

**DATE:** February 1, 2022

**TO:** Board of Trustees

**FROM:** Darrel Robertson, Superintendent of Schools

**SUBJECT:** Ventilation in Division Schools  
(Response to Request for Information #003)

**ORIGINATOR:** Kathy Muhlethaler, Assistant Superintendent

**RESOURCE  
STAFF:** Todd Burnstad, Terri Gosine, Linda McConnell, Christopher Wright

**REFERENCE:** December 14, 2021 Board meeting (Trustee Estabrooks)

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**ISSUE**

At the December 14, 2021, Board meeting, the Board of Trustees requested the following information:

(from October 5, 2021):

Given the determination by the WHO, the CDC, and Public Health Canada that ventilation is important in addressing transmission of SARS-COV-2, be it moved request provincial ventilation standards and resources to include:

- a) Clear provincial ventilation and air filtration standards for the management of airborne viruses, developed in partnership with APEGA.
- b) The provincial purchasing and provision of HEPA units suitable for classroom air filtration, to be approved by qualified APEGA engineers.
- c) Resources for building ventilation assessments, including room-level assessment of all student and staff spaces by qualified APEGA engineers.

In keeping with this motion, the following questions are being submitted as a request for information:

What response, if any, has the Division received from the Ministry of Education on the above advocacy motion and the actions requested?

What work has been done to monitor air quality, CO2 levels and ventilation performance in our schools?

- Which measurements are being used?
- How often are the measurements taken?
- Who takes the measurements?
- How is this information being shared publicly?

How is the Division meeting the recommendations put forward by the American Society of Heating and Refrigerating and Air-conditioning Engineers (ASHRAE), the regulatory body that the school division must adhere to? Could Administration provide a chart detailing:

- Each specific ASHRAE standard.
- What the division is currently doing to meet each of those standards.
- Additional enhancements Edmonton Public Schools is currently considering based on ASHRAE recommendations.

In situations where Alberta Health Services has investigated COVID-19 outbreaks in our schools, what did those investigations say about air quality and ventilation as possible factors contributing to the spread of COVID-19 and related variants?

There has been a lot of discussion about the use of HEPA filters in division classrooms.

- What have we learned about the efficacy of HEPA filters?
- How could HEPA filters help enhance ventilation in our schools?
- Has the division considered this option and if so, what were the findings?
- What might the estimated overall cost be to place HEPA filters in all instructional spaces?

Given the emerging evidence showing the benefits of HEPA filters, some parent groups have offered to fundraise to purchase these units.

- If the Division allows parent groups to purchase these units, will there be a process in place to ensure that all HEPA filters across the division meet the same set of standards and specifications?
- Could there be any potential liability for parent groups who purchase these HEPA filters for school use?
- What, if any, are the benefits in allowing parent groups to purchase these units?
- Given that equity is a priority for our Division, how can we ensure equitable access to HEPA filters in all schools?

Based on what the Division heard from experts consulted, do you see the potential for some instructional spaces to require both MERV-13 filtration units and HEPA filters?

## BACKGROUND

Context and information related to Board questions are captured below.

## CURRENT SITUATION

**What response, if any, has the Division received from the Ministry of Education on the above advocacy motion and the actions requested?**

To date, Administration is not aware of any response from the Ministry of Education to the Board Chair's October 15, 2021, letter requesting support and clarity relating to ventilation standards or Provincial procurement of stand-alone HEPA filtration units in classrooms. The October 15, 2021, letter was informed by the motion passed at the October 5, 2021, Special Board Meeting.

In response to the open letter from the Board of Trustees, dated January 6, 2022, the Minister responded on January 24, advising that if capital reserves are required to upgrade ventilation, the Division submit a request and the Minister committed to providing a prompt response.

**What work has been done to monitor air quality, CO2 levels and ventilation performance in our schools?**

- **Which measurements are being used?**
- **How often are the measurements taken?**
- **Who takes the measurements?**
- **How is this information being shared publicly?**

Context:

All Edmonton Public School buildings' mechanical systems are monitored through the Building Management System (BMS) in one of two ways. A large majority of our buildings have BMS that are able to be monitored remotely. The systems that are not yet digital are frequently reviewed in person by our Journeyperson Control and Mechanical Trade staff. Information collected by our controls department helps Integrated Infrastructure staff know if something is not working within the mechanical system, such as a broken fan. This allows our trade staff to respond to school needs quickly.

Our Infrastructure team also works closely with the school custodial staff and our Occupational Health and Safety Colleagues to ensure that any concerns are reviewed and addressed as quickly as possible. Schools are encouraged to call Integrated Infrastructure Services with any concerns.

CO2 monitoring and control is relatively new to building standards. Only recently has school construction incorporated CO2 monitoring and control, such as projects like Dr. Anne Anderson School. Prior to the most recent school designs, CO2 levels were addressed by meeting minimum outdoor air ventilation requirements prescribed by ASHRAE standard 62. CO2 has a wide range of acceptable values as CO2 readings between 400 ppm (parts per million) and 800 ppm would be considered acceptable.

Other than the schools constructed within the last five years, our school control systems do not record CO2 levels. In our new schools that are monitoring CO2 levels, measurements are continuously taken by the BMS and trends are reviewed by Integrated Infrastructure Services staff. These measurements are taken automatically when the control system has CO2 monitoring as one of its functions.

The Division currently does not have a mechanism to share information related to ventilation performance or CO2 levels with the public. Administration is currently examining the creation of a dashboard to share information about ventilation at each school on our website.

**How is the Division meeting the recommendations put forward by the American Society of Heating and Refrigerating and Air-conditioning Engineers (ASHRAE), the regulatory body that the school division must adhere to? Could Administration provide a chart detailing:**

- **Each specific ASHRAE standard.**
- **What the division is currently doing to meet each of those standards.**

Context:

All schools are designed and constructed in accordance with ASHRAE standards and guidelines as mandated by the applicable building codes at the time of construction.

Throughout the pandemic, the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has provided guidance documents that outline a series of recommendations in order to inform operations of mechanical heating and ventilation systems. ASHRAE recommendations and guidance are not the same as local building code or a Provincial directive outlining minimum standards for ventilation and filtration in schools, as requested by the Board.

Core recommendations, and a subsequent series of guidance documents, have been regularly issued and updated by ASHRAE from August, 2020 through to the most recent document from October 19, 2021: ASHRAE Epidemic Task Force: Core Recommendations for Reducing Airborne Infectious Aerosol Exposure. Targeted guidance documents have addressed a wide range of settings such as polling places, small temporary dining structures, residential buildings, laboratories, health care facilities, and the reopening of schools (assumed to primarily target dormant buildings following some long-term closures of school facilities in various North American locations).

The initial Guidance for the Reopening of Schools was issued in August, 2020, and is intended to provide ‘...practical information and checklists to school district and university campus environmental health managers, facility managers, administrators, technicians, and service providers to prepare educational buildings to resume occupancy.’ The most recent information linked to the document is dated October 19, 2021 and relates to the final report of the Epidemic Task Force and appears to confirm a shift towards the concept of ‘aerosol exposure’.

ASHRAE recommendations issued throughout the pandemic are summarized below:

ASHRAE Core Recommendation	Actions by EPSB
Regular inspection and maintenance of heating, ventilation, and air conditions (HVAC) systems	Ongoing annual inspection schedules. As filters are changed, and as part of our baseline service to schools, systems are checked regularly to ensure proper operations.
Maximizing fresh air intake	All ventilation systems were adjusted to allow for maximum fresh air intake. During cold weather months, there is a limit on how much outdoor air can be circulated by the system before the risk of freeze-up and damage occurs.
Extended hours for ventilation systems to ensure that buildings are ‘flushed’ with clean air	Operating hours for ventilation systems were extended to two hours before and after occupancy.
Use of MERV-13 filters, or the highest rated filter that systems are able to incorporate, without adversely impacting system operation	The Division ensured that all mechanical ventilation units were using the highest rated filter each unit was designed to accommodate.
In instances where MERV-13 filters cannot be used, including spaces without mechanical ventilation, portable HEPA air cleaners can be considered	The Division has mechanical ventilation in all classroom spaces.

More frequent filter changes for mechanical ventilation systems	Filter change scheduling was expanded to include an additional change cycle each year.
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Given the findings of the Epidemic Task Force, the key focus for revised recommendations in late 2021 appear to be focused on filtration (summarized below):

Updated Recommendations	Actions by EPSB
Use <u>combinations of filters and air cleaners that achieve MERV-13</u> or better levels of performance for air recirculated by HVAC systems.	Data analysis and retrofit efforts for potential filtration upgrades to MERV-13.  Completed Request for Proposal (RFP) for HEPA portable air cleaner units.

**Additional enhancements Edmonton Public Schools is currently considering based on ASHRAE recommendations.**

As outlined on the [Division's website](#) and communicated in the Superintendent's recent [Letter to Parents](#) regarding ventilation, the Division continues to look at emerging evidence and information so that we can adjust and enhance our safety measures.

Over the winter break, representatives from our Division met with engineers and industry experts to understand what we can do to further improve ventilation. We know there won't be a one-size-fits all approach for our schools, but based on updated recommendations from ASHRAE, we are looking at how we can further enhance our systems. This is recommended to include:

- adapting existing ventilation systems to fit Minimum Efficiency Reporting Value (MERV) 13 filters where possible, and
- providing stand-alone HEPA air cleaners to Division learning spaces, such as all classrooms, music rooms, libraries, as well as art and drama rooms
- a specific number of additional units sent to schools to allow for placement in other areas, based on school needs

The combination of MERV-13 filters, where possible, and stand-alone HEPA air cleaners aligns with the findings of the ASHRAE Epidemic Task Force.

**In situations where Alberta Health Services has investigated COVID-19 outbreaks in our schools, what did those investigations say about air quality and ventilation as possible factors contributing to the spread of COVID-19 and related variants?**

Over the course of the first year of the pandemic, Edmonton Zone health inspectors conducted inspections of several Division schools, often related to an 'outbreak status' declaration. Occasionally, after an inspection, Health reached out to the Division with a verbal summary of their findings. Air quality was not identified as an area of concern during any of the conversations.

In the fall of 2021, the Edmonton Zone connected for a conversation around this year's COVID-19 Back to School Plan. At that time, questions were raised about whether the Division had looked at ventilation based on the ASHRAE standards. We confirmed our work to align with recommendations, and

commented we had a variety of mechanical systems in our schools. They were satisfied with the measures we had in place.

**There has been a lot of discussion about the use of HEPA filters in division classrooms.**

- **What have we learned about the efficacy of HEPA filters?**
- **How could HEPA filters help enhance ventilation in our schools?**
- **Has the Division considered this option and if so, what were the findings?**

Ventilation is a single component of a broader Safety Plan and series of protocols. In order to enhance ventilation in Division classrooms, the use of stand-alone HEPA units can be considered. As mentioned above, Administration met with engineers and industry experts to understand what can be done to further enhance ventilation—including the use of stand-alone HEPA filters. As a result, the provision of stand-alone HEPA air cleaners to Division learning and ancillary spaces, such as: all classrooms, music rooms, libraries, as well as art and drama rooms is being recommended. Together with the installation of MERV-13 filters in existing ventilation systems, it aligns with the findings of the ASHRAE Epidemic Task Force.

When creating the Request for Proposal for the stand-alone HEPA filters, Division standards considered the teaching environment. As such, approved units will run quietly in an effort to not interfere with instruction.

**What might the estimated overall cost be to place HEPA filters in all instructional spaces?**

The recommended approach, involving the placement of stand-alone HEPA air cleaners in Division learning and ancillary spaces, such as all classrooms, music rooms, libraries, and ancillary spaces such as general offices will require an approximate maximum cost of \$6,000,000.

**Given the emerging evidence showing the benefits of HEPA filters, some parent groups have offered to fundraise to purchase these units.**

- **If the Division allows parent groups to purchase these units, will there be a process in place to ensure that all HEPA filters across the division meet the same set of standards and specifications?**

The Division has worked with approved vendors to provide parent groups with purchasing options that will ensure alignment with the unit specifications in place. Rather than issuing a specification for parent groups to interpret and use to guide purchases, a more supportive approach will identify specific approved HEPA units available for purchase from Division vendors.

None of the Division's approved vendors have retail locations for parent groups to purchase HEPA units in person. The proposed approach that will represent the greatest level of support for parent groups will involve vendors selling units to the Division, with the Division managing parent funds.

The system for parent groups purchasing HEPA units to support school needs would involve the following steps:

- Parent groups are to determine the type of fundraising funds will be used to support the purchase. If Casino generated funds are being used, groups will be required to get prior approval/exemption from AGLC before proceeding.
- All purchases will be initiated and processed by the school following the established Division Best Practices and Guidelines relating to procurement.
- Integrated Infrastructure Services will work directly with approved vendors to purchase parent-funded units on behalf of the Division.

- Upon receipt of a school invoice, the parent group will reimburse the school for the cost of the units purchased. These units will be considered school property and will not be owned by the parent group.
- **Could there be any potential liability for parent groups who purchase these HEPA filters for school use?**

Under the proposed plan to support potential purchases by parent groups, the Division would buy stand-alone HEPA units from our approved vendors supplemented by potential funds raised and donated by parent groups. As such, purchase and ownership of the purchased units would rest exclusively with the Division.

- **What, if any, are the benefits in allowing parent groups to purchase these units?**
- **Given that equity is a priority for our Division, how can we ensure equitable access to HEPA filters in all schools?**

Parent groups may choose to support the placement of stand-alone HEPA units in additional spaces within a school, beyond the extensive provision of units by the Division. Some parent groups may also support the similar placement of 'additional' units in other schools.

Fundraising efforts and the purchasing of stand-alone HEPA units by parent groups will not take precedence over the provision of HEPA units by the Division. Equitable access to units by all Division schools will be the initial focus.

**Based on what the Division heard from experts consulted, do you see the potential for some instructional spaces to require both MERV-13 filtration units and HEPA filters?**

While the Division is confident in the installation of MERV-13 filters across our schools, the delivery timelines for the filters has led to the recommendation to place stand-alone HEPA air purification systems in all of our school instructional spaces. The Division will continue to install the MERV-13 filters as soon as they are received to continue the layered approach to safety for our students and staff.

**KEY POINTS**

The Division's COVID-19 [Back to School](#) Plan and layered approach to safety have served stakeholders well for the last two years. We also remain committed to reviewing and acting on an evolving body of recommended practices, from foundational organizations such as ASHRAE.

The Division is recommending an expanded strategy to enhance ventilation systems, which would include:

- adapting existing ventilation systems to fit Minimum Efficiency Reporting Value (MERV) 13 filters where possible
- provide stand-alone HEPA air cleaners to Division learning spaces, such as all classrooms, music rooms, libraries, as well as art and drama rooms
- a specific number of additional units sent to schools to allow for placement in other areas, based on school needs

The combination of MERV-13 filters, where possible, and stand-alone HEPA air cleaners aligns with the findings of the ASHRAE Epidemic Task Force.

Proposed systems have been developed to support

- the purchase and distribution of stand-alone HEPA units to schools from approved vendors, and
- purchases by parent groups, if desired.

CW:kk