

Ventilating our places of worship during the COVID-19 pandemic

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SUMMARY

- **Information about Coronavirus or SRAS-CoV-2**
- **Coronavirus and indoor areas**
- **What can be done to minimize the risk of infectious aerosols?**
- **What are the environmental parameters that favour sustained viability of the Coronavirus in an indoor environment?**
- **Ventilation of indoor areas**

- What can be done inside our places of worship?

Information about the CORONAVIRUS

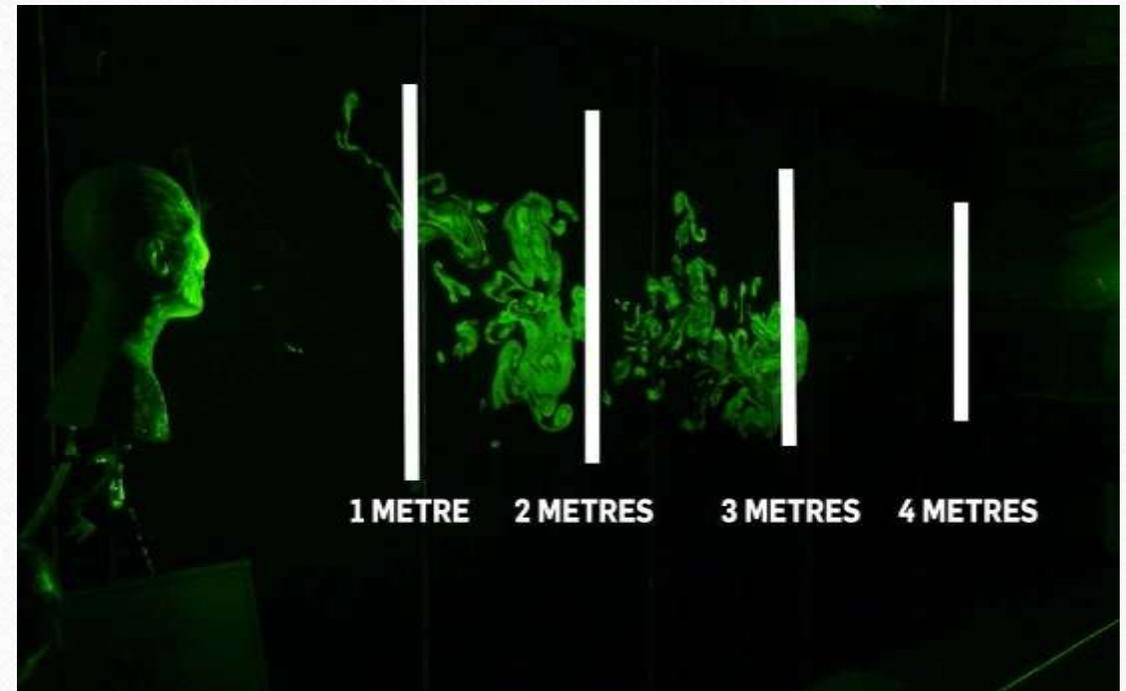
- A person infected with the Coronavirus who is symptomatic => significant viral loads in the indoor air, especially if respiratory hygiene measures are not adequate;
- Viral load => dispersed throughout indoor air in the form of particles of various sizes which remain suspended in the air for varying lengths of time,

depending on their **diameter** and **density**, as well as certain **environmental conditions**;

<https://www.inspq.qc.ca/publications/2992-environnement-interieur-qr-covid19>
(French only)

Information about the CORONAVIRUS

Droplets (particles ≥ 5 micrometres or μm) responsible for the transmission of COVID-19 can in most cases only be transported for a distance of one to two metres before being deposited on surrounding surfaces.



Information about the CORONAVIRUS

- The precise means by which the Coronavirus is transmitted are not yet completely clear;
- Experts cannot exclude the **possibility of airborne transmission** or transmission by infectious aerosols (contaminated fine respiratory secretions)

⇒ to be taken into consideration when setting up preventive measures

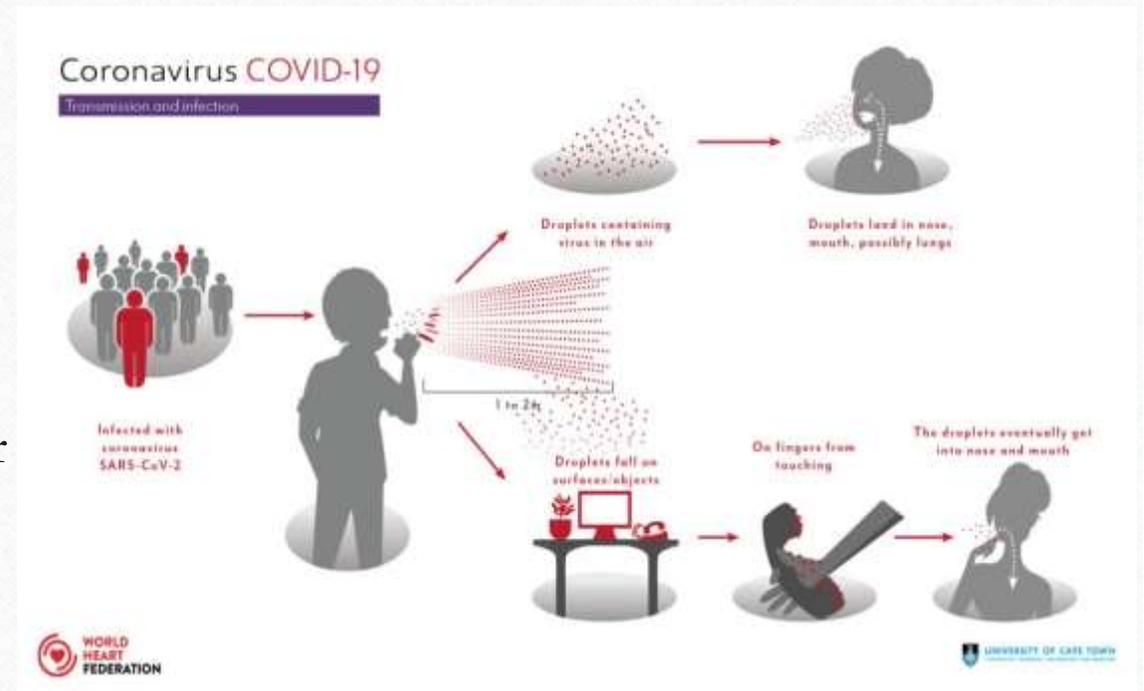
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Information about the CORONAVIRUS

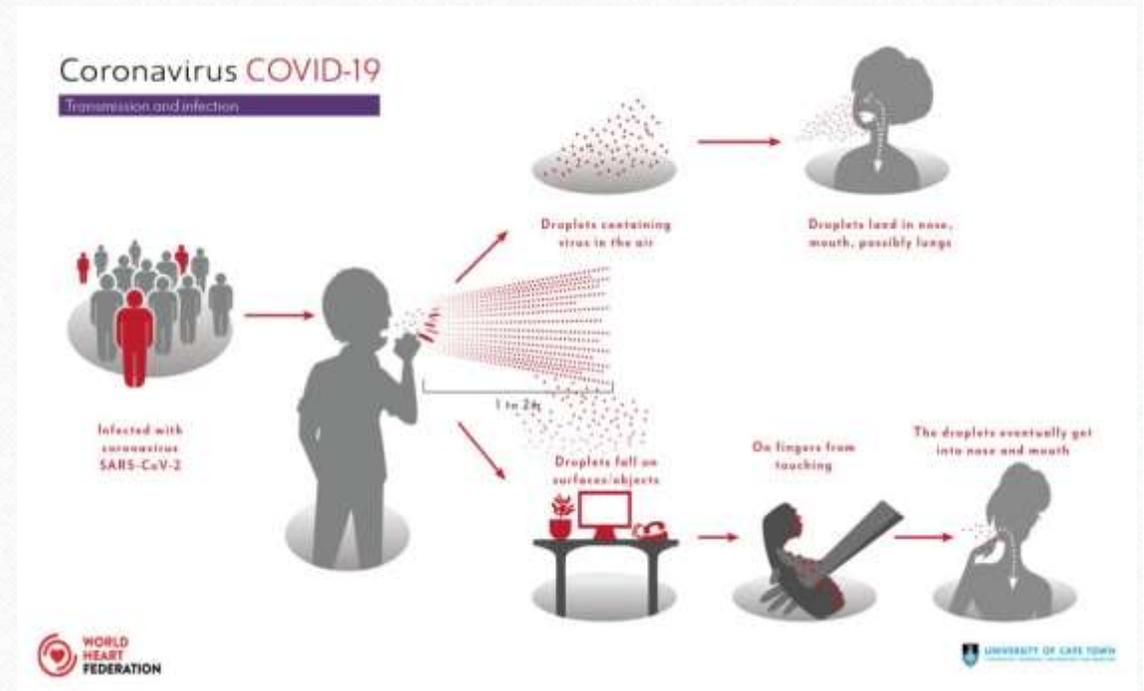
The virus can be transmitted:

- through droplets containing the virus that have been expelled by coughing or sneezing and are then inhaled by another person.
- by physical person-to-person contact as, for instance, through the exchange of saliva, by a handshake followed by contact with the mouth, nose or eyes;



Information about the CORONAVIRUS

- Transmission through contact with contaminated surfaces:
 - The Coronavirus exhibits a certain stability on many types of surfaces exposed to environmental conditions such as those normally encountered in an indoor area.
 - Even so, there have been no documented cases of Coronavirus infection caused by contact with inert contaminated surfaces.



CORONAVIRUS AND INDOOR AREAS

Coronavirus and indoor areas

- The risk of infection is at its highest in **enclosed areas** in which **several people not wearing masks** remain in **prolonged contact**.

- Poor rate of ventilation combined with a high concentration of occupants

⇒ potential **accumulation of infectious aerosols** in indoor air; ⇒
heightened risk of infection.

Risques de transmission du SARS-CoV-2 selon les situations

Ces estimations se basent sur l'hypothèse de porteurs asymptomatiques

Port du masque, contacts de courte durée						
	Faible fréquentation – Peu de monde			Forte fréquentation – Beaucoup de monde		
	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré
Silence	Vert	Vert	Vert	Vert	Vert	Orange
Conversation	Vert	Vert	Vert	Vert	Vert	Orange
Chant, Cris	Vert	Vert	Orange	Orange	Orange	Rouge

Port du masque, contacts prolongés						
	Faible fréquentation – Peu de monde			Forte fréquentation – Beaucoup de monde		
	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré
Silence	Vert	Vert	Orange	Vert	Orange	Rouge
Conversations	Vert	Vert	Orange	Orange	Orange	Rouge
Chant, Cris	Vert	Orange	Rouge	Orange	Rouge	Rouge

Sans masque, contacts de courte durée						
	Faible fréquentation – Peu de monde			Forte fréquentation – Beaucoup de monde		
	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré
Silence	Vert	Vert	Orange	Orange	Orange	Rouge
Conversations	Vert	Orange	Orange	Orange	Rouge	Rouge
Chant, Cris	Orange	Orange	Rouge	Rouge	Rouge	Rouge

Sans masque, contacts prolongés						
	Faible fréquentation – Peu de monde			Forte fréquentation – Beaucoup de monde		
	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré	A l'extérieur, bien aéré	A l'intérieur, bien aéré	A l'intérieur, mal aéré
Silence	Vert	Orange	Rouge	Orange	Rouge	Rouge
Conversations	Orange	Orange	Rouge	Rouge	Rouge	Rouge
Chant, Cris	Orange	Rouge	Rouge	Rouge	Rouge	Rouge

Risque transmission Faible ■ Moyen ■ Élevé ■

From Jones N et al BMJ 2020;370:m3223

What are the environmental parameters that favour sustained viability of the Coronavirus in an indoor environment?

- The Coronavirus may be able to survive for a certain length of time in indoor areas;
- Viability can depend on air **temperature** and **relative humidity**;
- Persistent viability generally decreases as the temperature rises:
- survival time for certain viruses is shorter at 30°C, longer at 20°C.
- virus viability is optimal at 4°C and can easily persist for 7 days at 22°C.

- virus may remain viable for more than 5 days on surfaces that are maintained at a relative humidity of 40 to 50% and at a temperature of 22 to 25°C.

=> Proper heating, proper ventilation, proper humidity

What are the environmental parameters that favour sustained viability of the Coronavirus in an indoor environment?

The following measures are recommended:

- maintain relative humidity rates (Health Canada, 2015):
 - approximately 30% in winter and
 - approximately 50% in summer;

- maintain the integrity of buildings;
- limit proliferation of fungus; and
- ensure that occupants are comfortable.

What can be done to minimize the risk of infectious aerosols?

- Improving the circulation of air from the exterior and properly maintaining **heating, ventilation and air-conditioning** (HVAC) systems will serve to complement other public-health measures recommended in the effort to reduce the spread of the Coronavirus, such as:

- testing;
- self-isolation if infected;
- social distancing: by itself not enough to prevent people from breathing in infectious respiratory secretions;
- hand-washing;
- controlling sources of fresh air; as well as
- cleaning and disinfecting surrounding areas.

What role could HVAC systems have in the transmission of the Coronavirus?

- **current** scientific evidence

=> HVAC systems do not contribute to the spread of the Coronavirus.

Ventilation of indoor areas

Does the ventilation of indoor areas affect the transmission of the Coronavirus?

Adequate ventilation of indoor areas:

- ⇒ an effective means of controlling contaminants in the indoor air;
- ⇒ minimizes the risk of transmission of the Coronavirus.

Ventilation =

- **extracting indoor air** that is potentially contaminated; and
- **diluting the contaminants** by introducing exterior-sourced air and directing it towards occupied areas (Government of Canada, 2018).

Ventilation: employing central mechanical ventilation systems or by opening windows (or other types of openings that facilitate natural aeration).

Some practical measures to follow with respect to mechanical ventilation during a time of pandemic

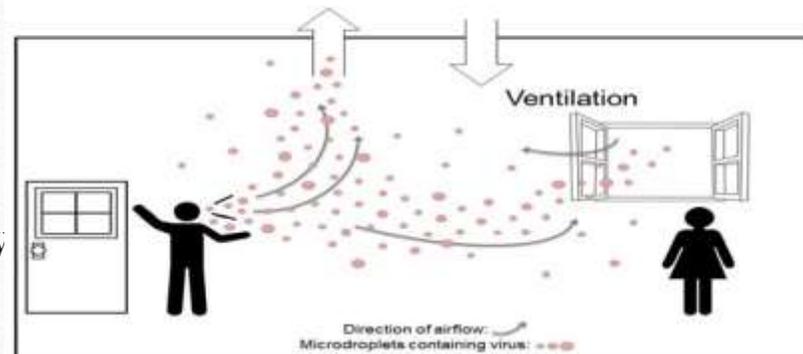
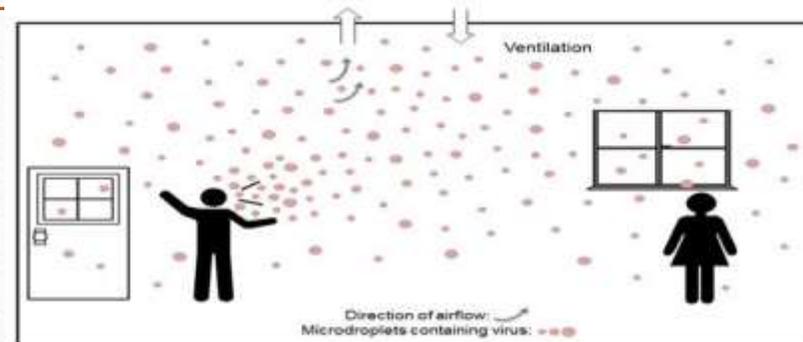
- avoid operating the ventilation system in ‘recirculate’ mode;
- use a MERV (*Minimum Efficiency Reporting Value*) 13 (or higher) filter if the air must be recirculated;
- avoid using energy-saving strategies (for example, demand-controlled ventilation or ventilation using CO₂ sensors);
- keep ventilation on ‘low’ during periods when the building is not in use, rather than turning the system off completely;
- ensure that pressurization of the hallways (positive building pressure) is maintained 24 hours a day.

What can be done inside our places of worship?

What can be done inside our places of worship?

In many of our places of worship, windows are not disposed in such a way as to facilitate proper aeration, and many also lack mechanical ventilation systems.

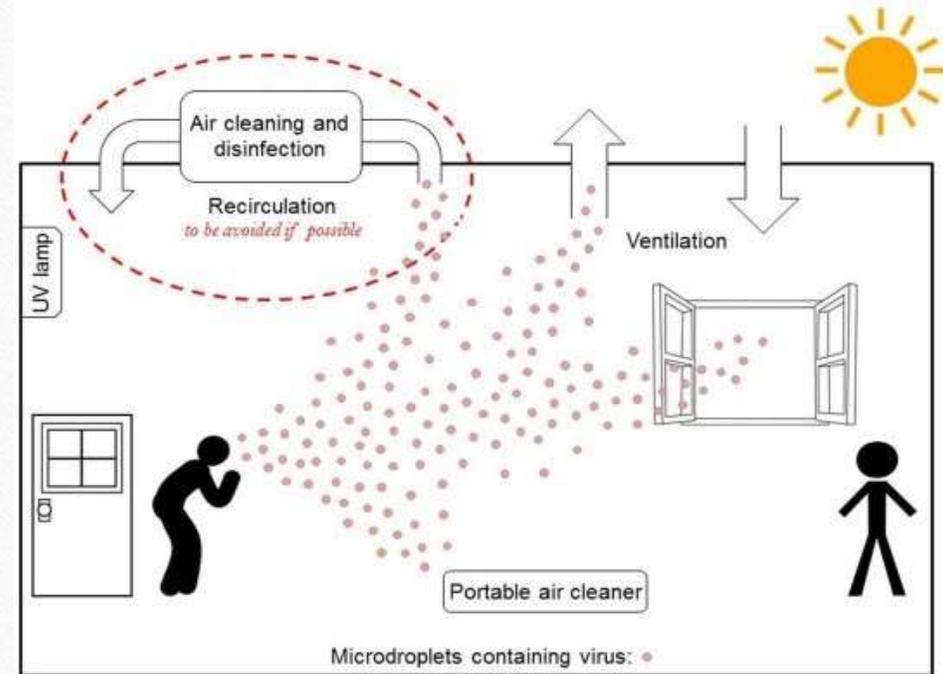
- Even in cold weather, the preferred solution is to open doors and windows in order to prevent the virus from being spread through speaking or breathing by an asymptomatic member of the congregation, a volunteer, a priest or minister.
- If neither opening windows nor ventilation is a possibility it is necessary at least to **purify the air using filters**.



Public-health experts' recommendation respecting Quebec schools
2020-10-13 19

What can be done inside our places of worship?

- Organize as quickly as possible the adoption of aeration and ventilation measures in all places of worship.
 - Maintenance? Cost of installation and maintenance?? To be considered...
- Objective: the air in places of worship **must be changed five times per hour** in order to dilute the Coronavirus effectively.
 - In order to achieve this, according to experts at 'HealthyBuildings,' it is usually only necessary **to open windows about 20 cm**
 - consider purchasing **CO₂ detectors** and **portable air purifiers with HEPA filters**



Public-health experts' recommendation respecting Quebec schools

Liquidation



Purificateur d'air sur console HEPA
Filtre à 360 degrés

★★★★★ 15 évaluations

109 \$



Air Purifier Ionizer Air Cleaner Purification devic

☆☆☆☆☆ 0 évaluations

39⁶⁷ \$

Coûtait ~~68,13 \$~~



Éliminateur d'allergènes à véritable filtre HEPA
Le choix des médecins !

★★★★★ 1 évaluation

266⁵⁸ \$



Éliminateur d'allergènes tower à véritables filtre
Pièce moyenne-grande

★★★★☆ 3 évaluations

355²⁰ \$

Chute de prix



Purificateur d'air
Fellowes® AeraMax® 100
Chambres de 100 à 200 pi2

★★★★★ 61 évaluations

139⁹⁹ \$

Coûtait ~~159,97 \$~~

Liquidation



New Portable Air Purifier
Air Cleaner Air Ionizer

☆☆☆☆☆ 0 évaluations

57²⁰ \$

Coûtait ~~98,23 \$~~



Purificateur d'air vertical
Bionaie à deux positions
Purification HEPA réelle à 99

★★★★★ 6 évaluations

199 \$

Liquidation



Brand New Air Purifier
Ionizer Air Cleaner

☆☆☆☆☆ 0 évaluations

39⁶⁷ \$

Coûtait ~~68,13 \$~~

AIR O MAX

PRODUITS DE QUALITÉ SUPÉRIEURE POUR LE TRAITEMENT DE L'AIR INTÉRIEUR

Références * Introduction * Captation à la source * Charbon Activé * Filtre Hepa * Types de Filtres * Contact * 514-567-6629

Bras Aspirants | Ventilateurs | Extensions à pivots | Tuyaux flexibles | Enrouleurs & Flexibles | Balanciers & Flexibles | Tuyauterie | Purificateurs d'Air

NOS ASSAINISSEURS D'AIR SONT EN STOCK, EN QUANTITÉ LIMITÉE

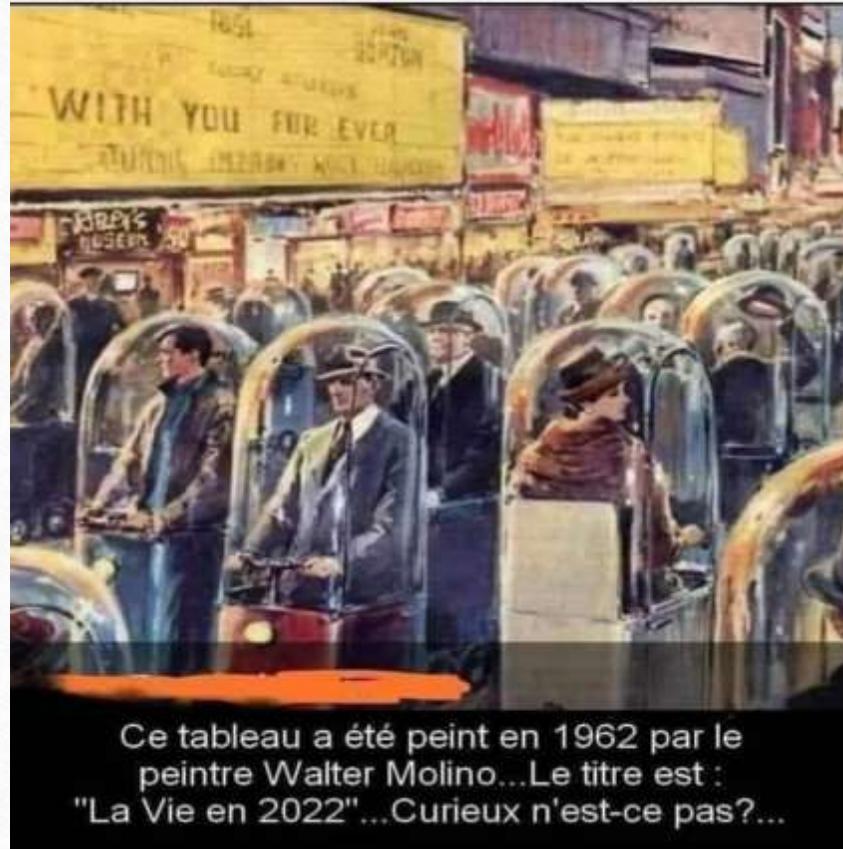
Informations sur la protection du COVID-19 : Le masque N95 a une efficacité de 95% à 0,3 micron. La taille des aérosols (gouttelettes) dans les cliniques et les hôpitaux est de 0,5 micron et plus. Nos appareils ont une efficacité de 99,97% à 0,3 micron. Ils sont tous certifiés à 99,97 % et plus lors d'un test avec un compteur de particules de 0,3 micron.

Opter pour un appareil avec un grande puissance de filtration; plus l'air passe souvent dans les filtres, moins qu'il y a de risque que les gouttelettes du COVID-19 vous atteignent ou demeurent dans votre environnement.

Bien entendu, nos assainisseurs d'air HEPA ne sont pas une solution miracle au Coronavirus. Par contre, ceux-ci font un excellent complément aux règles d'hygiène recommandées en milieu hospitalier. À cause de leurs qualités et de leurs performances, les appareils de filtration d'air que vous offre Airomax, sont utilisés dans plusieurs hôpitaux Québécois et Canadiens.

Ils sont conçus pour des applications de filtration d'air en mode recirculation ou nécessitant une pression négative ou positive. Idéal pour les travaux de rénovations et d'enlèvement de l'amiante, la captation des fumées de soudure ainsi que de la filtration d'air des polluants en général. Ils captent les poussières, fumées, moisissures, produits toxiques, bactéries et certains virus. Ils peuvent être utilisés de façon mobile, fixe et en mode central.

Cette illustration parue, en 1962, dans une BD de Walter Molino et dans le journal La Domenica del Corriere montre des gens enfermés dans des capsules... Elle a pour titre « La vie en 2022 » !



Ce tableau a été peint en 1962 par le peintre Walter Molino... Le titre est : "La Vie en 2022"... Curieux n'est-ce pas?...

Merci

