities. A large teaching facility in Michigan, a new teaching hospital and a community hospital in Montreal Quebec .

Microbial auditing of the environment pre and post cleaning provides a very accurate measurement of the effectiveness of hospital cleaning practices.

Previous studies have recommended that cleaning should reduce aerobic plate counts to below 2.5 Colony forming units (CFU) per square centimetre for cleaned surfaces.

However many professionals currently recommend that cleaned surfaces should have less than 1 colony forming unit per square centimetre after cleaning.

In all three facilities surfaces where sampled pre and post cleaning and two of the three hospitals in addition to aerobic plate counts samples were also analysed for presence of C.difficile spores.

Samples were taken in multiple rooms for multiple days with hospitals current cleaning process. Staff where then trained on how to clean using PCS Apply and Dry process. Testing pre and post cleaning were again taken in multiple rooms and days.

### PCS Apply and Dry Process

PCS low concentration, of non caustic, non toxic, neutral ph sodium hypochlorite solution Applied to surface by spray, pre moistened wiper or microfibre cloth and immediately wiped dry with PCS microfibre cloth.

Cleaning to a scientifically validated standard of less than 1 CFU per square centimetre on average is possible using PCS Apply and Dry process. Better cleaning equals fewer outbreaks. The use of disinfectants potent enough to kill spores like C. difficile should be limited to outbreaks and discharge cleaning of special pathogens, they are no longer needed for everyday cleaning of the health care environment.

### Cleaning to Protect Public Health.

#### Reports - Download PDF to access hyperlinks

- [Assessment of the Combined Activity of Spray and Wiping for Decontaminating Hard, Non-Porous Environmental Surfaces: Testing with Coronavirus 229E \(ATCC VR-740\)](#)
- [Assessment of the Combined Activity of Spray and Wiping for Decontaminating Hard, Non-Porous Environmental Surfaces: Testing with Healthcare-Associated Pathogens](#)
- [Assessment of the Combined Activity of Spray and Wiping for Decontaminating Hard, Non-Porous Environmental Surfaces: Testing with Mouse Norovirus \(MNV\) as a representative Healthcare- Associated Pathogen](#)
- [ACC Analysis of 146 samples C. difficile analysis of 72 post-cleaning samples](#)
- [ACC Analysis of 111 samples with NSF International](#)
- [ACC and Clostridium difficile Analysis of 195 total samples evaluating University Hospital's current Sporicidal Disinfection Procedure and PCS' Cleaning Process with NSF International Approved Hard Surface Disinfectants and Hand Sanitizers](#)

Vegetative Bacteria ( <i>S. aureus</i> and <i>S. marcescens</i> ) Average CFU per square centimetre							
Product	CFU/cm2			Percent		Average Percent	
	Control	AfterWiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	27,000	0	0	100	0	100	0
Apply & Dry Test 2	35,000	0	0	100	0	100	0

C. difficile spores Average CFU per square centimetre							
Product	CFU/cm2			Percent		Average Percent	
	Control	AfterWiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	27,000	3.57	0	99.99	0	99.95	0
Apply & Dry Test 2	9,240	8.15	0	99.91	0	99.95	0

Murine Norovirus Average PFU per square centimetre							
Product	PFU/cm2			Percent		Average Percent	
	Control	AfterWiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	4,333	0	0	100	0	100	0
Apply & Dry Test 2	18,386	0	0	100	0	100	0

Human Respiratory Coronavirus 229E (ATCC- VR-740)							
Product	Total PFU per platform			Percent		Average Percent	
	Control	Contaminated	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	13,778	0	0	100	0	100	0
Apply & Dry Test 2	127,777	0	0	100	0	100	0

Results		
Average hospital colony forming units (CFU) Pre and Post cleaning existing processes		
	Pre CFU	Post CFU
1. Community Hospital medical ward 60% isolation patients Daily cleaning with hydrogen peroxide disinfectant cleaner	6.33	3.18
2. Michigan Teaching Hospital daily sporicidal cleaning	10.9	4.61
3. New teaching hospital daily cleaning with Quaternary disinfectant cleaner	4.12	0.601

Results		
Average hospital colony forming units (CFU) Pre and Post cleaning PCS Apply and Wipe Dry Process		
	Pre CFU	Post CFU
1. Montreal Community Hospital	3.91	0.60
2. Michigan Teaching Hospital	10.9	1.53
3. New Teaching Hospital Montreal	7.84	0.263

	Pre CFU	Post CFU
<b>AVERAGE OF THE THREE HOSPITALS CURRENT CLEANING PROCESESS</b>	<b>5.01</b>	<b>2.797</b>
<b>AVERAGE OF THE THREE HOSPITALS PCS Apply and Dry Process</b>	<b>7.55</b>	<b>0.798</b>
No C. difficile spores where detected in any of the samples tested.		

## PCS QCT-3-9 Cleaning Process

Cleaning without transferring pathogens to cleaned surfaces.

Use to clean frequently touched surfaces. Apply to surface and wipe dry with microfibre cloth or other clean dry absorbent cloth.

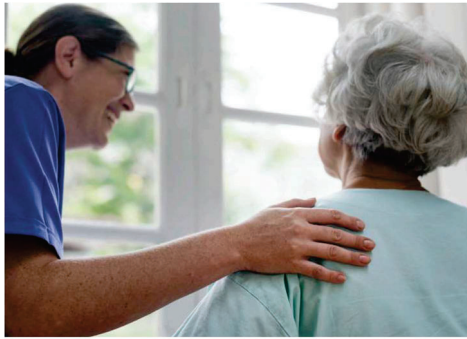
Wiping surfaces with pre-moistened disinfecting wipes or cloths removes bacteria, viruses and C. difficile spores but in the process some are transferred to cleaned surfaces.

Using PCS QCT-3 -9 Cleaning Process of apply and dry removes large numbers of pathogens without transferring to cleaned surfaces, including vegetative bacteria, norovirus and C. difficile spores.



### Health care

- Use to Clean frequently touched surfaces when staff, visitors or patients are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use



### Long term care

- Use to Clean frequently touched surfaces when staff, visitors or patients are present
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### Schools and public spaces

- Use to Clean frequently touched surfaces when staff, visitors or students are present
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- There are no hazards associated with this product in normal use



### Homeless shelters and daycares

- Use to Clean frequently touched surfaces when staff, visitors or homeless are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use

### International corporations serving the public

- Use to Clean frequently touched surfaces when staff, visitors or clients are present
- PCS 250 SDS section 11. Toxicological information
- There are no hazards associated with this product in normal use



### Home

- Use to Clean frequently touched surfaces in bathrooms , kitchens and frequently touched surfaces. Keep a separate bottle of PCS 250 with a PCS Hygienic microfibre cloth in Washrooms and kitchens .Just Spray and Wipe dry with PCS Hygienic microfibre cloth.
- Rinse cloth with warm water after use and place on top of PCS 250 to allow cloth to dry.
- There are no hazards associated with this product in normal use.

## Safety Data Sheet

### 11. Toxicological information

**Routes of exposure:** Eye, Skin contact, Inhalation, Ingestion.

#### Information on likely routes of exposure

**Ingestion:** May cause stomach distress, nausea or vomiting.

**Inhalation:** No adverse effects due to inhalation are expected.

**Skin contact:** No adverse effects due to skin contact are expected.

**Eye contact:** There was no ocular irritation observed in any treated eye during the study - OPPTS 870.2400 (1998)

**Symptoms related to the physical, chemical and toxicological characteristics:** There are no hazards associated with this product in normal use.



# PCS QCT -3-9 VALIDATED CLEANING PROCESS

**Reduces hospital pathogenic organic soil more effectively than most currently used hospital cleaning and disinfecting processes.**

## SAFE

- Neutral pH low concentration product is safer for equipment and staff.
- Endorsed and certified by the Envirosdesic™ Certification Program for Maximum Indoor Air Quality™ and minimum environmental health impact.
- PCS 250 SDS section 11. Toxicological information

## EFFECTIVE

- Cleaning to a scientifically validated standard.
- PCS validates its recommended environmental surface decontamination processes with CREM Co Labs newly developed third tier of the Quantitative Carrier Test Method (QCT-3) to assess decontamination of high-touch environmental surfaces (HITES) with the incorporation of field-relevant wiping.
- Maximize physical removal by wiping and use the minimum amount of chemical.

## ENVIRONMENTALLY RESPONSIBLE

- PCS Neutral pH solutions form equilibrium of 50% hypochlorous acid and sodium hypochlorite which are effective at very low concentrations.
- When combined with our validated wiping process health care facilities can reduce staff and environmental exposure of cleaning and disinfecting chemicals in many cases by 95%. This also reduces health care, institutions and most public facilities discharge of toxic chemicals into the environment through the release of waste water.
- Removal of hospital pathogens does not require high concentrations of chemicals with high alkali or acid pH values.
- Easy to use process that saves time.

## PCS QCT-3-9 VALIDATED CLEANING PROCESS

- Apply to surfaces to be cleaned, apply from cleanest to dirtiest.
- Take clean dry folded PCS microfibre or equivalent absorbent disposable cloth and wipe surfaces dry moving from cleanest surfaces to dirtiest.
- Suitable for use as instructed on commonly touched surfaces and equipment in health care and public spaces •

\*Remove gross organic soil prior to cleaning

Vegetative Bacteria ( <i>S. aureus</i> and <i>S. marcescens</i> ) Average CFU per square centimetre							
Product	CFU/cm2			Percent		Average Percent	
	Control	After Wiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	27,000	0	0	100	0	100	0
Apply & Dry Test 2	35,000	0	0	100	0		

<i>C. difficile</i> spores Average CFU per square centimetre							
Product	CFU/cm2			Percent		Average Percent	
	Control	After Wiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	27,000	3.57	0	99.99	0	99.95	0
Apply & Dry Test 2	9,240	8.15	0	99.91	0		

Murine Norovirus Average PFU per square centimetre							
Product	PFU/cm2			Percent		Average Percent	
	Control	After Wiping	Transfer	Reduction	Transfer	Reduction	Transfer
Apply & Dry Test 1	4,333	0	0	100	0	100	0
Apply & Dry Test 2	18,386	0	0	100	0		



## Cleaning with pre-moistened disinfecting wipes or cloths transfer bacteria, viruses and C. difficile spores to clean surfaces.



Pre-moistened disinfectant wipes or microfibre cloths are the most common method of cleaning in healthcare environments. Cleaning the areas around patients, noncritical patient care equipment and washrooms with pre-moistened wipes or microfibre cloths remove soil bacteria, viruses and C. difficile spores.

What is not common knowledge, is the process of wiping surfaces with pre-moistened wipe or cloth in addition to removing pathogens the process inherently transfers bacteria, viruses and C. difficile spores to surfaces being cleaned.

Many published papers have reported the transfer of Norovirus from wiping surfaces with pre-moistened cloths. PCS testing using CREM.Co Quantitative Carrier Test Method number three QCT-3 also demonstrated transferring viruses to clean surfaces by wiping with pre-moistened wipes or cloths

### Wiping with pre moistened wipes or microfibre cloths. PCS CREM Co Quantitative Carrier Test QCT-3 Murine Norovirus

Product Used	Transfer PFU/cm2
Saline T Detergent MF transfer of Murine Norovirus to clean surface	7.67
Saline T Detergent MF transfer of Murine Norovirus to clean surface	8.49
PCS NPH 250 MF transfer of Murine Norovirus to clean surface	9.34
PCS NPH 250 MF transfer of Murine Norovirus to clean surface	7.64
Hydrogen Peroxide 0.5% Wipe transfer of Murine Norovirus to clean surface	8.49

PCS testing using CREM.Co Quantitative Carrier Test Method number three QCT-3 in seven separate studies report the transfer of C. difficile spores to clean surfaces when wiped with pre-moistened disinfectant wipes or wiped with a pre-dampened microfibre cloth. All test were conducted with surfaces being wiped with two separate pre-moistened wipes or cloths.

### PCS CREM Co Quantitative Carrier Test QCT-3 C. difficile

Product Used	Transfer CFU/cm2
Saline T Detergent transfer of C. difficile to clean surfaces MF	296
PCS 7000 transfer of C. difficile to clean surfaces MF	0.31
Hydrogen Peroxide 1.4% Wipe transfer of C. difficile to clean surface	15.3
Quaternary Alcohol Wipe transfer of C. difficile to clean surface	161
PCS MicroClean transfer of C. difficile to clean surface MF	116
PCS MicroClean followed by NPH 250 transfer of C. difficile to clean surface MF	14.7
PCS NPH 250 transfer of C. difficile to clean surface MF	2.33

## PCS 250 Oxidizing Disinfectant/Disinfectant Cleaner

Kills Bacteria • Kills Viruses • Kills Fungi  
Active Ingredient: Sodium Hypochlorite - 0.025% w/w

Disinfectant/Disinfectant Cleaner for use on hard inanimate non-porous environmental surfaces in domestic, hospital and health care facilities, institutions, schools and hospitality industries, where organic soils may be present.

Use to clean frequently touched surfaces. Spray on surface and wipe dry with microfibre cloth or other clean dry absorbent cloth.

To clean and disinfect walls, tables, counter tops: Apply undiluted solution with a coarse trigger sprayer, mop or cloth to the pre-cleaned surface.

Allow the surface to remain wet for 10 minutes.

DIN: 02314843

**Kills Fungi - Assessment of PCS 250 as a Hard Surface Disinfectant against Fungi using AOAC Germicidal Spray Products as Disinfectants (GSPT): Testing against Trichophyton interdigitale<sup>1,2</sup>**

**Kills Viruses - Assessment of PCS 250 as a Hard Surface Disinfectant against Adenovirus using ASTM E1053, the Method to Determine the Virucidal Activity of Spray Disinfectants for Inanimate, Nonporous Environmental Surfaces<sup>1</sup>**

**Kills bacteria - Assessment of PCS 250 as a Hard Surface Disinfectant against Bacteria using AOAC Germicidal Spray Test (GSPT): Testing against Staphylococcus aureus and Pseudomonas aeruginosa**



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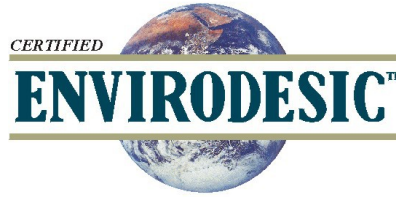


# Rethinking Hospital Cleaning Methods and Materials

The guiding principle is to remove germs rather than kill them and when necessary, use the smallest amount of the mildest disinfectant.

*By J. Darrel Hicks, Contributing Writer*





## PCS NPH Products and Microfibre Wiping Process

### CERTIFICATION SUMMARY

Rev13Sep17-1050

#### **CERTIFICATION STATEMENT**

PCS Stabilized Neutral-pH Sodium Hypochlorite/Hypochlorous Acid (NPH) products, as formulated by Michael Rochon of Cogent Environmental Solutions, Mulmur, Ontario, and as manufactured by Process Cleaning Solutions Ltd. (PCS), along with the QCT-3 validated PCS Microfibre Wiping Process, are together certified under the *Envirodesic™* Certification Program as suitable cleaners and a suitable cleaning process where maximum pathogen removal is required, and where Maximum Indoor Air Quality™ and minimization of health risks is preferred. This certification covers PCS Spray and Wipe Hand and Surface Cleaner, PCS 250 Oxidizing Disinfectant/Disinfectant Cleaner (New Neutral pH Formulation), NPH 160 Neutral pH Oxidizing Spray Cleaner Disinfectant and No Rinse Sanitizer, PCS 7000 Oxidizing Disinfectant (diluted to neutral pH with water treated with PCS Neutralizing solution), PCS Microfibre Cloths and similar PCS NPH products yet to be formulated. The certification also covers other forms of packaging of the various PCS NPH formulas, as manufactured by PCS, whether for private label or for specialty applications, provided that the formulation of the concentrates involved are identical to that of PCS NPH Products herein certified.

#### **SCIENTIFIC BASIS FOR CERTIFICATION**

*Envirodesic™* Certification for PCS NPH Products, as applied using the PCS Microfibre Wiping Process, is based primarily on evidence provided to *Envirodesic™* by Cogent, in which these products and their associated environmental surface decontamination process have been validated using a newly developed third tier of the Quantitative Carrier Test Method (QCT-3) created by CREM Co Labs to assess decontamination of high-touch environmental surfaces (HITES) by field-relevant wiping. There are three primary properties of the PCS NPH Products and Microfibre Wiping Process that merit their inclusion under *Envirodesic™* Certification:

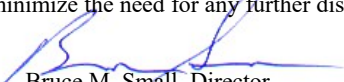
1. Through the use of their microfibre wiping procedure and through application of neutral-pH hypochlorous acid, they significantly reduce organic surface contamination. For example, testing completed in September 2017 by CREM Co. Labs using the QCT-3 procedure shows that in a mixed vegetative bacteria (*Staph. aureus* and *S. choleraesuis*) and *C. difficile* spore environment, Neutral pH PCS 250 Oxidizing Disinfectant Cleaner resulted in 100% reduction in vegetative bacteria with zero transfer to clean surfaces and reduction of *C. difficile* spores to less than 1 cfu/cm<sup>2</sup> after wiping, with less than 1 cfu/cm<sup>2</sup> transferred to clean surfaces. Their effectiveness in reducing surface contamination can also be verified in situ by cleaning staff, with the use of ATP monitors.
2. They drastically reduce the amount of chemical intervention, along with its associated environmental, occupational and occupant health risk from toxicity (e.g. from concentrated hypochlorite or quaternary ammonia compounds) that is required to clean environmental surfaces, as well as reduce potential damage to equipment and surfaces. By doing so they represent a significant step towards reducing and eliminating the problematic use of disinfectants and disinfectant cleaners.
3. Cogent Environmental and PCS are notably advanced in terms of full public disclosure of ingredients and their use of mostly naturally occurring inorganic ingredients (deionized water, acetic acid, NaOH, soda ash dense food grade, sodium chloride, sodium hypochlorite and sodium bicarbonate USP#1 powder). The products could theoretically be produced for hundreds of years without causing significant resource depletion. As such, the products are a significant advancement towards sustainable cleaning.

#### **ADDITIONAL SUBJECTIVE INFORMATION REGARDING ENVIRONMENTAL HYPERSENSITIVITY**

Because these products and methods do not rely on leaving residues but rather on efficient removal of biofilms, it is our opinion that they are generally suitable for use in installations occupied by and/or designed for environmentally hypersensitive persons. However, some of the products do have a mild bleach odour and it has not yet been determined whether the products are suitable for direct use by environmentally hypersensitive persons. Hypersensitive individuals are cautioned to test cleaners for compatibility with their own sensitivities.

#### **SUITABILITY FOR USE IN PUBLIC BUILDINGS INCLUDING HEALTH CARE AND EDUCATIONAL INSTITUTIONS**

PCS NPH Products, as applied with the PCS Microfibre Wiping Process, are highly suitable for use in public buildings, including hospitals, nursing homes, schools, government buildings, etc. The easiest way to lower surface contamination is by mechanical soil removal, and the easiest way to lower indoor air pollution immediately is to convert to low-emission cleaning products. PCS NPH and the Microfibre Wiping Process together provide a competent first cleaning step of removal of organic debris that will minimize the need for any further disinfecting of surfaces.



Bruce M. Small, Director  
*Envirodesic™* Certification Program

***Envirodesic™* Certification is an ongoing process whereby additional data and consumer experience is added to a product file as it becomes available. Persons wishing to ask questions about the certification criteria or the suitability of the product for different populations are invited to contact the *Envirodesic™* Certification Program at our office below.**



# Mechanical Wiping Increases the Efficacy of Liquid Disinfectants on SARS-CoV-2

Angela Sloan, Samantha B. Kasloff and Todd Cutts\*

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High-touch environmental surfaces are acknowledged as potential sources of pathogen transmission, particularly in health care settings where infectious agents may be readily abundant. Methods of disinfecting these surfaces often include direct application of a chemical disinfectant or simply wiping the surface with a disinfectant pre-soaked wipe (DPW). In this study, we examine the ability of four disinfectants, ethanol (EtOH), sodium hypochlorite (NaOCl), chlorine dioxide (ClO<sub>2</sub>), and potassium monopersulfate (KMPS), to inactivate SARS-CoV-2 on a hard, non-porous surface, assessing the effects of concentration and contact time. The efficacy of DPWs to decontaminate carriers spiked with SARS-CoV-2, as well as the transferability of the virus from used DPWs to clean surfaces, is also assessed. Stainless steel carriers inoculated with approximately 6 logs of SARS-CoV-2 prepared in a soil load were disinfected within 5 min through exposure to 66.5% EtOH, 0.5% NaOCl, and 1% KMPS. The addition of mechanical wiping using DPWs impregnated with these biocides rendered the virus inactive almost immediately, with no viral transfer from the used DPW to adjacent surfaces. Carriers treated with 100 ppm of ClO<sub>2</sub> showed a significant amount of viable virus remaining after 10 min of biocide exposure, while the virus was only completely inactivated after 10 min of treatment with 500 ppm of ClO<sub>2</sub>. Wiping SARS-CoV-2-spiked carriers with DPWs containing either concentration of ClO<sub>2</sub> for 5 s left significant amounts of viable virus on the carriers. Furthermore, higher titers of infectious virus retained on the ClO<sub>2</sub>-infused DPWs were transferred to uninoculated carriers immediately after wiping. Overall, 66.5% EtOH, 0.5% NaOCl, and 1% KMPS appear to be highly effective biocidal agents against SARS-CoV-2, while ClO<sub>2</sub> formulations are much less efficacious.

**Keywords:** SARS-CoV-2, biocide, disinfection, fomites, QCT-2, wiping.

**Abbreviations:** ClO<sub>2</sub>, chlorine dioxide; DPW, disinfectant pre-soaked wipe; EtOH, ethanol; HITES, high-touch environmental surfaces; KMPS, potassium monopersulfate; NaOCl, sodium hypochlorite.



## Surfactants can cause Resistance

Reducing the development of antibiotic resistant bacterial populations is no longer just an issue for hospitals. We all need to do what we can, because the same conditions that promote resistance operate not only in hospitals but in other environments as well.

Microbiology 2023

[Biological and synthetic surfactant exposure increases antimicrobial gene occurrence in a freshwater mixed microbial biofilm environment](#)

Int. J. Environ. Res. Public Health 2023,

[Organic Compounds and Antibiotic-Resistant Bacteria Behavior in Greywater Treated by a Constructed Wetland](#)

Heliyon (2023)

[Direct Environmental concentrations of surfactants as a trigger for climax of horizontal gene transfer of antibiotic resistance](#)

Water Research Volume 236, 1 June 2023, 119944

[Direct The structure of biodegradable surfactants shaped the microbial community, antimicrobial resistance, and potential for horizontal gene transfer](#)

Environmental Science & Technology 2023 57 (20), 7645-7665 DOI: 10.1021/acs.est.2c08244

[Quaternary Ammonium Compounds: A Chemical Class of Emerging Concern](#)

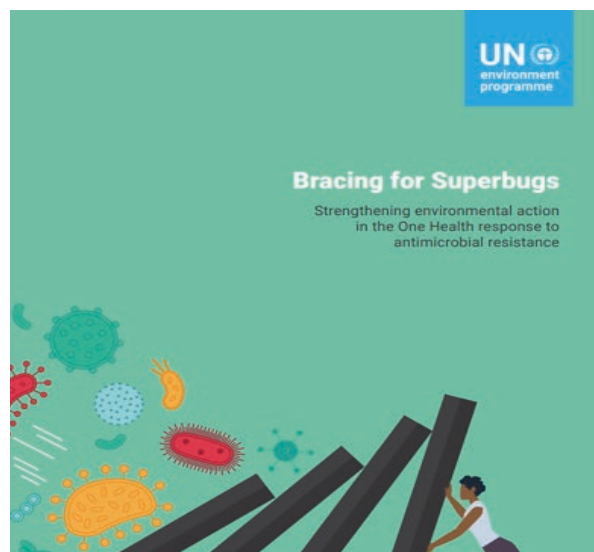
Policy Recommendations - Immediately address the known threat of antimicrobial resistance. The medical field recommends that antibiotics be prescribed only when necessary and educate the public about proper use. Similar efforts to eliminate non-essential uses of antimicrobial QACs in consumer products are warranted. An example would be product labeling requirements such as

“To reduce the public health threat of antimicrobial resistance, use this product only when disinfection is necessary and not for general cleaning”.

Manufacturers should also be discouraged from implying a health benefit of QAC use in coatings durable product treatments without supporting evidence that these treatments are effective in reducing the transmission of infectious diseases.

### [2023 United Nations Environment Programme](#)

The environmental dimensions of AMR include pollution from hospital and community wastewater, effluent from pharmaceutical production, run-off originating from plant and animal agriculture and other forms of waste and releases. These matrices may contain not only resistant microorganisms, but also antimicrobials, various pharmaceuticals, microplastics, metals and other chemicals, which all increase the risk of AMR in the environment. Polluted waterways, particularly those that have been polluted for some time, are likely to harbour microorganisms that increase AMR development and distribution in the environment. With increasing pollution and lack of management of sources of pollution, combined with AMR in clinical and hospital settings and agriculture, risks are increasing.







Fortunately, new cleaning strategies involving detergent free cleaning with safer, more dilute forms of PCS Stabilized Neutral pH Hypochlorous acid and sodium hypochlorite. Cleaning Without Harming.



**Neutral pH PCS 250 Oxidizing disinfectant Cleaner. Apply and Dry Surface Cleaning without Harming. DIN :02314843 PCS 1000 Plus Oxidizing Disinfectant Cleaner DIN :02521431**

- Category 4 Hospital Grade Disinfectants
- Meaning the label and SDS sheets do not require
- Warning or Caution Symbols
- Oxidizing cleaner
- Oxidizing hospital grade disinfectant
- Oxidizing broad spectrum virucide
- Apply and Dry Cleaning with PCS 250 Oxidizing disinfectant.
- Disinfect with PCS 1000 Plus Oxidizing Disinfectant Cleaner

**No need to use disinfectants that are more harmful and contain Synthetic detergent surfactants that deposit residues in the environment that contribute to the creation of Antibiotic Resistant Pathogens.**

**Right to Know**

- Chemical Name CAS#
- Water 7732-18-5
- Sodium Hypochlorite 7681-52-9
- Acetic Acid 64-19-17
- Sodium Hydroxide 1310-73-2
- Sodium Bicarbonate 144-19-8
- Sodium Carbonate 497-19-8
- Sodium Chloride 7647-14-5

We offer the potential of combating the bacterial resistance dilemma. With this cleaning method, the bulk of the pathogenic bacteria problem is solved by physical removal during efficient Cleaning Without Harming. In most commercial and institutional and health care public settings cleaning is sufficient to protect public health.

In healthcare facilities or when recommended by Public Health the remaining microbial population is oxidized with our PCS 1000 Plus Oxidizing Disinfectant Cleaner containing both Hypochlorous Acid and Sodium Hypochlorite. PCS process leaves no lingering contaminants on surfaces or in our waste water thereby avoiding the development of resistant bacterial strains.

PCS products contain only naturally occurring ingredients, free of any petroleum-based ingredients, detergent surfactants, phosphates and volatiles. Approximately 15 per cent of the total population has increased sensitivities to even very low levels of chemical exposures. Neutral pH PCS 250 Oxidizing Disinfectant Cleaner has been independently reviewed and certified by Envirosdesic for use by and around hypersensitive individuals.

The company also provides Complete Ingredient Disclosure. The company supports the safe use of Hypochlorous Acid because of it's safe potent oxidizing power and rapid decomposition, which minimizes the potential for the development of bacterial resistance.



Scan to learn more

# Environmental cleaning to prevent hospital-acquired infections on non-intensive care units: a pragmatic, single-centre, cluster randomized controlled, crossover trial comparing soap-based, disinfection and probiotic cleaning



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## Summary

**Background** The impact of environmental hygiene on the occurrence of hospital-acquired infections (HAIs) remains a subject of debate. We determined the effect of three different surface-cleaning strategies on the incidence of HAIs.

**Methods** Between June 2017 and August 2018 we conducted a pragmatic, cluster-randomized controlled crossover trial at 18 non-ICU wards in the university hospital of Berlin, Germany. Surfaces in patient rooms on the study wards were routinely cleaned using one of three agents: Soap-based (reference), disinfectant and probiotic. Each strategy was used on each ward for four consecutive months (4m-4m-4m). There was a one-month wash-in period at the beginning of the study and after each change in strategy. The order of strategies used was randomized for each ward. Primary outcome was the incidence of HAIs. The trial was registered with the German Clinical Trials Register, DRKS00012675.

**Findings** 13,896 admitted patients met the inclusion criteria, including 4708 in the soap-based (reference) arm, 4535 in the disinfectant arm and 4653 in the probiotic arm. In the reference group, the incidence density of HAIs was 2.31 per 1000 exposure days. The incidence density was similar in the disinfectant arm 2.21 cases per 1000 exposure days (IRR 0.95; 95% CI 0.69–1.31;  $p = 0.953$ ) and the probiotic arm 2.21 cases per 1000 exposure days (IRR 0.96; 95% CI 0.69–1.32;  $p = 0.955$ ).

**Interpretation** In non-ICU wards, routine surface disinfection proved not superior to soap-based or probiotic cleaning in terms of HAI prevention. Thus, probiotic cleaning could be an interesting alternative, especially in terms of environmental protection.

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**Keywords:** Hospital-acquired infection; Multidrug-resistant pathogen; Environmental cleaning; Probiotic; Randomized-controlled trial; Environmental hygiene; MRSA; VRE; Multidrug-resistant Gram-negative

## Introduction

Environmental cleaning is considered an important pillar of hospital infection prevention and control.<sup>1–4</sup> Hospital surfaces are contaminated by patients and hospital staff and represent the microbiome of their

users.<sup>5,6</sup> This includes potentially harmful pathogens and multidrug-resistant organisms (MDRO). Therefore, routine daily cleaning of frequently touched surfaces in patient rooms and in the hospital in general is a standard procedure performed to prevent the transmission

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