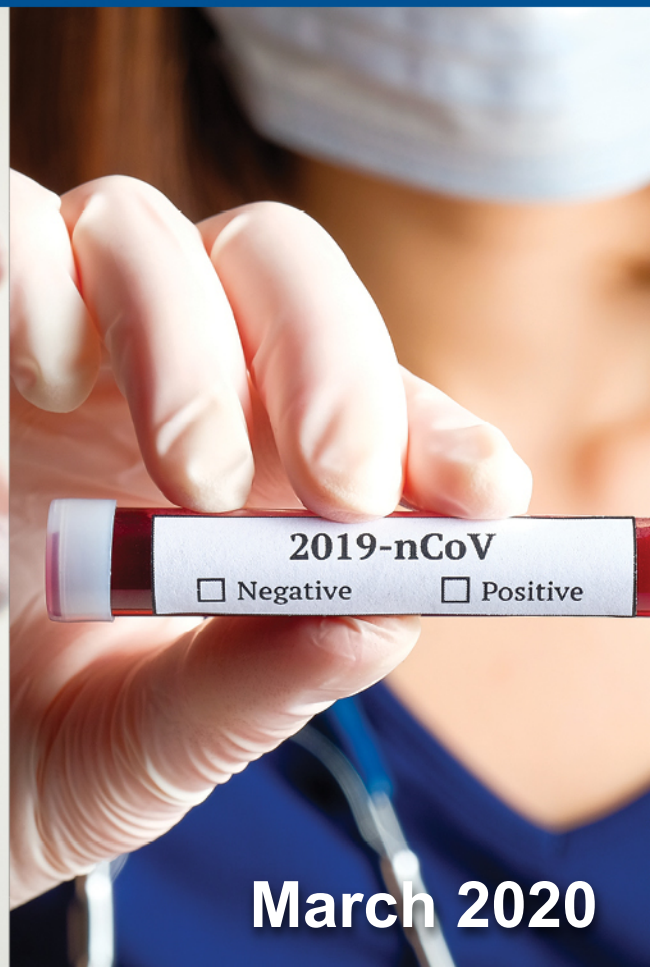
National Institute of Environmental Health Sciences
Worker Training Program

NIEHS COVID-19 Response Training Tool

Protecting Yourself from COVID-19 in the Workplace

Safety and Health Awareness for Responders to the Coronavirus



March 2020

Goal and learning objectives

Goal: Increase health and safety awareness for responders and workers with potential exposure to COVID-19.

Learning objectives: After attending participants will be able to:

- Explain basic facts about COVID-19.
- Assess the risk of workplace exposure to COVID-19.
- Define key steps in worker protection and infection control.
- Identify methods to prevent and respond to COVID-19 exposure in the workplace.

CAUTION!

This presentation by itself ***is not*** sufficient training for personnel who have potential for occupational exposure to SARS Coronavirus-2.

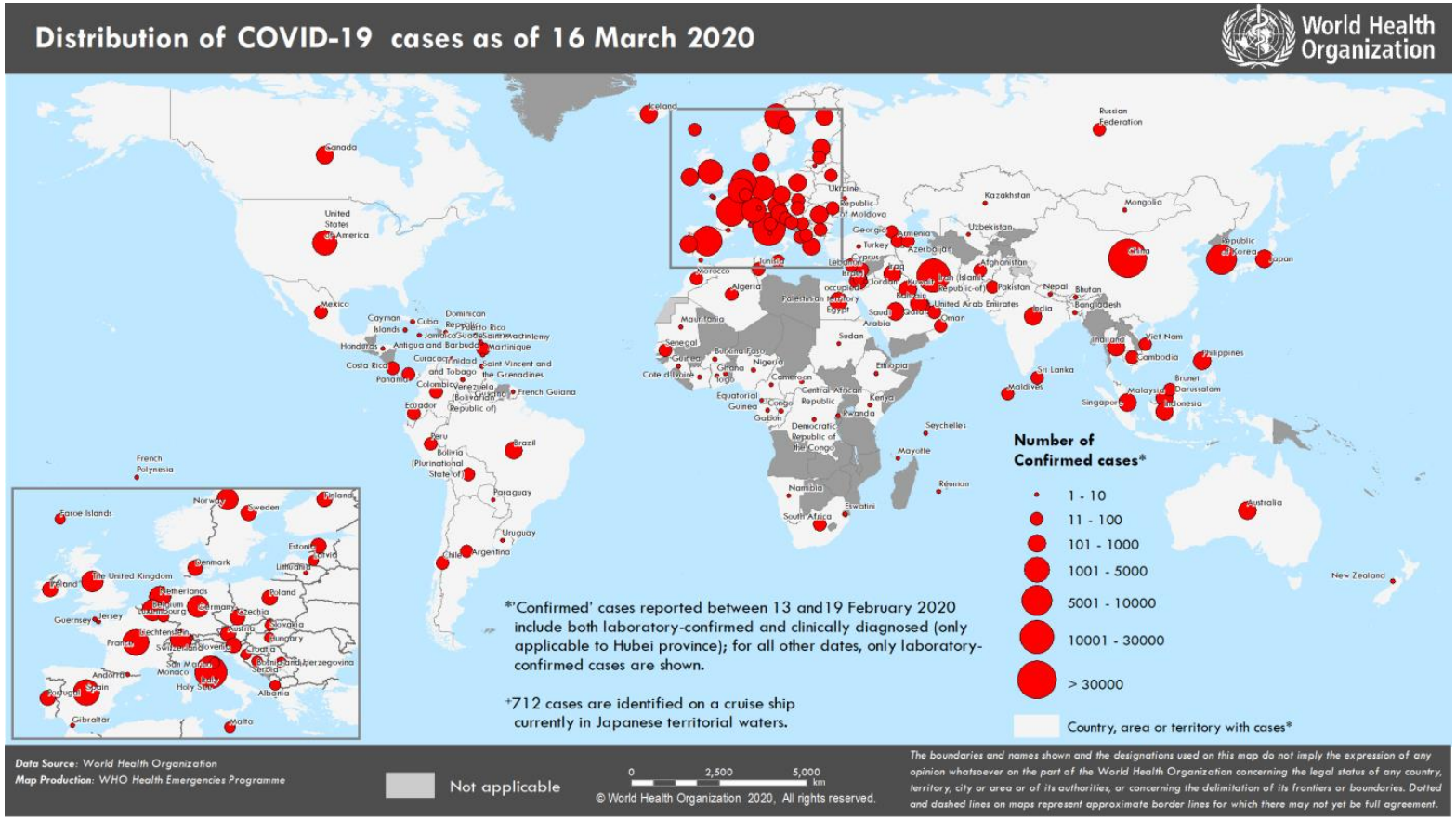
Personnel must be trained to their employer's site-specific policies and procedures. Training must include ***practice*** putting on and taking off PPE and respirators and performing decontamination procedures until competency and confidence can be demonstrated.

Employer and worker responsibilities

Employers and workers have responsibilities under the OSH Act.

- The Occupational Safety and Health Act requires that employers provide a safe and healthy workplace free of recognized hazards and follow OSHA standards. Employers' responsibilities also include providing training, medical examinations and recordkeeping.
- Workers should participate in the development and implementation of the employer's safety and health policies and help ensure that they are appropriate and implemented. This includes promoting the use of all required gear and equipment; following safe work practices and reporting hazardous conditions. Workers have a right to report hazardous conditions to OSHA if employers do not fix them.

Worldwide distribution map



For current data see: https://experience.arcgis.com/experience/685d0ace521648f8a5beeeee1b9125cd

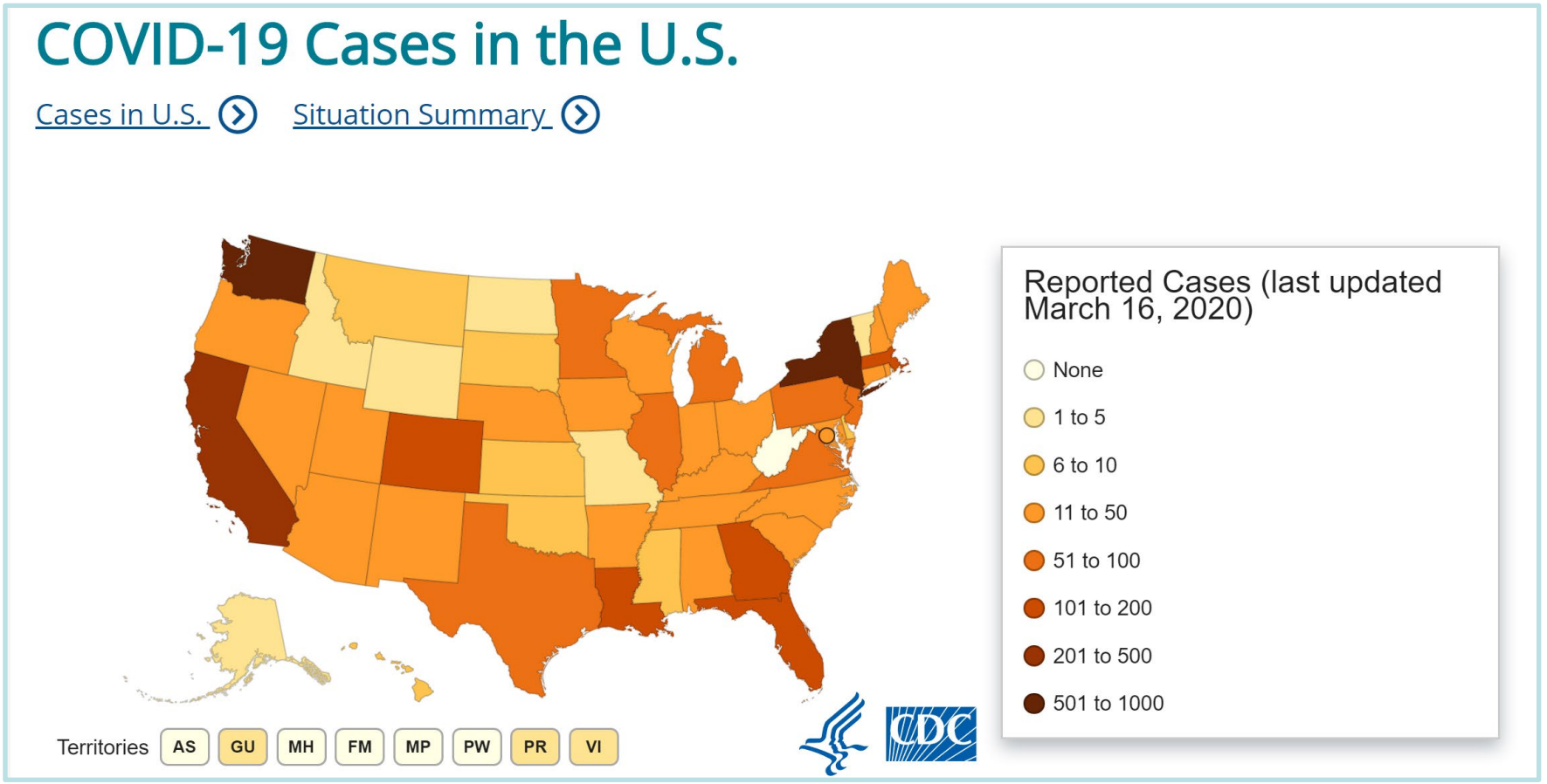
How widespread could it get?

- On March 11, 2020, the World Health Organization (WHO) characterized COVID-19 as a pandemic.
- It has caused severe illness and death. It features sustained person-to-person spread worldwide.
- Poses an especially high risk for the elderly (60 or older), people with preexisting health conditions such as high blood pressure, heart disease, lung disease, diabetes, autoimmune disorders, and certain workers.
- Some models predict 70 to 150 million people in the US could be infected during the pandemic.

US situation as of March 2020

- Experts are predicting that it will spread exponentially as it has in other countries.
- Those with elevated risk of exposure include:
  - Close contacts of persons with COVID-19.
  - Healthcare workers caring for patients with COVID-19.
  - Travelers returning from international locations where community spread is occurring.
- The entire country is practicing social distancing leading to massive shut down of schools, agencies, and employment.

US distribution map as of 3/16/2020



For updates see: https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.html#2019coronavirus-summary

What can individuals do?

- Be informed and prepared.
- Wash your hands frequently.
- Use alcohol-based hand sanitizer.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Stay home when you are sick.
- Cough or sneeze into a tissue or your elbow.
- Clean and disinfect frequently touched objects and surfaces such as cell phones.
- Be prepared if your child's school, daycare facility, or your worksite is temporarily closed.

Five steps to proper handwashing

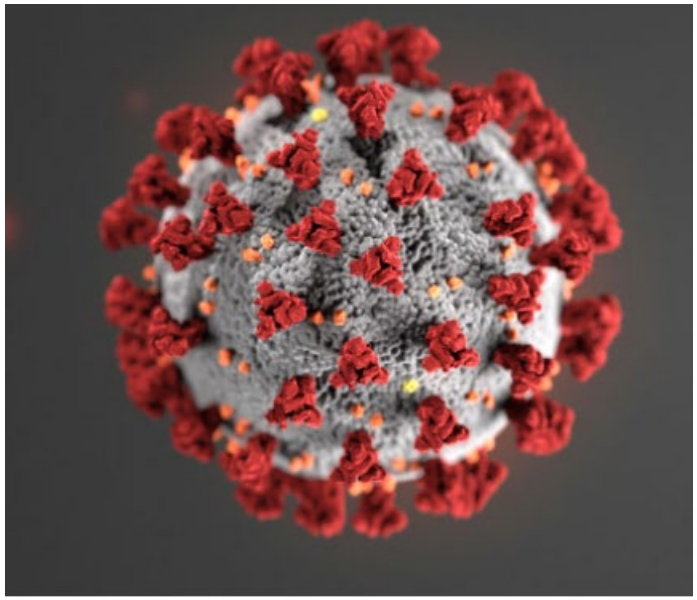
- **Wet** your hands with clean, running water (warm or cold), turn off the tap, and apply soap.
- **Lather** your hands by rubbing them together with the soap. Lather the backs of your hands, between your fingers, and under your nails.
- **Scrub** your hands for at least 20 seconds. Need a timer? Hum the “Happy Birthday” song from beginning to end twice.
- **Rinse** your hands well under clean, running water.
- **Dry** your hands using a clean towel or air dry them.

Precautionary principle

When it comes to worker safety, we should be driven by the 'precautionary principle' that reasonable steps to reduce risk should not await scientific certainty about the nature of the hazard or risk.

MODULE 1: COVID-19 BASICS

What is SARS-CoV-2?



SARS-CoV-2 is the virus that causes coronavirus disease 2019 (COVID-19)

- SARS = severe acute respiratory distress syndrome
- Spreads easily person-to-person particularly when someone sneezes
- Little if any immunity in humans

Detailed information:
https://www.cdc.gov/coronavirus/2019-ncov/index.html

Transmission

COVID-19 is spread from person to person mainly through coughing, sneezing, and possibly talking, and breathing.

- **Droplet** - respiratory secretions from coughing or sneezing landing on mucosal surfaces (nose, mouth, and eyes)
  - **Aerosol -** a solid particle or liquid droplet suspended in air
- **Contact** -Touching something with SARS-2 virus on it and then touching mouth, nose or eyes
- **Other possible routes**: Through fecal matter

Incubation period

- The incubation period is the time between exposure to a virus and the onset of symptoms.
- With COVID- 19 symptoms may show 2-14 days after exposure.
- People are most contagious when they are the most symptomatic.
- Scientific uncertainties:
  - People who are infected may be contagious before they develop symptoms or even if they never develop symptoms.

COVID-19 can cause mild to severe symptoms

Most common symptoms include:

- Fever
- Cough
- Shortness of breath

Other symptoms may include:

- Sore throat
- Runny or stuffy nose
- Body aches
- Headache
- Chills
- Fatigue

Severe symptoms –emergency warning signs for COVID-19

- Most people will have mild symptoms and should recover at home and **NOT** go to the hospital or emergency room.
- Get medical attention immediately if you have:
  - Difficulty breathing or shortness of breath.
  - Persistent pain or pressure in the chest.
  - New confusion or inability to arouse.
  - Bluish lips or face.

What is a person under investigation?

- A person who has both consistent signs or symptoms **and** risk factors as follows:

Suspect Case

A potential exposure within 14 days before the onset of symptoms.

Symptoms, including cough, fever, and shortness of breath

Confirmed case

A confirmed case is a suspect case with laboratory-confirmed diagnostic evidence of SARS CoV-2 virus infection.

U.S. Centers for Disease Control and Prevention via AP

How long does SARS-CoV-2 survive outside of the body?

- It is not clear yet how long the coronavirus can live on surfaces, but it seems to behave like other coronaviruses.
  - Virus may persist on surfaces for a few hours or up to several days, depending on conditions and the type of surface.
- It is likely that it can be killed with simple disinfectant on the EPA registered list below.

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

Increased risk of severe illness

COVID-19 poses a greater risk for severe illness for people with underlying health conditions:

- Heart disease
- Lung disease such as asthma
- Diabetes
- Suppressed immune systems

The elderly have higher rates of severe illness from COVID-19. Children and younger adults have had less severe illness and death. Because COVID-19 is new there are a lot of scientific unknowns such as the impact on pregnant women and their fetuses.

Comparison SARS 1, MERS, SARS 2 (3/16/2020)

	SARS 1, 7/5/2003	MERS, ongoing	SARS 2, ongoing
# of cases	8,422	2,494	196,106
Deaths	916	858	7,869
Countries impacted	29	27	148
Case Fatality Rate	9.6%	34.4%	2.6% estimated
Healthcare Workers	1,769 (21%) and 5 deaths	415, and 16% deaths	1,716 cases and 5 deaths

Note that the numbers in SARS 2 column are changing rapidly. For the latest statistics see: https://coronavirus.jhu.edu/map.html

Seasonal Flu vs. COVID-19

- COVID-19 has the potential to cause more deaths and hospitalizations
- SARS-CoV-2 is much more infectious and spreads faster than the seasonal flu

Seasonal Flu vs. COVID-19

- So far the case fatality rate (CFR) of COVID-19 is estimated to be at around 2%. The CFR of seasonal influenza is estimated to be around 0.1%, making SARS-CoV-2 about 20 times more deadly than the seasonal flu.
- An estimated 15 – 20% of infected individuals may suffer from severe symptoms that require medical attention including pneumonia with shortness of breath and lowered blood oxygen saturation.
- No Treatment, No Vaccine, No Immunity

Pandemic influenza

Experts have been recommending preparedness, warning about the likelihood of future pandemic influenza outbreaks for decades.

Flu pandemic fatalities, worldwide, in the last century:

- 1918 – between 40 and 100 million
- 1957 – 2 million
- 1968 – 1 million

Treatment and vaccines

- There is no vaccine to prevent COVID-19.
- There is no specific FDA approved medication or treatment for COVID-19.
- Treatment is supportive.
- People who are mildly ill with COVID-19 should isolate at home during their illness.

MODULE 2: ASSESSING THE POTENTIAL FOR EXPOSURE TO COVID-19 IN THE WORKPLACE

Key exposure factors in the workplace

- Does the work setting require close contact with people potentially infected with the COVID-19 virus?
- Do specific job duties require close, repeated or extended contact with people with known or suspected COVID-19?
- Has the community spread of the virus included cases in the workplace?

High potential for exposure

High exposure risk occupations are those working with people with known or suspected COVID-19, especially while performing aerosol generating procedures.

Examples of work settings

- healthcare
- laboratories
- autopsy suites

Examples of job activities

- bronchoscopy
- sputum induction
- working with specimens in laboratories
- some dental procedures
- some autopsy procedures

High potential for exposure

Examples of work settings

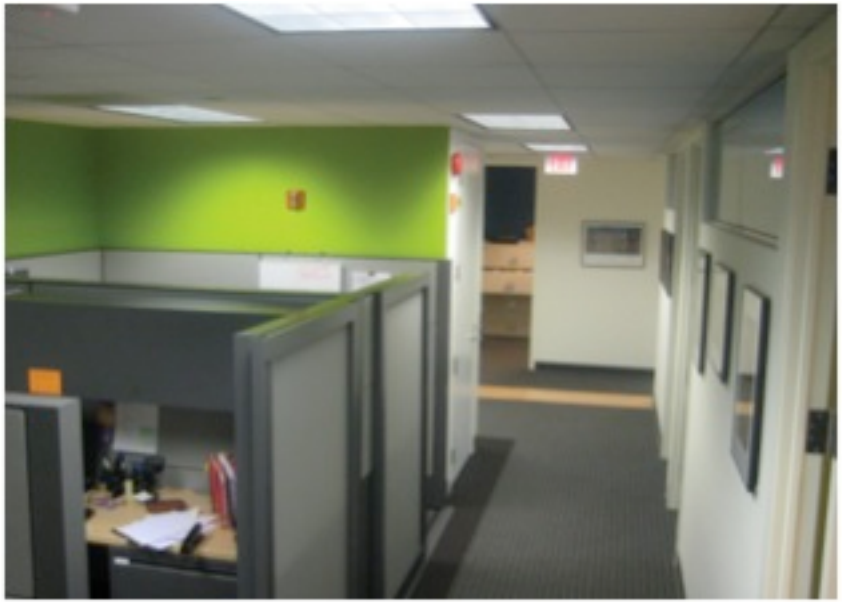
- hospitals and other types of health care facilities
- medical transport
- correctional facilities
- drug treatment centers
- homeless shelters
- home health care
- environmental clean-up of SARS CoV-2

Examples of job activities

- direct patient care
- emergency medical services
- housekeeping and maintenance in patient areas

Low potential for exposure

Low potential for exposure occupations are those that do not require contact with people known to be infected nor frequent contact with the public.



The next few slides will review key considerations for the health care and emergency services industries as well as continuity of operations and the role of public health.

Healthcare settings

Refer to the CDC and state health department guidelines for protection of healthcare workers. In the current and past coronavirus outbreaks healthcare workers have had a high rate of infection. Therefore, it is especially important to ensure that procedures, equipment, and training are fully protective

https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html

- The CDC site includes guidelines for infection control, EMS, home care, clinical care, evaluating persons under investigation, and more.

Emergency Services

Emergency services and critical infrastructure must be able to function during a national emergency.

Emergency services and critical infrastructure include:

- law enforcement
- Fire and EMS
- hospitals
- public utilities

Community/Workplace Connection

When a community outbreak occurs, any workplace or event location where people gather has a high potential for exposure.

Examples of work settings

- schools
- sports and arts events
- social services
- high density of coworkers
- high contact with the general public including retail

Examples of job activities

- classroom instruction
- aiding clients
- serving customers

Critical infrastructure

Keeping critical infrastructure and key resources operating is a priority!

- Government Facilities
- Dams
- Commercial Facilities
- Nuclear Power Plants
- Food and Agriculture
- Public Health and Healthcare
- Banking and Finance
- Chemical Manufacturing and Storage Facilities
- Defense Industrial Base
- Water
- Energy
- Emergency Services
- Information Technology
- Telecommunications
- Postal and Shipping
- Transportation

Continuity of Operations (COOP)

- All businesses and agencies should develop a strategy to overcome potential disruptions to operations for:
  - maintaining critical utilities and infrastructure;
  - rostering personnel with authority and knowledge of functions;
  - policies that enable employees to work remotely;
  - communications with employees and customers, including during disruptions to usual services;
  - stockpiling supplies or developing multiple suppliers in the event of a supply chain disruption;

Role of public health officials

- Case identification and containment.
- Communication and education.
- Contact tracing is when public health officers investigate contacts of a person who is infected to determine if they should be quarantined to prevent the spread of the virus.
- Mitigation may include restrictions on public events and gatherings, transportation, and other activities.
- Promote social distancing, staying out of places where people meet or gather, avoiding local public transportation if sick and maintaining distance (approximately 6 feet or 2 meters) from others.

MODULE 3: METHODS TO PREVENT COVID-19 IN THE WORKPLACE

Key steps for managing epidemics in the workplace

- Preparing for the threat.
- Implementing preventive measures.
- Implementing the continuity of operations plan.
- Managing business recovery post-epidemic.

Community spread can impact any workplace

- Mitigation may include shutting down events and worksites where people gather.
- For example, the National Basketball Association suspended its season on March 11, 2020.
- Many universities and colleges have ended onsite classes and have moved to online learning.
- Workers at stadiums, arts centers, and other places where people gather may be impacted.

Consider the impact on workers

- Will a worker be paid if their workplace shuts down or they are quarantined?
- What can be done for workers who are sick but have no paid sick leave?
- How can workers cope with the impact if their child's school is shut down or their child is placed in quarantine?
- What can be done for low wage and immigrant workers who have no access to healthcare?
- Other impacts?

Basic hygiene and social distancing

- Stay home when sick.
- Wash hands or use sanitizer frequently and after coughing, sneezing, blowing nose, and using the restroom.
- Avoid touching your nose, mouth, & eyes.
- Cover coughs & sneezes with tissues or do it in your sleeve.
- Dispose of tissues in no-touch bins.
- Avoid close contact with coworkers and customers.
- Avoid shaking hands/wash hands after physical contact with others.

STOP shaking hands!

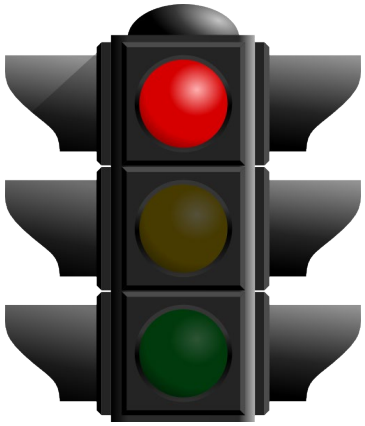


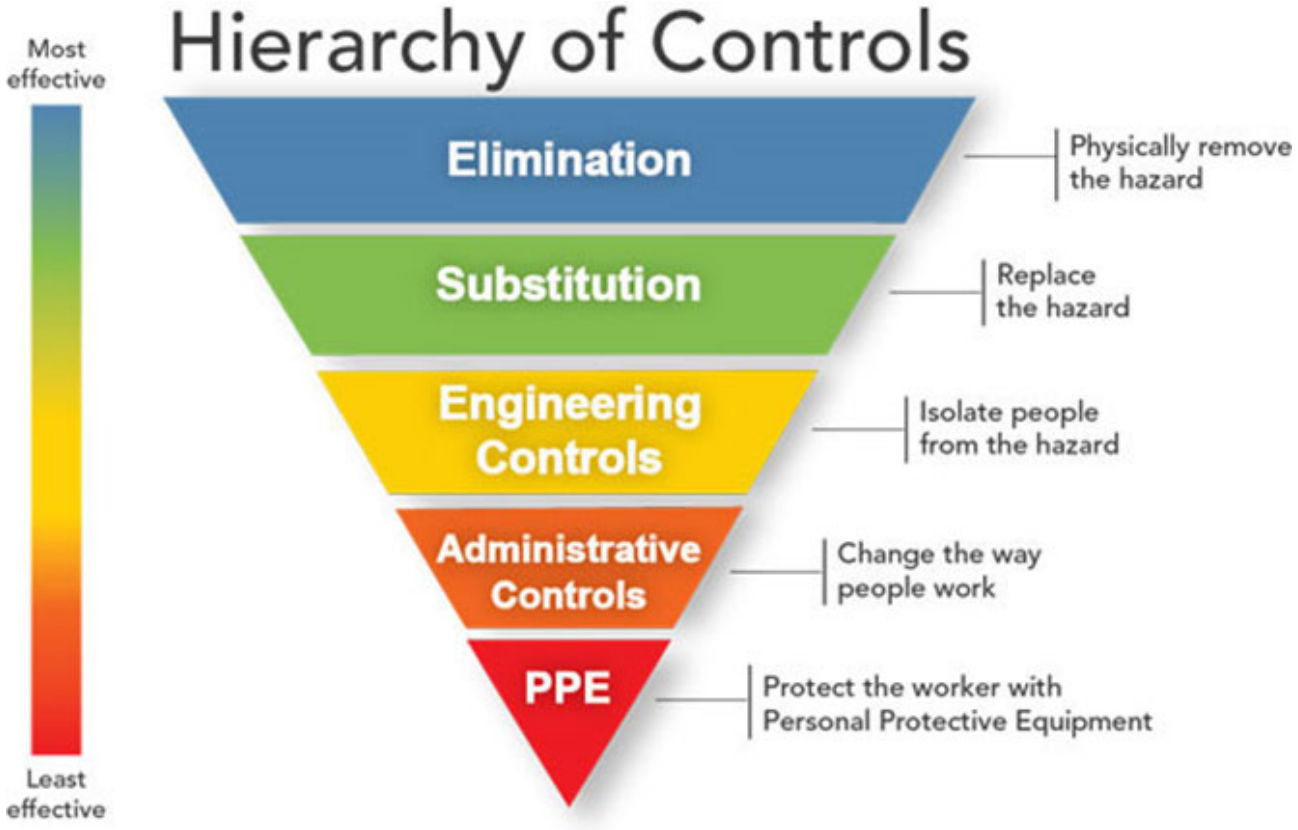
Image courtesy of NUS University of Singapore, Yong Loo Lin School of Medicine

Key elements: COVID-19 workplace plan

- Management leadership and employee participation
- Hazard identification and assessment
- Hazard prevention and control
- Education and training
- System evaluation and improvement
- Family preparedness
- Plan for a pandemic with “increased severity”
  - CDC recommends planning for current severity and “increasing severity”

Protecting workers

Start with the most effective method to protect workers.



Engineering controls

- Ventilation
- Drive through service
- Plastic shields and other barriers
- Sneeze guards

Engineering controls for high exposure potential jobs

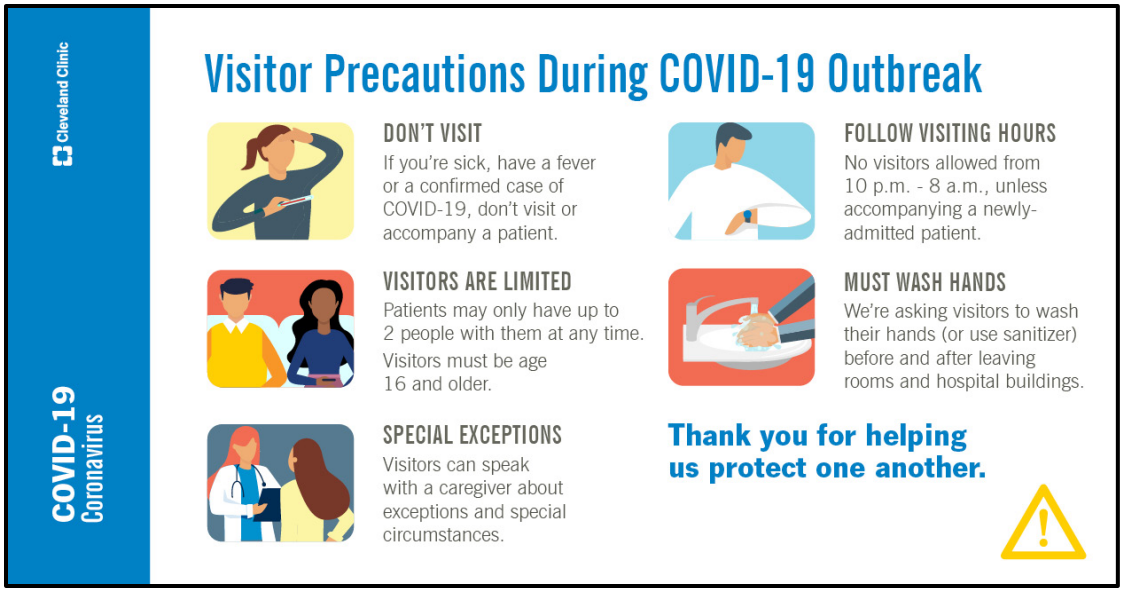
Engineering controls for high-risk workers include:

- Negative pressure isolation rooms
- Biological safety cabinets HEPA filtration
- UV irradiation systems

Administrative controls and work practices to reduce exposure

- Enable sick workers to stay home
- Establish work from home policy
- Minimizing contact among workers and clients
- Discontinue non-essential travel
- Limiting the number of staff present for high potential exposure tasks
- Training

Additional administrative controls



Soft barriers include use of tables, ropes, signs, and floor markings to maintain social distancing.

Adjust policies to reduce exposures

Policies that can help to reduce exposure to COVID-19 include:

- Encouraging workers who are ill to stay home without fear of reprisals or loss of pay or benefits
- Using email, phone, teleconferences instead of face-to-face contact

OSHA PPE standard

- Where applicable, the OSHA PPE standard requires employers to:
  - Conduct an assessment for PPE
  - Provide PPE at no cost, appropriate to the hazard
  - Train employees on how to don (put on) and doff (take off) PPE
  - Train workers to maintain, store, and replace PPE
  - Provide medical evaluation and fit testing

•https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9777&p_table=STANDARDS

Decontamination

- Employers should develop site specific decontamination procedures.
- Depending on the workplace, decontamination may require consultation with the health department or use of a consultant specializing in environmental cleanup.
- Use of an EPA registered disinfectant effective is recommended.
- Worker and building occupant protection is essential when cleaning and disinfecting contaminated surfaces to protect against the virus and adverse effects of the disinfectant.

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

Respirators

Respirators are needed when there is a potential for aerosol transmission.

An N95 respirator is the minimum level of protection to prevent

Respirators (continued)

Advantages of reusable respirators:

- Durability
- Stand up to repeated cleaning & disinfection
- Maintain fit over time
- Cost savings

- Powered air-purifying respirator (PAPR)
- Half or full-face elastomeric respirators

Elastomeric Half-Face Respirator with HEPA Cartridge

Powered Air Purifying Respirator

Elastomeric Full-Face Respirator with HEPA Cartridge

Respirators (continued)

Surgical masks are not respirators!

Surgical masks **do not**:

- Fit tightly against the skin to form a seal
- Filter tiny particles, such as viruses or bacteria that are in the air

Respiratory protection standard

Respiratory programs must comply with all elements of OSHA Standard 29 CFR 1910.134

- Written program
- Selection hazard to match hazard
- Medically fit to wear
- Fit testing
- Ensure proper use of respirators
- Respirator maintenance
- Labeling/color coding filters
- Employee training
- Program evaluation
- Recordkeeping

OSHA®

Healthcare facility identification and isolation

The most important steps to prevent spread of COVID-19

- Procedures for rapid identification and isolation of suspect COVID-19 cases
- Community and hospital procedures to ensure symptomatic people are not in public places, waiting rooms, reception areas, emergency departments, or other common areas
  - Collect a travel history for patients presenting with fever, cough, or shortness of breath
  - Immediately isolate – using standard, contact and droplet precautions for suspect or confirmed cases

PPE for jobs with high potential exposure

- Face/eye protection
- Gloves
- Gowns
- Respirators
  - At least N95
  - PAPR or full or half face elastomeric for greater protection
- NOTE: there is a worldwide shortage of PPE!

Training and drills

- Must be hands-on and frequent
- Should **not** be primarily computer based or lecture
- Must include an opportunity to drill the actual process of donning and doffing PPE and respirators
- Should include a trained observer and cover site specific decontamination procedures.

Prevention in all work settings

- Wash hands after removing gloves or when soiled.
- Keep common surfaces such as telephones, keyboards clean.
- Avoid sharing equipment if possible.
- Minimize group meetings by using phone, email, and avoid close contact when meetings are necessary.
- Consider telework.
- Limit unnecessary visitors to the workplace.
- Maintain your physical and emotional health with rest, diet, exercise and relaxation.

Protection of essential workers

- Fire, police, grocery stores, gas stations, utilities, communications, and healthcare facilities are examples of essential industries and operations that remain open during a pandemic shutdown.
- A site and job task specific risk assessment should be conducted to document the necessary protective measures.
- Social distancing measures may include use of barriers, signs, modifying work procedures that require close human interaction. Other steps may include increased cleaning and disinfection, use of PPE and respirators, and training.

OSHA Hazard Communication standard

The hazard communication standard, 29 CFR 1910.1200, establishes a worker's right to know about chemicals in the workplace

Employers are required to develop:

- List of all hazardous chemicals in the workplace
- Labels on containers
- Chemical information (safety data sheets)
- Training
- Written program and worker access to information

These rights may be relevant to the cleaning and disinfecting chemicals

Portable containers

- Portable containers must be labeled
- Exception: portable containers do not have to be labeled if only the worker who transfers the chemical uses it during that shift

Cal OSHA Aerosol Transmissible Disease (ATD) Standard

http://www.dir.ca.gov/Title8/5199.html

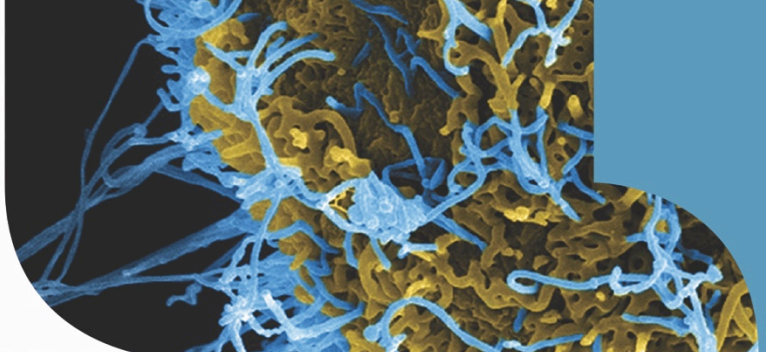
- Enforceable in California, it applies to many types of health care settings, police services, correctional facilities, drug rehab centers, homeless shelters, and other settings.
- Requires different types of engineering controls, work practices and administrative controls, and PPE depending on the level of potential exposure.
- It is a useful reference for all states.

Mental health & stress

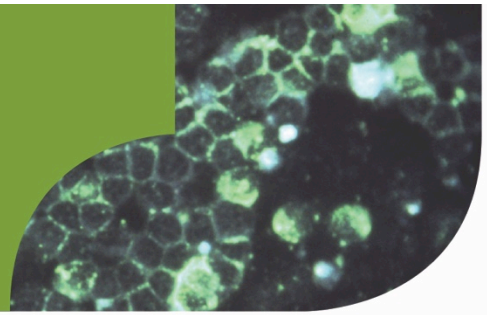
As the number of cases of COVID-19 increase, so does the associated anxiety and stress. Consider the following steps:

- **Use your smart phone** to stay connected to family and friends. Shift from texting to voice or video calling to feel more connected.
- **Keep comfortable.** Do more of the things you enjoy doing at home.
- **Practice stress relief** whenever you feel anxiety building – do some deep breathing, exercise, read, dig in the garden, whatever works for you.
- **Avoid unhealthy behavior** such as excess drinking – that will just increase your anxiety afterwards.
- **Keep looking forward**. Make some plans for six months down the road.

National Institute of Environmental Health Sciences
Worker Training Program



The PSD Training Module trains workers how to use existing resources to research and evaluate the characteristics of infectious disease hazards and also to understand the recommended methods for controlling them.



Pathogen Safety Data (PSD) Guide Training Module

OCTOBER 2016

NOTE: This module should not be used as a comprehensive stand alone safety & health training module on infectious diseases. Rather, users are encouraged to adapt and incorporate this module into new and existing programs. Also, the Trainer notes below each slide contain important information that should be reviewed prior to using this module.

Program design

- Interactive
- Adult training techniques
- Designed for workers & community
- All hazards approach
- Structured training materials

Objectives

Upon taking this module, participants will be able to:

1. Access and use existing resources for pathogen safety data.
2. Look up key terminology used in pathogen safety data resources.
3. Explain the use of pathogen safety data resources in risk assessment and infection prevention and control activities.

PSD guide training materials

- PPT presentation
- Participant worksheet
- The PSD Guide
- A glossary
- Four case studies that can be used as alternative to activities
- An instructor guide

Download the PSD materials:
https://tools.niehs.nih.gov/wetp/index.cfm?id=2554

Acronyms

- CDC Centers for Disease Control and Prevention
- EPA U.S. Environmental Protection Agency
- HEPA high-efficiency particulate air
- HHS U.S. Department of Health and Human Services
- JCAHO Joint Commission on Accreditation of Healthcare Organizations
- LRN Laboratory Response Network
- NIOSH National Institute for Occupational Safety and Health
- OSH Act Occupational Safety and Health Act of 1970
- OSHA Occupational Safety and Health Administration
- PAPR Powered air-purifying respirator
- PPE Personal protective equipment
- SNS Strategic National Stockpile
- WHO World Health Organization

For more information

Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov

Occupational Safety and Health Administration (OSHA)
http://www.osha.gov

World Health Organization
http://www.who.int/en/

National Institute for Occupational Safety and Health (NIOSH)
http://www.cdc.gov/NIOSH/

NIEHS Worker Training Program
https://tools.niehs.nih.gov/wetp/index.cfm?id=2554

Why this training tool was created

This training tool was created by the NIEHS National Clearinghouse for Worker Safety and Health Training under a contract (HHSN273201500075U) from the National Institute of Environmental Health Sciences Worker Training Program (WTP).

WTP has trained more than two million emergency responders and hazardous waste workers since 1987 to do their jobs safely. WTP is a part of the Department of Health and Human Services, which is a cooperating agency under the Worker Safety and Health Support Annex of the National Response Plan. As part of the coordinated effort, the National Clearinghouse worked with NIEHS, WTP to create this orientation briefing for those who may be exposed to COVID-19 (coronavirus).