

Cleaning for health, not theatre



Dorothy Wigmore
Occupational health specialist

Presented at OHCOW's Occ-COVID
series, September 24, 2021



CLEANER, SANITIZER & DISINFECTANT



What are the differences?

Cleaner: Soap/detergent and water + friction remove germs, dirt, and impurities from surfaces or objects. **Cleaning must be done before** sanitising or disinfecting.

Sanitiser: Reduces **bacteria** on surfaces to levels considered safe for public health, used as the label directs. Less effective than a disinfectant. A hand sanitiser is really a disinfectant.

Disinfectant: Destroys almost all (99.9999%) infectious germs on a surface, including **viruses**. No effect on dirt, soil, or dust. Must be used at the specific **dilution** and left **glistening wet** for the full **dwell or contact time**.

Regulated as a drug in Canada (no WHMIS data sheets, labels) and pesticide in the US (info on labels)

You can't disinfect a dirty surface!

“Sanitising” is not disinfecting – yet that’s the message we get

1. Increased sanitization processes have been in full force since the beginning of the pandemic. But we know the risk of surface transmission is relatively low, so why do we carry on with “hygiene theatre”?

Globe and Mail, 2021

Business

Safe Clean Canada’s no-touch disinfection services can fully sanitize any business environment safely, with no chemicals, no touching, and no human error.

LEARN MORE

PAUL DAVIS
RECOVER • RECONSTRUCT • RESTORE

Exceptional Cleaning & Sanitizing

Using a variety of disinfectants, Paul Davis is able to clean & decontaminate unique environments. Our patented process cleans and disinfects hard to reach areas and is compatible with all types of sensitive equipment. Pairing our cleaning & restoration technology with the Electrostatic Charged application, creates a revolutionary and thorough decontamination process.

COVID-19 IN MANITOBA

Archived since March 2020

COVID-19 / Restoring / Guidance to Retail Food and Grocery Stores / last updated July 27, 2020 / Archived

Guidance to Retail Food and Grocery Stores – Spring 2020

NEW Last updated: July 27, 2020

***Sanitize** high-touch surfaces such as pay stations, bagging areas and carts or hand baskets between each customer and use and encourage tap payment or PIN pad use.*

(https://www.gov.mb.ca/asset_library/en/covid/archives/restoring/grocery-stores.pdf)

These days, it's still *"clean and disinfect"*

Safe at School Photo Gallery

St. Michael's College School is committed to keeping students, staff, parents, and visitors safe while on campus. This involves preventing and reducing both individual and community exposure to or spread of infectious diseases like the coronavirus.

Take a look at some of the new health and safety features we are setting up ahead of September 2020.



Sanitizing foggers being used at SMCS. Sanitizing liquid is used in all hospitals. It takes about 90 seconds to clean a surface, no additional wiping is needed after.

- ☐ Supplies and equipment should be accessible and located in a way that promotes physical distancing.
- ☐ Use signs and overhead announcements that encourage people to clean their hands often and use proper cough and sneeze etiquette.
- ☐ Where possible, reduce the number of common surfaces and objects that need to be touched (for example, prop doors open, use no-touch waste containers).
- ☐ Encourage people to bring their own supplies from home to avoid having to use shared equipment or items.
- ☐ Develop and put into effect routine **cleaning and disinfecting** protocols that focus on high-touch surfaces and objects, and shared equipment and items.
- ☐ If shared equipment or items can't be properly **cleaned and disinfected** before and after use, consider removing or restricting access to them.
- ☐ Use **approved disinfectant products** and follow manufacturer's instructions for cleaning and disinfection. Be aware of **potential health risks** when using hard-surface disinfectants, especially in settings accessed by children and youth.

<https://health.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/reducing-covid-19-risk-community-settings-tool-operators.html>

But we know that disinfectants are **mis-used and over-used**. They are often prescribed by public health and infectious disease “experts” without considering what else might work, product hazards or consequences.

In this pandemic, calls to poison control centres have sky-rocketed. So have **false claims** about foggers, etc.



GREATER ESSEX COUNTY DISTRICT SCHOOL BOARD

BUILDING TOMORROW TOGETHER
EVERY LEARNER, EVERY DAY

Our Board's cleaning and disinfecting products include "Quats" based products such as Virex, which are very common throughout businesses and health care settings in Canada. They are products approved by the Federal Government, are on the Health Canada COVID-19 list of disinfectants and are also referenced in the WECHU's "Safe Return to School Tool Kit". <https://www.wechu.org/sites/default/files/edit-resource/em-safe-return-school-toolkit/sept-8-safe-return-school-toolkit.pdf>

The GECDSDSB applies and utilizes such cleaners and disinfectants according to the manufacturer and supplier specifications and dilution factors. The Board trains all staff on WHMIS regularly to ensure all products in schools are used safely.

Our most recent consultation with the WECHU was Friday September 25, 2020, in which they noted "since this is an approved product by Health Canada with a DIN, there is no concern from the health unit regarding its use in workplace".

<https://www.publicboard.ca/News/ourstories/CleaningandDisinfectinginSchools/Pages/default.aspx#/=>

WINDSOR STAR

Parents express health concerns over school disinfectant use during pandemic

Mary Caton

2020-10-09



"Our administration did outline the ways this was used and it's **used totally safely within Health Canada guidelines** and the **health unit also** commented on the fact that they **believe that it's being used correctly and it's appropriate,**" says Cipkar.

“Cleaning with products containing soap or detergent reduces germs on surfaces by removing contaminants and may also weaken or damage some of the virus particles, which decreases risk of infection from surfaces,” the CDC [added in an update on its website](#). “When no people with confirmed or suspected COVID-19 are known to have been in a space, cleaning once a day is usually enough to sufficiently remove virus that may be on surfaces and help maintain a healthy facility.”

Fortune, April 5, 2021;

<https://www.cdc.gov/coronavirus/2019-ncov/more/science-and-research/surface-transmission.html>



When no people with confirmed or suspected COVID-19 are known to have been in a space, [cleaning once a day is usually enough](#) to sufficiently remove virus that may be on surfaces and help maintain a healthy facility.

Disinfecting (using [U.S. Environmental Protection Agency \(EPA\)'s List N disinfectants](#)) kills any remaining germs on surfaces, which further reduces any risk of spreading infection.

CDC, June 15, 2021

IDEAS

Hygiene Theater Is a Huge Waste of Time

People are power scrubbing their way to a false sense of security.

JULY 27, 2020

July 27, 2020

[Derek Thompson](#)

Staff writer at The Atlantic

"This is not a significant risk," .. "Not even a measurable risk."

Why it may be harder to catch COVID-19 from surfaces than we first thought (July 11, 2020)

Emanuel Goldman, Professor of Microbiology, Biochemistry and Molecular Genetics, Rutgers University

<https://www.cbc.ca/news/health/coronavirus-surfaces-groceries-packages-playgrounds-1.5645602>

Comically excessive scrubbing of surfaces not doing a whole lot of good: experts



<https://www.cp24.com/news/> August 12, 2020



Still wiping your groceries: Is it 'hygiene theatre,' a reassuring ritual, or is there a (low) risk of COVID?

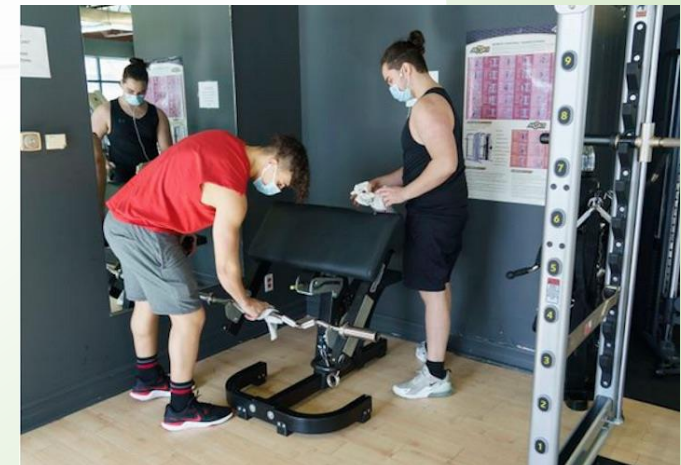


By Urbi Khan Staff Reporter
Sun., March 14, 2021 | 6 min. read

Article was updated Mar. 15, 2021

Why it's time to stop wiping down groceries and other COVID-19 cleaning measures that don't reduce transmission risk

SERENA MAROTTA
PUBLISHED MAY 25, 2021



Cleaners and disinfectants are linked to many health hazards



Short-term effects include:

- irritating, itchy or burning **eyes**;
- **skin** rashes, allergies and burns;
- **dizziness** and **headaches**;
- **nose bleeds**; and
- sore **throat**, coughing, wheezing, **shortness of breath**.

Studies show that -- depending on the chemical(s) ingredients can:

- ☐ cause new cases of **asthma**, trigger attacks
- ☐ harm the **brain, nervous system, reproductive organs, kidneys and liver**;
- ☐ cause breathing problems and illnesses
- ☐ disrupt/act like hormones (**endocrine disruptors**)
- ☐ lead to **cancer**
- ☐ be linked to **cardiovascular** problems.

11% of the California Work-Related Asthma Prevention Program's cases linked their asthma to cleaning products. Of these cases:

20%



1 In 5
worked as
a cleaner.

80%



4 of 5 of workers did not clean but were around
during cleaning or after cleaning just happened.

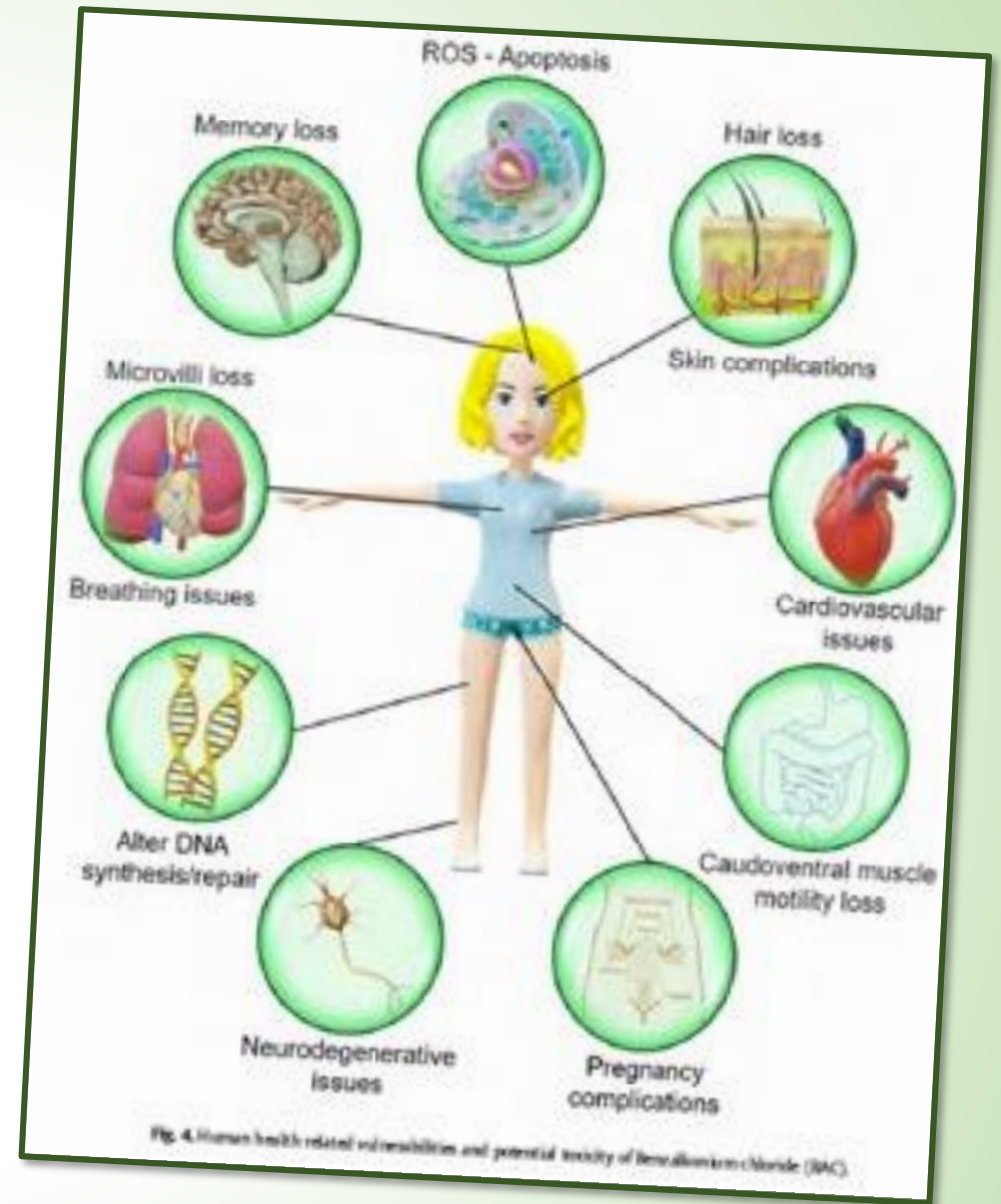
Quats/QACs are everywhere

Found in

cleaning products, disinfectants, “anti-bacterial” hand soap, eye drops, and more



- ❑ quaternary ammonium compounds are most common
- ❑ like bleach, are asthmagens, and have many other health effects
- ❑ the “smell” or perfume likely is toxic too
- ❑ still Health Canada/EPA approved

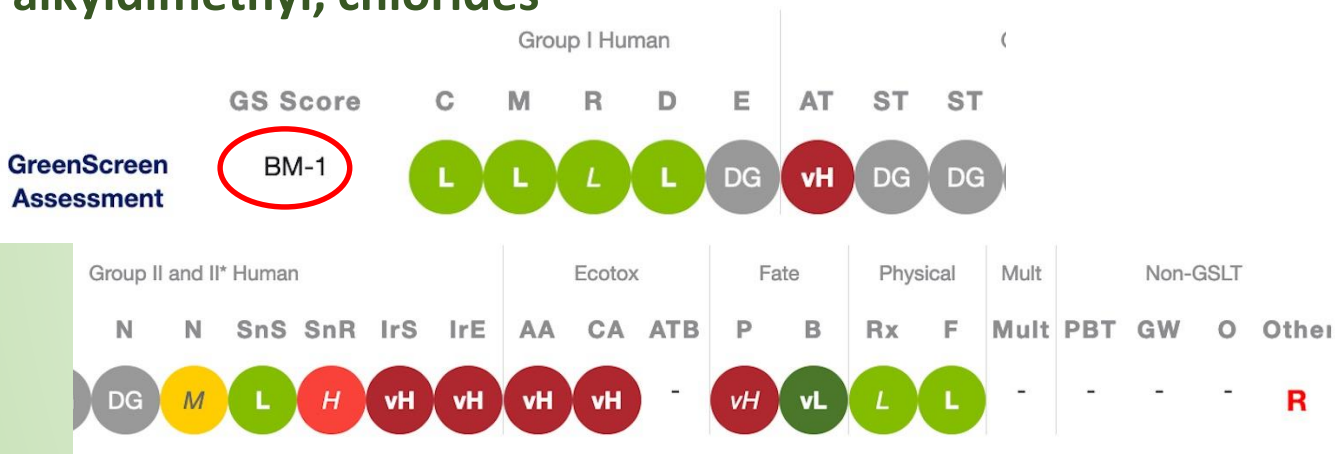


Bilal, M & Iqbal, H.M.N. (2019) “An insight into toxicity and human-health-related adverse consequences of cosmeceuticals — A review”, *Science of the Total Environment*, 670: 555–568.

Pharos

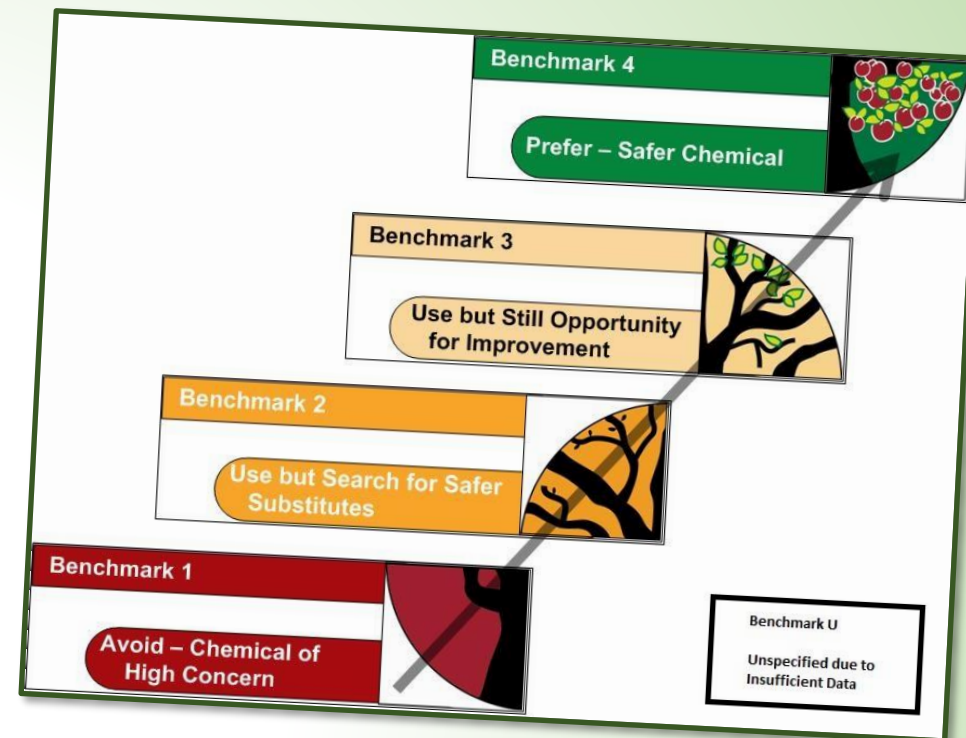
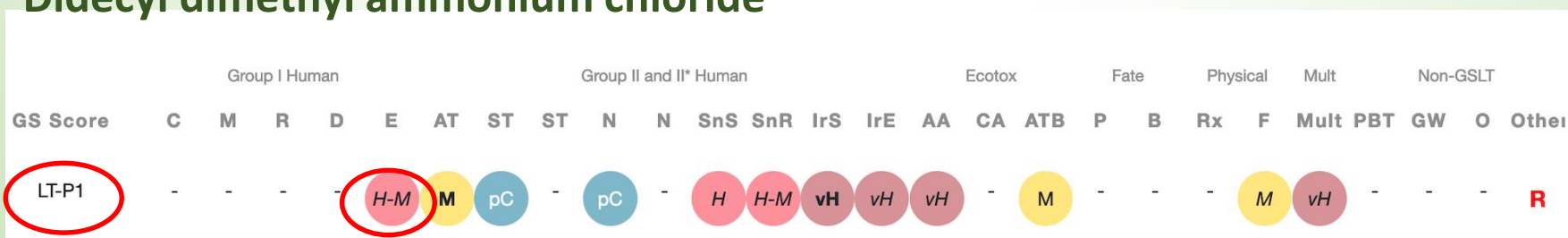
68424-85-1

Quaternary ammonium compounds, benzyl-C12-16-alkyldimethyl, chlorides



7173-51-5

Didecyl dimethyl ammonium chloride



<https://www.greenscreenchemicals.org>

Biomonitoring California Scientific Guidance Panel Meeting, March 2020 -- quats added as designated chemical

*The widespread use of quats coupled with the observations that they showed up in human samples and findings of potential toxicity in animals and cells has pushed some researchers to scrutinize these chemicals further. On March 4, after hearing Hrubec and Xu present their research and Hostetler's counter-arguments, a **panel of nine scientists voted unanimously to place quats in the Biomonitoring California program.***

“Do we know enough about the safety of quat disinfectants?” XiaoZhi Lim, *C&EN*

<https://cen.acs.org/safety/consumer-safety/know-enough-safety-quat-disinfectants/98/i30>



<https://biomonitoring.ca.gov/events/biomonitoring-california-scientific-guidance-panel-meeting-march-2020>

https://biomonitoring.ca.gov/sites/default/files/downloads/DesignatedChemicalsList_June2021.pdf



What's informed substitution?

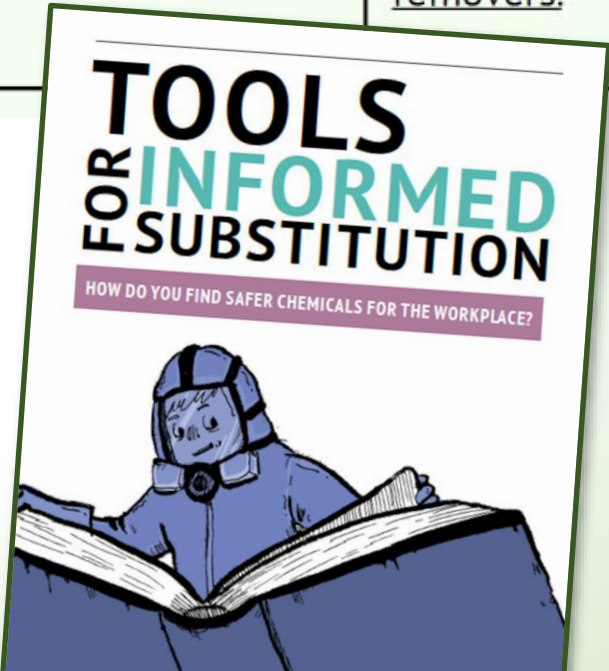
- ❑ goes beyond right to know to action
- ❑ use something that's known to be less toxic or non-toxic – a different ingredient, a different method/tool
- ❑ required in some OHS laws: BC, Manitoba, Québec, federal

The principles for applying it are:

- ✓ prevent people getting sick or hurt by hazards
- ✓ prefer precaution (i.e., better safe than sorry) rather than waiting for something to happen
- ✓ when we find hazards, look for solutions that eliminate the problem, not ones that just limit the harm
- ✓ answers the question: *Is it necessary?*



PRODUCT	MANUFACTURER/ SUPPLIER	SCREENING RESULT (PHAROS)	HAZARD(S)	SAFER SUBSTITUTES/ALTERNATIVES		
				ECOLOGO	GREEN SEAL	OTHERS
INO Graffiti Remover	INO Solutions	GreenScreen Benchmark 1 (which means avoid as this is a chemical of high concern).	Five other ingredients are LT-1 (probable GreenScreen Benchmark 1) Five are on the IARC cancer list (1A, 2A, 2B). Other effects are reproductive and developmental, neurotoxicity, skin irritation, water toxicity.	<u>CG310 Green Graffiti Remover</u> Ecologo has <u>other graffiti removers</u> . 	<u>Ecologic E49 Graffiti Remover</u> (and it's also a DfE Safer Choice) 	<u>SF Approved</u> has useful information about choosing graffiti removers.



What are the benefits of informed substitution?

DATE: _____

TIME: _____ (AM/PM)

WORK AREA: _____

WHO DID THIS AUDIT? _____

THE SYMBOLS

(Y) = Yes; the situation is fine now

(NI) = Needs Improvement; the situation is average so take action to improve it; second level priority for informed substitution

(No) = No; this is an unsatisfactory situation, and may be harmful; priority for substitution and/or other action

A. Documentation (review all the documents with information, including all reports of injuries/illnesses)

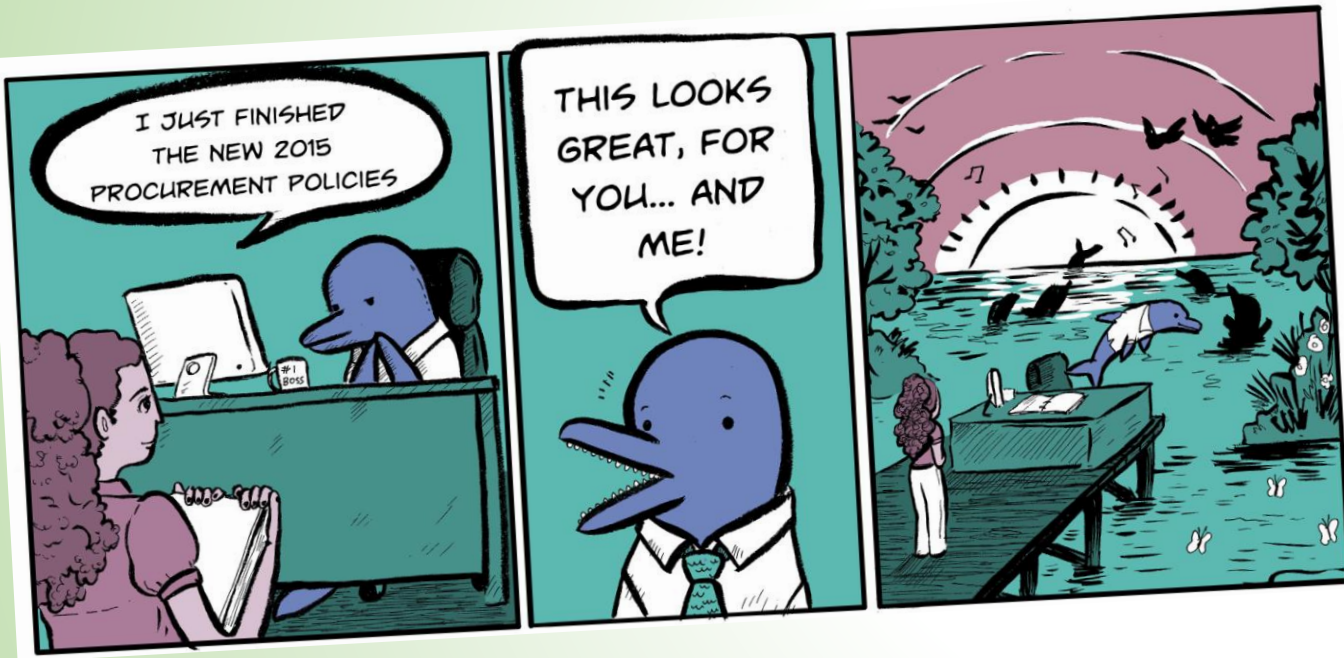
TOPIC	IS THE SITUATION GOOD?	IF THE SITUATION IS NOT GOOD (Y), WHAT CAN BE DONE TO IMPROVE IT RIGHT AWAY?	BY WHOM?	BY WHEN?	FOLLOW-UP: WHAT'S BEEN DONE?
Are the labels and SDSs up-to-date?	(Y) (NI) (N)				
Is there a process to make sure that happens?	(Y) (NI) (N)				
Is the inventory up-to-date?	(Y) (NI) (N)				
Is there a process to make sure that happens?	(Y) (NI) (N)				
Is the procurement policy included in the health and safety programme?	(Y) (NI) (N)				

73 | Tools For Safer Substitutes: Section 6

Keeping the workplace healthy and safe.
How do you implement informed substitution?

- fewer occupational health hazards for workers, unions and employers to deal with
- less harm to workers, their families, and others in the workplace (i.e., fewer illnesses, diseases, incidents)
- healthier workers, which can show up as less sick time or absenteeism
- fewer hazards to the outside environment and communities
- fewer costs for workers compensation, replacing absent workers, re-training new workers, accommodating injured ones, or responding to environmental issues
- improved practices within the organization/company.

What are best practices for a green procurement policy?



- ✓ reference third-party ecolabel standards
- ✓ designate staff to manage the program
- ✓ allocate a budget
- ✓ link to the health and safety committee
- ✓ include the policy in the health and safety programme
- ✓ include benchmarks and reporting requirements (including regular checks for compliance).

Less toxic disinfectants – what do others do?



Safer Disinfectant Options

Ethanol, isopropanol (isopropyl alcohol)
Hydrogen Peroxide
L-Lactic Acid, Citric Acid

The EPA Design for the Environment criteria for disinfectants/sanitizers is used for defining safer chemicals. "Peracetic acid is sold in solution as a mixture with acetic acid and hydrogen peroxide to maintain its stability, but is highly corrosive and exposure to it can severely irritate the eyes, skin and respiratory system." Peracetic acid is typically sold in concentrations of 1 to 5 percent and is diluted before use in food and healthcare industries.² Try to avoid products containing peracetic acid.

https://osha.washington.edu/sites/default/files/documents/FactSheet_Cleaning_Final_UWDEOHS_0.pdf



*Products must be EPA registered as disinfectants or hard surface sanitizers, and contain only the following active ingredients: **Hydrogen peroxide, citric acid, lactic acid, or caprylic acid.** Products must not contain **quaternary ammonium compounds** or **alkylphenl ethoxylates**. Concentrated products must be adapted for use in a closed-loop dilution system.*

<https://www.sfapproved.org/disinfectants>

*Cleaning for Healthier Schools–Infection Control Handbook
(Informed Green Solutions; prepared for TURI, 2010 and 2020)*

	AVOID		USE WITH CAUTION				PREFERRED		
Disinfectant Characteristics	Bleach - sodium hypochlorite	Quaternary Ammonium Compounds – QACs or Quats	Thymol** (e.g. Benefect®)	Hydrogen Peroxide - H2O2 and Peroxyacetic Acid - PAA (e.g. Oxycide Daily Disinfectant Cleaner)	Hypochlorous Acid*** (e.g. Brutabs /PurTab/CDiff ViroTab Tablets)	Hypochlorous Acid*** (e.g. Force of Nature, Envirocleanse A)	Hydrogen Peroxide (e.g. Oxivir TB)	Ethanol (e.g. Purell Professional Surface Disinfectant)	Citric Acid (e.g. CleanCide and Betco GE Fight Bac- same product privately labeled)

<https://www.informedgreen solutions.org/cleaning-for-healthier-schools-infection-control-handbook>

Search the Health Canada database

<https://www.canada.ca/en/health-canada/services/drugs-health-products/disinfectants/covid-19/list.html>

Identification Number (Din) ↑↓	Product name ↑↓	Company ↑↓	Active ingredient(s) ↑↓	Product form ↑↓	against SARS-CoV-2 (COVID) ↑↓	Approved use areas ↑↓
02436795	Prevail Animal Premise Disinfectant Cleaner & Deodorizer Ready To Use	Virox Technologies Inc.	Hydrogen Peroxide	Liquid	Indirect	Barn, Food Premises, Hospital/Hc Facilities, Institutional/Industrial
02436809	Prevail Animal Premise Disinfectant Cleaner & Deodorizer Concentrate	Virox Technologies Inc.	Hydrogen Peroxide	Liquid	Indirect	Barn, Food Premises, Hospital/Hc Facilities, Institutional/Industrial
02441039	D7	Decon7 Systems Llc	Benzalkonium Chloride;Hydrogen Peroxide	Kit; Solution	Indirect	Hospital, Food Premises, Barn
02446812	Maguard 5626cn	Mason Chemical Company	Hydrogen Peroxide; Peracetic Acid; Acetic Acid	Solution	Indirect	Domestic, Industrial, Hospital, Food Premises, Barn
02447592	Rescue Gel Sporicidal	Diversey Inc.	Hydrogen Peroxide	Gel	Indirect	Domestic, Industrial

What else can be used to disinfect?

1. Aqueous vapour/super-heated dry steam devices – also cleans



Superheated Steam Vapor Devices

- They are not conventional "steam" cleaners or pressure washers
 - They are devices that use only a little water and a little electricity to clean, disinfect, and deodorize most surface

Virus	Contact Time	Result
Norovirus (Feline Calicivirus)	7 Seconds	>99.99%
Canine Parvovirus	7 Seconds	>99.99%
Avian Influenza (Bird Flu) H9N2	7 Seconds	>99.99%
Human coronavirus 229E	3 Seconds	≥99.94%
MS2 Virus (Non-enveloped "Indicator" Virus)	2 Seconds	>99.99%

<https://www.advap.com/pages/peer-reviewed-studies>

Toxics Use Reduction Institute, University of Massachusetts Lowell

Dry Steam Vapor

Very effective for cleaning and rapid sanitizing/disinfecting

Harder-to-kill viruses, such as canine parvovirus
Similar human coronavirus, such as coronavirus 229E

Kill rates 99.99 under 10 seconds

Expected to be effective on Sars-CoV-2 according to the EPA

2. What about electrostatic sprayers?



https://www.youtube.com/watch?v=YVzGDY4AD1M&ab_channel=KPIXCBSBayArea

- ❑ generate charged particles, supposed to stick to surfaces
- ❑ limited information about them compared to conventional spray systems for SARS-CoV-2
- ❑ both work on certain pathogens on various surfaces
- ❑ electrostatic more efficient than manual application for delivery times -- do they deliver enough to surface for proper contact time?
- ❑ electrostatic systems best for pre-cleaned surfaces (if no cleaning, debris and micro-organisms not removed)
- ❑ need empty room, right PPE/re-entry times/ventilation, product registered for use in device

(Jason Marshall, TURI)

For EPA's take, see: <https://www.epa.gov/covid19-research/evaluating-electrostatic-sprayers-disinfectant-application>. For Public Health Ontario's <https://www.publichealthontario.ca/-/media/documents/ncov/ipac/2020/07/faq-covid-19-electrostatic-sprayers.pdf?la=en>



What are some best practices for disinfecting?

<https://assets.njea.org/njea-media/Disinfecting.pdf>

- ✓ dilute concentrates in closed loop systems to avoid spills and splashes
- ✓ clean surfaces beforehand to remove dirt
- ✓ use fragrance-free soap and water with microfiber materials to clean surfaces
- ✓ target only areas where and when needed, evaluating needs regularly
- ✓ apply disinfectants in unoccupied spaces, with effective ventilation and re-entry times
- ✓ follow “dwell time” requirements (usually three to 10 minutes)
- ✓ maximize ventilation during and after disinfecting to avoid accumulating vapours in the air
- ✓ go from furthest spot to door (don’t get trapped)
- ✓ clearly communicate information about safe re-entry times for other staff and students
- ✓ the employer provides effective, fitted protective gear

And -- what about soap and water?

- With a 90% cleaning removal rate, and hand washing:
 - 99.99% reduction
 - 4 log reduction without disinfection

Jason Marshall, Toxics Use Reduction Institute
Cleaning Laboratory, November, 2020;
<https://www.turi.org/content/download/13387/204949/file/Marshall+Session+A+Cleaning-Disinfecting+101.pdf>

.. and microfibre materials?





<https://www.cdph.ca.gov/Programs/CCDCPHP/DEODC/OHB/WRAPP/Pages/Disinfectants-Schools.aspx>

WORK-RELATED ASTHMA PREVENTION PROGRAM

Important points regarding disinfectant use in schools microfiber use reduces the risks of chemical exposure

Using microfiber to clean can minimize exposure to harmful chemicals found in disinfectants. Download our [Cleaning with Microfiber handout \(PDF\)](#) to learn more.

- ☐ **Only custodians or other trained staff** should use disinfectants.
- ☐ **Disinfect only when necessary**, such as when required by the health department, health code, or regulations.
- ☐ **Avoid** ingredients that are not safe for asthma, like bleach, ammonia, quaternary ammonium compounds (benzalkonium chlorides), and acetic acid (found in vinegar).
- ☐ **Follow the label** exactly for a disinfectant to work properly. Using a disinfectant for less time than specified on the label exposes school staff and students to chemicals in the product but may not disinfect the surface.
- ☐ By law, you must **keep disinfectants out of students' reach**. Disinfectants should never be used by children or to clean skin, including hands.

What questions should committee members, staff or parents ask?

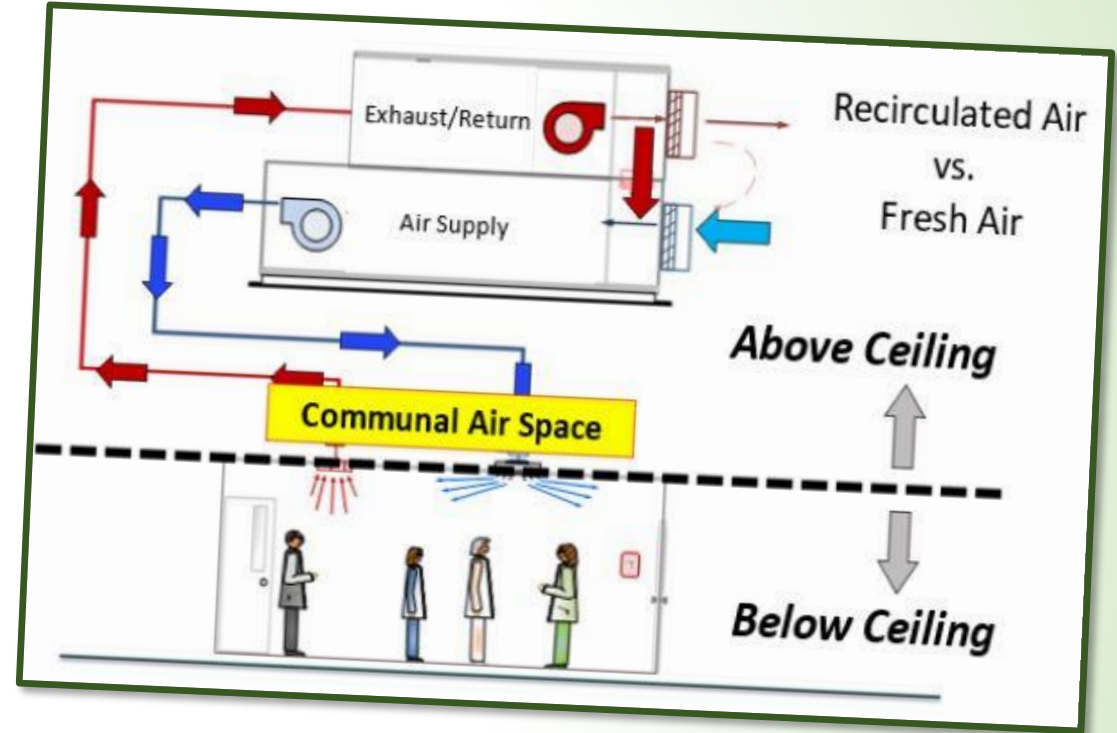
1. What products (brands and product names) are used in the school for cleaning? for disinfecting? Where are microfibre materials used?
2. Where are the Safety Data Sheets (SDSs) for those products? (We'd like to see them)
3. Does the school or board have a "green" purchasing policy? How is it connected to the health and safety programme?
4. Do suppliers offer any products certified:
 - ☐ through EPA's Safer Choice or Design for the Environment Program?
 - ☐ on the San Francisco Approved list of safer disinfectants?
 - ☐ by Green Seal or Cradle to Cradle (silver/gold)?
5. We'd like to make sure only those kinds of products are used in the school? What's the process to make that happen?



***Stop wasting money.
Require cleaning the air, not surfaces.***

***It's more than
hygiene theatre.***

***Our health and
anti-microbial
resistance are at
stake***



<https://www.acgih.org/covid-19-fact-sheet-airflow-patterns-matter/>