

A panoramic view of the Seattle skyline at dusk, featuring the Space Needle and various skyscrapers. The image is overlaid with a white network of dots and lines, suggesting a digital or interconnected theme. Four white circular callouts are positioned over the skyline, each containing text.

**Indoor Air
Quality**

Future of IAQ

**Changes in IAQ in
Washington**

**PHSKC IAQ
Plans**

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A background image of the Seattle skyline at dusk, featuring the Space Needle and various skyscrapers. A large white circle is overlaid on the left side of the image, containing text. Two smaller blue circles are on the right side, containing additional text.

Indoor Air Quality

The indoor environment is an important space for working, learning, and many other activities that we do in our daily lives. Indoor air can also negatively impact our health and well being. Improving indoor air is a key strategy for protecting health and...

...IAQ is holistic

**IAQ
Complexity**

**Health
Effects**

Example Sources of Pollutants Impacting IAQ



- Asbestos
- Biological Pollutants
- Carbon Monoxide (CO)
- Cookstoves
- Formaldehyde/Pressed Wood Products
- Lead (Pb) from paint coatings
- Mold Growth
- Nitrogen Dioxide (NO₂) - from combustion appliances
- Pesticides
- Radon
- Indoor Particulate Matter
- Tobacco Smoke
- Volatile Organic Compounds (VOCs)
- Wildfire Smoke
- Wood Smoke



Health Effects

Health effects experienced by building occupants can range from mild discomfort to serious disease (rare cases).

Common symptoms²:

- Irritation of eyes, nose, and throat
- Headaches, dizziness, and fatigue
- Respiratory diseases, heart disease, and cancer

Individual sensitivity may vary from person-to-person when exposed to various chemical and biological agents.

Occupants may also experience psychosocial stresses that lead to the perception that IAQ is causing a variety of health effects.

Consider the many interior components and chemicals associated with buildings and occupant activities.



Changes in IAQ in WA

Indoor air quality is an important focus in Washington for several reasons.

- COVID-19 and other airborne illnesses
- Climate impacts (heat and wildfires)
- Energy efficiency focus
- Keeping communities healthy and functioning

COVID-19

Climate
Impacts

Energy
Efficient
Buildings

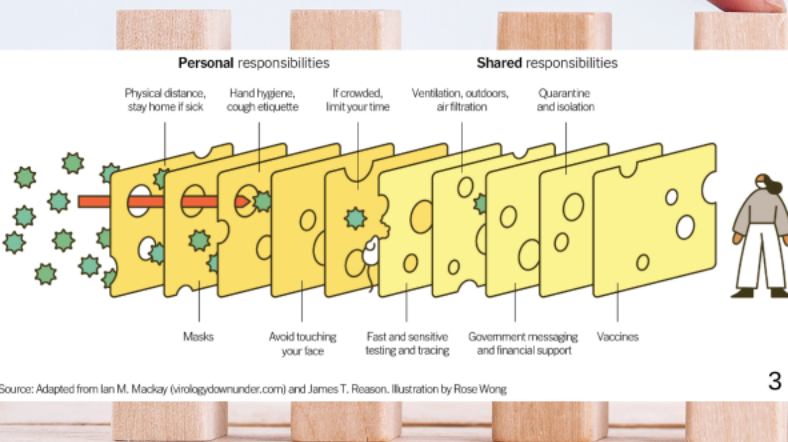
COVID-19 Prevention and IAQ

Importance of ventilation and filtration to prevent airborne disease transmission

- Upgrade filtration (MERV 13 minimum)
- Inspect and maintain ventilation system(s)
- Maximum fresh air intake
- Modified HVAC system operation
- Supplement with portable air cleaners
- Also increased building energy consumption

Increased use of HEPA-equipped portable air cleaners

- Temporary solution
- Increased maintenance and management time and resources



Climate Impacts

Wildfire smoke

- Significant impacts on community health and businesses
- Recent decades have seen increases in area burned in the Western U.S. concurrent with warmer temperatures⁴
- Fine and ultrafine particulate matter affects health⁵
- Importance of outside air filtration (MERV 13 filters)

Extreme heat impacts

- Poses threat to occupants as PNW buildings are not typically equipped with air conditioning
- Highlight importance of both **cooling and filtration** as wildfire and extreme heat events can overlap

Flooding

- More extreme weather conditions can cause flooding in susceptible areas
- Leads to building damage, injuries/deaths, and indoor air problems such as mold growth



Energy Efficient Buildings

- Buildings are a rapidly growing source of greenhouse gas emissions⁶
- Buildings sector is the state's second-biggest carbon polluter at 27% of statewide emissions, behind transportation⁶
- Ensuring buildings produce less emissions will reduce poor outdoor air quality that can also impact indoor environments
- State has adopted Clean Buildings Performance Standard
- Important to move towards zero emissions



Future of IAQ

Increased attention has been given to indoor air quality in recent years, unfortunately mainly due to the COVID-19 pandemic. Fortunately we can keep the focus and momentum going with respect to IAQ.

Importance
of
Ventilation

Climate
Resilience

Focus on
Underserved

Importance of Indoor Air Quality

- Maintain the momentum around indoor air quality improvement
- Improving ventilation can help prevent building occupants from acquiring respiratory infections and maintain better cognitive function

Needs:

- Indoor air quality standards/regulations
- Updated mechanical codes
- Additional funding for communities to improve ventilation and filtration in their buildings
- Rental housing assistance, inspection, and consultation for indoor air quality
- Funding for LHJ indoor air quality programs



Climate Resilience and Adaptation

Buildings need to be climate resilient

- Ensure a comfortable and safe indoor environment
- Prevent exposure to wildfire smoke and other fine and ultrafine particulate matter
- Prevent extreme heat indoors with efficient cooling
- Incentivising resilience will ensure more communities adopt resilient construction and adapt current structures
- Construction and design standards
- Green buildings



Source: International Code Council

Focus on Underserved Communities

Race, place, and income impact quality of life⁷



Focus on Underserved Communities

- According to the EPA, people of color breathe more particulate air pollution on average⁸
- Climate change disproportionately affects those who suffer from socioeconomic inequalities, including many people of color⁹
- Sensitive populations also need attention such as children in schools and daycares, and the elderly



Public Health - Seattle & King County IAQ Plans

Ongoing support from many different units in King County

- K-12 School EH Program
- Lead & Toxics
- Asthma Program
- Climate Change Initiatives and Programs
- COVID-19 and Indoor Air Quality Program (winding down)
- Best Starts for Kids
 - Healthcare for the Homeless
 - Health Engagement Action Resource Team (HEART)



Thank you!

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Citations

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