

Infection Control Checklist  
for Manufacturing America

FOCUS AREA	Possible Criticality Low, Med, High	Why act now	Tip #1	Tip #2
Monitoring	H	people who are pre-symptomatic (5 days) or asymptomatic, shed virus and infect others, especially INDOORS.	Thermal-imaging will miss between 30% and 44% of infected people.	Consider Finger Oxymeters; Saturation Level should be above 94%. Anything below is an alert; consider quarantining them and seeking medical referral.
Clock-in & Out	M/H	People in line are an infection-risk to each other, especially INDOORS.	Deploy non-contact clocking and multiple clocking points in the building.	RFID cards, bracelets or facial recognition (use cams and OPEN-cv data-processing).
Cleaning	L/M	Low risk <b>IF</b> people do not touch their faces; about 7% of infections come via touching contaminated objects.	Compulsory mask-wearing to reduce people touching their own faces	Cleaning regimes; soapy water or virucidal disinfectants, or UV-A/ UV-C light (when people are NOT present).
Quarantine stock	L	Inward packed goods may be contaminated and if feasible, can be quarantined - subject to the material surfaces.	Timers on pallets/totes etc., ideally with green/red LED lamps.	
Distancing	L/M/H	Outdoors in still air, distancing at over six feet will reduce viral load, especially where an infected person is already wearing a mask. Indoors, there are increased risks due to viral load in the air without specialist HEPA filtration (or UV-A/UV-C air-sterilization units) <b>and</b> multiple air-changes every hour.	Wear masks to reduce an infected person contaminating others directly from their virus-laden out-breath and/or from their increasing the viral-loading in the ambient air (for everyone in the building):	(Water-droplets in the out-breath contain perhaps thousands of virus in each droplet. Droplets of 0.06 to 10 microns in size stay in the air for hours). If people have to work closely or in a smaller space, wear better respirators, face-shields and consider getting the same people to work only with one-another as a 'bubble'.

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Space per person	H	An infected person's out-breath will infect another person; INDOORS, the viral load in the air continues to be a threat for hours (even when they have left the area). The threat continues for those wearing disposable cloth masks.	If people have to be at work, reduce numbers at any one time and increase distancing. Use respirators, ideally those that do not expel unfiltered air from the out-breath of the wearer.	Increase the numbers of shifts for all workers, including the office-workers, and stagger them to reduce the numbers of incoming and outgoing staff at any one time. Stagger lunches. See 'bubble' comments, above.
Remote Work	M/H	If the whole family is distancing and not going into buildings for more than a few minutes at a time, the whole house-hold is likely to stay safe.	Advise the worker and their family about best practices. Most people do more work at home than at work; be flexible with their (and your own) domestic needs.	
Hearing	L/M	The respiratory contamination threat goes up as soon as an infected person speaks and increases if they shout.	In noisy work-places change from ear-plugs to noise-attenuating ear-defenders.	Ban loud speaking, shouting and reduce speaking to a minimum.
Respirators	M/H	Disposable masks filtration layers are between 20 and 100% effective vs particles of 0.1 to 4 microns in size. The leakage though, allows a further 33 to 67% more infected droplets to be breathed in by the wearer.	Replace masks with Standard (industrial) N95 masks or N99, N100, R95, R99, R100, P95, P99, and P100, for example.	Supply petroleum jelly with the masks and advise wearers to apply the jelly to the rim before fitting to the face. This will reduce average leakage rates of 10-20% (surgical N-95) to near ZERO.
Disposable Gloves	L	Disposable gloves may be as contaminated as a hand or finger. If gloves help a wearer to stop touching their face, then they are a useful aid.	Insist on the use of disinfecting hand-gels and soap-water washing after using the washroom.	

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<b>Goggles/face-screens</b>	L	Respiratory infectors can come via the eyes from which channels open into the throat.	Vulnerable people, or those who have to be within a few feet of others, should be able to wear goggles and or a face-screen to prevent larger out-breath droplets hitting the eyes.	These measures are additional to mask/respirator wearing to further reduce the higher risk of respiratory route infection.
<b>Canteens</b>	H	Eating cannot be managed while wearing a mask or respirator. These areas are HIGH risk.	Stagger dining. Separate diners. Use washable barriers. Improve ventilation with fresh air. Do not use common utensils.	Where possible, close the canteen down; have people eat outside while distancing, or individually in vehicles.
<b>Toilets</b>	H	infected people have virus in their fecal material. Flushing without a lid can create a droplet plume fifteen feet high. Taps, handles, switches and all surfaces will be contaminated.	Remove doors. Install IR-sensing to put lights on inside and OUTSIDE the facility (that stay on for a period after the user has left the room). One-person occupancy at a time. Change taps and liquid-soap to auto-sensing or elbow-activated levers.	Improve fresh-air ventilation. Consider UV-A/UV-C air-handling units at ceiling level to disinfect the area safely and out-of-sight). Remove air-dryers, especially cool ones and replace with paper-towels.
<b>Corridors</b>	M/H	Congregation of people, poor-ventilation and surprise contact with people leaving side-rooms all create high risks for infection.	Make one-way if possible. (Mark out the shop-floor for one-way traffic also). Make sure all doors have glass panels and handle-levers that can be activated by an elbow.	Extract air at ceiling level, consider UV-A/UV-C air-units to kill virus out of sight.

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Offices	H	45 people became COVID-19 infected. Another two died in the main body of a Washington State church in early March 2020. Nobody sneezed or coughed. The chorists were distancing for just two and a half hours. Consider the risk in crowded offices for 7-8 hours.	Try and have everyone possible work from home. Even casual visitors who arrive can be directed to call someone at home. Wear N95., or better, masks (see above). Decontaminate anything touched. Do not file paper immediately, but quarantine it for later filing.	Digitalize all systems. Have separate shifts with the leaver opening windows where possible, to ventilate the room. Reduce talking to a minimum unless N95., or better masks/respirators are being used.
Emerging Advisories	M	We have a duty to stay up to date with regulatory advise and the best medical and scientific advice available.	Systematically scan CDC and OSHA guidelines. These are often behind global peer-review research. Nominate someone to keep ahead of likely policy-changes, to prevent poor investments in new measures.	Beware of web-based 'facts'. Always go to starred, peer-review research or official Governmental National Research or reputable, academic sources.
Emerging Technologies	M	Thermal imaging obviously is a terribly ineffective measure for screening people at work, airports or anywhere else. Antibody testing is of no proven use at all at this time as nobody knows if positive antibodies are COVID-19 specific or a flu-virus with any accuracy, how long the antibodies survive or whether the presence of antibodies reduce the infectivity of the person who has those antibodies.	Advanced technologies are coming. Oxygen saturation finger 'oxymeters' may be a much more reliable than thermal imaging. Far-UV lamps are used in operating suites without screens; reportedly, they do NOT cause skin/eye problems, but do kill viruses. The lamps may be available for industrial use: Krypton-Bromine (207 nm frequency) or Krypton-chlorine (222 nm frequency). Consider encouraging track-and-trace for workers.	Remote working including the use of audio-visual and remote actuation of equipment, doors, robots etc., is possible now and more cost-effective solutions are coming on stream every day. Only by creating time and having the discipline to research, can we stay ahead of the timeline and make better-informed decisions about investment strategies.