

COVID-19

The Columbus Fire Response



Fire Chief Kevin O'Connor



THE CITY OF
COLUMBUS

ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE

Kevin O'Connor Fire Chief



SOURCE: GETTY

The Arnold Classic Is "Canceled" Because People Are Being Babies About the Coronavirus

BY MUSTAFA GATOLLARI

Distractify.com March 5, 2020

Did Ohio get it right? Early intervention, preparation for pandemic may pay off.

The Washington Post

Democracy Dies in Darkness

“On the front end of a pandemic, you look a little bit like an alarmist. You look like a Chicken Little – the sky is falling. On the back end of the pandemic, you didn’t do enough”

*Dr. Amy Acton, Director
Ohio Dept of Public Health
March 13, 2020*



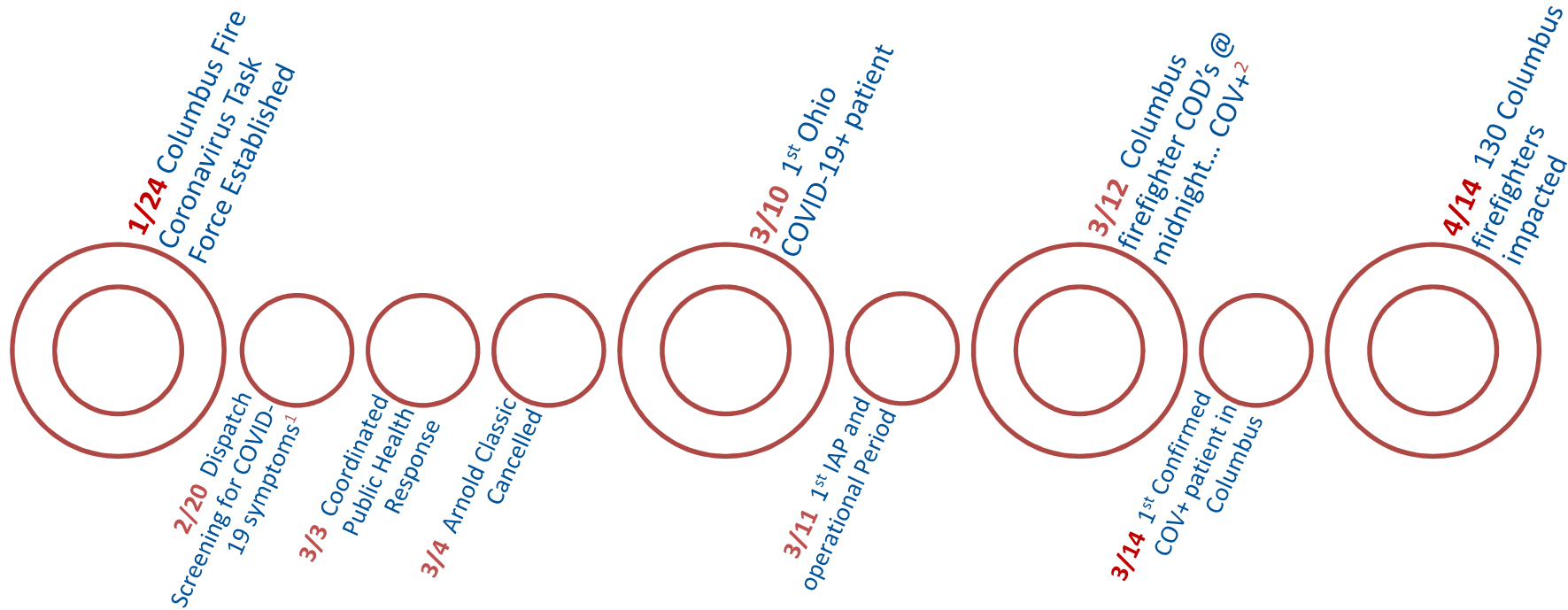
THE CITY OF
COLUMBUS

ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE

Kevin O'Connor Fire Chief

Columbus Fire COVID-19 Timeline



1) 'PPE Advised'; EMS Supervisor added to incident
2) 28 personnel impacted – *Isolation, Quarantine, Monitoring*

Columbus Fire COVID-19 Timeline

- Mid-January – Coronavirus Task Force Established
- February 10 – Dispatch screening for China travel and COVID symptoms
 - MDC remark “PPE Advised’
 - EMS Supervisor added to incident
- March 3 – City agencies begin coordinating response through Public Health
- March 4 – In coordination, the Governor & Mayor cancel *The Arnold Classic*
- March 10 – First Ohio COVID-19+ patient
- March 11 – Begin IAP & Operational Periods
- March 12 – McKee CODs at Midnight... results in +
- March 14 – First confirms COV+ patient in Columbus
 - Impacted 28 personnel (Paramedic class & fire station) + patient contacts...
- As of April 14 – 130 members impacted (Quarantine/Monitor/Isolation)



‘Very Aggressive Contact Tracing’

- COVID-19 Exposure Reporting & Tracking
 - Symptomatic Employees
 - Isolation
 - Testing Pathway
 - Exposed Coworkers
 - Quarantine (Close Contacts)
 - 3rd Party Pre-Shift Monitoring (Non-Close Contacts)
 - Daily Station Level Monitoring (All Personnel)
 - COV+ patient contact follow-up
- Return To Work
 - Confirmed or Suspected COVID-19
 - CDC Non-Test-Based Strategy

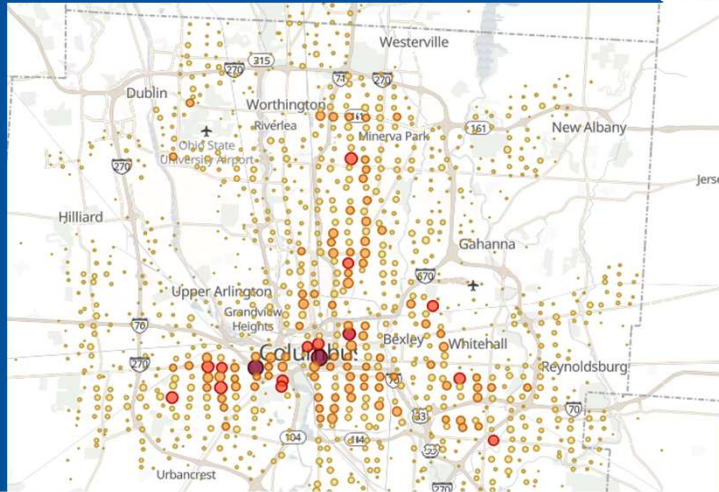


Best Practices

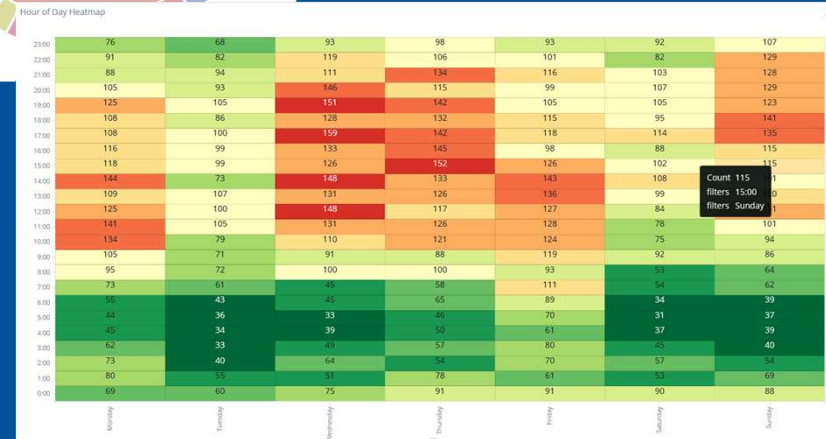
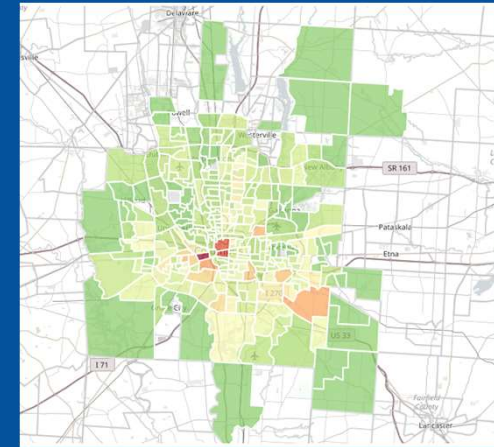
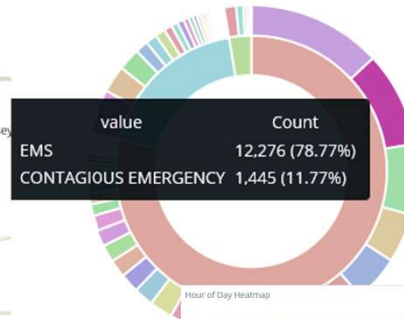
- Lessons learned & retained from H1N1, Ebola
 - Coordination w/ Public Health
 - Dedicated safety Officer & Infection Control positions
 - Early Actions –
 - ‘Contagious Emergency’ call type
 - Increased PPE requirements,
 - Early and aggressive tracking of incidents, patients, and personnel
 - Short Training Videos – doorway interview, PPE donning and doffing...
 - Curtailed non-essential activities
 - Aggressive prevention strategies
 - Post-exposure contamination control procedures
 - Strong labor-management cooperation
 - integration into the Planning process
 - modified deployment model
-



Powered by NFORS



Incidents by Category and Type



Incidents By Battalion & Unit



THE CITY OF
COLUMBUS
 ANDREW J. GINTHER, MAYOR
 DIVISION OF FIRE
 Kevin O'Connor Fire Chief



National Fire Operations Reporting System

Intelligent Fire Data. Reducing Injury, Death, and Damage



FIRE ALARM OFFICE
BATTALION CHIEF JEFFREY J. GEITTER

**COVID19 Coronavirus
Guidance**

REVISED 03/20/2020 15:00HRS
Effective with the IAP for 03/21/2020

EFFECTIVE COMMUNICATION between FAO dispatchers, EMS personnel and receiving facilities is necessary to ensure appropriate protection of healthcare workers during the care of a patient with possible or known COVID-19 (Coronavirus) infection. Symptoms exhibited by people infected with COVID-19 are very similar to those of influenza and include fever, cough and difficulty breathing. The incubation period is typically 2 to 14 days.

All callers that have an EMS related complaint shall be asked the following 2 questions after the Case Entry questions:

- **Has the patient been exposed to anyone who has tested positive for or is under suspicion for Coronavirus?**
- **Does the patient have a fever, cough or shortness of breath?**

If the answer is yes to either: The Call type will be **Contagious Emergency**. This will dispatch 1 Medic. The addition of the EMS Officer has been removed.

IF it is an ALS call type (CP, DB, Stroke, etc.) than **upgrade the alarm level to "1"** which will add an Engine company to the response.

Do not withhold pre-arrival instructions for patient care.

Finally, **The Call Taker** shall communicate the following to ALL callers that are inside buildings, no matter the call type:

"Can the patient safely get to the entrance of the building? If so, please meet the EMS crew at the door."

The EMS tactical Dispatcher (9 EMS) shall do the following:

1. Confirm all Contagious Emergencies have the appropriate response
 - o BLS - 1 Medic,
 - o ALS - 1 Medic, 1 Engine

If there is any question, be sure to advise our responders that PPE is advised

****THIS NEEDS FOLLOWED UNTIL FURTHER NOTICE***



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE
Kevin O'Connor Fire Chief

Personal Protective Equipment

- Aggressive early attempts to procure additional resources...
 - we are facing the same supply chain disruption as everyone else
- Ran out of gowns very early on...
 - Field Substitution Guidance for unavailable PPE
 - EMS Jackets (NFPA 1999/BBP)
 - ‘Poncho & Tyvek Sleeves’
 - Tyvek (limited supply)
- Bright Spot – Reusable Elastomeric APR w/ P-100 was already standard issue
- Surgical masks for patients and non-incident public interactions





THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR
DIVISION OF FIRE
Kevin O'Connor Fire Chief

COVID-19

Subject: EMS Operations Plan

From: Dr. Robert Lowe

Revised: 4/2/2020 2:20 PM



MANDATORY PPE ON ALL PATIENT CONTACTS

With increase of disease and severity in the community and the amount of infected patients expected to expand:

All Patient contacts require at a minimum, a respirator, eye protection, and gloves. Gowns or Tyvek suits should be added for high risk aerosolizing patients and /or procedures.

For all patients - apply or have patient put on a simple mask (surgical).

Dispatch

See current directive from the Alarm Office

Action:

- Always check your remarks; Verify you have proper PPE; Have a plan; Be prepared - the patient may meet you at the door or outside.

On the Incident

Action:

CRITICAL – All patient contacts require appropriate PPE

- 1) **Important** – All patients - apply or have patient put on a simple mask (surgical). If a surgical mask is not available, have the patient cover their mouth and nose with an article of clothing.
- 2) Limit contact with patient to the medic in-charge (*Unless CFD medic student); *if more members are needed for patient care, all must be in PPE.*
- 3) Other members, not engaged with the patient, should use the 6.5 foot social distancing guideline.
- 4) A Tyvek suit should be used for a patient requiring an advanced airway, nebulization treatments, or any high risk of droplet or aerosol showering of virus.



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR
DIVISION OF FIRE
Kevin O'Connor Fire Chief

DOORWAY INTERVIEW

Repeat same questions as done by Communications Center

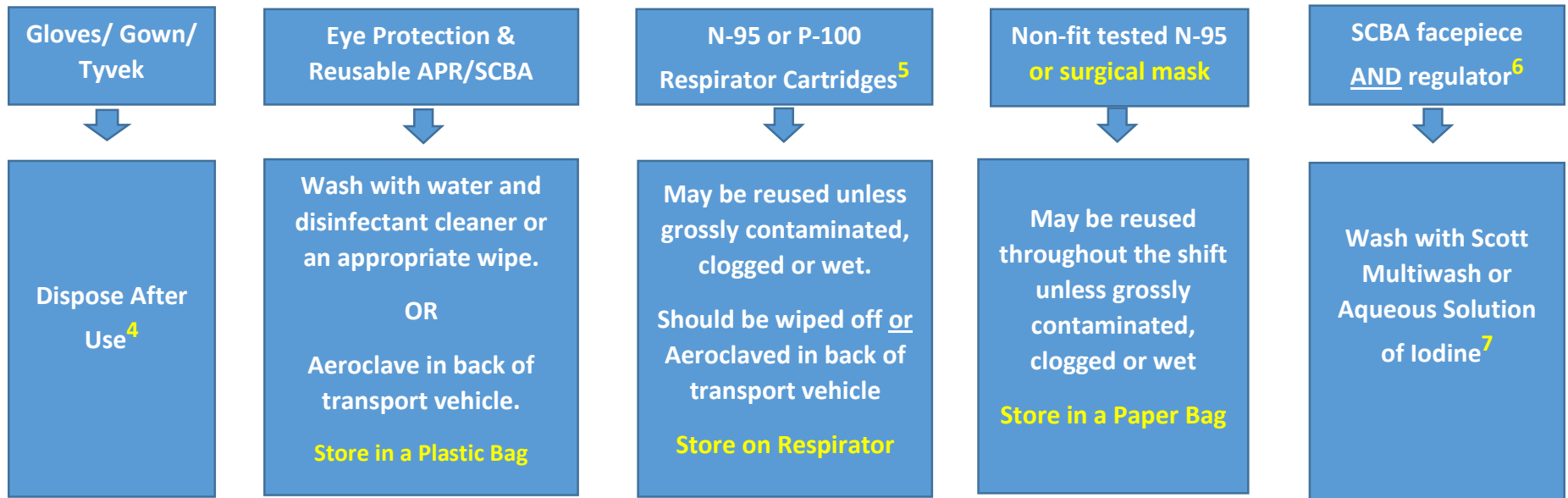
Provide a mask to patient



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE
Kevin O'Connor Fire Chief

Cleaning, Care, and Disposal Criteria



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE
Kevin O'Connor Fire Chief

Post-Incident Decontamination

1. Station Level

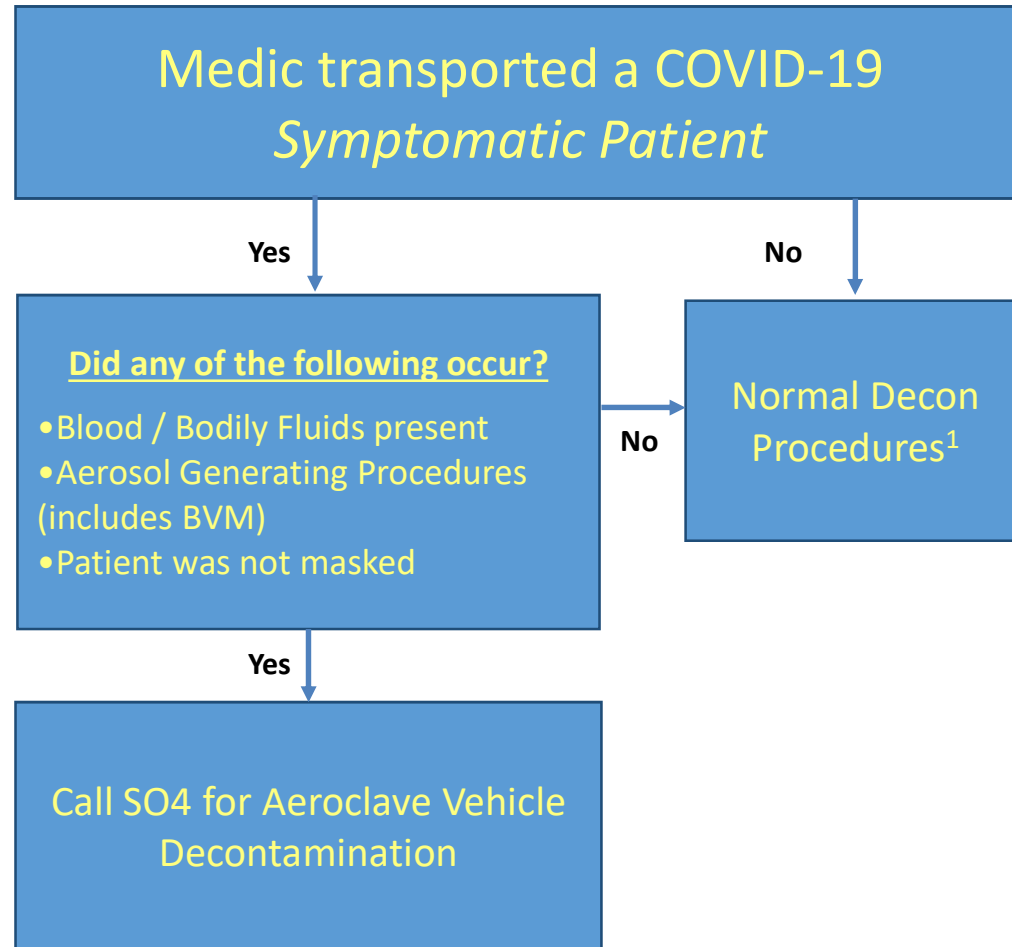
- lower risk patients
- lower exposure risk

2. Central Facility

- high risk patients
- ‘significant exposure’
- personnel and vehicle decon areas
- showers, uniform change out



Vehicle Decontamination



* Normal decontamination procedures should include wiping down of hard surfaces and high contact areas (door handles, etc.) with an appropriate anti-microbial solution or wipe.





COVID-19

Subject: Vehicle/FF Decontamination Procedure

From: Chief Baugh

Revised: 4/10/2020 3:00 PM

VEHICLE/FIREFIGHTER DECONTAMINATION PROCEDURE

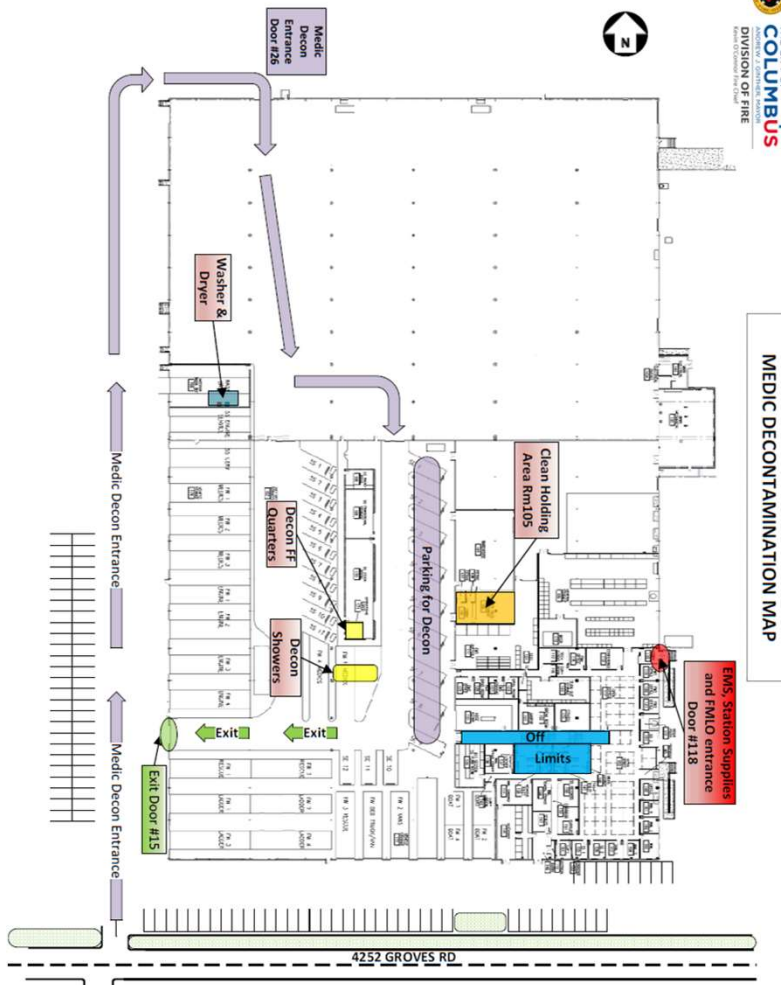
If it is determined that your vehicle requires decontamination with the AeroClave system, you will report to Groves warehouse, 4252 Groves Rd.

1. Notify SO-4 (614)332-9226, and contact 24hr Decon Technician by calling (614)493-1585 or x75958.
2. Enter through overhead door #26 located on the North side of warehouse.
 - a. Use Division ID on Matrix or use call box at man door to gain access to building.
3. Follow the arrows to the Special Duty overhead door (this door will automatically open as you approach it).
4. Proceed forward to the parking area located in the Special Event parking area.
5. Decon Technician will provide directions for vehicle decontamination process.

PERSONAL DECONTAMINATION PROCEDURE

If it is determined that personnel require personal Decon, the Decon Technician will show you to the shower and restroom trailer. **DO NOT ENTER DOOR 134, OR THE BUILDING OFFICE AREAS.**

1. Towel, washcloth, and soap will be handed to you in a trash bag by the Decon Technician. EMS gloves will be available for your use to prevent cross contamination.
2. Utilize the trash bag containing the shower supplies, for dirty uniforms. Properly secure uniform in bag, to be washed at the firehouse upon return to quarters, with hot soap and water.
 - a. For personnel not having an extra uniform, Tyvek suits are available.
 - b. Anyone who desires to immediately launder your uniforms, may wait while the uniform is laundered on site, utilizing the washer and dryer located in the wash bay (see map).
 - c. Any uniform contaminated with blood, will be doubled bagged in a heavy duty green trash bag, properly labeled with:
 1. Personal information
 2. What type of contamination i.e. blood
 3. Follow normal laundry procedures and send to Division laundry from your station.
3. Spray shower area with bleach solution. The Decon tech will scrub and rinse after a ten minutes soak period.
4. After shower, dirty towels shall be placed in the laundry hamper by the trailer. EMS gloves and any trash should be disposed in the trash can.
5. After showering personnel can report to room 105 until vehicle decontamination is complete and you have been officially released.
 - a. **Do not enter the office areas, or workout rooms.**
 - b. If you have any other division business, access door 118 from the outside.
6. When released proceed through door #15 on the West side of bay.



THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR

DIVISION OF FIRE
Kevin O'Connor Fire Chief

Facility Decontamination



Routine Cleaning

- After a.m. rollcall, after dinner, before a.m. rollcall
- Extra focus on high contact areas

Symptomatic Coworker

- Immediate thorough cleaning of all areas
- Aeroclave key areas and affected worker vehicle

COV+ Coworker

- 3rd party cleaning contractor





THE CITY OF
COLUMBUS
ANDREW J. GINTHER, MAYOR
DIVISION OF FIRE
Kevin O'Connor Fire Chief

Thank you



Fairfax County Fire and Rescue COVID-19 Response

FIRE CHIEF JOHN BUTLER

LIEUTENANT CHRIS YORTY

Planning Early



Exposure Control Plan and Program Policy Development



Fairfax County Fire and Rescue's Exposure Control Plan is updated annually in accordance with the Occupational Safety and Health Administration (OSHA), through 29 Code of Federal Regulations (CFR) 1910.1030 – Bloodborne Pathogens.



Relationships with Partner Agencies are both internal and external partnerships such as, Infectious Disease Physicians, Inc. (IDP), Fairfax County Health Department, Public Safety Occupational Health Center (PSOHC) physicians, emergency room (ER) staff, and Infection Control Practitioners at local hospitals.



Recordkeeping-
Infectious Disease Exposure Incidents
Medical Records
Training Records
Bloodborne Pathogens training records

Established Work Practices and Engineering Controls



Work Practices and Engineering Controls are barriers placed to minimize or eliminate the potential for transmission of disease through occupational exposures.



Hand Hygiene



Sharps Control



Labels and Signs



Containment and Disposal
of Biohazard Waste



Maintenance of
Equipment



Maintenance of Fire
Stations



Vehicle Modification

After consultation with our Infectious Control Physician we added a PlexiGlass sheet then sealed it with foam rubber sealant.

This was done in order to provide a barrier between the patient compartment and the drivers compartment.

Reviewed Vehicle Recommendations

Reviewed:

- Vehicle manufactures recommendations on the proper cleaning techniques.
- CDC'S cleaning recommendations.
- EPA's approved chemical list.

Best fleet cleaning practices were based on this research.

EMS Transport of a PUI or Patient with Confirmed COVID-19 to a Healthcare Facility (including interfacility transport)

If a patient with an exposure history and signs and symptoms suggestive of COVID-19 requires transport to a healthcare facility for further evaluation and management (subject to EMS medical direction), the following actions should occur during transport:

- EMS clinicians should notify the receiving healthcare facility that the patient has an exposure history and signs and symptoms suggestive of COVID-19 so that appropriate infection control precautions may be taken prior to patient arrival.
- Keep the patient separated from other people as much as possible.
- Family members and other contacts of patients with possible COVID-19 should **not** ride in the transport vehicle, if possible. If riding in the transport vehicle, they should wear a facemask.
- Isolate the ambulance driver from the patient compartment and keep pass-through doors and windows tightly shut.
- When possible, use vehicles that have isolated driver and patient compartments that can provide separate ventilation to each area.
 - Close the door/window between these compartments before bringing the patient on board.
 - During transport, vehicle ventilation in both compartments should be on non-recirculated mode to maximize air changes that reduce potentially infectious particles in the vehicle.
 - If the vehicle has a rear exhaust fan, use it to draw air away from the cab, toward the patient-care area, and out the back end of the vehicle.
 - Some vehicles are equipped with a supplemental recirculating ventilation unit that passes air through HEPA filter before returning it to the vehicle. Such a unit can be used to increase the number of air changes per hour (ACH) (<https://www.cdc.gov/niosh/hhe/reports/pdfs/1995-0031-2601.pdf>).
- If a vehicle without an isolated driver compartment and ventilation must be used, open the outside air vents in the driver area and turn on the rear exhaust ventilation fans to the highest setting. This will create a negative pressure gradient in the patient area.
- Follow routine procedures for a transfer of the patient to the receiving healthcare facility (e.g., wheel the patient directly into an examination room).

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-for-ems.html>

The screenshot shows a web browser window with the URL <https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2>. The page header includes the EPA logo and navigation links for Environmental Topics, Laws & Regulations, and About EPA. The main heading is "Pesticide Registration" and the specific page title is "List N: Disinfectants for Use Against SARS-CoV-2".

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

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

Finding a Product

The easiest way to find a product on this list is to enter the **first two sets** of its **EPA registration number** into the search bar below.

For example, if EPA Reg. No. 12345-12 is on List N, you can buy EPA Reg. No. 12345-12-2567 and know you're getting an equivalent product. You can find this number by looking for the EPA Reg. No. on the product label.

Using Other Products

If you can't find a product on this list to use against SARS-CoV-2, look at a different product's label to confirm it has an EPA registration number and that human coronavirus is listed as a target pathogen.

Follow the Label

Other COVID-19 Resources

- [EPA's Coronavirus Site](#)
- [CDC's Coronavirus Disease 2019 Site](#)
- [CDC's Cleaning and Disinfection Recommendations for COVID-19](#)
- [NPIIC's COVID-19 Virus Factsheet](#)

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

Changing of Dispatch Protocols

- If CAD/Dispatch indicates positive DPSC pre-screening, screen from >6ft away on arrival
- On **ALL** responses, prioritize social distancing and utilize minimum personnel for initial investigation. If scene is suspicious for COVID-19 risk, screen from >6ft away

<< SCREEN >6ft AWAY >>

Signs/Symptoms (ANY)

<< SCREEN >6ft AWAY >>

- Fever
 - Reported/measured temperature of 100.4 or higher
 - Hot to the touch in room temperature
- Chills
- Difficulty breathing or shortness of breath
- Persistent cough
- Any other new respiratory problems (e.g. persistent sneezing, wheezing, congestion, etc.)



PPE for anyone entering COVID-19 contaminated scene

- N95

- Gloves

- Gown

- Eye/face shielding with droplet protection or Chemistry Goggles

- Safety glasses

Personnel outside not engaged in direct patient care maintain 6 feet distance and should be ready to don PPE to assist if directed

Initial care team maintains full Covid-19 PPE ensemble, transports with patient, and conducts transfer at ED

Person utilized to drive EMS unit to hospital should not enter PCA (on scene/at ED) so CPPE is not required

Clean Cab Initiate, No contaminated PPE enters Suppression units or EMS unit Cab

Pressurize EMS unit cab (close cab windows, turn HVAC fan on high, turn off air recirculation)

Use patient compartment exhaust fan

Do not use any shared HVAC systems

Family/friends should drive separately If required to ride in EMS unit, place in patient compartment, provide face masks, and advise hospital entry may be restricted

PPE Conservation/Contamination Reduction

Post Incident Actions

1

Document exposure details for **ALL** who arrive on scene Per CDC

2

Electronic Patient Care Record: Fire and Rescue Screening Results

3

Fire Reporting system note Individual PPE levels (who wore what, all persons)

4

Consult Safety Officer for unit/personal decontamination guidance at hospital and on return to station



COVID-19 Decontamination Best Practices

In addition to the general daily procedures for cleaning the transport units, the following guidelines are to act as a reference for decontamination for post-COVID-19 positive screened patients EMS transport.

All devices or equipment sent in for service must be decontaminated prior to placing it in office mail or out for service 1 pickup.

Post Hospital Transport After patient care has been transferred to the ER staff, a crew member should return to the unit to ensure the security of property of the vehicle. The crew member should leave the rear doors of the transport vehicle open to allow for enough air exchange to remove potential infectious particles. When cleaning the transport vehicles, all EMS personnel performing the cleaning should wear all the required COVID-PPE, which consist of disposable gown, gloves, face shield/goggles and an N95.	
Bleach (10% bleach Solution) Clean ALL surfaces that may have come in contact with the patient and/or ALL materials contaminated during patient care (e.g. stretcher, rails, control panels, floors, walls, work surfaces). All surfaces and materials should be thoroughly cleaned and disinfected using the approved cleaning solution, which is one-part bleach to nine-parts water, creating a 10% bleach solution. After spraying the solution allow a ten-minute wet/stay time before wiping off. The solution must remain wet the full ten minutes, therefore, this may require repeated spraying. *Bleach Mixed at the fire Stations has a 24-hour shelf life per the manufacturer.	70% Alcohol (or higher) For electronics follow the manufacturer instructions for all cleaning and disinfecting products. Consider the use of a wipeable cover for electronics. If the manufacturer does not give cleaning/disinfecting guidelines, then consider the use of alcohol-based wipes or a spray that contains at least 70% alcohol to disinfect electronics. Dry surfaces thoroughly to avoid the pooling of liquids.
EMS Equipment Larger pieces of equipment, such as backboards and EMS bags, will be sprayed with the 10% bleach solution. Allow the equipment to have a ten minute wet/stay time before wiping off excess residue. This may require repeated spraying to maintain ten minutes.	UVEX – A600 Series Goggles (Splash Goggles). The recommendation for cleaning goggles is with warm water and a general mild soap. The use of any wipe and/or other cleaning agent may cause problems with the anti-fog coating on the lenses.
Flex Wipes FLEX®WIPES Disinfectant Wipes has demonstrated effectiveness against viruses similar to 2019 Novel Coronavirus (2019-nCoV) on hard non-porous surfaces. Use enough wipes to maintain 10 minutes of wet/stay time. If area is extremely dirty use a different wipe to remove the excess filth first.	

Providing Defined Cleaning Guidelines to the Personnel





Contact Information

LT. Chris Yorty

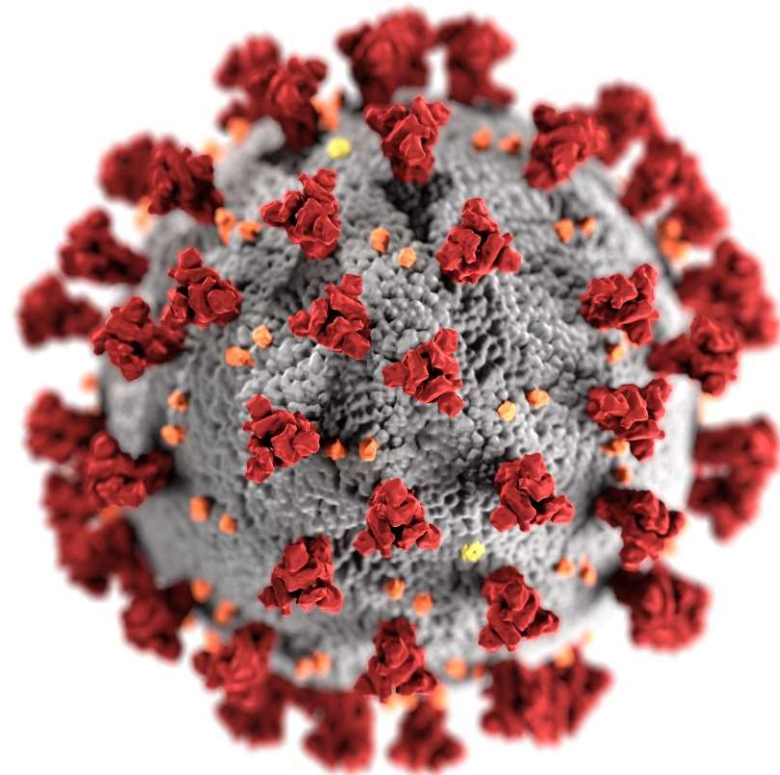
Email Christopher.Yorty@fairfaxcounty.gov

Respirator Decontamination

Edward Fisher, MS

Biologist, NIOSH National Personal Protective
Technology Laboratory

April 16, 2020



For more information: www.cdc.gov/COVID19



Given the current N95 supply issues, NIOSH has recommended implementing the following five strategies:

- (1) optimizing the supply of N95s through using all steps in the hierarchy of controls;
- (2) using NIOSH-approved alternatives to N95 respirators where feasible, including using elastomeric and powered-air purifying respirators (PAPRs);
- (3) considering the use of stockpiled respirators beyond their designated shelf life and comparable respirators complying with international standards;
- (4) extending the use of N95 respirators when alternatives are not available; and
- (5) decontaminating and reusing N95 respirators. While these strategies do not adhere to the typical standards of care in the U.S., they reflect the current realities on the ground as a result of the COVID-19 pandemic.

Storing FFRs in a breathable bag over a period of days may reduce the risk of self inoculation when reusing FFRs

- SARS-CoV-2 is able to survive on surfaces for up to 72-hours
- Timing of FFR reuse can be based on pathogen persistence
- Issue one FFR/shift (5-7 FFRs/HCW) to each HCW to wear each day
- HCP will store FFRs in a breathable paper bag at the end of each shift
- FFR use order should be repeated with a minimum of five days between each use



Decontamination of FFRs is a crisis capacity strategy that can be used during periods of known FFR shortages

- CDC and NIOSH do not recommend that FFRs be decontaminated and then reused as standard care
- Decontamination method should reduce the pathogen burden, maintain the function of the FFR, and present no residual chemical hazard
- NIOSH/NPPTL and others have assessed the effect of decontamination methods
 - FFR filtration efficiency
 - FFR fit
 - antimicrobial efficacy



The confidence of FFR performance following decontamination may differ depending on methods used and method validation

- FFRs that are decontaminated using methods that have been verified by the manufacturer or a third-party to show that FFR performance is not impacted can be worn for any patient care activities
- FFRs that are decontaminated with methods that have not been verified by the manufacturer or a third party can be reused but should not be worn when performing or present for an aerosol-generating procedure



CDC has identified vaporous hydrogen peroxide, ultraviolet germicidal irradiation, and moist heat as promising FFR decontamination methods

- Demonstrated antimicrobial efficacy with various viral and bacterial challenges
 - No data for SARS-CoV-2
- Limited detrimental effects to FFR filtration
- Limited impact on FFR fit
- Researchers, decontamination companies, healthcare systems, or individual hospitals should focus current efforts on these technologies
- Four vaporous hydrogen peroxide methods authorized by FDA through Emergency Use Authorizations for reuse by healthcare personnel during the COVID-19 pandemic (as of April 15, 2020)



Steam treatment and liquid hydrogen peroxide are promising methods with some limitations

- The limited number of studies for microwave generated steam report minimal effect on FFR filtration and fit performance and a minimum 99.9% reduction in H1N1 and bacteriophage MS2
 - The effect of higher power microwaves on FFRs is unknown
 - The metal nosebands of FFRs may cause arcing, sparks inside the microwave oven, during exposure to microwaves
- Six tested FFR models demonstrated no changes in filter performance after three cycles of decontamination with 6% liquid hydrogen peroxide
 - FFR fit and disinfection efficacy were not assessed for this method



Some decontamination methods change FFR performance or function or present a health hazard

- Methods that should not be used for FFR decontamination

- Autoclave
- dry heat
- isopropyl alcohol
- soap
- dry microwave irradiation
- bleach
- disinfecting wipes



- Ethylene oxide is not recommended as a crisis strategy as it may be harmful to the wearer, currently being reevaluated

Conclusions

- Conventional (using other respirators with equivalent or better performance than N95 FFRs) and contingency capacity strategies (extended use) for optimizing the supply of N95 respirators should be considered before resorting to crisis capacity strategies such as FFR decontamination
- There is no “one-size-fits-all” solution to FFR decontamination that inactivates pathogens while maintaining filtration and fit performance of the FFR
- Some FFR decontamination methods are more promising than others



Elastomeric Half-mask Respirators (EHMRs)

- Half-mask, tight-fitting respirators that are made of synthetic or rubber material permitting them to be repeatedly disinfected, cleaned, and re-donned
 - Equipped with exchangeable filters
 - May have disposable components
- NIOSH-approved
- OSHA assigned protection factor (APF) same as N95s
- Fit-testing required (same process as N95s)
- Elastomeric webinar posted

– <https://www.youtube.com/watch?v=8wd5Bx2fVDI>



Photo Courtesy of MSA



View the CDC resources for further guidance

- Strategies for Optimizing the Supply of N95 respirators
 - <https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/index.html>
- Decontaminating filtering facepiece respirators
 - <https://www.cdc.gov/coronavirus/2019-ncov/hcp/ppe-strategy/decontamination-reuse-respirators.html>
- Use of elastomeric respirators
 - Recorded webinar: <https://www.youtube.com/watch?v=8wd5Bx2fVDI>
 - Guidance coming soon
- Use of powered air purifying respirators
 - Guidance coming soon



PPE Selection, Use, and Decontamination Guidance

- **InterAgency Board for Emergency Preparedness and Response (“IAB”)**

PROVIDING A **STRUCTURED FORUM** FOR THE **EXCHANGE OF IDEAS** TO **IMPROVE** NATIONAL PREPAREDNESS AND **PROMOTE** INTEROPERABILITY AND **COMPATIBILITY** AMONG **LOCAL, STATE, AND FEDERAL RESPONSE COMMUNITIES.**

THE
INTERAGENCY BOARD
FOR EMERGENCY PREPAREDNESS AND RESPONSE

- **Emergency Response TIPS**

– Dr. Christina Baxter

- **International Personnel Protection, Inc.**

– Jeffrey O. Stull

Multiple “Quick” and “Detailed” Reaction Guides aimed at first responders



International Personnel
Protection, Inc.™





Quick Reaction Guide – Protection & Decon

- One page document
 - Minimum PPE recommendations
 - Respiratory
 - Ocular
 - Dermal – hand
 - Dermal – body
 - Minimum decontamination recommendations

Type of Protection	Preferred or Ideal	Minimum	Other Factors
Respiratory	NIOSH approved P100 filtering facepiece respirator; or Reusable elastomeric facepiece with P100 filters; or PAPR with HE filters	NIOSH approved N95 filtering facepiece	If surgical/procedure mask used (should meet ASTM F2100) Level 2 or 3. Europe equivalents: FFP2 ≈ N95 FFP3 ≈ P100
Ocular	ANSI Z87.1 N3 or N5 rated goggles; or Full facepiece respirator	ANSI Z87.1 compliant Disposable or reusable faceshield; or Safety glasses	Attached shields on surgical or procedure masks are not effective by themselves (wear with safety glasses)
Dermal – Hand	Examination gloves meeting ASTM D6319 (nitrile), ASTM D6977, or NFPA 1999; Double gloving offers additional physical protection	Examination gloves meeting ASTM D3578 (latex); or cleaning elastomeric or coated work gloves	Avoid glove liners or cloth-based gloves. Always thoroughly clean hands with soap and water or hand sanitizer after use
Dermal – Body	Isolation gowns that meet Level 4 criteria in AAMI PB70 and ASTM F3352; or Single use garments or ensembles certified to NFPA 1999	Any protective garments offering passing viral penetration resistance per ASTM F1671 with adequate integrity, strength, and durability for intended use	Lesser barrier clothing may result in contamination of underlying uniform or work clothing but may be suitable for light exposures. European equivalent: ISO 16604 at 3.5 kPa per EN 14126 ≈ ASTM F1671 and NFPA 1999



Detailed Reaction Guide – Protection & Decon.

Minimum Recommended Guidance on Protection and Decontamination for First Responders Involved in COVID-19 Cases – Detailed Reaction Guide

By Christina M. Baxter (Emergency Response TIPS) and Jeffrey O. Stull (International Personnel Protection)

Responders can be exposed to the SARS-CoV-2 virus responsible for COVID-19 by inhaling aerosolized droplets from an infected individualized persons' coughs and sneezes as well as contact with contaminated surfaces with subsequent hand transfer to the mouth, nose, or eyes. First responders may be at increased risk for exposure with potentially sick patients from increased aerosol and fluid volumes and close proximity. For this reason, extra caution in the selection, handling, and cleaning of PPE used by first responders must be exercised. Specific considerations must be given to respiratory, ocular, and skin protection for lessening exposure.

MINIMUM GUIDANCE ON PPE

PPE Considerations for Protecting Against Inhalation



International Personnel
Protection, Inc.™





Detailed Reaction Guide – Protection & Decon.

Organization and Utility

- 14 pages
- Thorough explanations of recommended PPE and decontamination
 - Explanations for relative effectiveness and tradeoffs
- Links to CDC guidance
- Cited research papers

Content

- PPE considerations:
 - for inhalation, ocular, dermal protection
 - donning, use, and doffing
 - cleaning, sanitization, and disinfection
- Decon./disinfection for first responders
 - Selecting a disinfectant
 - Applying by using electrostatic sprayers
 - Fire apparatus/station disinfection
 - Waste management

Strategies for Extending Respirator Use Life

	Recommended Best Practice	Minimum Acceptable Protection	Last Resort
Phase 1 When Respirator Supplies are Available	<ul style="list-style-type: none"> N/R/P-100 filtering facepiece respirator (FFR) OR air purifying respirator (APR) or powered air purifying respirator (PAPR) with HE Filters Filters used once and replaced between patients 	<ul style="list-style-type: none"> N/R/P-95 filtering facepiece respirator APR or PAPR with appropriate particulate protection Interchange of filters and masks that are not certified together is not approved. 	Not Applicable
Phase 2 When Respirator Supplies are Low	<ul style="list-style-type: none"> Use a medical mask OVER the N95 to extend its use. Replace the medical mask between patients. Utilize emergency rule to allow for APR/PAPR canister interchangeability Use masks beyond their “expiration date” 	<ul style="list-style-type: none"> Consider reusing your FFR (store in non-plastic bag between uses) <ul style="list-style-type: none"> Static charge in plastic bags can remove the electret capability responsible for the small aerosol filtration Consider reusing your APR/PAPR canisters (wipe (not spray) down with disinfectant and store in humidity-free environment) <p>DO NOT SPRAY FILTER MEDIA</p>	<ul style="list-style-type: none"> Prioritize protection by exposure risk: <ul style="list-style-type: none"> > 6’ from patient = no mask 3’-6’ = medical mask < 3’ = N95 or greater
Phase 3 When Respirator Supplies are Depleted	<ul style="list-style-type: none"> Decontaminate FFRs and reuse (attempt to not share FFRs and APR/PAPR filters between people – maintain individual issue) <ul style="list-style-type: none"> Microwave Generated Steam for 1 minute on each side at 1100-1250W (2 min total) <ul style="list-style-type: none"> Consider placing a paper towel between FFR and glass plate to prevent melting Consider placing FFR on container containing 50 mL of water to generate steam Ultraviolet Germicidal Irradiation (UGVI) for 15 minutes on each side using a device fitted with a 40W UV-C bulb. 	<ul style="list-style-type: none"> Utilize medical/surgical face masks with priority given to those meeting ASTM F2100 Level 3 (then Level 2, Level 1, Surgical molded utility masks, and finally, utility masks) Consider adding reusable and cleanable faceshield to minimize direct exposure with droplets 	<ul style="list-style-type: none"> Consider homemade respiratory products using common fabric materials (note that the protection level will be minimal, at best) Requires the use of a reusable and cleanable faceshield to minimize direct exposure with droplets

Quick Reaction Guide – Turnout Clothing

Helmet Ear Covers – Consist of at least two material layers but typically do not have barrier layers and likely will only partially attenuate penetration of aerosols.

Hoods – Particulate blocking hoods block 90% or more of the particles ≥ 0.1 micron; ordinary knit hoods do not provide particulate blocking capabilities.

Respiratory Protection – Wear a minimum of N95 protection.

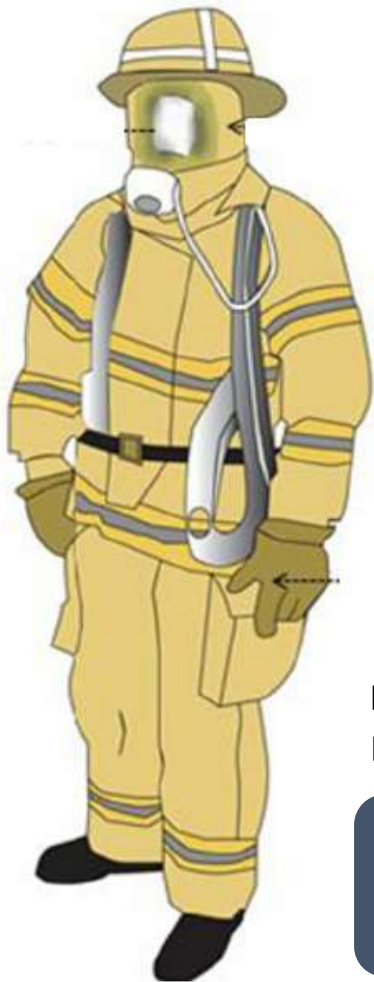
Eye & Face Protection – Any SCBA or other full facepiece already providing coverage to the face and eyes OR goggles rated N3 or N5 per ANSI Z87.1

Wristlets – Unless incorporating a particulate-blocking layer, most do not have barrier layers and likely do not attenuate penetration of aerosols.

Gloves – Wear examination gloves that meet ASTM standards or NFPA 1999 in place of structural or work gloves. Avoid any gloves that have absorptive materials.

Footwear – All footwear certified to NFPA 1971 are tested for viral penetration. Be sure to disinfect entire footwear element following potential exposure.

Turnout clothing ensembles have multiple interfaces and closures that may permit some penetration of bio-aerosols, but likely significantly limit the exposures.



International Personnel
Protection, Inc.

THE
INTERAGENCY BOARD
FOR EMERGENCY PREPAREDNESS AND RESPONSE

EMERGENCY RESPONSE
TIPS

InterAgency Board – Future Direction

Cleaning & Sanitizing Turnout Gear

- Please refer to NFPA 1851, 2020 edition, for procedures and guidance on sanitizing and cleaning turnout gear. Also seek advice from the gear manufacturer or a Verified Independent Service Provider (ISP) on appropriate cleaning agents, sanitizers, or disinfectants, and processes.
- Clean and sanitize any element of structural firefighting protective clothing in accordance with procedures established in NFPA 1851:
 - Wear gloves, eyewear, mask and apron when handling garments.
 - Sanitize and launder garments in a programmable, front loading washer/ extractor that has ample capacity for the wash load.
 - Use “sanitization” program of machine in conjunction with specialized cleaning; if not available, use the following steps:
 - Apply initial step of at least 10 minutes with an EPA-registered laundry sanitizer additive (use as directed supplier instructions).
 - Follow the sanitizing by draining the washer/extractor and using a 4-minute extraction step.
 - Wash garments with an appropriate detergent and use multiple rinse cycles but apply specialized cleaning at the maximum wash temperature up to 140°F.
 - Dry garments by air drying, using a drying cabinet, or applying machine drying on a “no heat” or “air-dry” option.
- Alternatively, use an ISP for conducting sanitization and specialized cleaning.

- Additional Quick and Detailed Action Guides forthcoming:
 - Detailed information for firefighters performing EMS
 - Information of possible field disinfection techniques
 - Best practices aimed at law enforcement first responders
 - Recognizing certified products

<https://www.interagencyboard.org/>