An Employee Owned Company
General Aire
P.O. Box 110 · Darby, PA 19023
610.532.3070 ·Fax: 610.532.3077

Facility Virus Protection Preparedness for 2021

Updated 11/17/2020

We continue to get many questions about the proper steps to prepare a facility (Government and Municipal offices; Police stations, Court Houses, Office buildings, public facilities, Doctors and Dentists office, Malls, Schools, stores of every type, restaurants, etc.) to reopen and be prepared from a virus reduction standpoint. Recommendation are available from many sources. The WHO and CDC have proclaimed that this is an airborne event and face masks are warranted. AS SME's, we are obligated to advise customers of their best available course of action based on restrictions within their existing building envelopes and HVAC systems. As we all know an infected person inside a building will cause viral load to increase until that person leaves the building or proper mitigation solutions are employed by the facility.

The recommendations below are based off of documents released by cognizant authorities and offer the best state of the art precautions to prepare a facility and it's HVAC system to reopen and are solutions common to all indoor occupied spaces. Each source is referenced in the recommendation and the source document can be provided upon request. Please keep in mind that every facility is unique and should be understood in detail in order to provide the best state of the art solutions and applications. Employment of combinations of recommendations are best, however even one solution will reduce airborne virus aerosols and particles. These recommendations do not address active patient care facilities of any type. There is a separate document for those recommendations.

AIR BORNE VIRUS REDUCTION SOLUTIONS

- ROOM TREATMENT
  - Upper Room UV Germicidal Irradiation (1)
    - Requires 8' or higher ceiling height ($875.00 each. Covers 225 Sq. Ft.)
  - UV Germicidal Irradiation Room Decontamination (2)
    - Requires room to be unoccupied and other safety consideration ($ 4,620.00 / unit)
  - HEPA filtered room recirculation with UVC Irradiation (3)
    - Recommended 12 Air changes per hour minimum during occupied periods
      - MAP 400 UV @ 400 CFM $ 2,926.00
      - MAP 800 UV @ 800 CFM $ 3,780.00
  - HEPA filtered room recirculation without UVC Irradiance (4)
    - Recommended 12 Air changes per hour minimum during occupied periods

- City M 256 CFM
    - White (p/n M34002928 Early November) $1,960.00
    - Black (p/n M34002927 Early November) $1,960.00
    - HEPA / Molecular filter (p/n M34002992) $380.00
- MAP 400 CFM $ 2,720.00
- CC 500 CFM (Powder Coated) $3,500.00
- CRI TAF with Stand 700 CFM $2,595.00
- MAP 800 CFM $3,230.00
- Air Pure 800 (Stainless Steel) $ 4,475.00
- CRI Guardiair $2,350.00 Add UV + $480.00 **(Be sure to have the correct part number by color)**

- HVAC SYSTEM CHANGES (Comparative values)
    - Upgrade existing air filters to (5)
        - GOOD =
            - MERV 13 pleat, 24x24x2 (AP-13) $16.95 each
            - MERV 13A, 24x24x12 (Durafil ES²) $163.00
            - MERV 14A 24x24x2, (Optipac Durable MERV 15), $37.98
            - MERV 14A 24x24x4, (Optipac Durable MERV 15), $64.26
            - MERV 14A, 24x24x12 (Durafil ES²) $169.00
        - BETTER = MERV 16A 24x24x12 (Durafil ES²) $191.00
        - BEST = HEPA Filters, 24x24x12, 99.99% (Filtra 2400) $662.00
    - Install UV Germicidal Irradiation in the Air handler (1,2,3)
        - $.55 per CFM Built Up Systems

- $.35 per CFM for external mount units

- Install terminal HEPA or 95 DOP filters in lieu of existing HVAC grilles (5)
  - 400 CFM 24x24 HEPA
    - Slim Line 2x2 up to 300 CFM - $ 341.00 ea.
    - Slim Line RSR 2x2 up to 400 CFM - $ 825.00 ea.
  - 800 CFM 24x48 HEPA
    - Slim Line 2 x 4 up to 688 CFM - $446.00 ea.
    - Slim Line RSR up to 800 CFM - $1,020.00 ea.
  - 400 CFM 24x24 95 DOP
    - Slim Line 2x2 up to 300 CFM - $ 289.00 ea.
    - Slim Line RSR 2x2 up to 400 CFM - $ 750.00 ea.
  - 800 CFM 24x48 95 DOP
    - Slim Line 2 x 4 up to 688 CFM - $368.00 ea.
    - Slim Line RSR up to 800 CFM - $915.00 ea.

NOTE: Prices above are budget / order of magnitude and are FOB the factories. Freight needs to be added.

SOURCES:

1. Engineering controls: Isolate workers from the hazard https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html
   a. Consider using ultraviolet germicidal irradiation (UVGI)pdf iconexternal icon as a supplement to help inactivate the virus.
2. Engineering controls: Isolate workers from the hazard https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html

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3. Engineering controls: Isolate workers from the hazard https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html

a. Cdc Consider using ultraviolet germicidal irradiation (UVGI)pdf iconexternal icon as a supplement to help inactivate the virus.

b. Consider using portable high-efficiency particulate air (HEPA) fan/filtration systems to help enhance air cleaningpdf iconexternal icon

4. Engineering controls: Isolate workers from the hazard https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html

a. Consider using portable high-efficiency particulate air (HEPA) fan/filtration systems to help enhance air cleaningpdf iconexternal icon

5. Engineering controls: Isolate workers from the hazard https://www.cdc.gov/coronavirus/2019-ncov/community/office-buildings.html https://www.ashrae.org/technical-resources/filtration-disinfection#mechanical

a. Improve central air filtration:

i. Increase air filtrationexternal icon to as high as possible (MERV 13 or 14) without significantly diminishing design airflow.

ii. Inspect filter housing and racks to ensure appropriate filter fit and check for ways to minimize filter bypass