



So You Want to Open ... Now What

Jason Marshall, ScD
Jason_Marshall@uml.edu
TURI Cleaning Lab Director
UMass Lowell
978-934-3133



Toxics Use Reduction Institute Cleaning Lab

- Aid companies, organizations and individuals in selecting location-specific cleaning options
 - Better, safer cleaning
 - Share information on effective cleaning methods
- Evaluate and compare performance of safer cleaning products
- Evaluate equipment related to all areas of cleaning
 - Parts
 - Precision
 - Institutional
 - Household



Potential Health Impacts from Cleaning and Disinfecting Products

Headaches

Dizziness

Nausea or vomiting

Skin rashes or burns

Allergic reaction

Watery eyes/eye irritation

Nose irritation

Throat irritation

Asthma

Concerns for children's health



Photo by CDC, obtained through Unsplash

Green Cleaner Evolution

- 15-20 years ago - hit or miss if they worked
 - Created negative image for green products
 - Still persists today
- Green cleaners of today are much improved
 - On par or exceed traditional products
 - Still need to pilot test products to see if they work for you
 - TURI Lab can help
 - In the lab
 - In the field

https://www.turi.org/Our_Work/Cleaning_Laboratory

Third Party Certification

- Green claims
 - How real are they, who do you trust?
 - A green colored label does not equal a safe product
- Independent verification of product safety and performance
 - Green Seal
 - www.greenseal.org
 - EPA Safer Choice
 - www.epa.gov/saferchoice
 - Ecologo
 - www.ecologo.org/



So How Do You Go Green?

- Environmentally Preferable Products Lists
 - Collection of products that helps take the guess work out of product selection
 - Reduce environmental and public health impact
- State/Federal procurement
 - <https://www.mass.gov/handbook/environmentally-preferable-products-and-services-guide>
 - <https://www.epa.gov/greenerproducts/environmentally-preferable-purchasing-program-history>
- Large organizations/corporations
 - Universities, Hospitals, etc.
- Non-profit groups
 - Environmental Working Group - <https://www.ewg.org/guides/cleaners/>

Cleaning, Sanitizing, Disinfecting, Sterilizing

- Cleaning
 - Cleaning products **remove** debris, dirt and dust
 - Can achieve 99.9 % (2-3 log) reduction for microorganisms
- Sanitizing
 - Solution is applied **AFTER** cleaning to kill any remaining organisms on the surface
 - Reduces contaminants to a level where health is not affected
 - Evaporates and leaves no chemical residue behind
 - Achieves 99.9-99.999% (3 to 5 log) reduction for microorganisms
 - Cannot claim killing viruses or fungi
- Disinfecting
 - **Destroys all forms of microbial life, bacteria, virus, but not necessarily their spores**
 - Leaves a barrier/film behind on surface
 - Achieves 99.99% (4 log) reduction for microorganisms
- Sterilizing
 - **Eliminates, removes, kills, or deactivates all forms of life**
 - Typically 99.9999% (6 log) reduction for microorganisms

You CANNOT Disinfect Dirty Surfaces

- What does this mean?
 - Soil renders disinfectants less effective
 - Hides the microbes
 - Absorbs the active disinfectant ingredients
 - Changes the chemical nature of the disinfectant
 - All dirt, debris, and other organic matter should be removed from a surface so that the disinfectant can contact and destroy the microbes

CLEAN FIRST!

Important to Remember

- Disinfectants ARE NOT cleaners
 - Pesticides designed to kill microbes
- Important to have a system in place to determine when to use them
 - Including
 - when
 - dilution rates
 - labeling
 - frequency
 - Depends on the organisms you are trying to reduce

Written Procedures Ensure Consistency

- Why disinfect?
- What surfaces need disinfection?
- What is the schedule for disinfection?
- **Are least toxic and most effective products being used?**
- Who should be doing the disinfecting?
- What information, training, and PPE do personnel need?
- How should people be protected during the process?
- What is the proper way to manage disinfectants?
- How should disinfectant be disposed of?

Why Disinfect?

- Identify high risk and high touch areas
 - Keyboards, lights, doorknobs/handles, handrails, desk phones, cell phones, restrooms, etc.
- Determine whether surface will contact broken skin or mucous membranes
- Adjust procedures for routine vs. outbreak

Factors that Influence Effectiveness of Disinfectants

- Type of organisms that you need to kill
 - Human coronavirus
 - Check EPA Registration to verify
- Materials of the surface to be disinfected
- Cross contamination issues
- Concentration and quantity of product
- Contact time
- Appropriate temperature
- Shelf life

Key Elements For Cleaning-Disinfecting Plan

- Requirements
 - Company, County, State, Federal
- Products, supplies and equipment
- Cleaning procedures
- Communication
- Training
- Labeling

Planning

- Written steps for what to do (standard operating procedures)
- Building-specific green cleaning plans
 - Schedules, communications, floor maintenance
 - Vulnerable populations, special areas, etc.
- Use of powered equipment
 - Vacuum cleaners, carpet extraction, powered floor maintenance, scrubbing machines

Cleaning Procedures

- **Chemicals**

- Track use, limit waste and exposures, employ chemical dilution control system
- Use appropriate technology for applying chemicals

- **Waste**

- Recycle, minimize, reuse

- **Entryways**

- Clean frequently; Implement matting to reduce track-in

- **Floors**

- Different criteria for different types of flooring: hard floors, carpet care, vacuuming

- **Disinfection**

- Use only where needed and as required
- Perform using only EPA registered disinfectants
- Follow procedures for dilutions, usage and **contact time**

- **Restrooms**

- Clean and disinfect; do not co-mingle equipment in other areas

Cleaning Procedures

- Eating areas
 - Clean and sanitize surfaces
- Trash
 - Pull as needed, especially before weekends and holidays
- Recycling
 - Inspect and clean daily
- Indoor plants
 - Collect debris; keep from carpet, vents
- Vulnerable populations
 - Reduce exposure, chemicals
 - Consider students, elderly, ill and custodians

Communication

- Must have strategy developed in conjunction with
 - Building owners, managers and occupants
- Provide proper employee training
 - On-site
 - Site specific
 - Annual in-service training
- Allow employees to provide comments and suggestions
- Define opportunities to reduce the need for intensive cleaning or treatments
- Notify management of chemicals being used in building/facility
 - Provide safety data sheet (SDS – Right to Know documents)
- Identify occupants with special needs or sensitivities

Training

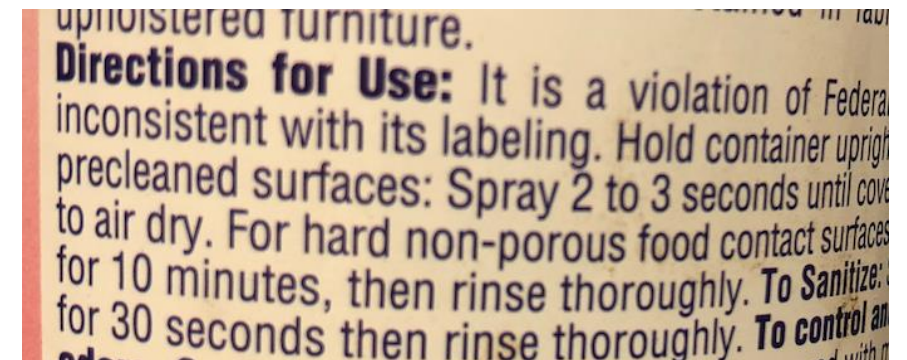
New hires must be provided basic training on chemical safety and then more specific training for location

All cleaning personnel should receive in-service training/continuing education on annual basis

Management/supervisors also should have in-service training/continuing education on annual basis

Finding What Works Is Not Easy

- Struggling with availability and applicability of products
 - Lack of information on what kills the virus
- Read labels
 - Look for safer ingredients
 - Check for contact times
 - Find EPA Registration number
 - Determine what organisms that product has been tested on



upholstered furniture.
Directions for Use: It is a violation of Federal law if this product is used in a manner inconsistent with its labeling. Hold container upright over surface to be treated. For pre-cleaned surfaces: Spray 2 to 3 seconds until cover is wet. For hard non-porous food contact surfaces: Spray 2 to 3 seconds until cover is wet, then allow to air dry. For hard non-porous food contact surfaces: Spray 2 to 3 seconds until cover is wet, then allow to air dry for 10 minutes, then rinse thoroughly. **To Sanitize:** Spray 2 to 3 seconds until cover is wet, then allow to air dry for 30 seconds then rinse thoroughly. **To control and prevent**

EPA N-List Active Ingredients for COVID 19

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

- Quaternary ammonium
 - Glutaraldehyde; Sodium carbonate
 - Peroxyhydrate; Triethylene glycol
- **Sodium hypochlorite (bleach)**
- Hydrogen Peroxide
- Phenolic
- Chlorine dioxide
- Citric acid
- Peroxyacetic acid
- Sodium chlorite
- **Hypochlorous acid**
- Lactic acid
- Isopropanol
- Ethanol
- Sodium dichloroisocyanurate
- Hydrochloric acid (muriatic acid, Hydrogen chloride)
- Thymol
- Dodecylbenzene sulfonic acid
- Silver
 - Silver ion; Citric acid
- Potassium peroxymonosulfate; Sodium chloride
- Sodium dichloro-S-triazinetriene
- Octanoic acid
- 1,2-Hexanediol
- Glycolic acid

List N: Disinfectants for Use Against SARS-CoV-2

<https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>

All products on this list meet [EPA's criteria](#) for use against SARS-CoV-2, the virus that causes COVID-19.

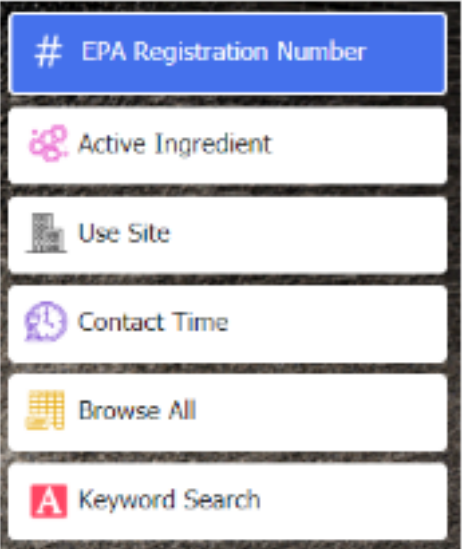
Finding a Product

To find a product, enter **the first two sets** of its **EPA registration number** into the search bar below. You can find this number by looking for the EPA Reg. No. on the product label.

For example, if EPA Reg. No. 12345-12 is on List N, you can buy EPA Reg. No. 12345-12-2567 and know you're getting an equivalent product.

[Search by EPA registration number](#)

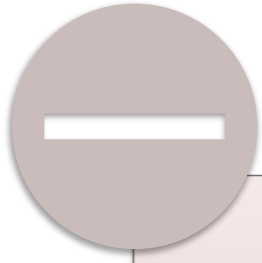
NEW View List N's information in our new tool



The screenshot shows a vertical stack of five search input fields, each with a distinct icon and text:

- Field 1: A blue header bar with a white hash symbol (#) and the text "EPA Registration Number".
- Field 2: A pink icon of a molecular structure and the text "Active Ingredient".
- Field 3: A grey icon of a building and the text "Use Site".
- Field 4: A purple icon of a clock and the text "Contact Time".
- Field 5: A yellow icon of a grid and the text "Browse All".
- Field 6: A red icon of a letter 'A' and the text "Keyword Search".

Safety Concerns for Active Ingredients in Disinfectants



AVOID

- Sodium hypochlorite
- Hydrogen Chloride
- Phenols
- Pine Oil
- Quaternary ammonium chloride compounds
- Silver
- Thyme oil



PREFERRE

- Hypochlorous acid
- Hydrogen peroxide
- Citric Acid
- Lactic Acid
- Caprylic Acid
- Dichloroisocyanurate
 - Non food contact
 - Tab form

Important Notes on Bleach

- Sodium Hypochlorite
 - Traditional bleach
 - Health Issues
 - Skin/eye irritant
 - Respiratory irritant
 - Long shelf life
 - Inexpensive
 - High pH
- Hypochlorous Acid
 - Lower exposure to free available chlorine
 - Common active ingredient in wound, eye and veterinary care products
 - Short shelf life
 - ~2 weeks
 - More effective than sodium hypochlorite
 - Neutral to moderate pH
 - 4-6

Other Resources

- TURI and CleanerSolutions
 - www.turi.org and www.cleanersolutions.org
- COVID 19 disinfection options
 - <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>
 - EPA registration number and that human coronavirus is listed as a target pathogen
- Trade Associations
 - ISSA – International Sanitary Supply Association
 - www.issa.com
 - IFMA – International Facility Management Association
 - www.ifma.org
 - CMM Magazine – Cleaning & Maintenance Magazine
 - www.cmmonline.com

Cleaning Industry Management Standard (CIMS)



CIMS is the first consensus-based management standard that outlines the primary characteristics of a successful, quality cleaning organization.

Think of it as a way to differentiate your organization from the competition, demonstrate your commitment to quality and customer satisfaction, improve your overall operations, and *save money*.

Contact TURI Lab for Help

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