



September 9, 2023

Dear Basic Education Funding Commission:

The Philadelphia Regional Center for Children's Environmental Health would like to thank the Basic Education Funding Commission for the invitation to submit our comments regarding the current state of Pennsylvania school infrastructure and its impact on the health and development of children.

The Philadelphia Regional Center for Children's Environmental Health is a collaboration between the University of Pennsylvania and Children's Hospital of Philadelphia, one of only six Children's Environmental Health Research and Translation Centers funded by the National Institute of Environmental Health Science (NIEHS) in the US. We are physicians and scientists working to improve children's health through reducing environmental exposures in early life by applying science to policy, practice and behavioral change.

For more than a decade, we have been working on environmental health problems in schools including asbestos exposure, peeling lead paint, lead in drinking water, aging roofs and other infrastructure related water intrusion events leading to mold growth, radon, and most recently inadequate ventilation which increases the transmission of respiratory illness. Our programs are carried out through partnerships with parents, teachers, school districts and non-profits working to improve the health of children.

Children are a vulnerable population. Their bodies are still developing, they breathe a higher volume of air relative to their body size compared to adults, and they put their hands and other non-food items in their mouths. They spend the most time at school than anywhere except their homes. Schools should be a healthy place to grow and learn.

Many of the 1.6 million Pennsylvania school age children attend a brick and mortar school that can harm their health. 71% of school districts have buildings in need of major repair and those repair needs are most often involve heating, ventilation and cooling systems, roof repairs and other health and safety upgrades. In addition, 66% of school buildings in the Commonwealth were constructed before 1970 making them likely to contain asbestos and 78% were constructed at a time when lead paint was used (2014 school facilities survey). All school buildings built before 1986 are likely to have lead pipes, lead solder and/or lead fixtures all of which can deposit dangerous levels of lead in drinking water (EPA, Lead Free Pipes Rule).

It should be noted that the presence of these conditions does not always lead to exposure. For example, vigilant observation for damage and prompt remediation of asbestos containing material and lead paint can keep children safe from these hazards. Our Center has reviewed Philadelphia's asbestos AHERA reports, remediation reports as well as teacher reports of building conditions and found that although most schools have damage involving hazardous materials, the early identification and prompt remediation of asbestos damage and flaking lead paint does not always occur. Our discussions with school district representatives suggest that deferred maintenance in schools is the cause of delays in correcting hazardous

environmental conditions. Deferred maintenance occurs when funds are diverted to meet other educational needs. Deferring needed maintenance can lead to more costly repairs and greater exposure to hazards to children. Commonwealth schools have allocated only 7.5% of their budgets annually for the last two decades resulting in unprecedented unhealthy conditions in many schools.

- **The state should require that school districts as a pre-condition to any funding commit to policies that annually allocate 15% or more of their budget to infrastructure maintenance.**
- **Recommendations with Funding Implications- The state should require that all school districts publicly report EPA required asbestos inspection findings and fund schools so that they are able to promptly address damaged asbestos containing materials, lead paint and roof repair.**

While most schools in the Commonwealth are likely to contain lead pipes, lead solder or lead in fixtures, a minority of schools have tested their drinking water. In 2018-2019, more than 100 school buildings in 32 PA school districts identified lead in drinking water. Since 2018, 91 drinking water lead levels were more than 10 times the EPA limit of 15ppb and 7 were more than 100 times the limit. Drinking this water would certainly elevate a child's blood lead level and unquestionably harm them. **Every school that has identified lead in drinking water should provide water that has been filtered for lead and all unfiltered drinking water sources should be closed off. Filtered drinking water sources should be of sufficient quantity to be easily accessible to students.** Philadelphia provided one filtered drinking water source for every 100 students. It relied on a \$5 million EPA grant to accomplish this.

- **Recommendations with Funding implications- To achieve equity, all schools should be tested for lead in drinking water and testing results should be promptly reported to the public. Filtration of every drinking water outlet should be funded throughout the Commonwealth for every school where lead in water is identified.**

Air quality directly impacts childhood illnesses and learning. Mold due to water intrusion can lead to asthma exacerbations in children. 7.9% of PA children have asthma compared with 6.5% of US children (CDC). Inadequate ventilation has been associated with the transmission of respiratory illnesses. Poor ventilation leading to elevated indoor carbon dioxide levels has been associated with poor concentration (Fan, 2023) and improving ventilation has been associated with improved cognitive function (Allen, 2016) and reduced respiratory viral transmission (Buonanno, 2022). When central ventilation is not available, enhancing ventilation with outside air through open windows and fans can bring inside pollen, ozone and particulate air pollution as seen during our recent poor air quality events due to the Canadian wildfires. Pollen and particulate air pollution have been associated with diminished math and reading achievement in 5-8 year olds (Marcotte, 2017). Some schools are located near high traffic areas. Traffic related air pollution has been associated with poorer student academic performance (Stenson, 2021). Student absenteeism largely driven by asthma exacerbations and respiratory illness has been associated with adverse school building conditions (Simons, 2011). Stafford showed in her 2015 study significant test score improvement following indoor air quality renovations including mold remediation, ventilation improvements, and roof repairs.

Increased temperatures have been associated with reductions in math scores in elementary and middle school students (Goodman et al., 2018). In older children, an association between increased temperature

and lower PSAT scores has also been shown (Goodman et al., 2018). Heat and humidity can trigger asthma exacerbations in children with asthma.

- **Recommendations with Funding Implications- Upgrade ventilation systems in all schools to improve ventilation rates to achieve 21 cfm/person (Buonnano, 2022), air conditioning that can achieve temperatures less than 76 degrees, and filtration that can reduce particle pollution indoors to levels consistent with good outdoor air quality (5 ug/m3). Provide adequate funding to promptly remediate mold and improve building infrastructure to eliminate water intrusion.**

Although most counties in Pennsylvania are classified by the EPA as having the highest potential for indoor radon levels, very few schools have tested for radon. Radon can enter buildings at their lowest level, a basement if there is one or first floor for buildings on a slab. In either case, it can enter occupied spaces and expose children and staff. Radon is a known human carcinogen, causing lung cancer which can take many years to develop. The longer the exposure the greater the risk.

- **Recommendation with Funding Implications- As the second leading cause of lung cancer after smoking, radon should be tested in every school and be remediated when elevated levels are found.**

Although each of the hazards discussed have serious health impacts on children, the hazards rarely occur individually in schools. They tend to cluster in older buildings in the poorest school districts. Children in these school districts experience multiple hazards often in addition to similar environmental hazards at home. The cumulative health effects of these environmental conditions can be lifelong, diminishing cognition, causing chronic medical conditions, reducing academic achievement and lifetime earning potential. I implore you to recognize the significant harm that continuing the status quo is having on the Commonwealth's children and take steps to remedy it. Thank you for the opportunity to submit this testimony. I would be happy to address any questions or provide additional information as needed.

Sincerely,



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