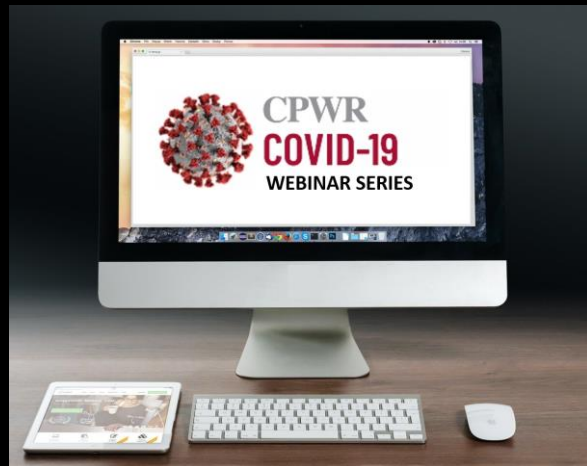


# CPWR-NIOSH COVID-19 Webinar Series

## What We've Learned: Health Risks and Prevention

September 10, 2020



### Welcome:

G. Scott Earnest, Ph.D., P.E., C.S.P., Associate Director for Construction, Office of Construction Safety and Health, NIOSH

### Moderator:

Chris Trahan Cain, CIH, Executive Director, CPWR

### Presenters:

**Eileen Betit**, Director, Research to Practice, CPWR

**Rosemary K. Sokas, MD, MOH**, Professor, Department of Human Science, Georgetown University School of Nursing and Health Studies; and Professor, Department of Family Medicine, Georgetown University School of Medicine

**Melissa A. McDiarmid, MD, MPH, DABT**, Medical Director, DVA Depleted Uranium and Toxic Embedded Fragment Surveillance Centers; and Professor of Medicine and Epidemiology & Public Health and Director, Division of Occupational & Environmental Medicine, University of Maryland School of Medicine

**CPWR-NIOSH  
COVID-19 Webinar Series**

**What We've Learned:  
Health Risks and Prevention**

***New Exposure Control Planning Tool***

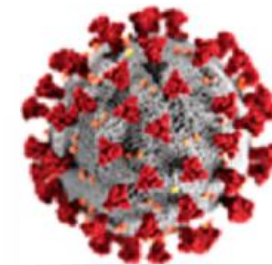
**September 10, 2020**

Development Team:

Eileen Betit, Director, Research to Practice, CPWR

Rick Rinehart, Deputy Director, CPWR

Hannah Echt, Consultant



**CPWR**

**COVID-19**

Exposure Control Planning Tool

<https://www.covidcpwr.org>

# Home Page

1. Why Create A Plan
2. How it Works
3. Register/Login (*optional*)
4. Begin Your Plan

## Creating a plan to protect workers and prevent the spread of COVID-19 on construction job sites

The [Centers for Disease Control and Prevention \(CDC\)](#) and the [Occupational Safety and Health Administration \(OSHA\)](#) recommend that companies develop a plan to protect their employees and prevent the spread of COVID-19. This free COVID-19 Exposure Control Planning Tool takes you step-by-step through developing your plan, including what to consider when conducting a job hazard analysis for COVID-19, selecting appropriate controls, screening workers and visitors, training employees, and implementing the plan. Remember to take advantage of your employees' knowledge of job site conditions as you develop your plan.

At the end of the steps, you will have a written plan tailored for your job that can be saved, printed, and emailed. There is an option to confidentially register if you want to save and edit your plan(s) at a later time, but registration is not required to use this free tool.



[Begin Your Plan](#)

### Why Create A Plan?

Preventing the spread of COVID-19 will keep construction job sites open, help prevent delays, and protect employees.

### How it Works

This easy to use tool has four key steps to follow to create your plan.

### Register/Log In

You do not need to register to use the tool. This is an option for users who want to edit their plans.

### COVID-19 Construction Clearinghouse

A central resource for construction employers and workers to find the latest information and resources to help prevent the spread of the disease.

[VISIT THE SITE](#)

# Develop a Plan – Step 1

## Identify the Risks and Control Measures on the Job Site *and* in the Office/Trailer

The screenshot shows the CPWR COVID-19 Exposure Control Planning Tool interface. At the top, there is a navigation bar with links for HOME, WHY CREATE A PLAN?, HOW IT WORKS, and REGISTER/LOGIN. Below the navigation bar, the text "New Plan" is followed by a link "CLICK HERE TO CHANGE PLAN NAME". A progress indicator shows "STEP 1: JOB SITE" as the active step, followed by "STEP 1: OFFICE/TRAILER", "STEP 2: SCREENING EMPLOYEES", "STEP 3: TRAINING", and "STEP 4: COMPLETE YOUR PLAN". The main heading is "Step 1: Identify where your employees could be exposed to COVID-19 and the control measures that will be used to protect them and prevent exposure." Below this is a paragraph of instructions. A red circle highlights the section header "JOB SITE EXPOSURE RISKS AND CONTROLS". Below this header is a list of seven exposure risks, each with a red checkmark icon and a blue information icon:


- Airborne Exposures Outdoors – General Work Areas
- Airborne Exposures Indoors/Enclosed Areas
- Airborne & Touch Exposures in Choke Points (entrances, elevators, lifts)
- Touch Exposures from Lifting and Moving Materials
- Touch Exposures from Sharing Hand Tools and Small Equipment
- Touch Exposures from Sharing Vehicles and Heavy Equipment
- Airborne & Touch Exposures in Heavy Traffic/Frequent Use Areas (break areas, porta potties)

At the bottom right, a green button reads "NEXT: Office/Trailer Exposure Risks and Controls".

The screenshot shows the CPWR COVID-19 Exposure Control Planning Tool interface. At the top, there is a navigation bar with links for HOME, WHY CREATE A PLAN?, HOW IT WORKS, and REGISTER/LOGIN. Below the navigation bar, the text "New Plan" is followed by a link "CLICK HERE TO CHANGE PLAN NAME". A progress indicator shows "STEP 1: OFFICE/TRAILER" as the active step, followed by "STEP 1: JOB SITE", "STEP 2: SCREENING EMPLOYEES", "STEP 3: TRAINING", and "STEP 4: COMPLETE YOUR PLAN". The main heading is "Step 1: Identify where your employees could be exposed to COVID-19 and the control measures that will be used to protect them and prevent exposure." Below this is a paragraph of instructions. Below the instructions, the section header "OFFICE/TRAILER" is displayed. Below this header is a list of five exposure risks, each with a red checkmark icon and a blue information icon:

- Airborne Exposures in Enclosed Office Work Area
- Touch and Airborne Exposures in Bathrooms
- Airborne & Touch Exposures in Heavy Traffic Areas and Choke Points (entrances, elevators, hallways, kitchens, and common areas)
- Touch Exposures from Sharing Equipment & Supplies (computers, tablets, phones, pens, etc.)

At the bottom left, a grey button reads "Back". At the bottom right, a green button reads "NEXT: Step 2 Screening Employees", which is circled in red.

- ✓ Select multiple risk categories and controls for the risks
- ✓ Throughout  gives descriptions and links to additional information

Test Plan [CLICK HERE TO CHANGE PLAN NAME](#)

STEP 1: JOB SITE // STEP 1: OFFICE/TRAILER // STEP 2: SCREENING EMPLOYEES // STEP 3: TRAINING // STEP 4: COMPLETE YOUR PLAN

















### Step 1: Identify where exposure risks exist and the control measures that will be used to protect them from exposure.

The following is a list of areas on a job site where exposure risks exist. Select all the exposure risk areas that apply. Controls to prevent exposure will apply to all selected areas. Use the 'Other' option to fill in ones not listed. The controls will be implemented. The below information is for informational purposes only.

Keep workers and others moving in the same direction to limit interactions by establishing separate gates/points and routes to use when arriving and leaving the job site. [Click here for resources on designating separate points for entering and leaving the job site.](#)

Close

#### OFFICE/TRAILER

- Airborne Exposures in Enclosed Office Work Area 
- Touch and Airborne Exposures in Bathrooms 
- Airborne & Touch Exposures in Heavy Traffic Areas and Choke Points (entrances, elevators, hallways, kitchens, and common areas) 
  - Designate separate points for entering & leaving job site 
  - Require handwashing before & after entering area 
  - Increase ventilation 
  - Limit the number of individuals in lifts & elevators 
  - Place handwashing stations & hand sanitizers in accessible locations 
  - Restock soap/water, towels & hand sanitizer frequently 
  - Prohibit sharing of food & beverages 
  - Use respirators (such as N-95s) as part of a respiratory protection program 
  - Mark walking areas with directional arrows 
  - Use signs/posters/markers to maintain a 6ft distance between workers 
  - Use signs to limit number of people in an area 
  - Use face coverings 
  - Use face shields 
  - Other

TEST

Use this space for additional details on how the controls will be used to address the risk.

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# Connected to Resources in the COVID-19 Construction Clearinghouse

Test Plan [CLICK HERE TO CHANGE PLAN NAME](#)

STEP 1: JOB SITE // STEP 1: OFFICE/TRAILER // STEP 2: SCREENING EMPLOYEES // STEP 3: TRAINING // STEP 4: COMPLETE YOUR PLAN

**Step 1: Identify where your employees could be exposed to COVID-19 and the control measures that will be used to protect them and prevent exposure.**

The following is a list of areas on a job site and in an office/trailer where individuals may be exposed to COVID-19 in the air and/or on surfaces. Select all the exposure risks that you expect will be present on your job site. As you select an exposure risk, a list of possible controls to prevent exposure will appear. Please select all the controls that you will use. If an exposure risk or control is not listed, please use the 'Other' option to fill in ones of your own and use the text box to include additional information on the location of the risks and how controls will be implemented. The blue information icon will take you to additional information on the risk or control measure.

**OFFICE/TRAILER**

- Airborne Exposures in Enclosed Office Work Area
- Touch and Airborne Exposures in Bathrooms
- Airborne & Touch Exposures in Heavy Traffic Areas and Check Points (entrances, elevators, hallways, kitchens, and common areas)
  - Designate separate points for entering & leaving job site
  - Require handwashing before & after entering area
  - Increase ventilation
  - Limit the number of individuals in lifts & elevators
  - Place handwashing stations & hand sanitizers in accessible locations
  - Restock soap/water, towels & hand sanitizer frequently
  - Prohibit sharing of food & beverages
  - Use respirators (such as N-95s) as part of a respiratory protection program
  - Mark walking areas with directional arrows
  - Use signs/posters/markers to maintain a 6ft distance between workers
  - Use signs to limit number of people in an area
  - Use face coverings
  - Use face shields
  - Other

TEST

Use this space for additional details on how the controls will be used to address the risk.

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Keep workers and others moving in the same direction to limit interactions by establishing separate gates/points and routes to use when arriving and leaving the job site. [Click here for resources on designating separate points for entering and leaving the job site.](#)

Close

CPWR COVID-19 Construction Clearinghouse

Enter search terms...

**Control: Designate separate points for entering & leaving job site**

**Designated stairs for up and down to promote social distancing**

**Description:**  
Segregated stair towers with signage reduce two-way traffic in stairwells and help workers maintain social distancing.

**Source:** Oregon State Building Trades Council  
**Date:** 08/28/20

**Signs indicate walking paths to maintain social distancing**

**Description:**  
Signage and segregated walk paths reduce two-way traffic on narrow

# Step 2

Describe procedures for screening:

- ✓ Who will be screened?
- ✓ How will screening be done?
- ✓ Who will do the screening?
- ✓ How will sick and exposed workers will be handled?

*This is a screen shot of what a user will fill out.*

The screenshot shows the 'Test Plan' interface for the CPWR COVID-19 Employer's Control Planning Tool. The page is titled 'Test Plan' with a link to 'CLICK HERE TO CHANGE PLAN NAME'. The navigation bar includes 'HOME', 'WHY CREATE A PLAN?', 'HOW IT WORKS', and 'REGISTER/LOGIN'. The current step is 'STEP 2: SCREENING EMPLOYEES', with other steps listed as 'STEP 1: JOB SITE', 'STEP 1: OFFICE/TRAILER', 'STEP 3: TRAINING', and 'STEP 4: COMPLETE YOUR PLAN'. The main heading is 'Step 2: Identify the procedures for screening employees and dealing with sick or exposed workers.' Below this is a sub-heading: 'Please use the space provided to describe the specific approaches and policies you will implement for dealing with sick or exposed workers to prevent the spread of disease. The blue information icon will take you to additional information.' The form contains several questions with text input fields and a radio button for the first question: 'Is your company responsible for screening your employees or others who come to the job site?' with options 'Yes' and 'No'. The remaining questions are: 'If your company is not responsible, please list the company that is responsible.', 'Who will be screened? (All employees? All visitors? Others?)', 'When and how frequently will the screening take place? (days/times)', 'Where will the screening be performed? (Identify the location on the job site)', 'Who will perform the screening? (Name of individual(s) and/or company, and title(s))', 'How will workers be screened?', 'Do you anticipate any language or literacy barriers and how will they be handled?', 'How will screening records be maintained and who will maintain the records?', 'How will workers with COVID-19 symptoms be dealt with?', 'What is the policy for dealing with workers who had contact with a sick co-worker?', 'What is the procedure for cleaning and disinfecting the work area where a sick worker was located? (How soon after the worker is sent home will the cleaning take place? Who will do the cleaning? How will the individual(s) cleaning be protected? What will the cleaning involve?)', 'How will the sick person's confidentiality be protected?', 'When you learn a worker on the job has tested positive for COVID-19, who will you notify and when? (Local health department, other contractors, etc.)', 'Will an effort be made to trace sick workers and if so how (contact tracing)? (Local health authority, etc.)', and 'What is the policy for workers who have tested positive returning to work?'. At the bottom, there are 'Back' and 'NEXT: Step 3 Training' buttons.

# Step 3

Describe the training that will be provided:

- ✓ Who will be trained?
- ✓ How will the training be provided?
- ✓ Where will the training take place?
- ✓ When will the training be conducted?
- ✓ What topics will be covered?
- ✓ Will there be special (ICRA, etc.) or trade specific training?

*This is a screen shot of what a user will fill out.*

The screenshot shows the 'Test Plan' interface for CPWR COVID-19. The page is titled 'Test Plan' with a link to change the plan name. The navigation bar includes 'HOME', 'WHY CREATE A PLAN?', 'HOW IT WORKS', and 'REGISTER/LOGIN'. The current step is 'STEP 3: TRAINING', with other steps being 'STEP 1: JOB SITE', 'STEP 2: SCREENING EMPLOYEES', and 'STEP 4: COMPLETE YOUR PLAN'. The main heading is 'Step 3: Training on COVID-19'. Below this, there is a paragraph of instructions: 'Please use the space provided to describe the COVID-19 focused training that will be provided to employees. The blue information icon will take you to training resources to help you carry out this training.' The form contains several sections with input fields and checkboxes:

- Who will be trained?** (Text input field)
- How will the training be provided?** (Checkboxes for: In-person with social distancing, Video - on-demand, Conference calls, Online Meetings, Other)
- Where will the training be provided?** (Text input field, with a note: '(Location if in-person; platform (Zoom, Microsoft Teams, etc.) if online; link to videos)')
- When will the training be held?** (Text input field, with a note: '(Start of the job? When new employees are hired? When there is new guidance or policies?)')
- What will the training cover?** (Checkboxes for: Signs and symptoms of COVID-19, How the disease spreads, Reason for the screening (why it is being done), Screening methods that will be used, Company policy for sending sick workers home, Company policy for dealing with workers that may have been exposed, Procedures or restrictions for accessing the job site, Specific COVID-19 risks on the job that the workers may encounter, Control measures that will be used for each exposure risk, Requirements for face coverings (if and when they will be provided, proper use, when will they be required to be used), OSHA required respiratory protection training (when respirators are used), Locations and availability of gloves, handwashing stations and/or hand sanitizer, and expectations for use, How to use of gloves (donning and doffing gloves, proper care, maintenance, useful life, and disposal), Hazard communication training for COVID-19 related disinfectants and hand sanitizers used, Recommendations or restrictions related to food and beverages on the job, The role of the COVID-19 officer for the job site - the name, how to reach, when to contact, who to contact if the person is unavailable, What to do if you feel at risk of exposure, Mental health resources, Requirements under the Families First Coronavirus Response Act)
- Specialized training (such as ICRA) - please specify:** (Text input field)
- Training specific to trade-specific tasks to prevent COVID-19 exposure:** (Text input field)

At the bottom, there are two buttons: 'Back' and 'NEXT: Step 4 Complete Your Plan'.



# Step 4

Other information to include in a plan:

- ✓ Company name
- ✓ Person preparing the plan
- ✓ Project name and description
- ✓ Person responsible for implementing the plan and their authority
- ✓ Other steps the company will take

*This is a screen shot of what a user will fill out.*

The screenshot shows the CPWR COVID-19 Exposure Control Planning Tool interface. At the top left is the CPWR COVID-19 logo with the tagline "Exposure Control Planning Tool". To the right are navigation links: HOME, WHY CREATE A PLAN?, HOW IT WORKS, and REGISTER/LOGIN. Below the navigation is a grey header bar with "Test Plan" and a link "CLICK HERE TO CHANGE PLAN NAME". A progress bar below the header shows five steps: STEP 1: JOB SITE, STEP 2: OFFICE/TRAILER, STEP 3: SCREENING EMPLOYEES, STEP 4: TRAINING, and STEP 5: COMPLETE YOUR PLAN. The main content area is titled "Step 4: Complete Your Plan." and includes a paragraph of instructions: "Please use the following spaces to provide information on the project, who will be responsible for implementing the plan, and other actions you plan to take to prevent the spread of COVID-19 on the job." Below this are several form fields: "Company Name", "Person Preparing the Plan (First and Last Name and Title)", "Project (Name/Location)", "Description of Project" (with a text area), "Name of Person Responsible for Implementing the Plan on the Job Site (COVID-19 Officer)", "COVID-19 Officer's Role Within the Company", "COVID-19 Officer's Authority to Implement the Plan", and "Other steps that will be taken to prevent exposures and the spread of COVID-19 on the job site (i.e., sick leave policy, etc.)" (with an information icon). At the bottom left is a "Back" button, and at the bottom right is a green "NEXT: Get Your Plan" button.

# Completed Plans – Plans can be downloaded, emailed and printed – If registered and logged in, saved and edited later

Users can go back to earlier steps and modify their entries

CPWR  
COVID-19  
Exposure Control Planning Tool

HOME WHY CREATE A PLAN? HOW IT WORKS REGISTER/LOG IN

Test Plan [CLICK HERE TO CHANGE PLAN NAME](#)

STEP 1: JOB SITE // STEP 2: OFFICE/TRAILER // STEP 3: SCREENING EMPLOYEES // STEP 4: TRAINING // STEP 5: COMPLETE YOUR PLAN

### Test Plan

What is known about how COVID-19 spreads and can be controlled is evolving. As new information is learned, this COVID-19 Planning Tool and related Construction Clearinghouse will be updated. Please review your plan periodically to ensure it includes the most up-to-date information and is being implemented properly.

Company Name  
Test Company

Person Preparing the Plan (First and Last Name and Title)  
John Doe

Project (Name/Location)  
Local School

Description of Project  
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Name of Person Responsible for Implementing the Plan on the Job Site (COVID-19 Officer)  
Jane Doe

COVID-19 Officer's Role Within the Company  
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COVID-19 Officer's Authority to Implement the Plan  
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Other steps that will be taken to prevent exposures and the spread of COVID-19 on the job site (i.e., sick leave policy, etc.)  
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### COVID-19 Exposure Risks and Controls

Office/Trailer: Airborne & Touch Exposures in Heavy Traffic Areas and Choke Points (entrances, elevators, hallways, kitchens, and common areas)

- Designate separate points for entering & leaving job site
- Require handwashing before & after entering area
- Other: TEST

### Procedures for COVID-19 screening and responding to sick workers

Is your company responsible for screening your employees or others who come to the job site?  
Yes

If your company is not responsible, please list the company that is responsible.  
John Doe

Who will be screened? (All employees? All visitors? Others?)  
All Workers

When and how frequently will the screening take place? (days/times)  
Daily

Where will the screening be performed? (Identify the location on the job site)  
Entrance to job site

Who will perform the screening? (Name of individual(s) and/or company, and title(s))  
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How will workers be screened?  
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Do you anticipate any language or literacy barriers and how will they be handled?  
No

How will screening records be maintained and who will maintain the records?  
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How will workers with COVID-19 symptoms be dealt with?  
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What is the policy for dealing with workers who had contact with a sick co-worker?  
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What is the procedure for cleaning and disinfecting the work area where a sick worker was located? (How soon after the worker is sent home will the cleaning take place? Who will do the cleaning? How will the individual(s) cleaning be protected? What will the cleaning involve?)  
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How will the sick person's confidentiality be protected?  
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When you learn a worker on the job has tested positive for COVID-19, who will you notify and when? (Local health department, other contractors, etc.)  
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Will an effort be made to trace sick workers and if so how (contact tracing)? (Local health authority, etc.)  
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What is the policy for workers who have tested positive returning to work?  
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### Training on COVID-19

Who will be trained?  
All Employees

How will the training be provided?

- In-person with social distancing
- Videos - on-demand
- Online Meetings
- Other: Test

Where will the training be provided? (Location if in-person; platform (Zoom, Microsoft Teams, etc.) if online; link to videos)  
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When will the training be held? (Start of the job? When new employees are hired? When there is new guidance or policies?)  
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What will the training cover?

- Signs and symptoms of COVID-19
- How the disease spreads

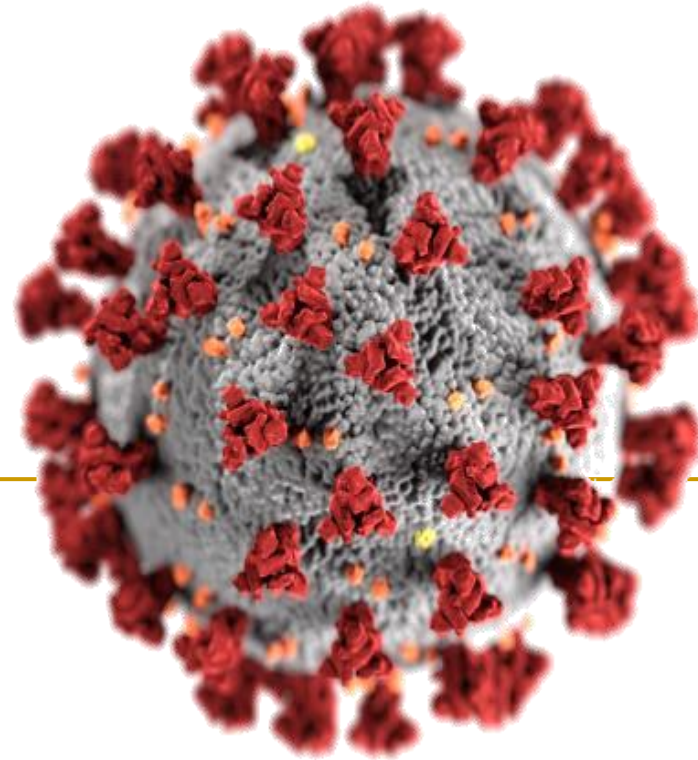
Specialized training (such as ICRA) - please specify:  
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Training specific to trade-specific tasks to prevent COVID-19 exposure:  
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Back Download PDF Email Plan Print Plan

# Covid-19 Update:

What have we learned in the past 8 months?



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# Coronaviruses





- Common Human Coronaviruses - HCoV
    - 229E (alpha coronavirus)
    - NL63 (alpha coronavirus)
    - OC43 (beta coronavirus)
    - HKU1 (beta coronavirus)
  - Severe Acute Respiratory Syndrome (SARS)
  - Middle Eastern Respiratory Syndrome (MERS)
  - **Novel Coronavirus (SARS CoV-2)**
  - Many others are still zoonotic only (mostly in bats, but other mammals and birds as well)
-

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# What more do we know now?

- Asymptomatic or pre-symptomatic viral shedding is common, including among children
  - Men, older age, racial and ethnic minorities, underlying conditions, including obesity, diabetes, hypertension
  - Extraordinary risks in some jobs, such as meat packing
  - Increased evidence for airborne transmission, slightly decreased emphasis on indirect contact spread.
  - Increased appreciation for variety of severe outcomes
  - Improved treatment - Remdesivir reduces length of hospitalization; steroids reduce mortality; prone position
  - PCR tests can be positive when no longer infectious
-

# COVID-19 CASES, HOSPITALIZATION, AND DEATH BY RACE/ETHNICITY

FACTORS THAT INCREASE COMMUNITY SPREAD AND INDIVIDUAL RISK		 CROWDED SITUATIONS	 CLOSE / PHYSICAL CONTACT	 ENCLOSED SPACE	 DURATION OF EXPOSURE
Rate ratios compared to White, Non-Hispanic Persons	American Indian or Alaska Native, Non-Hispanic persons	Asian, Non-Hispanic persons	Black or African American, Non-Hispanic persons	Hispanic or Latino persons	
CASES <sup>1</sup>	2.8x higher	1.1x higher	2.6x higher	2.8x higher	
HOSPITALIZATION <sup>2</sup>	5.3x higher	1.3x higher	4.7x higher	4.6x higher	
DEATH <sup>3</sup>	1.4x higher	No Increase	2.1x higher	1.1x higher	

Race and ethnicity are risk markers for other underlying conditions that impact health — including socioeconomic status, access to health care, and increased exposure to the virus due to occupation (e.g., frontline, essential, and critical infrastructure workers).

**ACTIONS TO REDUCE RISK OF COVID-19**

-  WEARING A MASK
-  SOCIAL DISTANCING (6 FT GOAL)
-  HAND HYGIENE
-  CLEANING AND DISINFECTION



<sup>1</sup> Data source: COVID-19 case-level data reported by state and territorial jurisdictions. Case-level data include about 80% of total reported cases. Numbers are unadjusted rate ratios.  
<sup>2</sup> Data source: COVID-NET (<https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covidview/index.html>, accessed 08/06/20). Numbers are ratios of age-adjusted rates.  
<sup>3</sup> Data source: NCHS Provisional Death Counts (<https://www.cdc.gov/nchs/nvss/vsrr/COVID19/index.htm>, accessed 08/06/20). Numbers are unadjusted rate ratios.

[cdc.gov/coronavirus](https://cdc.gov/coronavirus)

CS319360-A 08/08/2020


# CoRona VIrus Disease 2019


Rate =


Could be True

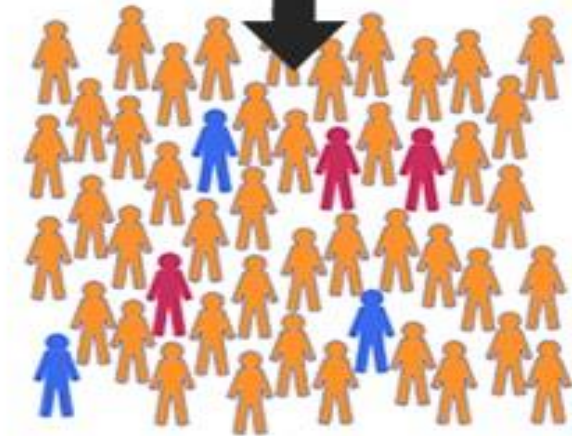
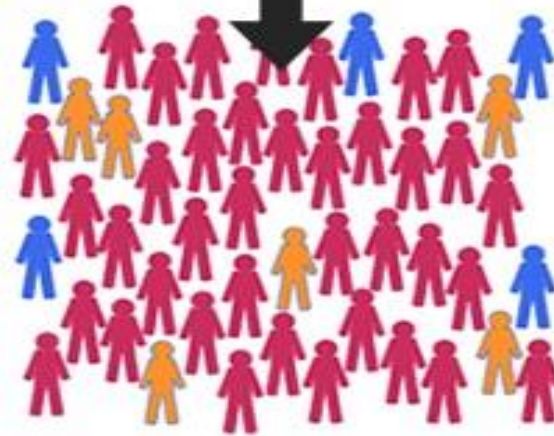
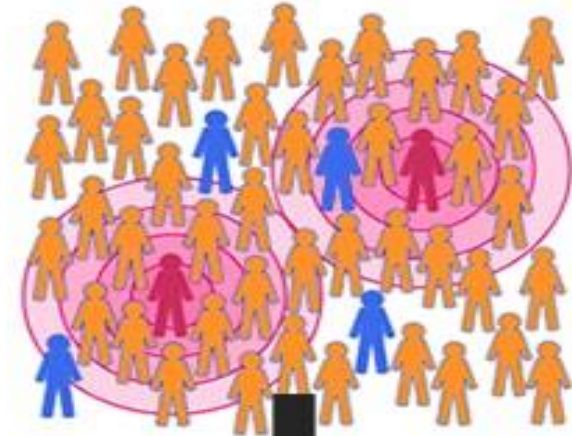
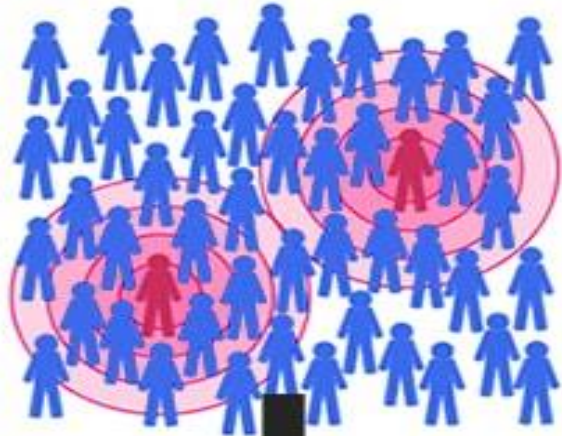
Don't really know

- CDC initially didn't track race or ethnicity
- It still doesn't ask about occupation or industry
- What are the true numbers?
- What is the deal with herd immunity?

 = not immunized,  
but still healthy

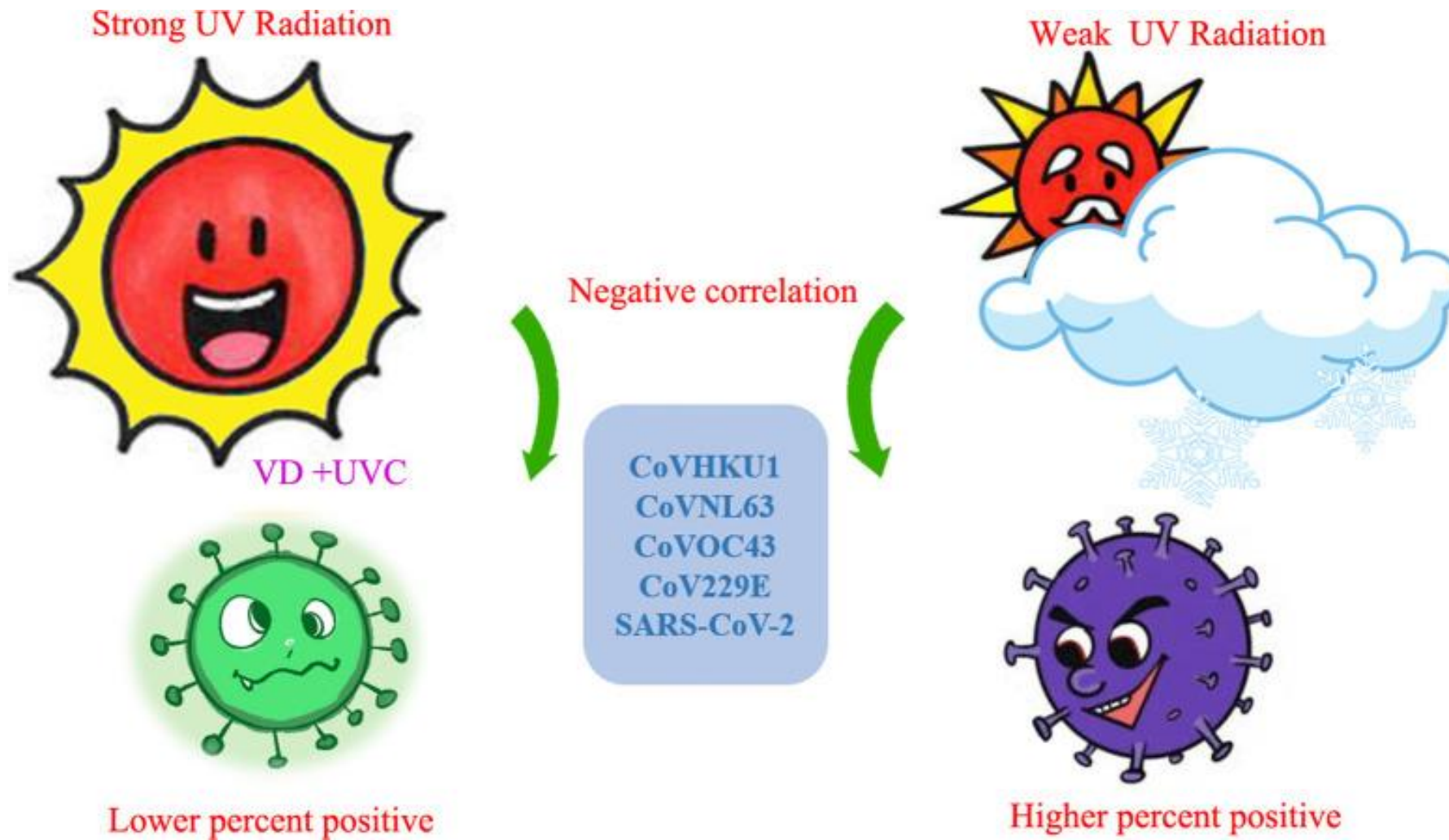
 = immunized  
and healthy

 = not immunized,  
sick, and contagious



TKARCHER

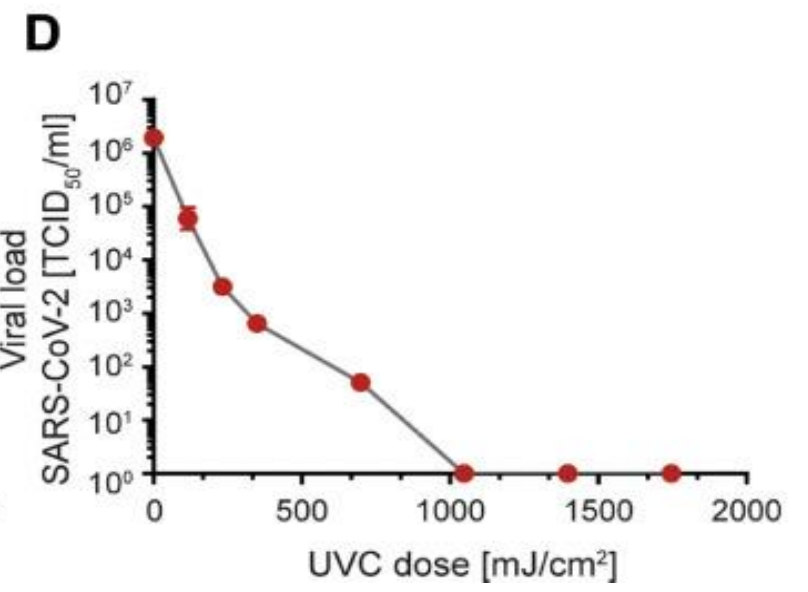
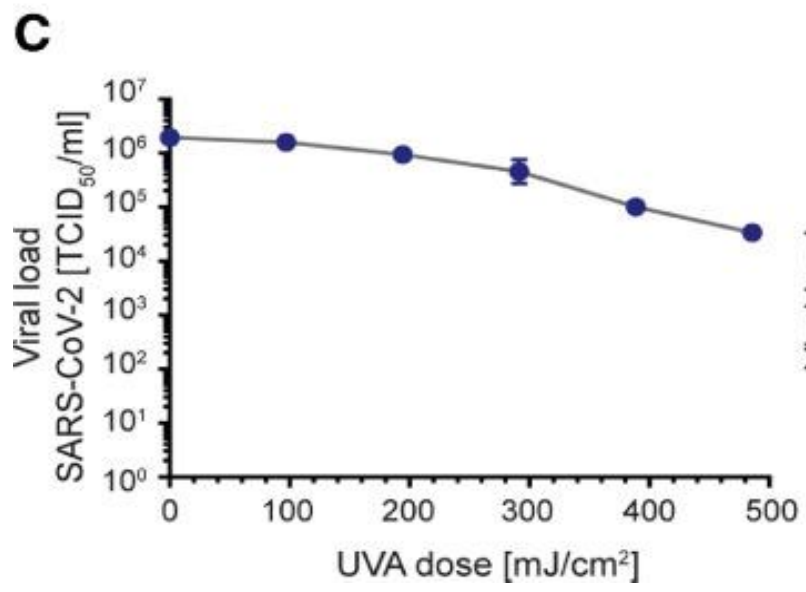
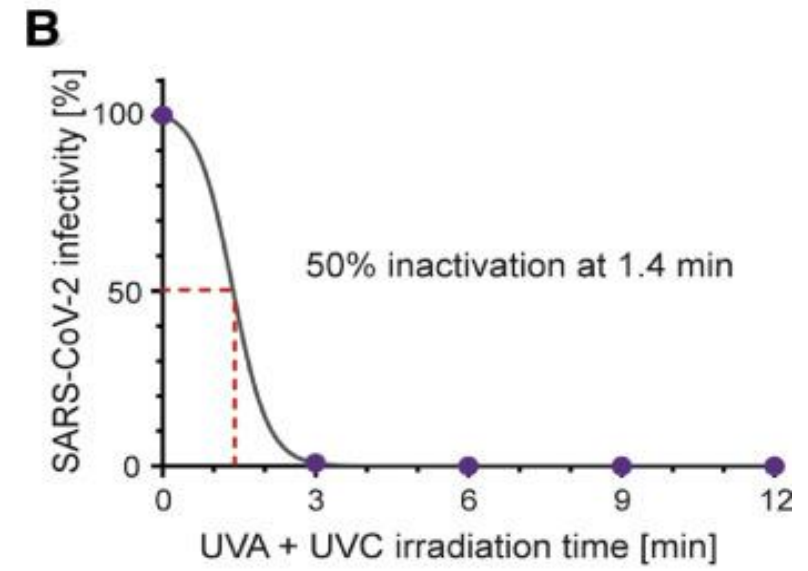
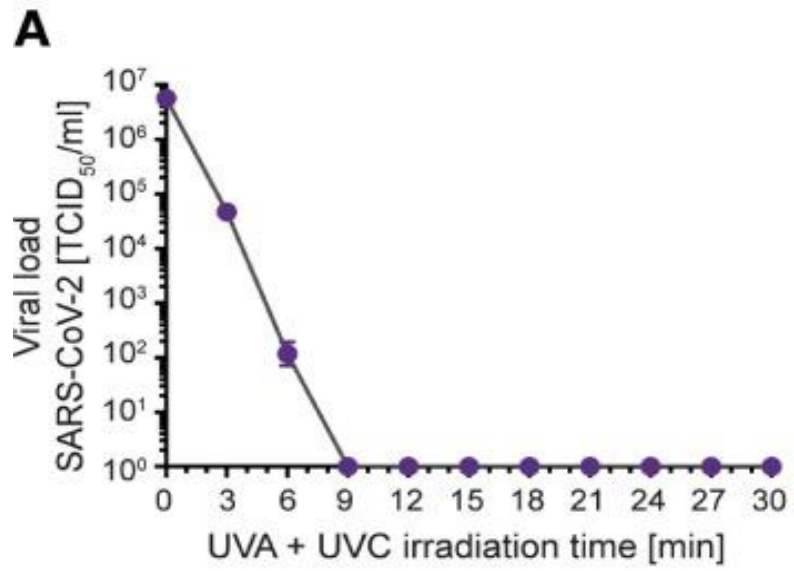




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# What about Vitamin D?

- ❑ Vitamin D levels are lower among those hospitalized with Covid 19 and even lower among those dying.
  - ❑ Vitamin D deficiency is associated with older age, diabetes, obesity, hypertension, and is higher among racial and ethnic minorities living in northern latitudes.
    - So is this just correlation?
    - Or could Vitamin D deficiency be causing both?
  - ❑ Mortality rates from covid19 are higher at higher latitudes
    - Some hypothesize that this is UV- vitamin D link
    - But UV kills the virus as well
-





# COVID-19 Update: What's Up with Masks?

*Melissa A. McDiarmid, MD, MPH, DABT*

*University of Maryland School of Medicine*

*Division of Occupational and Environmental Medicine*

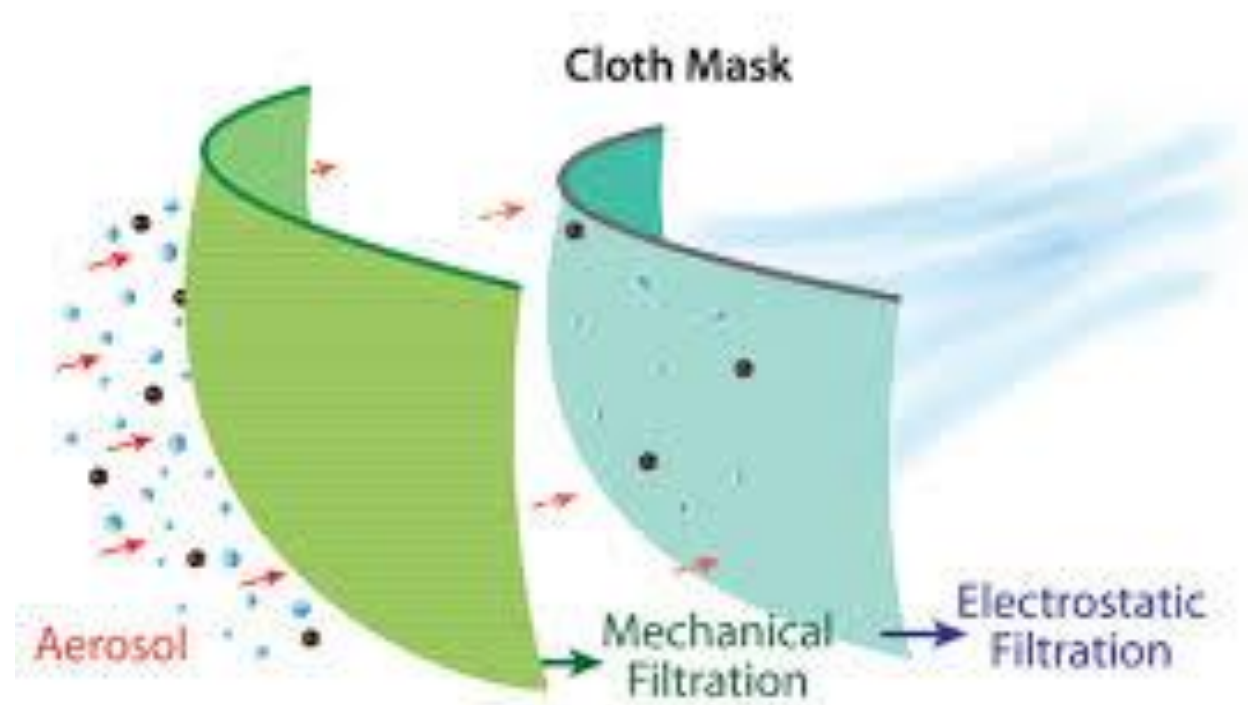
# Face Coverings Recommended For Everyone Who Is Around Others In Public



To prevent asymptomatic spread

# How Masks ‘Work’ or ‘Don’t’

1. Masks can ‘capture’ particles using two physical methods:
  - a) Filtration – excluding a particle based on size
  - b) Electrostatic force – excluding a particle based on charge
2. For cloth masks, the greater density of the material (thread count) the better the filtration
3. Gaps in fit of the face covering, just like a respirator can significantly decrease filter efficiency



This drawing illustrates the two ways that some fabrics can filter out small aerosols, including those carrying viruses. Mechanical blockage by fabrics such as tightly woven cotton keeps big particles from moving through. The electrostatic control of silk and chiffon fibers can then trap certain charged aerosols for extra filtration.

A. KONDA *ET AL*/ACS NANO 2020

# Masks - relevant standards and requirements

## - Non-Medical masks – general purpose/general public:

- One cloth does not equal another
- Huge variation, no clear and easy guidance possible for structure
- Efficiency should be measured, it cannot (yet) be predicted

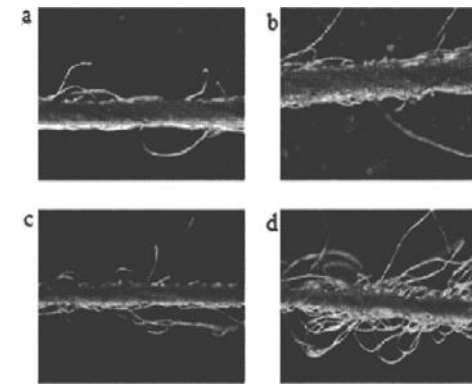
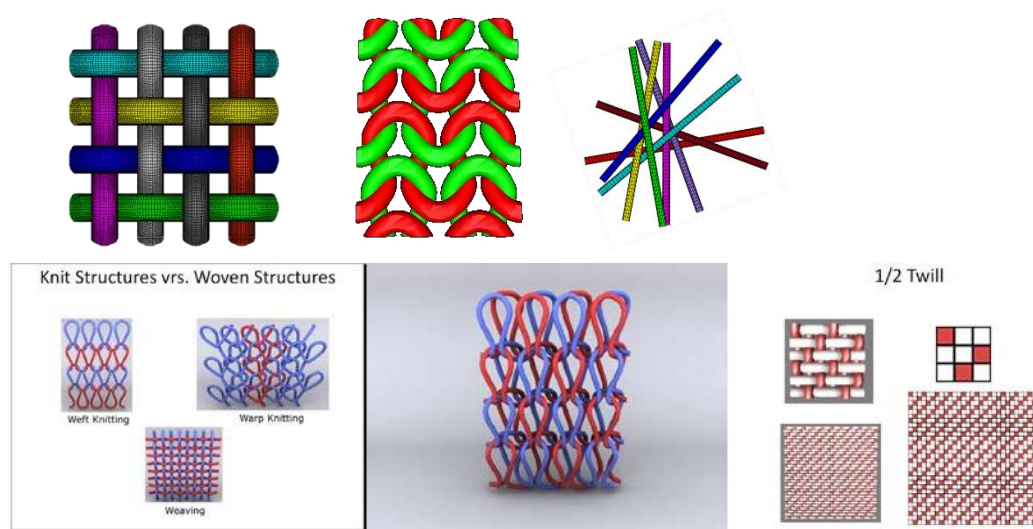
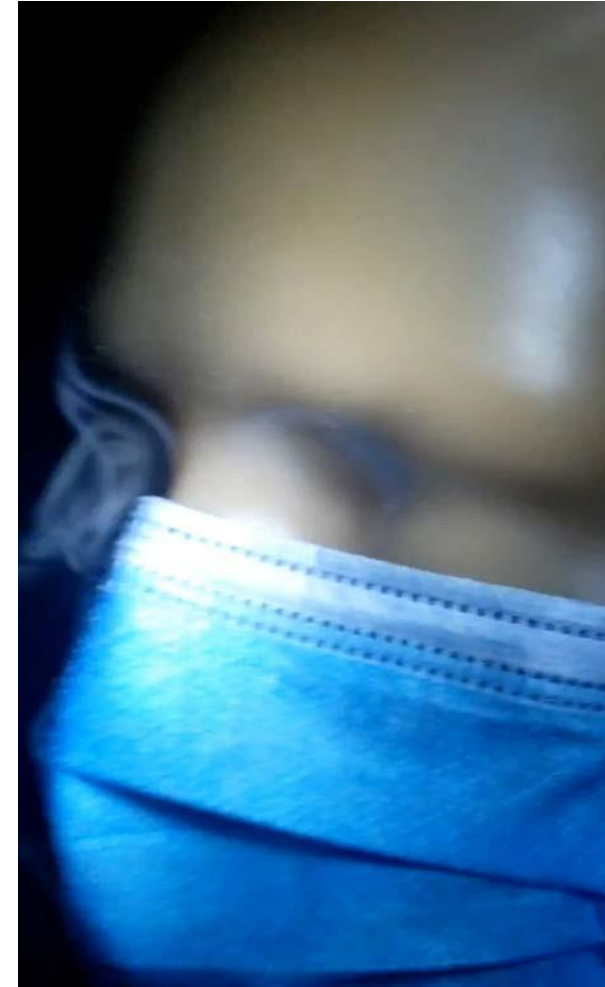


Fig. 8. Images of different spun yarns (a) ring, (b) rotor, (c) air-jet, and (d) OE friction  
Ghosh et al., Journal of Applied Polymer Science, 2008, Vol. 108, 3233–3238.



# Protection and reduction inward and outward – general reminders

- PPE: Protection is not only about the fabric used, but all about the final product and its personal fit
- For masks: filtration fabric + good fit to the face
- Air will follow the path of least resistance
  - If you feel air escape, that is where most of it is going
  - If your glasses fog up, your protection is low (inward and outward)
  - The smaller the particles (aerosols) the better they follow the air flow



# Examples of Masks and Facial Coverings



Face mask, surgical (FDA)



Comfort mask



Facial covering



Face mask, non-surgical (FDA)  
Procedure mask



Facial covering



Facial covering





Current Issues in the  
Assessment of  
**Respiratory  
Protective  
Devices**

August 4-5, 2020

*A Virtual Workshop*

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Academies of | SCIENCES  
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...and face covering for the public

# What is needed for general purpose/general public/community face coverings?

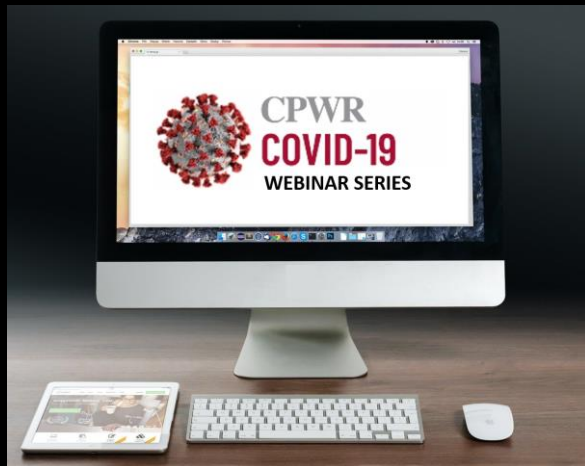
- Standards that define mask performance
- Assessment program to measure performance against a standard

This is a work in progress...

# CPWR-NIOSH COVID-19 Webinar Series

## What We've Learned: Health Risks and Prevention

September 10, 2020



# Questions