Healthy Classroom Management
Infection Control for SARS-CoV-2

Breaking the Chain of Infection

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Based on collaborative work with Carol Westinghouse, Informed Green Solutions, Inc. and on Work Funded by the Toxics Use Reduction Institute, UMass Lowell

Welcome

The goal of this presentation is to provide you with:

- **An understanding of the types of conditions in your classroom and/or office that can you can manage to help protect your health and your students' health during the pandemic.**

- **Guidance on how to achieve the best indoor environmental quality possible during the pandemic for your unique space:**
  - **making your classrooms cleanable**
  - **ensuring your space is effectively cleaned and disinfected**
  - **optimizing your ventilation systems and any new air cleaning technology**

What is not covered in this training!

Other types of contaminants in a school, such as:

- Allergens (e.g. pets, mold)
- Legacy Contaminants (e.g. lead based paint, lead in drinking water, asbestos, PCBs, radon)
- Chemical Hazards - other than from cleaning and disinfecting products (e.g. curriculum products, maintenance and building products)
- Particulates (e.g. exhaust, particulates from building components)

Our focus today is on addressing specific issues posed by working in the classroom during the pandemic, but will also be helpful for long term healthy management of your classroom!

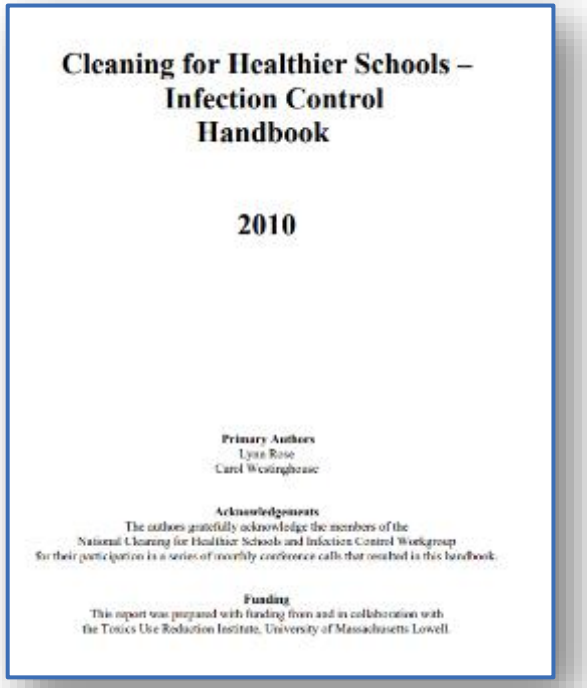
What is this work based on? I work in school districts where I develop EHS programs and work practices, procure products and services, do inspections and provide training.

Free Technical Resources

Many documents referenced in this presentation are available on the Toxics Use Reduction Institute (TURI) and Informed Green Solution, Inc. websites.

https://www.informedgreensolutions.org/

https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools


Cleaning for Healthier Schools – Infection Control Handbook

2010

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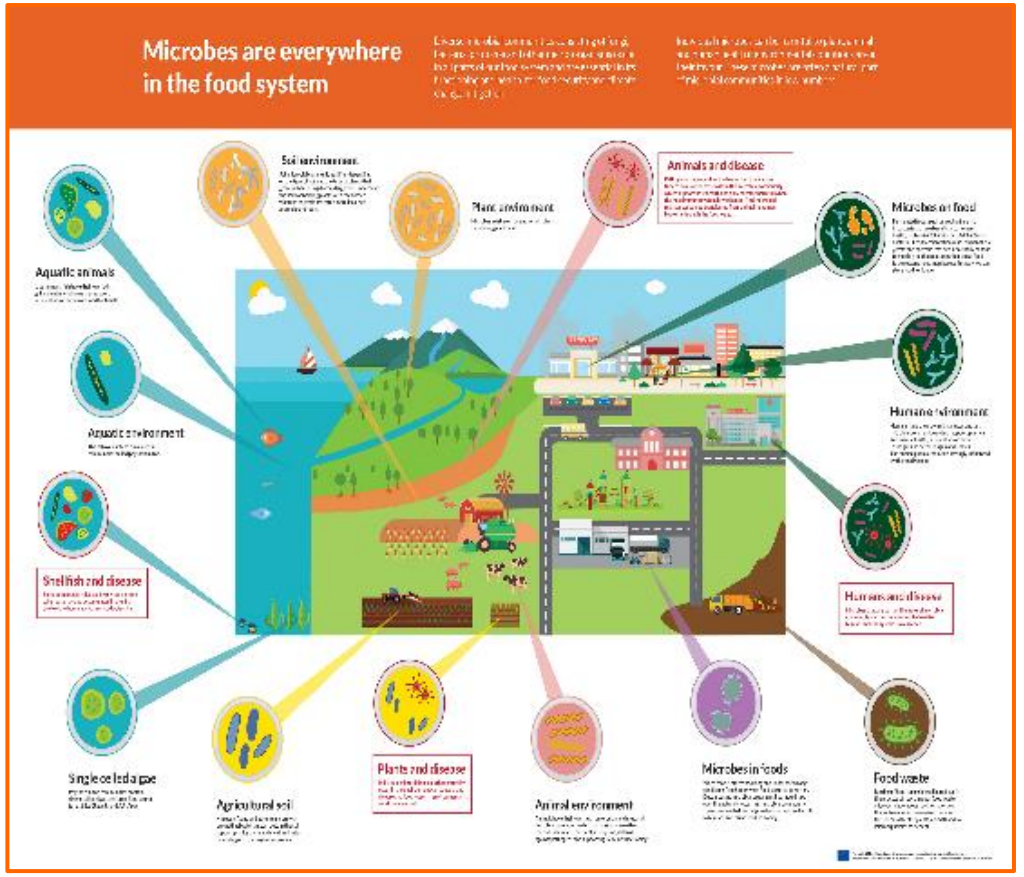
This report was prepared with funding from and in collaboration with the Toxics Use Reduction Institute, University of Massachusetts Lowell.

https://www.turi.org/Our_Work/Community/Topic_Areas/Schools/Cleaning_for_Healthier_Schools_and_Infection_Control_Workgroup_Statewide/Project-Materials/Infection-Control-Handbook

What do I need to understand about the SARS CoV2 Virus that causes COVID-19?

Let's start with the basics - what are germs?

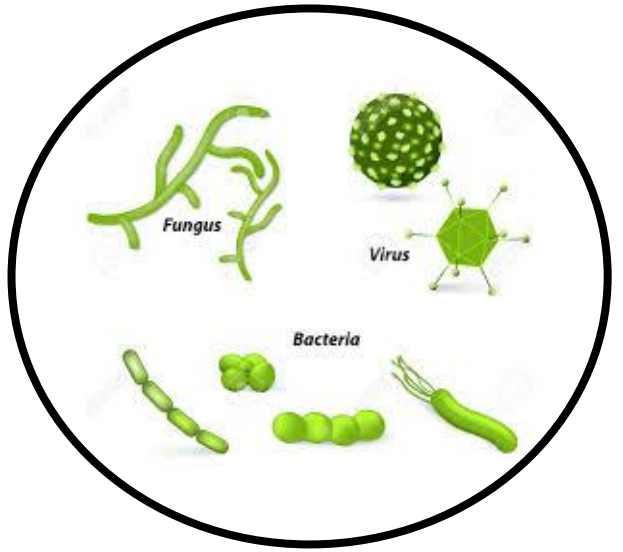
- **They are microorganisms which are everywhere in the environment – in the air, water, soil, plants and animals.**
- **We can't live without them.**
- **Some are good for you, and other "*pathogenic*" microbes cause infections and disease, commonly referred to as *"germs"*.**

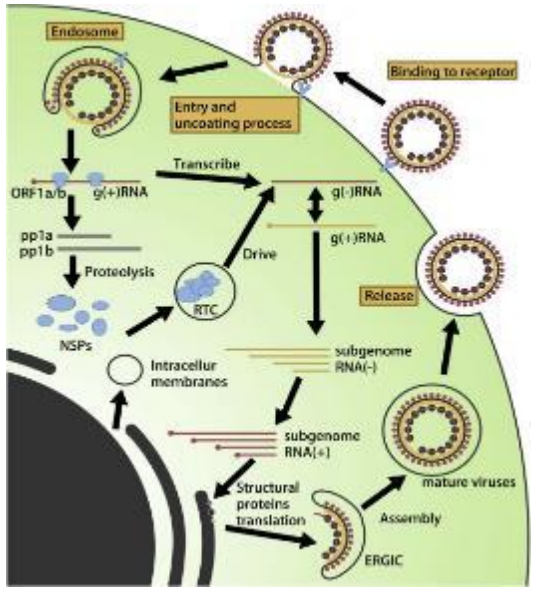


https://www.microbiomesupport.eu/microbes-are-everywhere-in-the-foodsystem/

What types of microorganisms are there?

- ***Bacteria**** – **have their own cell walls, and can live and reproduce independently.**
- ***Fungi**** – **grow on dead and decaying matter. Common forms are yeast and molds.**
- ***Viruses*** – **live and multiply inside of cells of a living host, and cannot live independently.**





COVID-19 is the illness caused by the SARS CoV2 Virus.

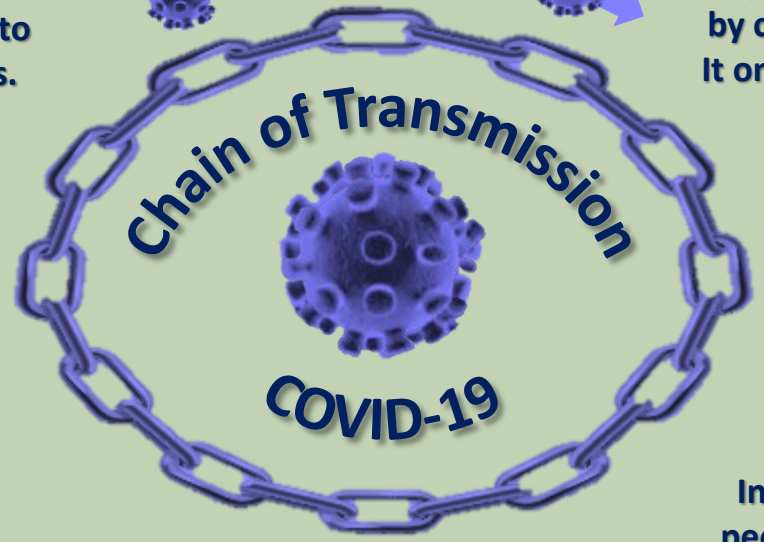
Although it may survive for a while outside the body, it <u>will not</u> reproduce.

Developed by Lynn Rose

SARS-CoV2 - Transmission Video Link: https://www.youtube.com/watch?v=AGQYlrXzVJQ&list=PLF1cIjDb3MSJyGNteP-hVpuEI0j57WzP3&index=3 , Video Text by: Prof. Shelly Miller, University of Colorado Boulder. Voice by: Shelly Miller and Renee Leiden. Drawings and editing by: Prof. Marina Vance, University of Colorado Boulder.

How the Virus Transmitted

and the role of cleaning and disinfecting in breaking the chain Of transmission



Infectious Agent - SARS-CoV-2

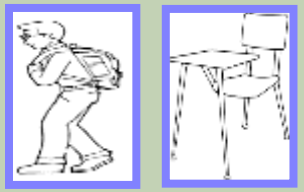
is the Virus that causes the disease Covid-19

Person as a Host

SARS-CoV-2 can infect people and make some people sick with COVID-19. People with COVID-19 without symptoms may still be able to transmit the virus to others.

Reservoir

Where the virus lands on living and nonliving things. It survives outside the body for a length of time determined by conditions and type of surface. It only reproduces inside the body.



The Virus Enters the Body

Eyes and respiratory system: nose and mouth

The Virus Leaves Reservoir

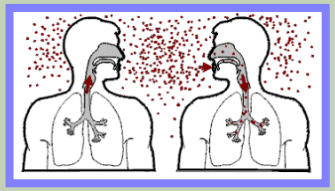
Infected person touches surfaces and people, and sneezes, coughs, sings, etc.

The Virus is Transported to New Locations

where people come in contact with it:

Contact with Person

Expelled Respiratory Droplets and Aerosols



Contact with Surface

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Summary[1] - what we know about transmission at this time!

- **Main Transmission Route**
  - **It spreads through respiratory droplets or small particles in aerosols, produced when an infected person coughs, sneezes, sings, talks, or breathes.**
  - **These particles can be inhaled into the nose, mouth, airways, and lungs and cause infection.**
  - **There is growing evidence that droplets and airborne particles can remain suspended in the air and be breathed in by others, and travel distances beyond 6 feet.**
  - **Indoor environments without good ventilation increase this risk.**
- **Not the Main Transmission Route**
  - **Droplets can land on surfaces/objects, and be transferred by a person touching a surface or object that has the virus on it, and then touching their mouth, nose, or eyes.**

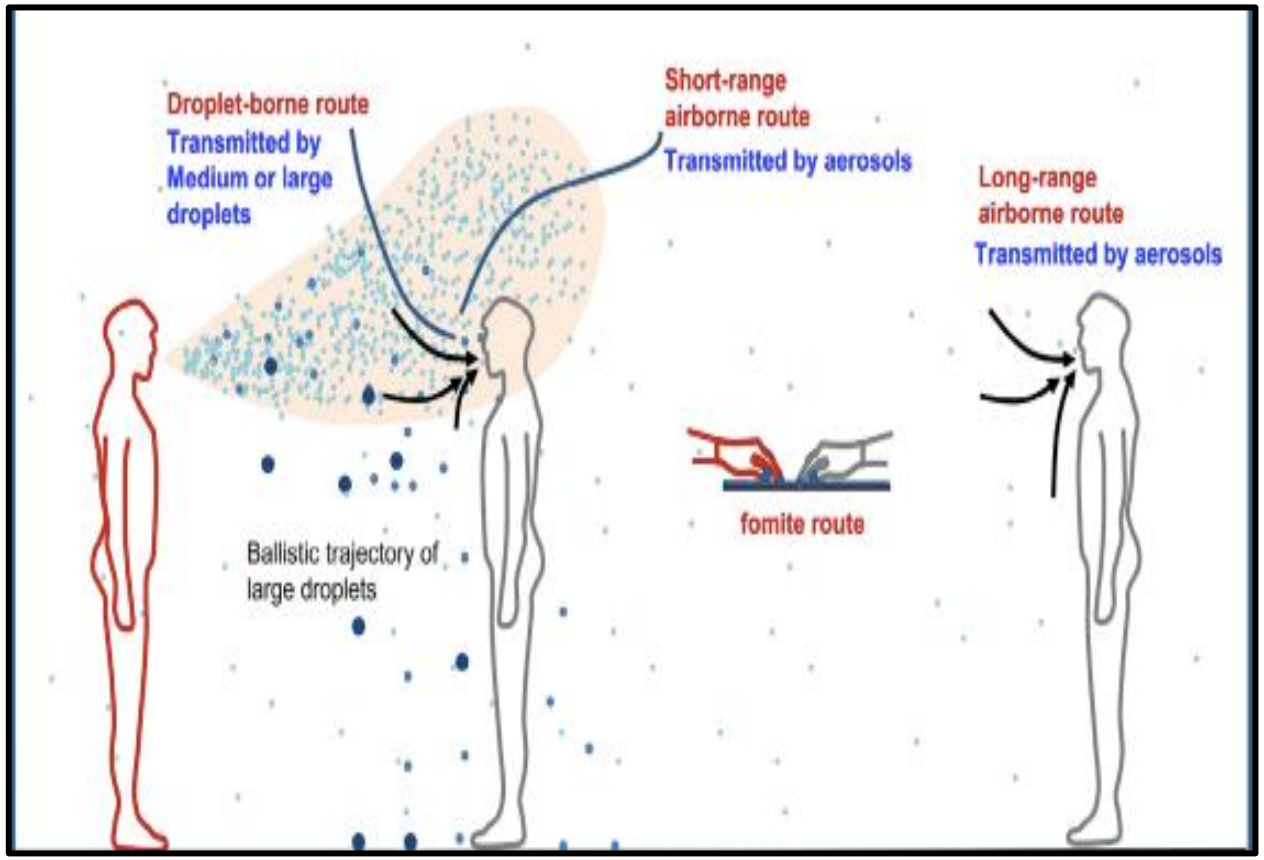


Fig 1: Illustration of different transmission routes of SARS-CoV-2. Small droplets (<5 µm), sometimes called aerosols, are responsible for the short-range airborne route, long-range airborne route, and indirect contact route. Large droplets are responsible for the direct spray route and indirect contact route. Fomite route refers to contaminated surfaces. Adapted from Jianjian Wei PhD and Yuguo Li PhD. (source)
https://www.assaygenie.com/transmission-of-sarscov2-covid19-via-droplets-and-aerosols-

1. CDC - https://www.cdc.gov/coronavirus/2019-ncov/faq.html#Spread

Studies to Determine Viability of Virus on Surfaces

Date	Study
3/17/20	**Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1** CDC, National Institute of Allergy and Infectious Diseases, Princeton University, University of California, New England Journal of Medicine 2020; 382:1564-1567,
4/2/20	**Stability of SARS-CoV-2 in different environmental conditions** The Lancet Microbe, https://doi.org/10.1016/S2666-5247(20)30003-3
9/20	**Effect of Environmental Conditions on SARS-CoV-2 Stability in Human Nasal Mucus & Sputum** Matson M, Yinda C, Seifert SN, Bushmaker T, Fischer RJ, van Doremalen N, et al. Emerg Infect Dis. 2020;26(9):2276-2278. https://dx.doi.org/10.3201/eid2609.202267, CDC Emerging Infectious Diseases
Published 10/7/20	**The effect of temperature on persistence of SARS-CoV-2 on common surfaces.** Riddell, S., Goldie, S., Hill, A. *et al.* (Australia's Commonwealth Scientific and Industrial Research Organization (CSIRO), a national science agency). *Virol J* **17,** 145 (2020). https://doi.org/10.1186/s12985-020-01418-7

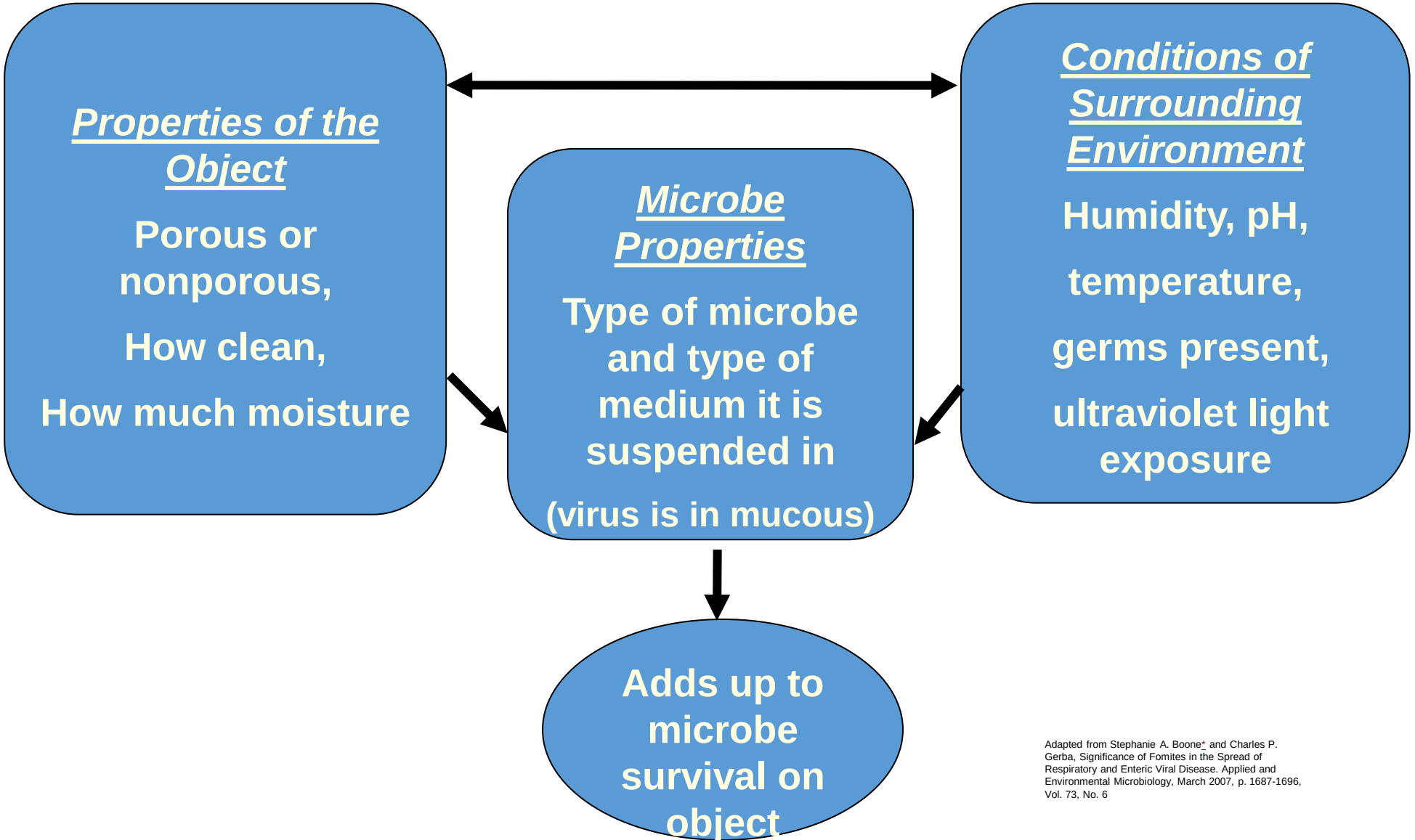
Key Points from the Studies to Determine Viability of the Virus

- **Viable virus could be detected in aerosols up to 3 hours post aerosolization.** **(Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1)**
- **There is conflicting data on how long the virus survives on a surface. Most research has been done in labs using different research methods, most of which do not replicate normal conditions.**
- **The CDC reports that higher humidity and warmer temperatures are less hospitable to the virus's survival in nasal mucous.**
  (https://wwwnc.cdc.gov/eid/article/26/9/20-2267_article)
- **There is also a question about how viable the virus is on surfaces.**

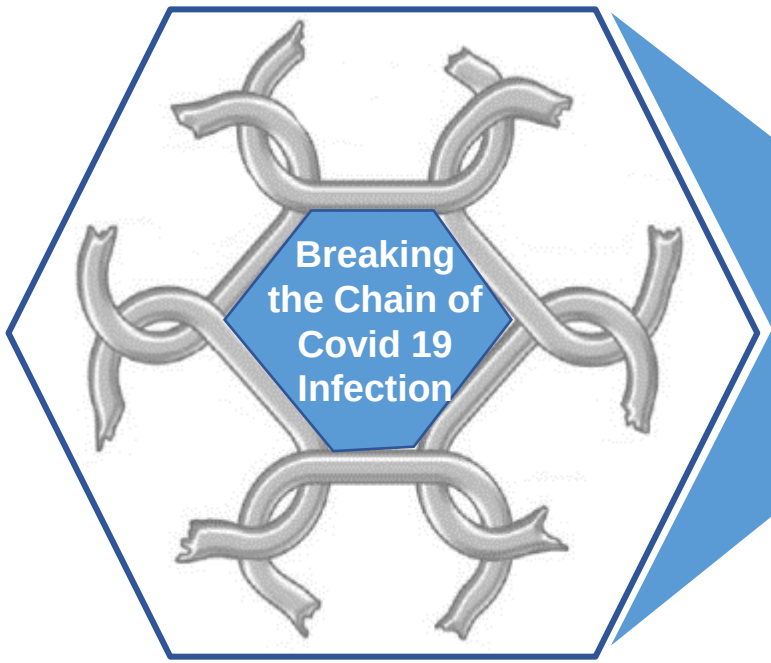
Examples of the range research findings for illustration purposes only!
Please do not quote!

- **Plastic**:
  - **2 to 7 days**
  - **CSIRO Study - 28 days on non-porous plastic surfaces (this study was conducted in the dark)**
- **Metal:**
  - **On copper - 4 hours**
  - **Stainless steel and metals - 2 to 7 days**
- **Paper:**
  - **Lancet - paper money - 4 days**
  - **Virology Journal- 28 days**
  - **Lancet - printed paper or tissue paper - 3 hours**
- **Glass (e.g. screens on televisions, computers, smartphones) - 4 days.**
- **Cardboard:**
  - **NEJM study suggests - 24 hours**
- **Cloth or non-porous surfaces:**
  - **While evidence has been limited on this category, the CSIRO research (conducted in the dark) found that common cotton didn't hold onto the virus beyond 2 weeks (most of which was inactivated upon first contact).**

What Influences the Survival of the Virus Outside of the Body?

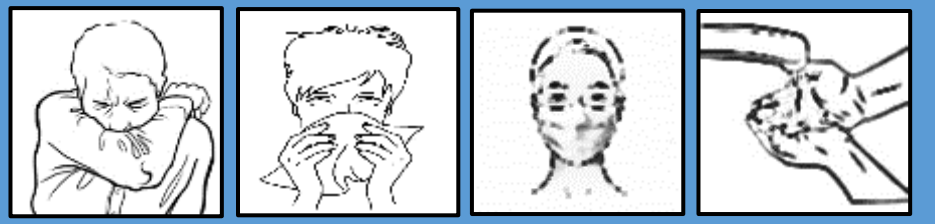


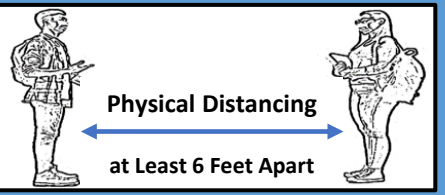
Adapted from Stephanie A. Boone* and Charles P. Gerba, Significance of Fomites in the Spread of Respiratory and Enteric Viral Disease. Applied and Environmental Microbiology, March 2007, p. 1687-1696, Vol. 73, No. 6



3-Pronged Strategy

1. Personal Hygiene & Social Strategies

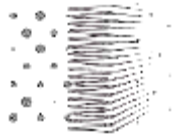




Isolation and Quarantine

2. Manage Airborne Transmission

Examples of Strategies: Increased Air Exchange and Increased Filtration



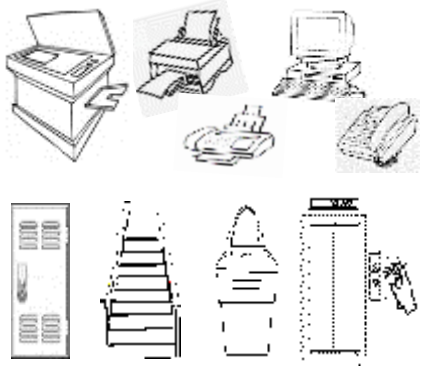
Examples of Strategies: Air Treatment

3. Cleaning for Health and Targeted Disinfection

Environmentally Preferable Products

Microfiber, HEPA Vacuum, Steam, Electrically Activated Water

Examples of High Touch Points



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Breaking the Chain of Infection - 3 Levels of Germ Control
1. Cleaning (most important!)

It involves using water, detergent and a cloth or microfiber to scrub the surface.

It is an <u>essential activity</u> in infection control as it:

- **Physically removes conditions germs need to survive (e.g. dirt, moisture) *and* <u>removes</u> germs. Microfiber cloths can remove more than 99% of the germs if done correctly!**
- **Helps inactivate this type of virus by breaking down the outer fat (lipid) protective coating of the virus. Testing is underway at TURI to see if this can be documented.**
- **Prepares the surface for disinfecting.**

Breaking the Chain of Infection - 3 Levels of Germ Control
2. Sanitizing

Designed for use on both soft and hard surfaces:

- <u>Food</u> contact surfaces: sanitizing rinses for surfaces (e.g. dishes, cooking utensils, high chairs)
- <u>Non-food</u> contact surfaces: (e.g. carpet, laundry)

Key points:

- COVID-19 is caused by a <u>virus</u>, and sanitizers only work on <u>bacteria</u>.
- Note: Some products are approved to be <u>both</u> a sanitizer and disinfectant, typically at different concentrations and contact times.

Developed by Lynn Rose

Surface Sanitizer *versus* Hand Sanitizer

Regulated by two different agencies for different uses:

These two alcohol based products may look similar!

Need to read the label

Pesticides – Sanitizers and Disinfectants

Used on surfaces, non-living things

Example: wipes for the bathroom

Regulated by the U.S. EPA

Drugs and Antiseptics

Used in or on living things

Example: hand-sanitizing wipes & hand sanitizers

Regulated by the U.S. FDA

Example of Incorrect advertising - This hand sanitizer is a disinfectant for external use.

Concept by NPIC: http://npic.orst.edu/factsheets/antimicrobials.html

Breaking the Chain of Infection - 3 Levels of Germ Control
3. Disinfecting

- **Most disinfectants only work on hard <u>nonporous</u> surfaces such as door handles, tables, etc.**
- **Requires cleaning and rinsing surface (if required) prior to disinfecting!**
  - **Surfaces and items <u>must</u> be cleaned before you can disinfect in order for the disinfectant to be in contact with the germ!**
  - **Germs can hide in dirt, and dirt can change the chemistry of the disinfectant and make it less effective.**

Developed by Lynn Rose

What are enhanced cleaning and disinfecting work practices like?

- There is a focus on cleaning and disinfecting frequently touched “common touch points” touched by many people.

- It involves the use approved disinfectants listed on *EPA’s List N of Disinfectants for Emerging Pathogens for COVID-19*. Some disinfectants on List N are more hazardous than others.

Developed by Lynn Rose

What do I need to consider when selecting disinfects?

What Common Disinfectants Are Hazardous? *Bleach*

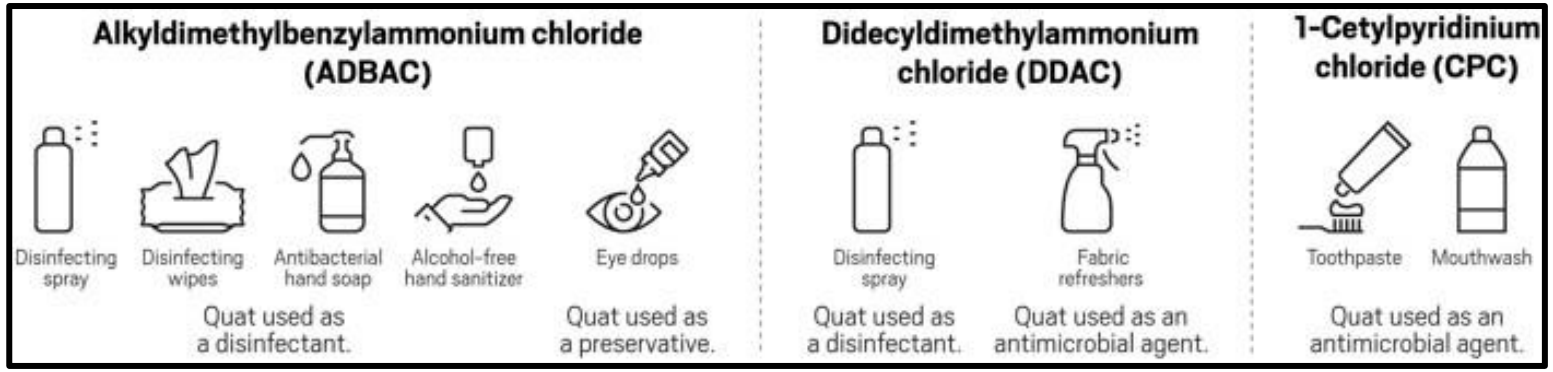
- **Bleach can:**
  - **cause occupational asthma**
  - **trigger asthma episodes**
  - **affect breathing**
  - **burn or irritate skin and eyes**

- **Must be mixed daily, posing an exposure to the concentrate**

What Common Disinfectants are Hazardous? *Quats*

- **Quaternary Ammonium Compounds**

  (Quats are known under individual names - Benzalkonium chloride, Alkyl dimethyl benzyl ammonium chlorides, Benzyl-C12-18-alkyldimethyl, chlorides, Didecyl dimethyl benzyl ammonium chlorides etc.)



- **Quats can cause:**
  - **asthma**
  - **irritation of skin and respiratory system**
  - **Reproductive and fertility issues**

How to Find the Safest Disinfectants on EPA List N Approved for the Virus that Causes COVID-19?

Check for products that have third-party certifications:

- EPA's Design for the Environment/ Safer Choice
- Green Seal

Fragrance Free
SAFER CHOICE
Meets U.S. EPA Safer Product Standards
epa.gov/saferchoice

GREEN SEAL ®

Look for the logos!

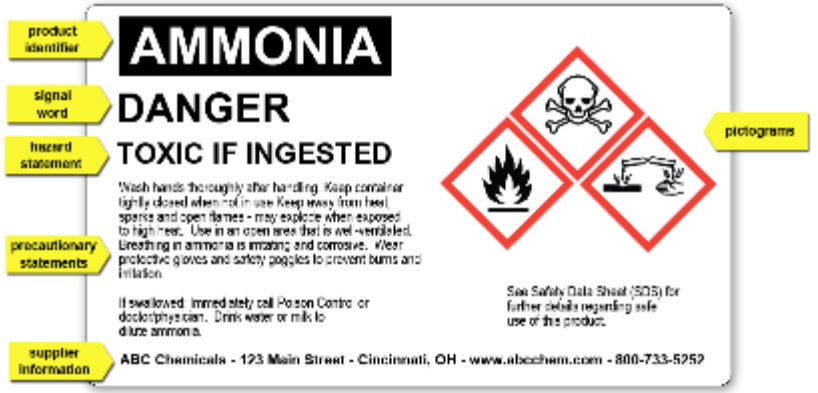
Developed by Lynn Rose

Selecting Safer Disinfectants

Look for “at a glance” rating information:

Found on some SDSs and Product Labels:

- The signal word <u>Warning</u> rather than Danger.



HMIS

NFPA

4. Severe Hazard
3. Serious Hazard
2. Moderate Hazard
1. Slight Hazard
0. Minimal Hazard

Zero rating on either:

- Hazardous Materials Identification System (HMIS), or
- National Fire Protection Association (NFPA) health rating scales.

Safest Disinfectant for Teachers to Use in the Classroom

There are disinfectants/sanitizers on the DESE supply list approved for COVID-19 that:

Acute Toxicity Category	Signal Word Required
Category I	Danger/Poison
Category II	Warning
Category III	Caution
Category IV	Caution (or none required if all routes are Cat IV)

Toxicity

EPA's Toxicity Rating

NFPA

HMIS

4. Severe Hazard
3. Serious Hazard
2. Moderate Hazard
1. Slight Hazard
0. Minimal Hazard

- **do not require PPE, mixing or rinsing**
- **are rated all zeros on the HMIS/NFPA**
- **are food contact approved**
- **have a short contact time**

Sources of Information on Safer Products

Organizations that review and list products for health and safety considerations:

Toxics Use Reduction Institute:
https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Disinfecting_Products

Green Seal: https://greenseal.org/about/blog/how-to-safely-disinfect-for-coronavirus

Responsible Purchasing Network:
https://osha.washington.edu/sites/default/files/documents/Updated%20Safer%20Disinfectants%20List_March%2026%2C%202020.pdf

Where to buy safer cleaning and disinfecting products?

Massachusetts Operational Services Division – Environmentally Preferable Products Program, FAC85 Cleaning Equipment and Supplies: https://www.mass.gov/doc/fac85/download

Some vendors on this contract selling safer cleaning and disinfection products:

- **Next-Gen Supply Group, (Formerly M.D. Stetson), Michael Glass, 800-255-8651, mike.glass@nextgensupply.com**
- **Casey EMI, Kim Swart, 978-821-9753, kaswart89@gmail.com**
- **Hillyard, Inc. (DBA Rovic), Dermot Pelletier, 800-832-1013, dpelletier@hillyard.com**
- **Richco Products, Inc., Shara Audet, 800-343-3221, info@richcoproduts.com**
- **Simplex Janitorial Supplies, Jeff Ventura, 781-784-8484, jventura@simplexjanitorial.com**

Why should teachers not bring in unauthorized products from home?

- Accessible to students - stored in unlocked cabinets, under sinks, etc.
- Bleach and ammonia are incompatible and are often found stored together (can create toxic gas).
- Can cause health reactions, including asthma, and safety incidents, such as fire.

Why should teachers not bring in unauthorized products from home?

Your district cannot plan for and manage chemical hazards it is unaware of!

- **Districts are required by DLS to provide Haz Com training on all hazardous products used.**
- **There is no product safety information in the event of an emergency!**

The cleaning and disinfecting products found in classrooms often:

- **Have a very high (alkaline) pH or a very low (acid) pH which makes them a dangerous corrosive that can burn skin, cause blindness, or trigger asthma.**

- **Are often solvent-based, which have volatile organic compounds (VOCs), which evaporate at room temperature, are toxic, and can create a respiratory, asthma and fire hazard.**
- **May require a respirator and/or active ventilation.**

- **Are in aerosol cans which generate mist that can stay suspended for hours posing a health hazard, including asthma.**

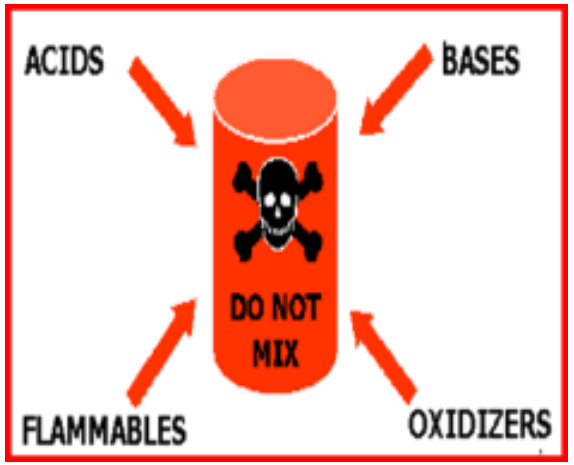
How can I prevent a Haz Mat Incident in my classroom?

Identify safe, secure product storage locations.

Store disinfectant and cleaning products by hazard categories to prevent hazardous reactions.

Common disinfectant ingredients are in the following hazard categories:

Acids – lactic acid, citric acid, hydrogen peroxide, Peroxyacetic Acid, some alcohol based products



Bases – quaternary compounds, some alcohol based products are slightly above corrosive

Flammables – alcohol (quantities may require a flammables cabinet)

Oxidizers – bleach, hydrogen peroxide, hypochlorous acid

What do I need to think about when locating a space to store products?

Note that schools have lost space due to: 1) storing additional the new infection control supplies, and 2) moving furniture and supplies in order to create social distancing.

Work with your Facilities Department to identify secured storage locations:

- **If you already have cleaning products under your sink or in your classroom, either take them home (see guidance), or notify the Facilities Department to remove them.**
- **Find locations that can be secured away from water.**
- **Find spaces that are temperature controlled and located away from heaters.**
- **Meet safety codes - building, electrical, fire (e.g. not block electrical panels and egress).**

How do I safely remove unauthorized products?

- **Inform principal or facility manager about products that you are not removing, pose a safety risk, or question the identity or condition of.**

- **Guidelines for packaging and transporting products home:**
  - **STOP! Have someone look at your situation to determine if it is safe to work with.**
  - **Remove ONLY those cleaning products that are yours, that you are sure of what the contents are, and have intact containers and sealable lids.**
  - **Separate chemicals into 4 compatible categories (acid, base, flammable, reactive).**
  - **Put the products into another container to keep them separated (e.g. sealable plastic bags, small plastic dish tubs, plastic shoe boxes, buckets).**
  - **Seal lids, and pack so containers will remain upright and secured during transport.**

Compatibility Chart for Cleaning Product Packaging and Transportation

Note: Since there are numerous products brought in from home, and it is impractical to list them all here, we have provided a list of the most common products typically found in school. Please note that product types listed below may fall into more than one category (e.g. disinfectants can be either alcohol based (flammable), or quaternary compound based (corrosive base)) depending on the ingredients. Please check the label.

If you have products that are not on this list, you can check the labels to see if they list the hazard category, check the Safety Data Sheet (SDS) that you can find on-line for most products, and/or you can call the company for more information.

Hazard Category	Product	"Acute" Health Effects
Reactive "Oxidizer" They are very unstable and can reactive with other chemicals and water.	Bleach	Oxidizers are also corrosive, and can irritate and burn skin, eyes and the respiratory system. Can trigger asthma.
	Scouring Powder with bleach	
	Hydrogen peroxide-based products	
Base/Alkaline "Corrosive" The pH level is higher than 12.5. This information can be found on an SDS under the "Physical Data" category.	Disinfectants	Can irritate, burn, and damage the eyes and skin. Can trigger asthma.
	Ammonia, and ammonia based window cleaner and all-purpose cleaners	
	Oven, drain cleaner and degreasers	
Acid "Corrosive" The pH level is lower than 2. This information can be found on an SDS under the "Physical Data" category.	Acid-based toilet bowl cleaner	Can irritate, burn, and damage the eyes and skin. Can trigger asthma.
	Vinegar based window cleaner	
	Mineral scale removers	
Flammable/Ignitable Can give off flammable vapors at room temperature.	Degreaser	Breathing in vapors can affect the nervous system, and can irritate the respiratory system and trigger asthma.
	Alcohol based window cleaner	
	Alcohol based disinfectants	
	Metal polish	
	All-purpose cleaners	

Attachment to the sample memo to be given to teachers to take their products home safely.

This document is located on the TURI Website

https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

What do I need to understand about hand sanitizer?

- **Whenever possible, wash hands versus using hand sanitizer, as it is more effective at reducing germs.**
- **Hand sanitizer can build up on your hands and should be washed off after several uses.**

- **It is toxic and flammable!**
- **Locate in an area where you can keep an eye on it.**
- **Store extra supplies in a cool, secured space, away from students.**

What do I need to understand about hand sanitizer?

- **Routes of Exposure for Children**
  - **squirt it into their mouths**
  - **absorb it through skin**
  - **lick it off their hands**

What to request from your district for support!

Components of a District Infection Control Plan: Cleaning and Disinfecting Surfaces/Items

A plan or strategy should answer the following questions:

- **Who is responsible for doing the cleaning and disinfecting?**
- **What products and supplies to use?**
- **How will these supplies be provided and restocked?**
- **Where and how to safely use and store products?**
- **What is the schedule and frequency of disinfection activities?**
- **How to protect oneself and building occupants while disinfecting?**

What should your district provide you with if you assist?

Districts should provide you with technical assistance, and:

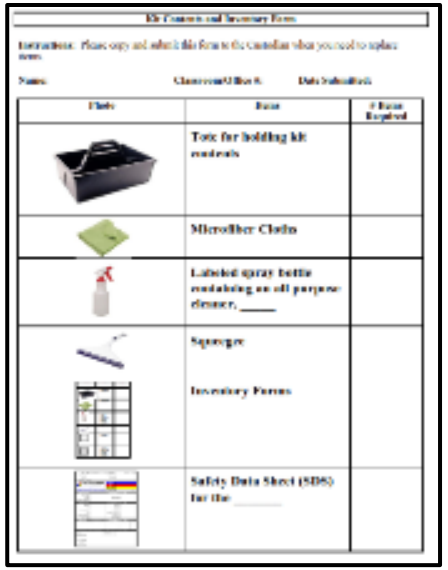
- *Safety Data Sheets* for all new products
- *Labels* for secondary containers
- *Hazard Communication Training* on hazards and precautions of all new products:
  - Hazards
  - Precautions
  - Emergency response – first aid

What should your district provide you with if you assist?

Ensure you have <u>approved</u>:

- **Nitrile gloves for cleaning and disinfecting (goggles are only needed if SDS requires it and typically for concentrate)**

- **Products and supplies**
- **Protocols for refilling supplies**
- **Work practices and schedule**



CDC Decision Making Tool for Cleaning and Disinfecting

https://www.cdc.gov/coronavirus/2019-ncov/community/cleaning-disinfecting-decision-tool.html

CLEANING with soap and water removes germs and dirt from surfaces. It lowers the risk of spreading infection.

DISINFECTING kills germs on surfaces. By killing germs on a surface after cleaning, it can further lower the risk of spreading disease.

Is the area outdoors?

Yes

Is it an indoor area?

No

Maintain existing cleaning practices.

Coronaviruses naturally die in hours to days in typical indoor & outdoor environments.

Viruses are killed more quickly by warmer temperatures and sunlight.

Has the area been occupied in the last 7 days??

Yes

The area has been occupied within last 7 days.

No

The area has been unoccupied within the last 7 days.

The area will need only routine cleaning.

It is frequently touched surface or object?

Yes

It is a frequently touched surface or object.

No

Thoroughly clean these materials. Consider setting a schedule for routine cleaning and disinfection, as appropriate.

What type of material is the surface or object?

Hard, nonporous surfaces like glass, metal or plastic.

Soft and porous materials like carpet, or seating material.

Visibility dirty surfaces should be cleaned prior to disinfection.

More frequent cleaning and disinfection is necessary to reduce exposure

Thoroughly clean or launder materials.

Consider removing porous materials in high traffic areas.

Disinfect materials if appropriate products are available.

Cleaning and Disinfecting Work Practices

What do I need to think about in my department?

Handout - *COVID-19 Cleaning and Disinfecting By School Department Staff*

Department	Items/Areas to be Disinfected	Product and Equipment Criteria	Criteria to Consider When Developing Procedures
Vocational/CTE This department does not typically do disinfecting unless related to the Career and Technical Education programs in health and animal care.	There are required surfaces and items to be managed as part of the program that should already be accounted for. There are also shared equipment, tools and supplies in these hands-on practicums. They range from hand tools to stationary equipment to working on a shared project, such as a car.	Need to determine if what they are currently using in the health care and animal care programs is effective for COVID 19. Ideally no rinse, short dwell time.	Handwashing before and after use of each piece of shared equipment. Cleaning and disinfecting after use of each piece of shared equipment.

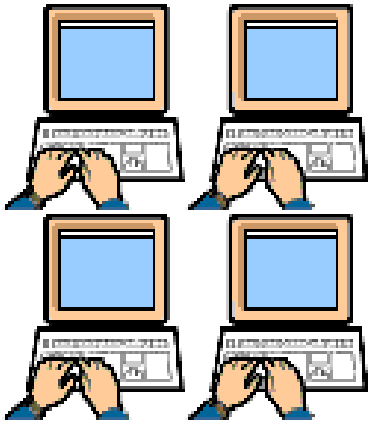
Guidance document on TURI website:

Considerations for all departments https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

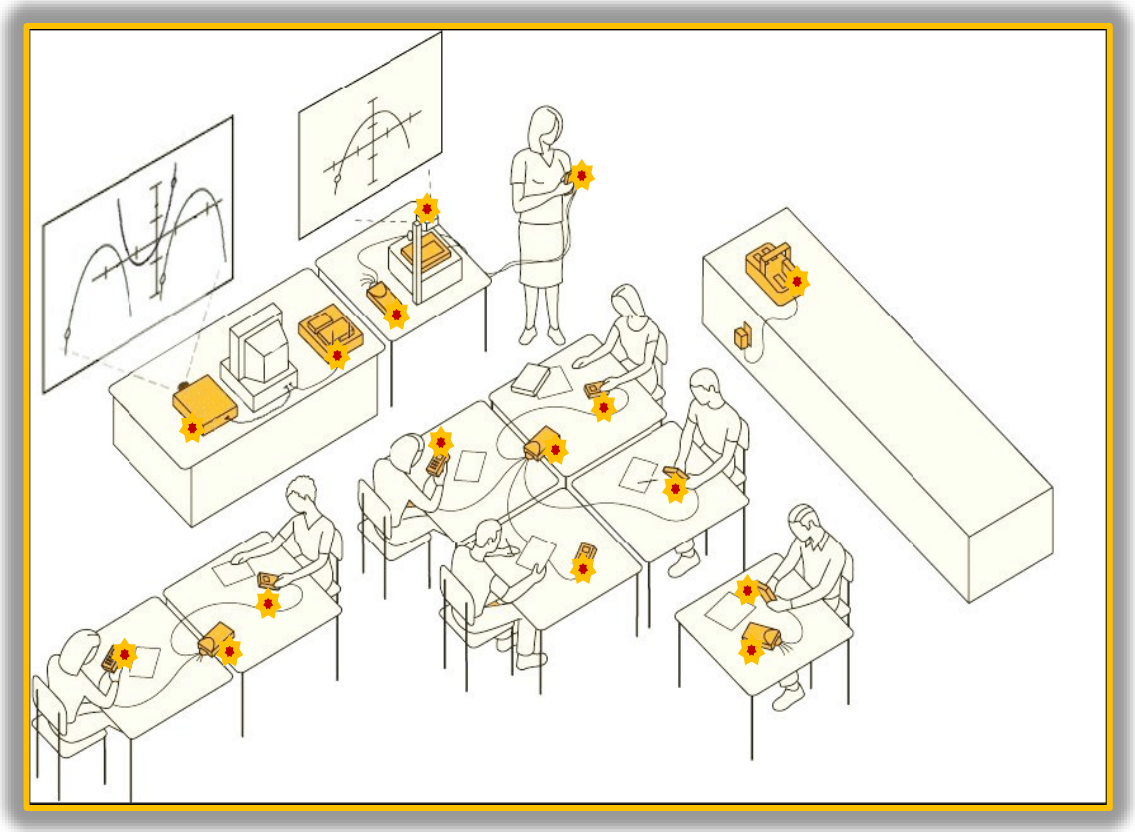
Common High Touch Surfaces - Touched Often by a Variety of Hands Examples

Office and Classroom

- Shared desks and work areas
- Shared computer mice and keyboards
- Fax machines, copiers, printers
- Sign in – school office, security desk



Cleaning and Disinfecting



Common High-Touch Points

By

Location in School Building

Customizable Templates

This document is available on TURI website
https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

Table of Contents

Developed by Lynn Rose

Ensure Occupational and Occupant Safety

- ***Always know the hazards*** **of the products you, and/or other staff are using.**
- ***Read labels and safety data sheets*** **to understand the hazards, precautions, safe use, etc.**

Label

Safety Data Sheet

- ***Wear PPE*** **as directed by the SDS and label.**

At a minimum, wear nitrile gloves.

Developed by Lynn Rose

Prepare to Safely and Effectively Disinfect

- ***Schedule disinfection activities*** **- when there will be the fewest occupants.**

- ***Ventilate the space as much as possible*** **- operate the HVAC system, or open the windows.**

- ***Dilute Product Correctly*** **– Ideally products are "Ready to Use".**

  Typically, custodian's will dilute the products for you. If not, follow dilution rate instructions exactly for specific uses.

  More is not necessarily better, it can be more hazardous!

Developed by Lynn Rose

Prepare to Safely and Effectively Disinfect

- ***Check expiration date:***
  - **Disinfectants, sanitizers and hand sanitizers have expiration dates.**
  - **Diluted products have a shorter shelf life:**
    Example – Diluted bleach must be disposed of daily.
  - **Properly discard any expired products in concentrate – contact your Facilities Manager.**

Developed by Lynn Rose

Prepare to Safely and Effectively Disinfect

- ***Do not mix chemicals!***

- ***Preclean and rinse surface* – for disinfectant to be most effective.**

- ***Spray product onto cloth whenever possible* - unless directed by label to spray on surface.**

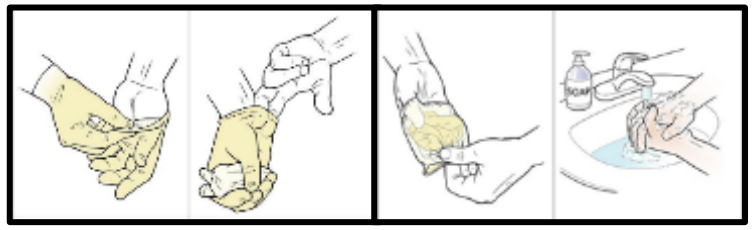
Developed by Lynn Rose

Safely and Effectively Disinfect

PUR:ONE is also effective as a Healthcare disinfectant for bloodborne viruses (HIV-1, Hepatitis A Virus, Hepatitis B Virus and Hepatitis C Virus) when used at a level of 4306 ppm available chlorine disinfectant solution with a 1 minute contact time, in 5% organic soil load.

- ***Follow label directions for "contact time"*** **- the length of time it is required to be wet on the surface. It is different for each product.**

- ***Rinse high touch surfaces*** **- if required on the label. Any residue may be hazardous when it comes in contact with skin.**



- ***Wash hands*** **– after removing gloves.**

Developed by Lynn Rose

What do you need to consider when having students assist with cleaning?

- What is the need during the school day?
  - Are the surfaces and items used by more than one student?
  - Are the elementary students at the same desk all day, and the MS and HS students change rooms every period?
- Are students eating at their desks?
  - Do you have existing protocols for “Breakfast in the Classroom” or “Meals in the Classroom”?
  - Do you need food contact product due to use of desk for eating that also kills COVID-19?

Meals in the Classroom Planning Checklist
https://schoolnutrition.org/covid19/back-to-school-resources/dining-guide-for-meals-in-the-classroom/

- Are they cleaning and/or disinfecting?

  One strategy - Students can clean, and teachers can disinfect after they leave, if needed.

- Are students able to wash hands after cleaning? Hand sanitizer will not “clean” chemicals.

Who is doing the cleaning and disinfecting????

Important Note:

Students should NOT be using disinfectants and disinfectant wipes.

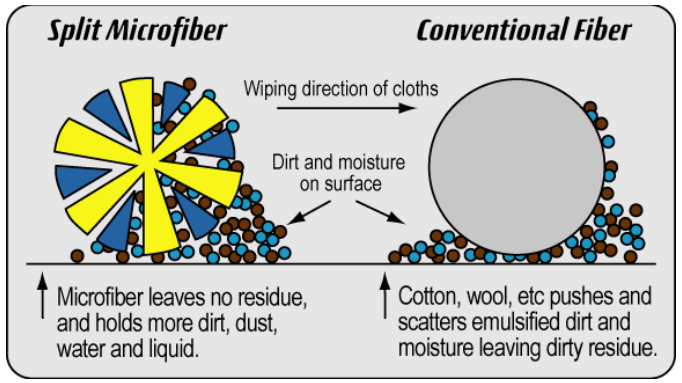
https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

Wipes

- There are numerous types of wipes for different purposes: disinfecting, sanitizing, cleaning and hand wipes.
- There is extensive misuse of wipes.
- Use the correct product for the job to prevent exposures to disinfectants.
- Always wear gloves and clean the surface before using a disinfecting wipe.

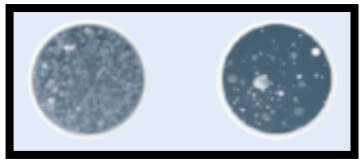
Consider Student and Staff Use of Microfiber and Dish Soap

Microfiber is the most effective cloth for cleaning and removing germs from a surface!



- ***Minimizes Microbial Growth:*** **dries more quickly, which helps to prevent microbe growth inside fiber.**
- ***Captures Microbes:*** **more effective than cotton due to the split fibers.**

Use of microfiber mops in UC Davis Medical Center 2002 hospital study found 99% reduction in bacteria versus only 30% reduction using a conventional wet mop system.



Source: **EPA Fact Sheet, November 2002 - Using Microfiber Mops in Hospitals**

Districts will need to organize a collection, laundering and distribution system.

Options: **washing on-site or laundering services with District owned or rented items.**

See fact sheet, *Using Microfiber Cloths and Mops for Infection Control*

https://www.turi.org/Our_Work/Cleaning_Laboratory/COVID-19_Safely_Clean_Disinfect/Safer_Cleaning_and_Disinfection_for_Schools

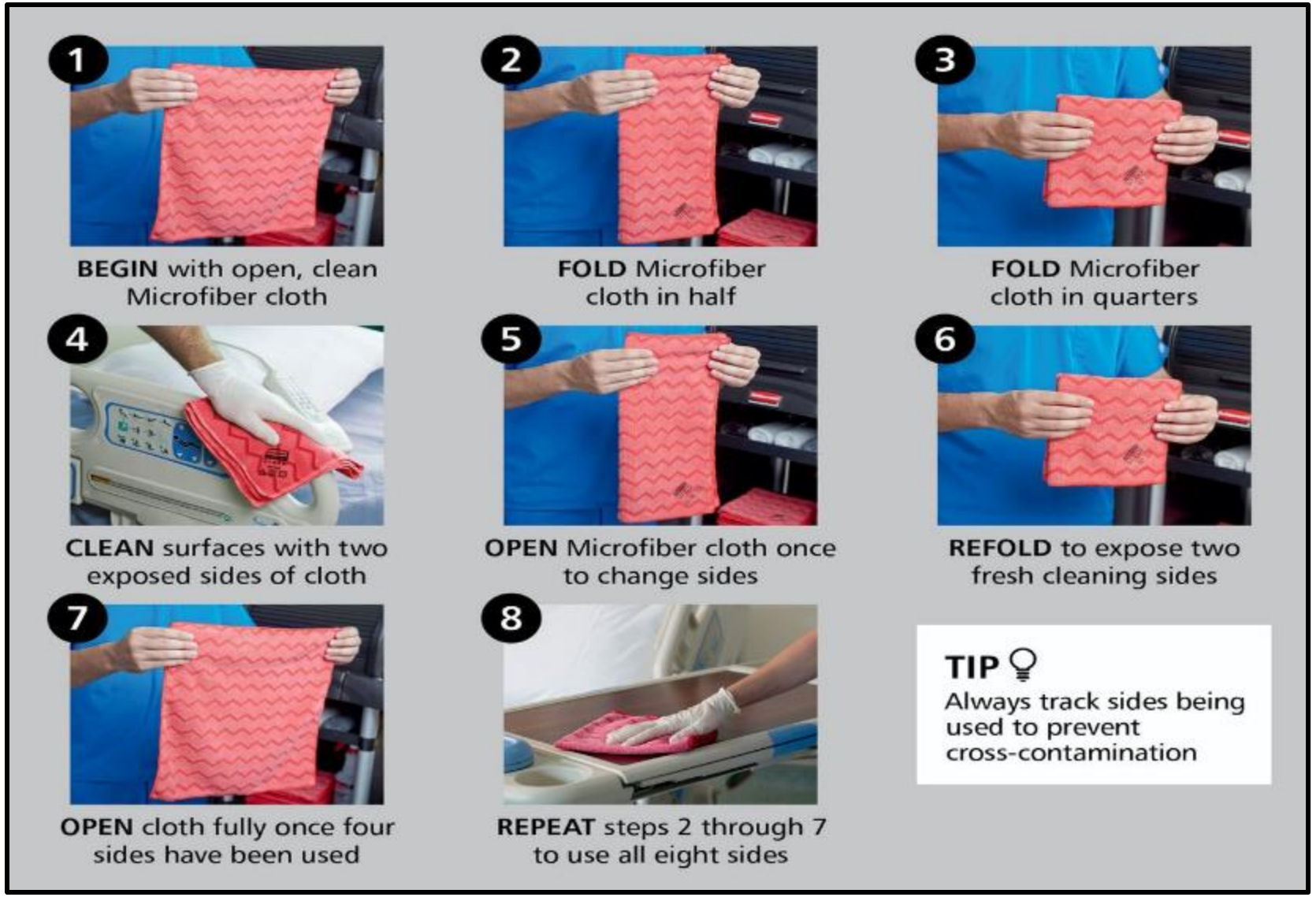
How can I prevent cross contamination? (The transfer of germs from one surface to another!)

Strategies for Surface to Surface

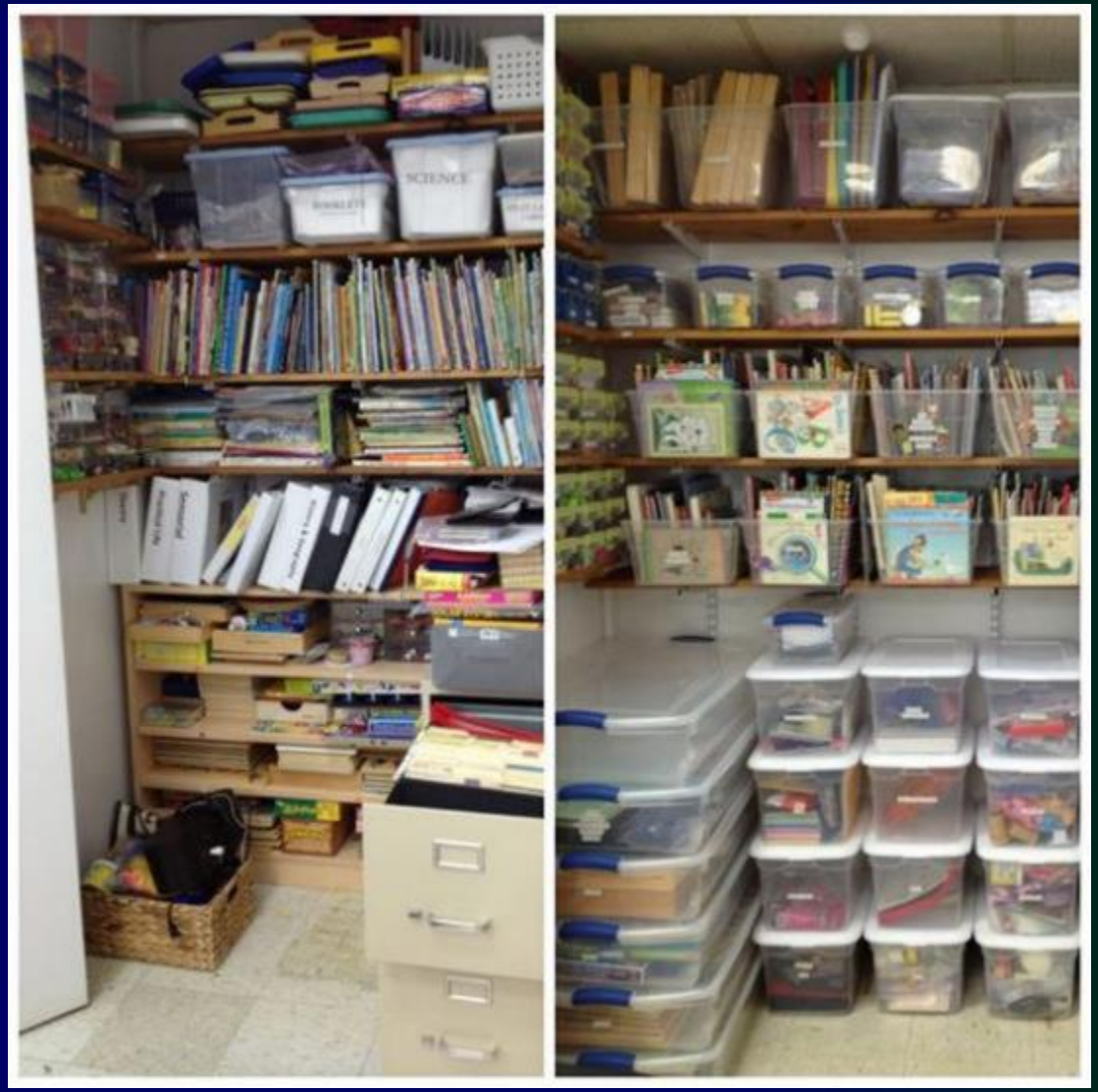
Fold cloth into 8, and use a new side for each surface.

Wash hands, or gloves in between surfaces.

Source: Rubbermaid - https://www.rubbermaidcommercial.com/resource-center/0a1bf96b7165e962e90cb14648c9462d/Cross_Contamination_Prevention/



How can I maintain a Healthy Classroom?



What are your school's interrelationships that impact Indoor Environmental Quality (IEQ)?

People (Activities, Operation, Maintenance)

HVAC, Air Treatment and Filtration Systems

Sources of Pollutants:

Chemical, Particulate, Biological

Building (Age, Original Design, Renovations)

What is a Teacher's Role in Creating and Maintaining a Healthy Classroom?

Keep it:

- Dry
- Pest free
- Ventilated
- Clean and cleanable
- Contaminant free (e.g. germs, fragrances, hazardous chemicals)

Asthma Triggers

Don't forget pests such as cockroaches and rodents!

Is Your Room Cleanable?

Open containers versus closed:

- **Cannot dust or vacuum.**
- **Would not be able to use disinfecting spray equipment.**

Fabric and carpets are harder to manage for allergens and infection control, and you cannot use disinfectant spray equipment.

Is Your Room Clean? School Responsibility

Please remember that custodians are required to prioritize infection activities and may not be able to accomplish all of the normal routine tasks!

- **Dusting**
- **Sweeping and Mopping**
- **Vacuuming (ideally with a HEPA Vacuum)**
- **Cleaning and disinfecting**
- **Removing trash and recycling**

Is Your Room Cleanable? Your Responsibility

- **Clear horizontal surfaces to ensure dust removal that the virus might have attached to.**

- **Power off and possibly cover electronics if mister/foggers or automated fogging systems are used (MIIA prefers manual spray bottle or electrostatic sprayers).**

- **Store learning supplies, and pet and people food in sealable containers.**

Is Your Room Clean and Safe? Summary

Prevent chemical incidents:

- **Use only approved products**

- **Store products in compatible categories – dish tubs work great:**

- **Store products safely in a secured location**

- **Remove unauthorized products (see guidance)**

How can I maintain supplies students use during the day?

Challenges include time, availability of sink for washing, funding for extra supplies, etc.

Some Strategies

- **Cleaning hands before and after handling items.**
- **Integrate cleaning of items into activities.**
- **Distribution and Collection:**
  - **Have students pick up clean supplies as they enter the room and drop off as they leave.**
  - **Pre-organize materials as much as possible, and use individual bags or paper cups for easy distribution.**
  - **Have bins for used supplies and unused supplies.**

Some Strategies

- **Do instruction in school, activities at home.**
- **Students have their own set of items.**
- **Use disposable supplies.**
- **Items that go home do not return.**

- **Have students use a tissue to hold shared materials like pastels or charcoal.**

What do you need to understand about Indoor Air Quality in your classroom?

Some of the following information is
Based on EPA's Tools For Schools

What do you need to understand about the air quality in your room?

- School Districts are working to ensure the best ventilation and air quality that can be achieved in each building to enable occupants to return.
  - This may be accomplished in a variety of ways and possibly a combination of systems due to the unique configuration of each space.

- Teachers can ensure that they maintain optimum air quality in their space by understanding:
  - how air is delivered and removed (exhausted),
  - any air treatment systems, and
  - how ventilation systems and any air treatment systems work together

Role of the HVAC System

Heating, Ventilating, Air Conditioning System

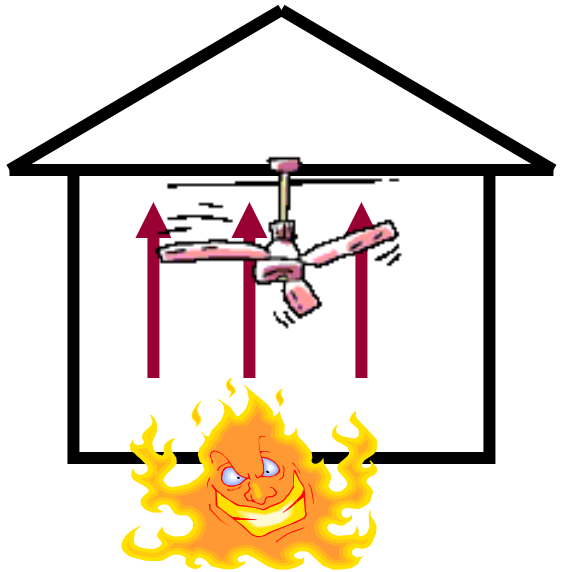
- ***Environmental Controls***
  - **Temperature**
  - **Carbon dioxide levels (e.g. not a pollutant source, it is what we breathe out, is used as an indicator of air exchange in a space)**

- ***Pollution Control – 2 kinds of systems:***
  1. **Dilution – General Ventilation System**
  2. **Complete removal – Direct Ventilation System (e.g. bathroom exhaust, stove hood)**

How is air moved through the building?
Two Types of Systems:

Passive – intentional and unintentional:

- **uses the force of the wind and movement to move air in and out of windows, doors, leaks in building, cracks, etc.**
- **stack effect (warm air rising)**
- **pressure gradients**



Active - mechanical systems: removes, dilutes, conditions and circulates air, examples:

- **unit ventilators**
- **central HVAC**
- **central exhaust**

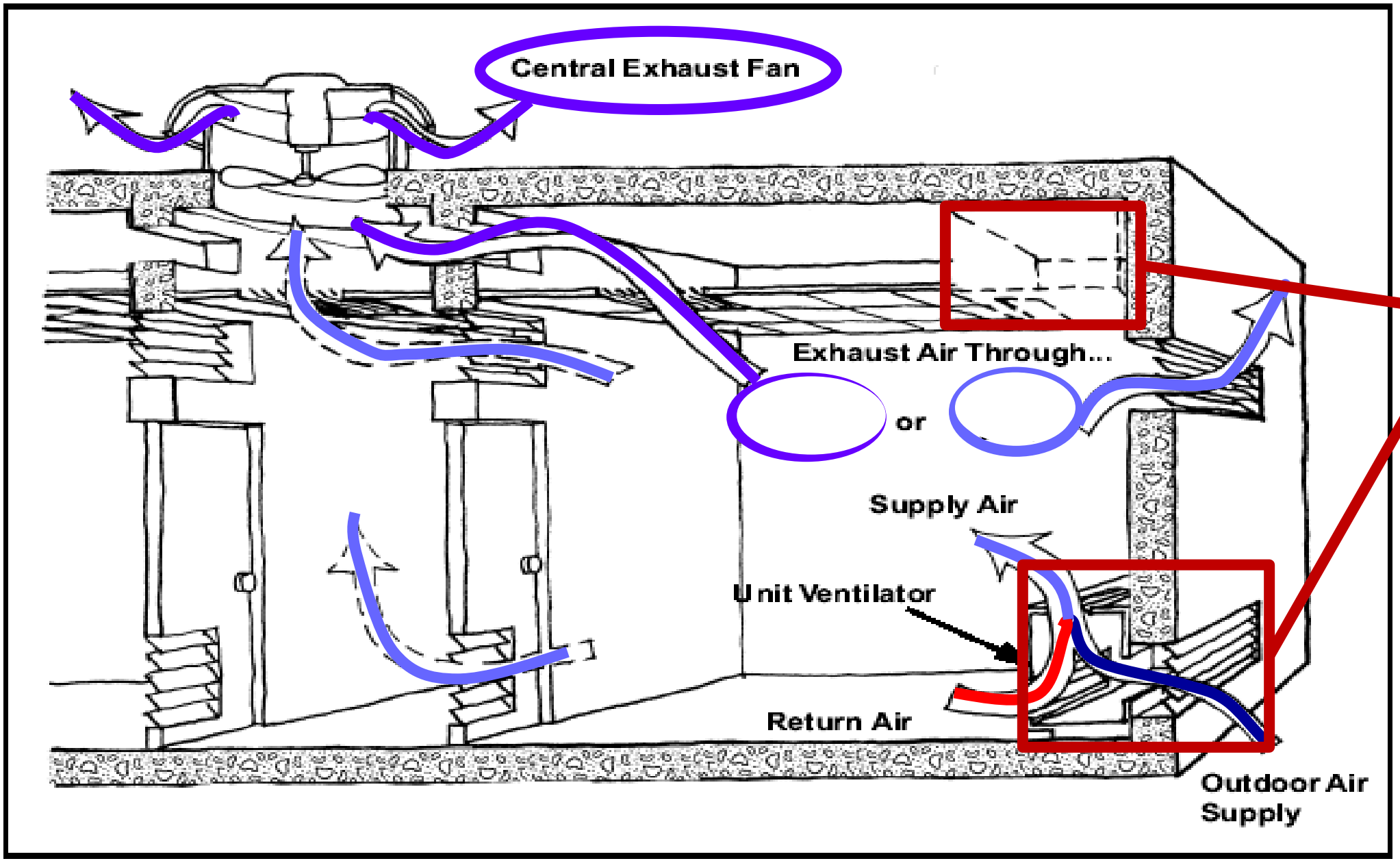
Types of Ventilation Systems:
2 Types of Active General Dilution Systems

Unit Ventilators

- Handles one room
- There may be several in one room
- May be on outside wall or mounted on ceiling

https://www.google.com/url?sa=i&url=http%3A%2F%2Fairhandlingunitfukanse.blogspot.com%2F2017%2F03%2Fcomponents-of-air-handling-unit.html&psig=AOvVaw1ggkWDeDMdLi1oRwHFZfDb&ust=1607796679723000&source=images&cd=vfe&ved=2ahUKEwjHzv_Aw8btAhWV21kKHWxHAX4Qr4kDegUIARC_Ag

Example of a Common School HVAC Design: Unit Ventilator

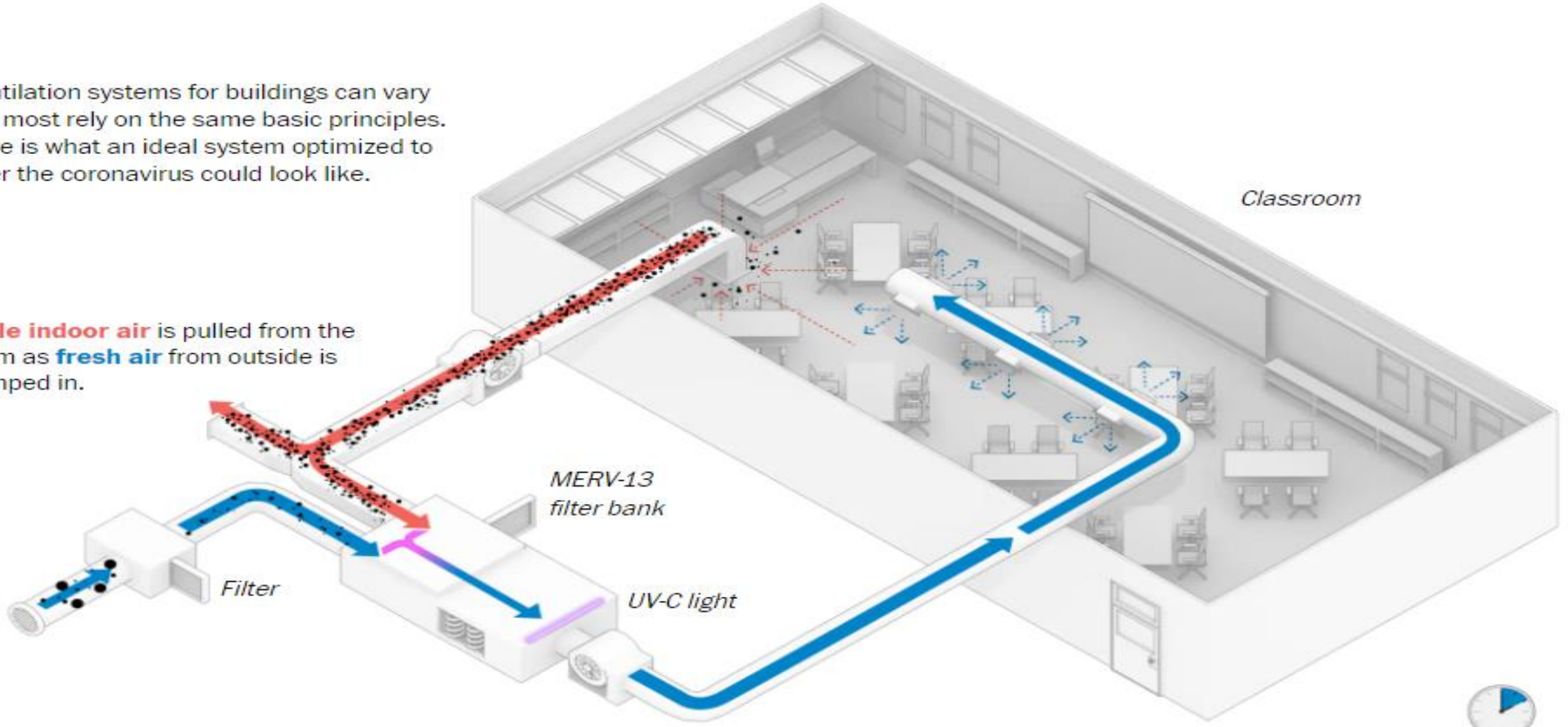


Location on outside wall

Example of a School HVAC Design: Air Handling Unit w/ Air Treatment Technologies

Source: Washington post

Ventilation systems for buildings can vary but most rely on the same basic principles. Here is what an ideal system optimized to filter the coronavirus could look like.



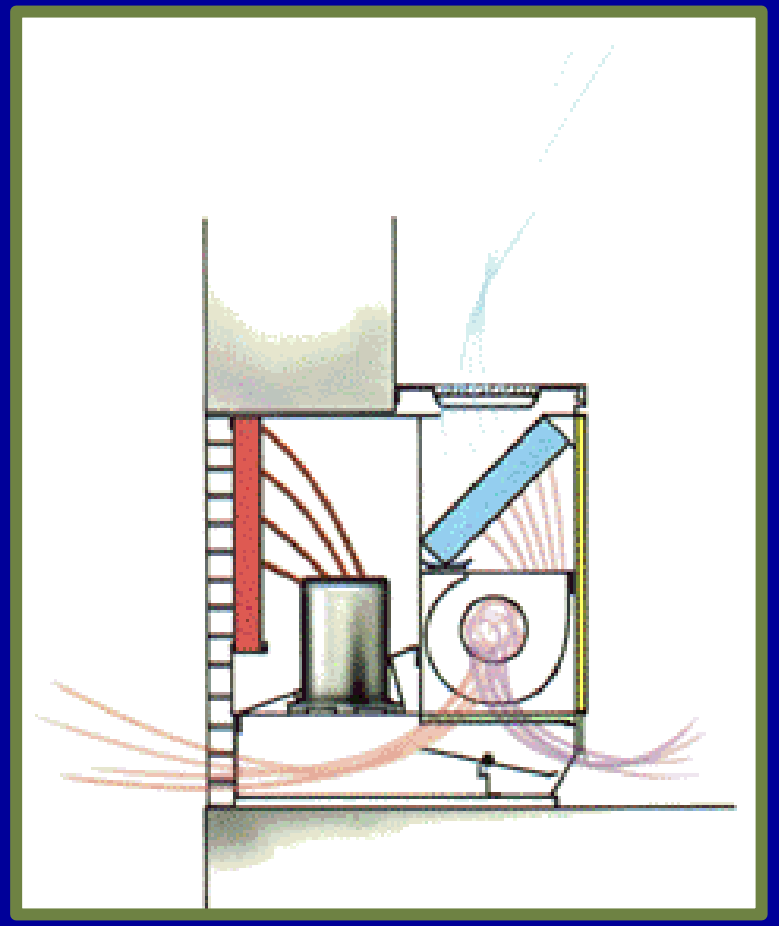
With outside ventilation increased to maximum, **prefilters** catch large particles from outside air while **MERV-13 filters** further clean the air and capture virus particles.

UV-C lights may also be installed in air-handling units or ducts to kill airborne viruses. Clean air is vented back into the room while the stale air is vented outside.

The goal would be to have the air filtered and pass UV-C lights every 10 minutes.

Check to see if air is able to flow through your room as designed and any air treatment systems are unhampered!

Based on Tools For Schools



http://www.nesbittaire.com/nesbittaire_unit_ventilators.html

Where is your fresh air coming from? *Unit Ventilator*

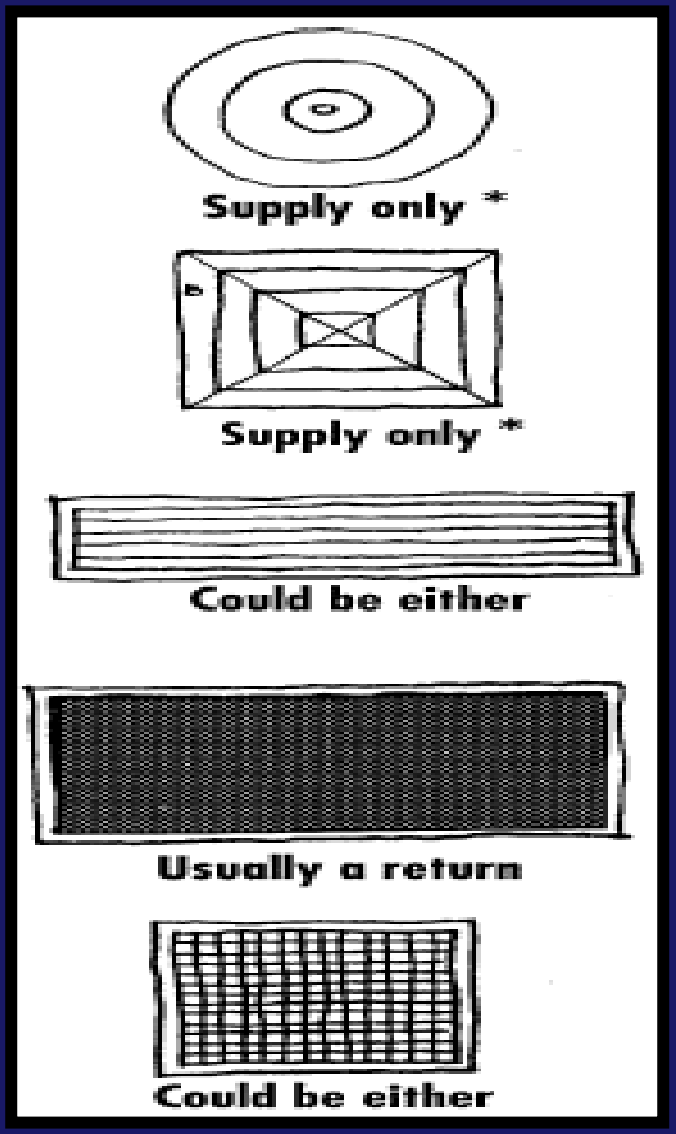
- Where are they located?
- Are they blocked?
- Is there a **3 foot clearance** all the way around them?

Identify and Evaluate Your Air Supply: *Supply Vents*

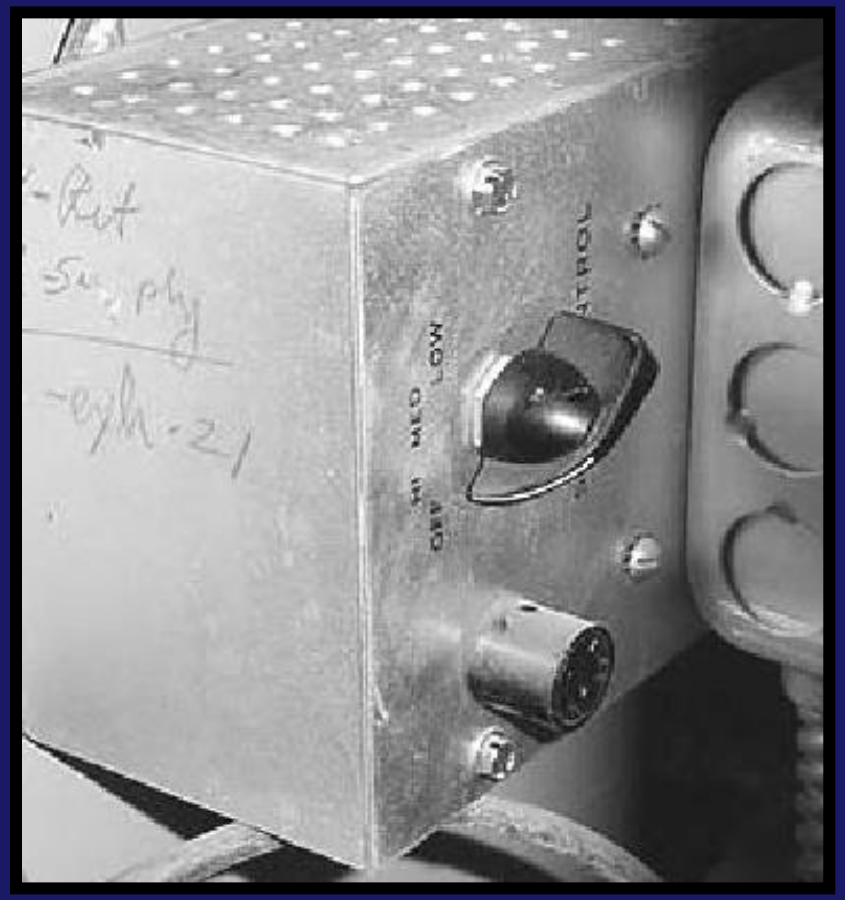
- Where are they located?
- Can you feel the air flow?
- Which direction does it flow?

  (when it creates a draft, it often gets blocked)

- Are they blocked?
- Is there a <u>three foot clearance</u> around them?



Evaluate Your Air Supply: *Unit Ventilator – Is it on?*



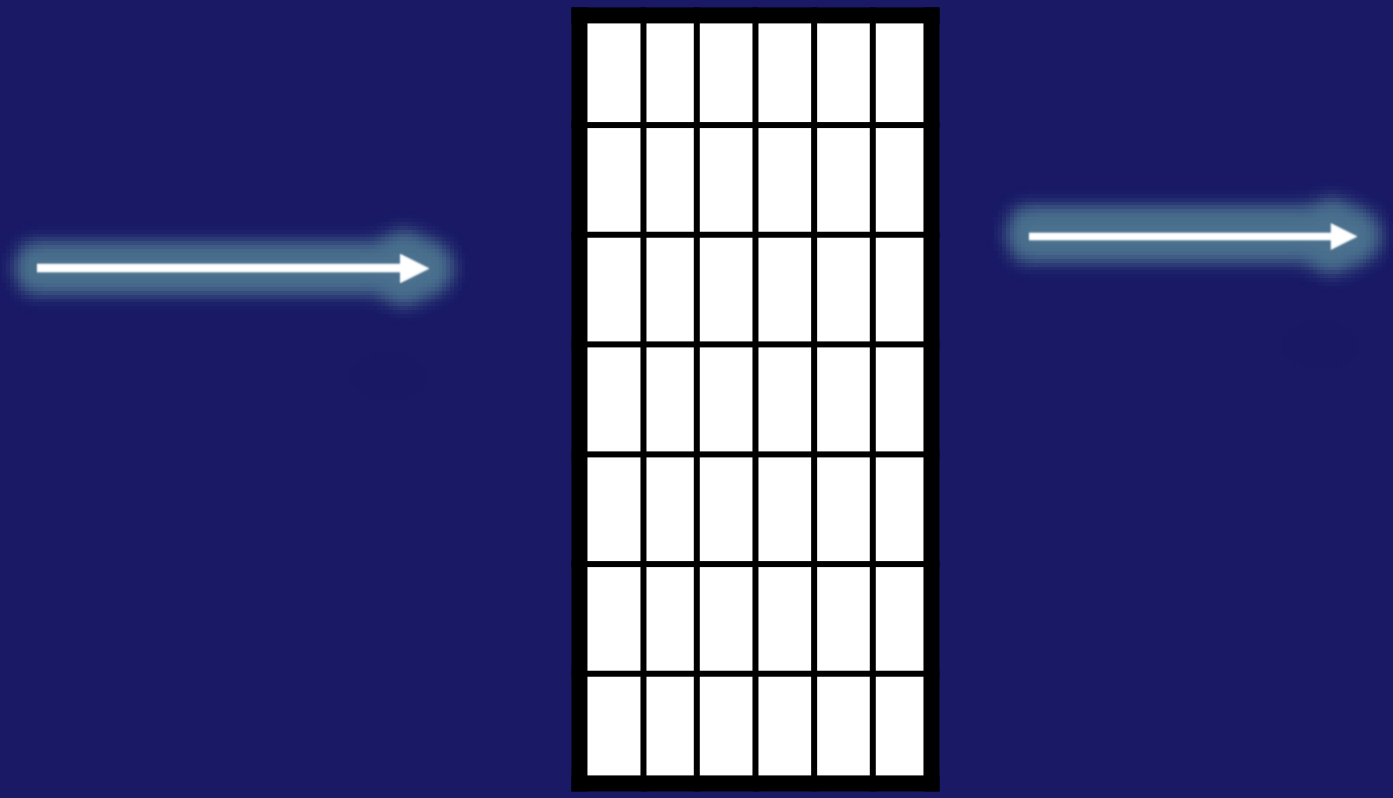
Univent Control:

Switched to off position in classroom during school occupancy.

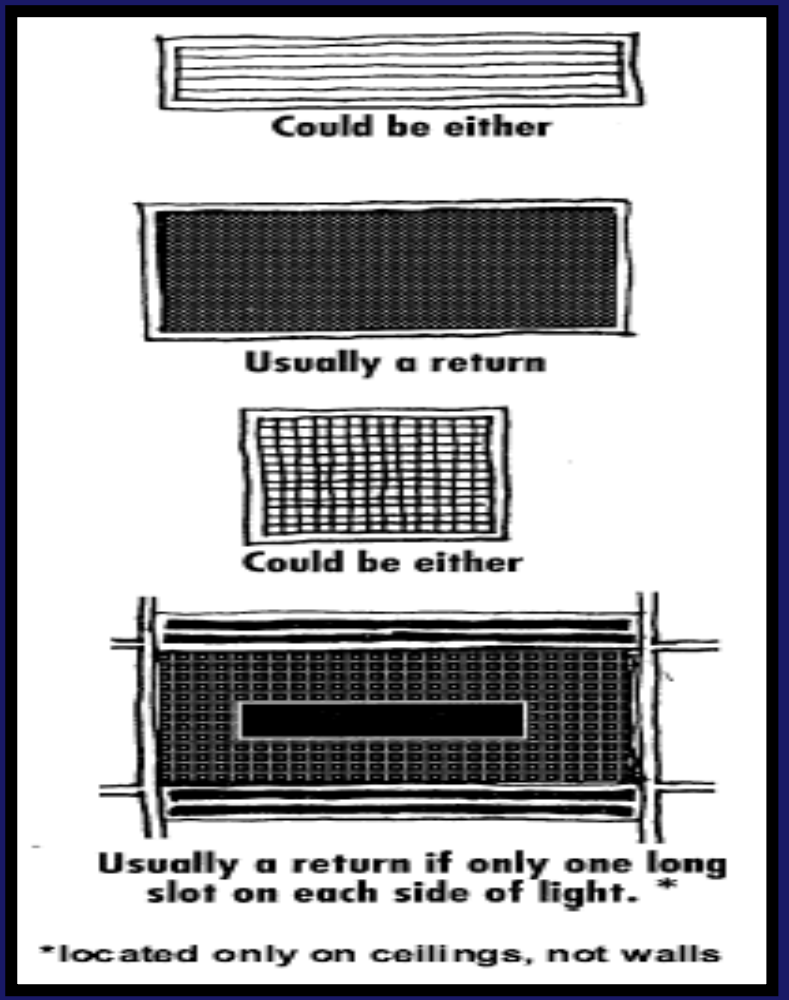
Was it shut off for being too noisy or drafty?

Where are your *exhaust* systems: *Exhaust Vents*

Air is removed from rooms through



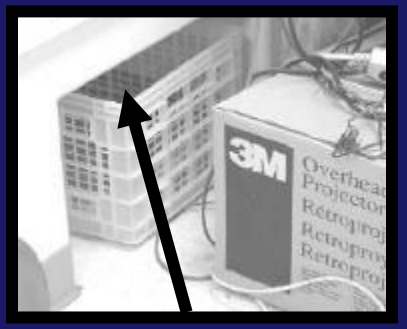
Exhaust or Return Vents



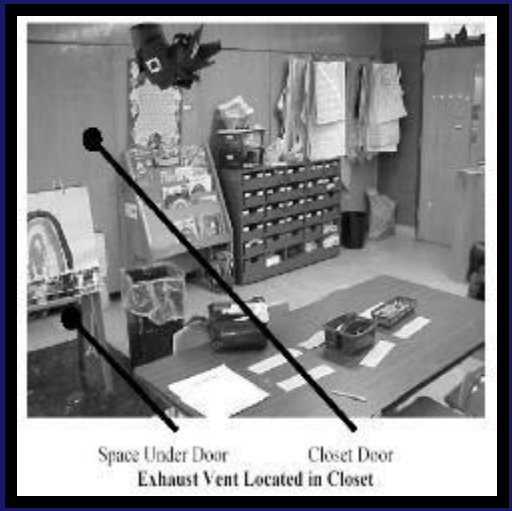
Types of Grilles on the Vents

Where are your exhaust systems? *Exhaust Vents*

- Where are they located?
- Are they blocked?
- Are they working - is there air movement?
- Is there a **3 foot clearance** all the way around?



Exhaust Cubby



Coat Closet Exhaust Vent

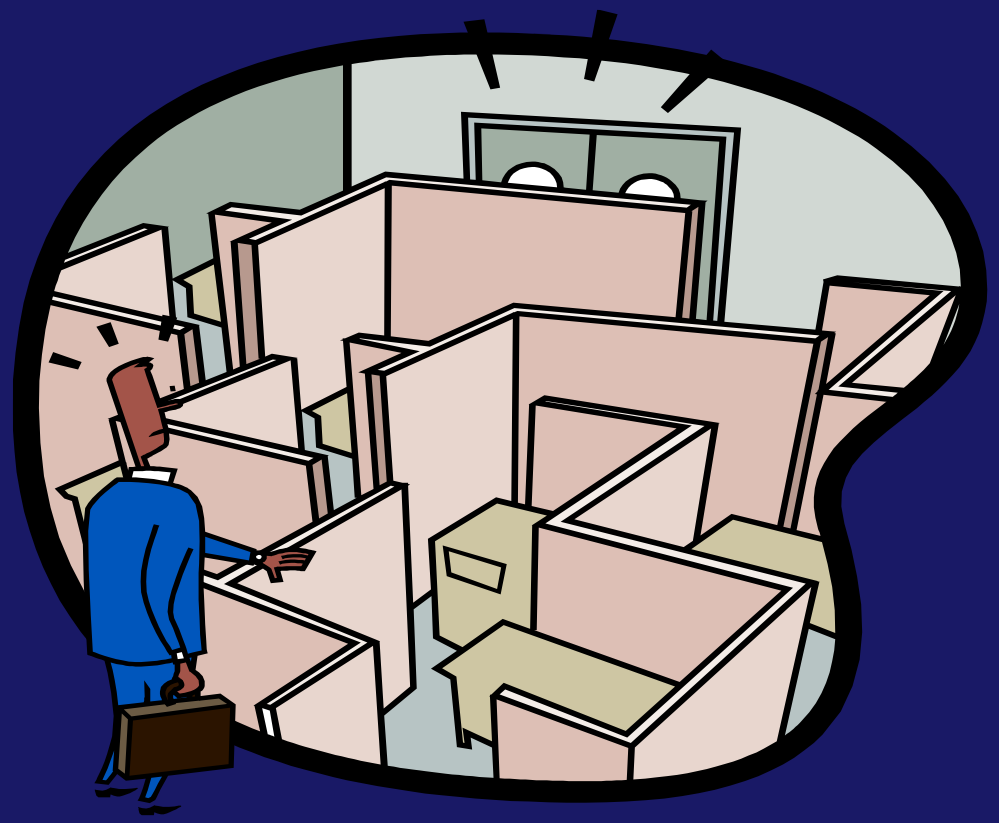
Shelves in classroom built around exhaust cubby obstructing airflow

Identify Air Barriers

That block or change the flow of air in the space,

around supply, return and exhaust vents and any air treatment systems

- **Dividers**
- **Walls**
- **Bookshelves**
- **Free standing whiteboards**
- **Partitions**



room dividers

Summary – Follow guidance from your Facilities Department and/or COVID-19 Leader for:

1) Obtaining approved products
2) Training on product use
3) Storing approved products
4) Removing unauthorized products
5) Maintaining ventilation and air treatment systems

Questions?