

Mechanical Air Filters can trap this % of Influenza Viruses:



MERV Rating	%Viruses Arrested (captured)
1-5	1-5%
6	6.2%
7	7%
8	11%
10	12%
13	46%
15	71%
16	76%
17 (HEPA)	99.9%

Viruses can be captured & sterilized with a combination of MERV Filters & URV rated UV-C Light



- Adding filters and UV together in successive layers can provide a lethal force to both prevent the recirculation and reduce the levels of airborne viruses in occupied spaces.
- A MERV 10 filter alone captures only 10% of flu viruses whereas adding a Ultraviolet rating of URV 10 triples that total single pass capture/sterilization to 35%.
- A MERV 13 filter plus a URV 13 UV light rating can have an 84% capture/sterilize rate for influenza. That is a very achievable goal for any indoor space.
- Adding additional UV lamps to an URV 16 level combined with a MERV 16 rated filter can achieve a total single pass capture/sterilize/inactivation rate of 98.8% for influenza.

MERV rated filters & UV lights prevent airborne influenza



Table 1. Filtration Rates of Design Basis Biological Weapon Agents

Pathogen	Mean size, μm	Filter Model and Removal Rates, Fraction						
		MERV 6	MERV 7	MERV 8	MERV 10	MERV 13	MERV 15	MERV 16
Influenza	0.098	0.062	0.07	0.11	0.12	0.46	0.71	0.76

Table 2. Ultraviolet Germicidal Irradiation Kill Rates of Design Basis Biological Weapon Agents

Pathogen	Rate constant ($\text{cm}^2/\mu\text{W}\cdot\text{s}$)	ULTRAVIOLET GERMICIDAL IRRADIATION KILL RATES, FRACTION						
		URV 6	URV 7	URV 8	URV 10	URV 13	URV 15	URV 16
		75 $\mu\text{W}/\text{cm}^2$	100 $\mu\text{W}/\text{cm}^2$	150 $\mu\text{W}/\text{cm}^2$	500 $\mu\text{W}/\text{cm}^2$	2000 $\mu\text{W}/\text{cm}^2$	4000 $\mu\text{W}/\text{cm}^2$	5000 $\mu\text{W}/\text{cm}^2$
Influenza	0.001187	0.044	0.058	0.085	0.257	0.695	0.907	0.949

Table 3. Combined Removal Rates for Biological Weapon Agents

Pathogen	FILTRATION AND ULTRAVIOLET GERMICIDAL IRRADIATION REMOVAL RATES, FRACTION						
	MERV 6	MERV 7	MERV 8	MERV 10	MERV 13	MERV 15	MERV 16
	URV 6	URV 7	URV 8	URV 10	URV 13	URV 15	URV 16
Influenza	0.10	0.12	0.19	0.35	0.84	0.97	0.988

Combined UV Light & Filtration Capture/ Kill/Sterilize this % of Flu Viruses:



MERV & UVR Combined	%Viruses Killed/Sterilized
6	10%
7	12%
8	19%
10	35%
13	84%
15	97%
16	98.8%