Cleaning and disinfecting in a pandemic – hazards, "hygiene theatre" .. and less, for our health

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Cleaner: Removes germs, dirt, and impurities from surfaces or objects. Soap/detergent, water and friction physically **remove** dirt and germs from surfaces. Effective disinfecting and sanitizing means **cleaning must be done beforehand**.

Sanitizer: Reduces **bacteria** on surfaces to levels considered safe for public health, used as the label directs. Less effective than a disinfectant.

Disinfectant: Destroys almost all infectious germs on a surface, including **viruses**. No effect on dirt, soil, or dust. Must be used at the specific **dilution**/concentration and left **glistening wet** for the full **dwell or contact time**. Health Canada registers as "drugs" so no data sheets or labels required under WHMIS

These days, it's always: *"clean and disinfect"*

Promote and facilitate personal preventive practices. Everyone plays a part in making workplaces/businesses safer, including employers, employees, contractors, clients, and all others who interact with workplaces/businesses.

- Keep your employees informed about public health advice applicable to your workplace/business
- Promote the use of personal practices (e.g., frequent hand hygiene, avoid touching the face, respiratory etiquette, clean and disinfect frequently touched surfaces with approved products)
  - Post signage that reminds employees/clients to practice these measures, ensuring that it is appropriate for the employees'/clients' age, ability, reading level and language preferences
  - Provide increased access to hand hygiene facilities (e.g. by placing hand sanitizer dispensers in easy to see locations) and ensure accessibility for employees/clients with disabilities or other accommodation needs
  - Promote increased environmental cleaning and disinfecting of employees' work environments (e.g., provide sanitizing wipes so employees can clean and disinfect their own workstations)

https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/guidance-documents/risk-informed-decision-making-workplaces-businesses-covid-19-pandemic.html

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.

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.

What hazards do cleaning and disinfecting chemicals pose?

Cleaning product chemicals can have **short-term effects**, such as:

- 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) – cleaning/ disinfecting product ingredients can :

- cause new cases of **asthma** and trigger asthma 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**; and
- be linked to **cardiovascular** (heart) problems.

https://www.wigmorising.ca/cleaning-products-can-be-green/

"Cleaning" ingredients continue to cause respiratory diseases

– for health care workers, cleaning staff, sports staff, teachers, chefs and other kitchen workers, and others

Carder, M., et. al. (2019) "Occupational and work-related respiratory disease attributed to cleaning products", *Occupational and Environmental Medicine,* 76: 530–536.

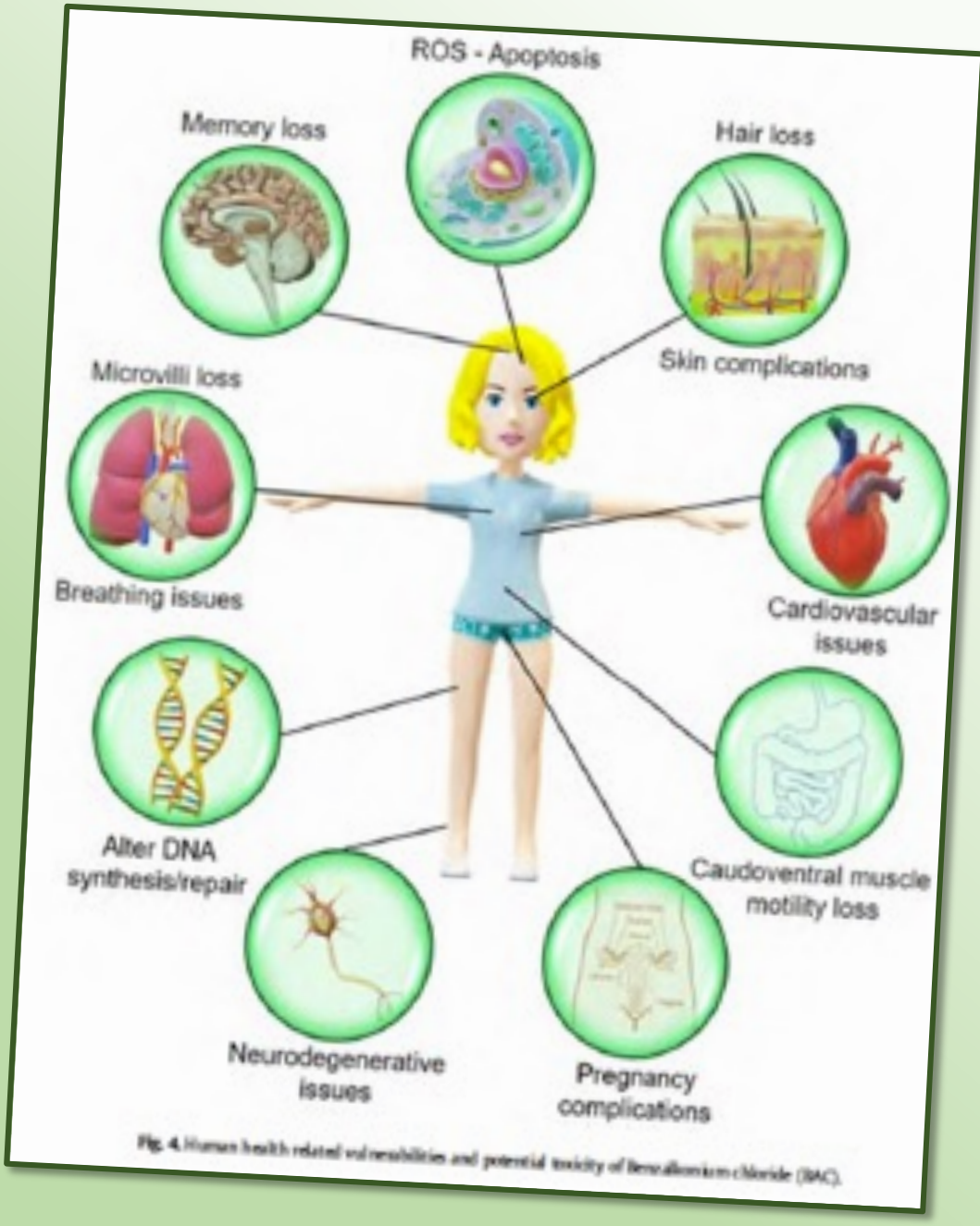
Table 1 Number (and percentage) of actual cases of occupational and work-related respiratory disease attributed to cleaning agents (by agent group), reported by chest physicians to SWORD* (1989–2017), occupational physicians to OPRA† (1999–2017) and general practitioners to THOR-GP‡ (2006–2017)

		SWORD*	OPRA†	THOR-GP‡
		Total cases (%)		
Group	Name	1989–2017	1999–2017	2006–2017
1	Caustics including ammonia and alkaline phosphates	21 (3%)	4 (5%)	2 (13%)
2	Acids	39 (6%)	6 (8%)	1 (6%)
3	Chlorine/releasers	167 (24%)	30 (41%)	6 (38%)
4	Chloramines and nitrogen trichloride	27 (4%)	2 (3%)	0
5	Quaternary ammonium	9 (1%)	2 (3%)	0
6	Solvents (organic)	45 (7%)	0	1 (6%)
7	Aldehydes	223 (32%)	11 (15%)	1 (6%)
8	Phenolics	7 (1%)	2 (3%)	0
9	Terpenes	4 (1%)	0	2 (13%)
10	Enzymes	6 (1%)	1 (1%)	0
11	Miscellaneous	27 (4%)	5 (7%)	1 (6%)
12	Unclear	115 (17%)	12 (16%)	2 (13%)
	Total cases§	690 (100%)	73 (100%)	16 (100%)

*Surveillance of Work-Related and Occupational Respiratory Disease.
†Occupational Physicians Reporting Activity.
‡The Health and Occupation Research network in General Practice.
§A case may be attributed to more than one cleaning agent.

Quats/QACs are ubiquitous, have many health effects

- quaternary ammonium compounds
- look for:
  - benzyl
  - ammonium
  - chloride
- 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.

Found in

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

Other problems with quats include:

- often need to be rinsed off
- build up in sewage sludge
- can stick/bind to cleaning cloths, mops
- linked to antimicrobial resistance
- ineffective when sprayed in the air

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

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

*Finally, and most important, hygiene theater builds a **false sense of security**, which can ironically lead to more infections. Many bars, indoor restaurants, and gyms, where patrons are huffing and puffing one another's stale air, shouldn't be open at all.*

*.. Instead, **many** of these establishments are **boasting about their cleaning practices while inviting strangers into unventilated indoor spaces to share one another's microbial exhalations**.*

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

Goldman said the evidence for infection from surfaces was based on lab experiments that were unrealistic when compared to real life situations and used extremely large amounts of virus to test if it could survive over extended periods of time.

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

Emanuel Goldman (egoldman@njms.rutgers.edu), Professor of Microbiology, Biochemistry and Molecular Genetics, New Jersey Medical School - Rutgers University, Newark, NJ

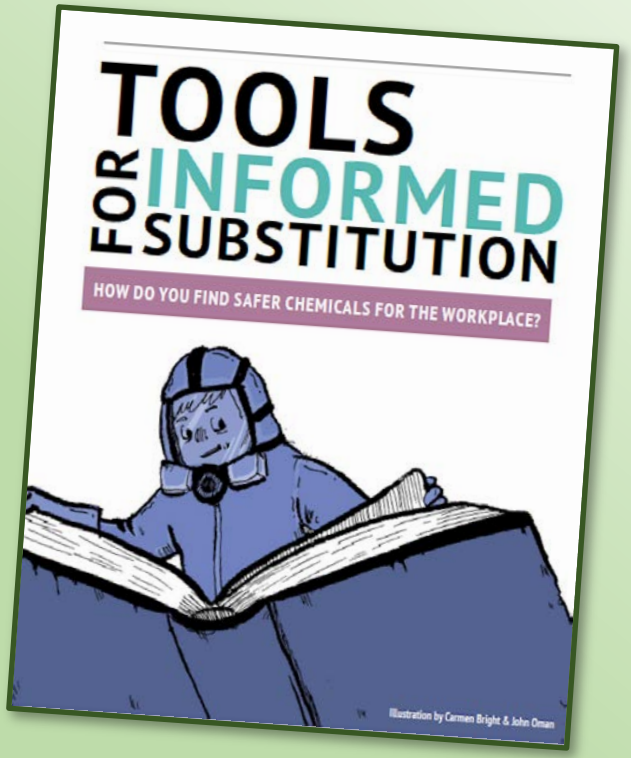
https://www.cbc.ca/news/health/coronavirus-surfaces-groceries-packages-playgrounds-1.5645602

Is it necessary? Not often!
If so, there are options

"Environmentally preferable" products are independently-certified to contain fewer toxic chemicals than traditional ones.

Look for **Cradle to Cradle (silver or gold levels), Green Seal, Safer Choice.** (Ecologo allows quats.)

Also check lists from the Toxics Use Reduction Institute (turi.org), the Responsible Purchasing Network and San Francisco's environment department's list sfapproved.org.



https://www.wigmorising.ca/cleaning-products-can-be-green/

Other options

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

EPA Establishment # 82121-WA-01

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

...eated steam vapor device

- Very effective for cleaning and rapid sanitizing/disinfecting
- Manufacturers have tested devices and proven effective on
  - Harder-to-kill viruses, such as canine parvovirus
  - Similar human coronavirus, such as coronavirus 229E
- Expected to be effective according to the U.S. Environmental Protection Agency (EPA)

Jason Marshall, Toxics Use Reduction Institute; August 28/20

But -- what about soap and water?

Soft surfaces

For soft surfaces such as carpeted floor, rugs, and drapes

- **Clean the surface using soap and water** or with cleaners appropriate for use on these surfaces.

https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html

- wash your hands often with soap and water for at least 20 seconds or use an alcohol-based hand sanitizer containing at least 60% alcohol

https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/measures-reduce-community.html

.. and microfibre materials?

- 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

What are your questions?

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