

Review of Engineering Report

The City's Safety Codes team reviewed the "Shisha Lounge Ventilation and Isolation" Engineering Report (the "Report") provided by stakeholders interested in allowing indoor shisha consumption.

Indoor Air Quality Standards

The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standard 62: Ventilation for Acceptable Indoor Air Quality (ASHRAE 62), is the adopted standard within the National Building Code (Alberta Edition), and provides minimum ventilation rates used to determine compliance with Code-acceptable indoor air quality requirements.

The City of Edmonton is not a cognizant authority as defined in ASHRAE 62. This means that the City has neither expertise or jurisdiction to determine an acceptable concentration level of smoke within an indoor space, and this should be left to the health authorities. According to Health Canada and the United States. Centers for Disease Control there is no safe level of exposure to secondhand smoke.

ASHRAE periodically issues position papers on specific topics of emergent interest to public policy makers. ASHRAE's July 2020-July 2023 position paper¹ on Environmental Tobacco Smoke states the following:

- A building and its systems can reduce only odour and discomfort, but cannot eliminate exposure when smoking is allowed inside or near a building.
- Even when all practical means of separation and isolation of smoking areas are employed, adverse health effects from exposure in non-smoking spaces in the same building cannot be eliminated.
- Based on the above, Standards and Guidelines shall not prescribe ventilation rates or claim to provide acceptable indoor air quality in smoking spaces.

Building ventilation systems are designed to introduce fresh air into a space to dilute contaminants generated by people--such as carbon dioxide and odours - or from objects such as volatile organic compounds (VOCs). This approach is called dilution ventilation. As ventilation rates to the space are increased, the concentration level of contaminants decreases but cannot reach zero to fully eliminate indoor air contaminants.

¹ASHRAE Board of Directors. (2020, July 1). *ASHRAE Position Document on Environmental Tobacco Smoke*. ASHRAE.

Review of the Shisha Lounge Ventilation and Isolation Report

The Report provides several ventilation approaches to mitigate smoke spread to non-smoking areas; however, none of the proposed solutions indicate the risk would be fully eliminated.

The most compelling approach proposed in the Report suggests using pressurization of spaces to ensure that air movement flows from non-smoking areas into the smoking area, and is then exhausted. The article this approach is based on, states that this approach results in 90 per cent exhaust efficiency of smoke. This confirms that while a mechanical approach can significantly reduce smoke in a place, it cannot fully eliminate or guarantee infiltration of smoke into adjoining spaces.

The other approaches in the Report did not make claim of any specific exhaust efficiency for smoke.

Conclusion

The Report appears to summarize potential engineering approaches and existing literature for a proposed project, but does not appear to include any results or data collected from a real world test of a purpose-built solution. The true performance of this project as proposed is therefore still unknown.

Furthermore, the report does not identify any theoretical or practical solution that is capable of generating a zero exposure level. Based on Alberta public health authorities' position that there is no safe level of exposure to secondhand smoke, Administration has concluded that the report does not provide any engineering solution that will eliminate the public safety risks of indoor smoking.