Children's Health Protection Advisory Committee

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Administrator Michael Regan
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

RE: Protecting Children's Environmental Health in Schools and Child Care Settings

Dear Administrator Regan:

Thank you for the opportunity to comment on the critical importance of children's environmental health in school and child care settings in the United States (U.S.), where approximately 11 million children less than five years old attend child care programs and more than 53 million students attend approximately 130,000 public and private schools.[1; 2] On average, children spend 36 hours in child care programs per week and 34 hours in school buildings per week.[1-3] Environmental health hazards in school and child care facilities[A] also affect educational staff, who are predominately female and often of childbearing age.[4-6] Therefore, the Environmental Protection Agency (EPA) must also consider exposure of pregnant people to environmental hazards in the school and child care settings when considering children's environmental health.

The Children's Health Protection Advisory Committee (CHPAC) was asked to identify priority areas and activities, projects, and/or programs that the Agency and EPA's Office of Children's Health Protection (OCHP) should undertake in collaboration with EPA programs and regions and external stakeholders to improve children's environments in school and child care settings (see charge questions in Attachment 1). In this letter, we identify **priority areas** and **activities** to enhance EPA efforts specific to school and child care settings, with consideration of cost-effective measures. We also identify **key parties and collaborators** who could support and/or augment EPA's work to ensure healthy school and child care environments.

- **Please note that the specific recommendations within each section are bulleted and bolded for visibility.**

Overarching Priority Areas

Environmental injustice

Numerous studies and reports have demonstrated the inequitable distribution of environmental exposures in school and child care settings in the U.S.[7] For example, a U.S. Government Accountability Office (GAO) survey study found that schools serving >50% students of color and schools with 70% or more students eligible for free or

[A] School and licensed center-based child care facilities consist of the physical structure of buildings and building systems (e.g., mechanical, plumbing) along with furnishings, materials and supplies, and equipment; as well as aspects of the building grounds and outdoor features such as athletic fields, playgrounds, and vehicular access and parking. A child care facility may consist of a non-residential commercial building and its grounds (to operate a licensed center-based program) or indoor and outdoor space at a residential property (to operate a licensed family or home-based program).

reduced-price lunch had a higher frequency of unsatisfactory environmental conditions[8]. A study of neurotoxic air pollutant exposures at public schools nationwide found that students of color were more likely to attend schools in the top 10% for neurotoxicant exposure.[9] These environmental inequities translate into disparities in health outcomes (e.g., asthma exacerbations), student absenteeism, and academic achievement.[10-15] Because local school districts shoulder the vast majority of capital facilities costs, lower-income districts are frequently unable to adequately maintain and repair buildings and grounds or build new facilities, further amplifying these inequities.[16-20] Many of the children in these districts already face disproportionate environmental exposures outside of school and child care due to poor housing conditions, unjust land use and housing policies, and other socio-economic risk factors stemming from current and historic systemic racism.

- **EPA should develop a program to help fund environmental health hazard mitigation at child care centers and schools when local and state resources are inadequate.** EPA could play a collaborative role with local, state, and national agencies that assess, repair, and/or maintain school infrastructure.[21] This program could include asbestos, radon, or mold mitigation or private-side lead service line replacement. Some of this support could come through public-private partnerships.
- **The committee agrees with other groups that have recommended that EPA develop a more robust assessment tool that moves beyond looking at one chemical at a time and instead consider aggregate and cumulative exposures that include settings such as a school.** The committee commends EPA's national leadership in advancing our knowledge of the inequities associated with exposure to environmental hazards. The EJSCREEN tool is a preliminary step to identify communities that may be candidates for additional outreach, programs, and activities. However, the tool has significant shortcomings. Aggregate and cumulative exposure to multiple chemical toxicants, combined with the negative influences of structural racism and health inequities (e.g., lack of access to health care, unsafe housing, food apartheid, chronic stress) have been shown to put children at the highest risk for poor health outcomes. These health inequities are not included in EJSCREEN.[22] An enhanced federal equity mapping initiative built on EJSCREEN is needed to track cumulative impacts of exposure to pollution, health disparities, and economic inequality and should optimally include school and child care facilities as a map layer.
- **EPA should make more efforts to increase community engagement in children's environmental health in schools and child care**. Communication on environmental health in schools and child care is most effective when delivered at the local level. However, EJ communities are often not aware of existing environmental health risks and are not included in decision-making processes that impact their exposure to environmental hazards. To engage disproportionately affected communities, EPA and its public health partners should work with local communities to conduct needs assessments and health impact assessments. Exposure assessments should include demographic factors such as race and income, as recommended by the National Research Council .[23] This will provide community stakeholders with accurate information at the local level and advance awareness of how environmental injustice impacts the health and social well-being of children. We also recommend that EPA look for ways to reach in-home and non-licensed child care providers that serve smaller groups of children and often have fewer resources to assess and address harmful exposures.
- **EPA should offer more technical assistance and training to tribal, state, and local decision makers on its school siting guidelines and coordinate with the Agency for Toxic Substances and Disease Registry's (ATSDR) "Choose Safe Places for Early Care and Education" program to disseminate educational materials to tribal, state, and local governments about safe child care siting.** School and child care siting policies are an important preventative approach to reducing environmental exposures. Unfortunately, there are no federal policies in place to protect children from attending schools in contaminated locations in the U.S.[7] The CHPAC previously recommended in 2010 that EPA provide regional and national support for school siting activities, including technical support,

prioritization guidance, and evaluation of capacity resources, implementation, and impact.[24; 25] We further suggest targeted training and education to planning/zoning/permitting professionals and those in child care licensing agencies in under-resourced communities.

- **EPA should partner with the U.S. Department of Health and Human Services (HHS) to improve environmental health in federally funded child care programs that provide care for children who bear disproportionate exposure to environmental hazards.**
    - Partnering with the HHS Office of Child Care can ensure that state and local governments, territories, and tribes participating in the Child Care and Development Fund program include environmental health criteria in their health and safety requirements.
    - Partnering with HHS' Office of Head Start can help to incorporate environmental health criteria into the federal Head Start Program Performance Standards. The Children's Environmental Health Network's (CEHN) Eco-Healthy Child Care® (EHCC) program curriculum and child care endorsement checklist offer no-to-low-cost best practices developed under guidance from leading national child care organizations including Child Care Aware of America and the National Head Start Association to improve children's and staff member's health without overly burdening child care programs.[26]

In sum, addressing environmental health inequities in school and child care settings is a priority on its own. Further, each additional priority area, activity, and program to improve children's environmental health in school and child care settings, including those described below, should be evaluated through a health equity lens. To ensure that school- and child care-level environmental health disparities are prioritized and actions to address them are implemented, the CHPAC recommends that EPA:

- **Expand the scope and funding of the Office of Environmental Justice (OEJ) with initiatives specifically targeted to identify disparate environmental health risks in school and child care settings and seek to mitigate them. OEJ should work collaboratively with the EPA Office of Children's Health Protection in these efforts.**

Surveillance of environmental conditions

Unfortunately, CHPAC's evaluation underpinning our recommendations on priority areas was limited by the lack of systematic data on the presence and levels of environmental hazards in school and child care settings.

- **We recommend increased surveillance of environmental hazards in the nation's school and child care settings so that it is possible to accurately assess the condition of these facilities, quantify levels of exposure to environmental hazards, monitor progress towards environmental health goals, and assess racial, ethnic, and economic inequities in environmental exposures.**

While there have been periodic surveys on the condition of public school facilities,[21] no surveillance system currently exists in the U.S.[27] As a cost-saving measure, EPA could seek out local partners and collaborators to gather and compile data. EPA could also partner with the Centers for Disease Control and Prevention's (CDC) existing Environmental Public Health Tracking Program to develop content areas and indicators; and ensure that national and state-based data sources and reporting mechanisms needed to provide useful data are consistent, regularly updated, and available in one location through CDC's existing tracking portal.

Hazard-Specific Priority Areas

Below, we identify three hazard-based priority areas in school and child care settings, recognizing both the limited surveillance data to fully assess the state of environmental conditions in schools and child care facilities across the U.S. and the recognized disparities in the extent to which these issues affect communities throughout the U.S.

Ambient and indoor air quality

Exposure to ambient air pollution may occur outside on school and child care grounds, or inside when it enters school and child care buildings through windows, doors and ventilation systems. Outdoor air pollution is associated with adverse health and developmental outcomes in children, including decreased lung volume[28-30] and increased risk of asthma and neurological outcomes.[31-35] Research has also demonstrated relationships between ambient air pollution and adverse pregnancy outcomes including preterm birth and abnormal fetal growth.[36-39] Furthermore, exposure to air pollution (including $PM_{2.5}$ and air toxics) during fetal life has been associated with abnormal neurodevelopment.[40; 41] These studies indicate that current EPA National Ambient Air Quality Standards (NAAQS) do not offer adequate health protection for children and pregnant people, especially from particulate matter (respirable/coarse PM_{10} and fine $PM_{2.5}$), ozone, and NO_2.[42; 43] Thus, we support efforts to update and reduce the annual average and daily average and maximum NAAQS for particulate matter, as well as the shorter term NAAQS for ozone. Controlling sources of outdoor air pollution will positively impact both outdoor and indoor air quality in school and child care settings.

Pollution originating indoors is also an important consideration in school and child care settings. Some examples include hazardous chemicals in cleaning products and pesticides (including disinfectants), building materials containing formaldehyde or polychlorinated biphenyls (PCBs), toxic gases via soil vapor intrusion, and excess moisture leading to molds due to leaks, condensation, or flooding. Indoor air pollution levels are generally two to five times higher than outdoor air pollution levels and can have harmful effects on children's health, attendance, and academic achievement.[11-15; 44; 45] Many school buildings have inadequate mechanical and natural ventilation needed to dilute emissions from both outdoor and indoor sources[21]. Additionally, districts may not have the resources needed to properly maintain and optimize the performance of HVAC systems. For these reasons, the CHPAC recommends that EPA:

- **Improve accessibility of the EPA Indoor Air Quality Tools for Schools Kit via increased training and outreach efforts, especially to child care programs and schools that have not been successfully reached.** EPA should encourage schools and child care programs to use the Tools for Schools Kit not only to resolve indoor air quality problems, but to adopt routine indoor air quality best practices and properly maintain HVAC systems.
- **Identify priority indoor air pollutants, including those with outdoor sources, quantify health risks from both indoor and outdoor sources, and develop appropriate guidance on interventions in school and child care settings**. A grant program focused on the monitoring and assessment of indoor air quality hazards would improve the knowledge base needed to carry out these activities. School and child care facilities in low-income communities and communities of color should be prioritized for assessment. If unacceptable levels of risk are commonly identified, new proposed indoor air regulations may be needed to reduce health risks in schools and child care settings, similar to Japan's regulation of 13 indoor air pollutants,[46] South Korea's regulation of eight indoor air pollutants,[47] and Taiwan's regulation of five indoor air pollutants.[48]

One cost-effective option is to engage in public-private partnerships to protect air quality in schools and child care. A private partner with a shared mutual interest of air quality could provide support by planting low-allergy trees near the school, technical assistance on mold reduction, and/or other indoor air quality interventions. The 2012 Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities outlines key priority actions, including collaborations between federal agencies' programs and local private sector partners to reduce environmental exposures in schools and child care.[49] These public-private partnerships provide a potentially excellent stepping stone for additional indoor air quality improvements.[50]

The COVID-19 pandemic has resulted in new federal funding through the CARES Act to ensure K-12 schools can safely reopen and operate. This provides an important opportunity for schools nationwide to make improvements in indoor air quality.

- **EPA should act expeditiously to support schools in finding proven technologies that are not only effective for airborne diseases but that will also lead to sustainable improvements in the reduction of the indoor air pollutants described above.**

Climate change and disaster preparedness

Climate change is increasing the frequency and intensity of disasters such as wildfires, excessive heat, floods, and hurricanes. These and other disasters (e.g., volcanic emissions, pandemic disease) impact many aspects of school and child care operations such as air quality, general safety, power supplies, availability of safe drinking water, and attendance. The impacts are far-reaching. For example, airborne concentrations of $PM_{2.5}$ can be significantly increased in communities as far as 20 miles away from a wildfire,[51] and may extend hundreds to thousands of miles away[52] when weather conditions or terrain allow smoke to reach ground level. Children's increased vulnerability to disaster-related air pollution has been previously described.[53-56] School and child care were interrupted for a million school children by Hurricane Harvey in 2017, with petrochemical spills and mold affecting human health in the aftermath. Wildfires led to more than one million California school children experiencing school cancellations in a single month in 2018.[57]

The effects of climate change disproportionately impact children in lower-income communities and communities of color. For example, Black and Latinx students are more likely to attend high-poverty schools, which are more likely to lack air conditioning.[58] Less well-maintained buildings, which are more common in low-income communities, are also more vulnerable when natural disasters strike, leading students in these communities to experience more adverse effects, such as dislocation and prolonged school closures. School and child care facilities need support in climate change and disaster-related assessment, physical and environmental protections, response preparedness, and mitigation. This is applicable to both the primary function of these facilities as well as a common secondary function of school buildings, which is to serve communities as emergency shelters during disasters.

Specifically, the CHPAC recommends the following actions specifically aimed at mitigating children's exposures during and after disasters in school and child care settings:

- **EPA should develop a major initiative to evaluate interventions in school and child care facilities that can decrease children's exposure in communities with air pollution exposures from wildfires and other disasters.** Knowledge is emerging on how schools can be proactive in maintaining operations during extreme air pollution and other disaster events.[59] Additional research is needed on the effectiveness of filtration devices and other engineering controls/mitigation measures to improve indoor air quality in school and child care facilities. This will help advance initiatives to establish "clean air shelter schools" as described by Holm et al. [60]
- **EPA should update several key web pages.** The Indoor Air Quality Tools for Schools Action Kit should provide guidance specific to wildfire smoke events and encourage its use in school and child care settings. The Healthy School Environments pages and the Healthy Child Care pages at EPA could be modified to include disasters and the risks they create and well as link to other agencies' documents on this topic. EPA's Sensible Steps to Healthier School Environments could be updated to include disasters. Schools are only briefly mentioned at present on EPA's General Information for Disasters site; the information could be expanded to include school-specific recommendations.
- **EPA should work closely with other federal agencies to promote existing, useful guidance**. Examples include: ATSDR's 2020 Choose Safe Places for Early Care and Education: Disaster Recovery Supplement; the U.S. Department of Education's Office of Safe and Supportive Schools, which administers the Readiness and Emergency Management for Schools Technical Assistance Center with fact sheets and resources; the 2013 Guide for Developing High-Quality School Emergency Operation Plans, a joint effort by six other federal agencies; and other resources from the U.S. Federal Emergency Management Agency. Outside the federal government, the National Environmental

Health Association and American Red Cross provide disaster guidance for schools and child care settings; and the American Public Health Association and the National Association of School Nurses offer disaster preparedness training for school nurses.[61]

Lead safety in school and child care settings

Lead in drinking water

Safe drinking water is a high priority area to protect children's health in school and child care. EPA actions paramount to providing safe drinking water in all settings include increasing the frequency of assessments and regulatory review of both regulated and unregulated contaminants, investing in drinking water infrastructure, and providing support to state, tribal, local, and territorial agencies to help public water systems achieve compliance.

Lead is a drinking water contaminant of particular concern in school and child care settings because it poses the greatest risk to infants, children under the age of six, and pregnant people. In children, it can delay growth and cause learning and behavioral problems, while in pregnancy it can reduce fetal growth and cause premature birth.[62; 63] Lead in drinking water is especially concerning for infants fed formula reconstituted with tap water in child care settings due to their high water intake rate.[62; 63] Lead primarily comes from the corrosion of lead-containing pipes, plumbing materials and fixtures rather than source water, requiring sampling within the school and child care facility itself.[64] However, only fifteen states and the District of Columbia have laws requiring lead testing in school drinking water.[65] Fewer states, including Maryland, Illinois, Washington, and Vermont, and the District of Columbia, have passed legislation to require remediation at a level of 5 ppb or lower in school drinking water. In a recent review of schools' drinking water, 22 of the 31 states examined received a failing grade in protecting children from lead contamination.[66] A recent GAO report (GAO-20-597) further documented that only about one in four Head Start child care centers tested for lead in drinking water at the tap, of which approximately one in ten found detectable levels of lead.[67] Based on these findings,

- **The CHPAC supports the GAO recommendations to EPA in their report, namely, to implement the EPA and HHS Memorandum of Understanding (MOU) to ensure that drinking water is safe from lead at HHS Office of Child Care-funded centers.**

This MOU outlines roles and responsibilities to reduce lead levels in drinking water and the development of performance measures to track progress toward the outcomes of the MOU.

- **The CHPAC further recommends that HHS and EPA expand these MOU actions to cover non-federally funded, licensed child care facilities and schools.**

The CHPAC supports EPA's focus on schools and licensed child care facilities in the newly revised Lead and Copper Rule (LCR).[66] However, the rule overall, as well as its requirements for schools and child care facilities, should be further modified to increase protections. Overall, the revised LCR focuses primarily on testing rather than both testing and the removal of lead hazards. Lead service lines (LSL) typically contribute the greatest percentage of lead to the tap,[64; 68] yet the LCR slows the mandatory LSL replacement rate from 7% to 3%. In addition, the revised rule does not prohibit community water systems (CWS) from conducting partial LSL replacements, which do not fully remove the lead hazard and which may increase lead levels in drinking water in the short term.[69] Partial replacements will no longer "count" as mandatory replacements in the revised rule, thereby removing incentives to conduct them. However, if a CWS establishes an LSL replacement plan that requires private-side payment, partial replacements will most likely occur disproportionately in low-income communities and communities of color. The rule also requires the CWS to "find and fix" the problem if an individual sampling result is >15 ppb. However, EPA provides no guidance on

what counts as "fixing," which could include flushing as a sole effort, which may not be an effective, practical, or sustainable solution.[70]

The rule's testing requirements for school and child care facilities should also be strengthened. The revised LCR requires CWSs to test 20 percent of elementary schools and licensed child care facilities (constructed prior to 2014) each year during a five-year testing cycle. Thereafter, schools and child care programs must request additional testing from the CWS. Testing in secondary schools is by request only. Therefore, participation by schools, and especially child care programs after initial testing, is likely to be low. In addition, people of child-bearing age who work in secondary schools, as well as students in these schools, will not be protected via the "by request" testing requirement. Also, the new LCR rule requires that sampling be performed at only five taps in schools and two taps in licensed child care facilities. These samples may not capture the highest lead levels in drinking water due to mixed age plumbing, differences in water use in different areas, and concentration variability from faucet to faucet within one building.

Although there is no known safe level of exposure to lead, the revised LCR does not lower the current action level for lead in drinking water. The current action level for lead of 15 ppb, even with the new "trigger" level of 10 ppb, is not protective enough for children.[62] Additionally, the proposed LCR revisions do not include a "remediation trigger" level for school and child care facilities above which identified problems specific to these settings (e.g., replacing plumbing fixtures or the LSL) must be fixed. States set their own remediation trigger levels for these facilities and often use the existing action level of 15 ppb level or higher.[71] The American Academy of Pediatrics (AAP) recommends that state and local governments ensure school and child care water fountains do not exceed water-lead concentrations of 1 ppb.[62]

Therefore, the CHPAC recommends that EPA should further revise the LCR to:

- **Lower the lead action level in water from 15 ppb to be as near to the maximum contaminant level goal of 0 as possible (e.g., AAP recommendation of 1 ppb) to best protect children's health in all settings.** Notably, Canada and the European Union recently set their maximum lead contamination in drinking water to 5 ppb.[72; 73]
- **Create a "remediation trigger level" for school and child care facilities that requires mitigation if exceeded, with waivers for states that have stricter levels.** A remediation trigger level specific to these facilities should be as close to zero as possible. If the LCR does not establish a remediation trigger level for schools and child care facilities, it should still require mitigation when lead levels exceed the remediation trigger levels defined by states.
- **Prioritize accelerated full LSL replacement in schools and child care facilities.** In facilities with known LSLs, replacement should precede water testing to determine if there are internal plumbing fixtures contributing to lead levels. Partial LSL replacement should be prohibited so as not to potentially increase lead exposure in under resourced communities or lead to inequities in exposure. EPA should return to the 7% as the minimum rate of LSL replacement per year and consider increasing the rate as feasible. The American Jobs Plan, as currently proposed, includes funding to replace lead service lines.[74]
- **Mandate testing of all outlets used for direct consumption and meal preparation (cooking, formula, beverages, etc.) in school and child care facilities.** EPA's own guidance for school and child care facilities (3Ts for Reducing Lead in Drinking Water) recommends that each outlet potentially used for water consumption be tested for lead. If prioritization is needed, the 3Ts guidance states, "Make sure to prioritize outlets that are used by children under the age of six years or pregnant people (e.g., drinking fountains, nurses' office sinks, classrooms used for early childhood education, kitchen sinks, and teachers' lounges)."
- **Require water purveyors to provide clear communication to schools and child care providers about testing results and lead action levels.** Specifically, schools and child care providers should be

informed that detectible lead concentrations below the action level does not equate to the water being "safe" and lead-free, and that there are actions they can take to further reduce levels in drinking water to as close to zero as possible. This communication should include advice on how to achieve further lead reduction—such as adoption of routine practices as outlined in the 3Ts guidance. CHPAC suggests that EPA perform this communication as soon as possible, rather than wait for CWSs to begin this outreach as part of revised LCR testing.

- **Provide financial support for mitigation in licensed home-based child care facilities.** EPA could partner with other government agencies to provide home-based child care providers, particularly those in under-resourced communities, with financial support to mitigate elevated lead levels in drinking water, whether from plumbing fixtures or from LSLs.

CHPAC also concurs with slightly modified recommendations recently made by the EPA Science Advisory Board on the LCR proposed revisions to[75]:

- **Require consecutive testing rounds in perpetuity at all elementary and secondary schools and child care facilities**. Preventive, routine sampling is unlikely to happen if the financial and technical burden is placed on schools and child care providers to request and conduct testing.
- **Develop and disseminate guidance to help states create facility-specific sampling plans for schools and child care.** Frequency of sampling should be based on several factors such as water lead levels and facility plumbing and fixture age. Higher water lead levels and/or older facilities and water system infrastructure will likely require more frequent sampling than every five years.
- **Strengthen public education and risk communication requirements to ensure consistent interpretation, implementation, and enforcement.** EPA should establish a clear procedure and standard wording for information flow from school and child care programs to families, to ensure the communication is understood, including appropriate reading level and languages other than English, as needed. EPA should involve representatives from impacted communities when developing these communication materials. The CHPAC 2020 comment letter "Recommendations for improving EPA risk communication for children's health risks"[76] includes several suggestions for effective children's environmental health risk communication.
- **EPA should provide funding or assist in finding funding for school districts and child care programs that cannot afford drinking water mitigation measures that are needed until LSLs are fully replaced.** A program similar to the Schools Chemical Cleanout Campaign, which allowed outside funding to assist schools in cleanup, could help fund such a project.

Other sources of lead in school and child care settings

In addition to lead in drinking water, many center-based and especially home-based child care providers lack the information they need to reduce lead exposures from other sources (e.g., deteriorating paint, house dust, contaminated soil). To meet this need, CEHN's EHCC program, in collaboration with the National Association for Family Child Care and the National Center for Healthy Housing, developed a free Lead-Safe Toolkit for Home-Based Child Care. CEHN's Lead Fact Sheet is another no cost resource available for download. The fact sheet educates child care providers and families on how to minimize childhood exposure to lead in paint, dust, and soil. EPA could support the promotion of these resources and other lead education resources offered by EHCC and the Healthy Schools Network. Additionally,

- **EPA should provide education and funding resources to support testing for lead paint in school and child care settings, as well as resources to fund remediation for child care providers and school districts that demonstrate the need for financial assistance.**

Currently, EPA's Lead Renovation, Repair, and Painting Rule (RRP) applies only to the portions of pre-1978 buildings where children aged six years and under regularly visit at least two days a week for at least three hours.

- **The CHPAC recommends that EPA expand the RRP rule to apply to all areas of a school in which elementary school-aged children spend time.**

A 2019 report of EPA's Office of Inspector General (OIG) found the RRP program severely lacking in oversight and enforcement.[77]

- **The CHPAC agrees with the following OIG recommendations on the RRP rule most relevant to schools and child care:**
    - **Establish Lead RRP Rule enforcement objectives, goals, and measurable outcomes.**
    - **Establish management oversight controls to verify the RRP Rule program guidance is followed and expectations are being met.** This may also involve specific reporting requirements for regions and authorized states and tribes.

In 2012, CDC, in an acknowledgement of no safe level of blood lead, changed the term "level of concern" to "reference level" set at the 97.5th percentile of blood lead distribution in children (5 µg/dL at the time) with the intention of adjusting this reference level as further preventive progress was made in reducing blood lead levels (BLLs) in children. A BLL of 5 µg/dL is not protective, as even this level is significantly associated with cognitive impairment and IQ loss.[78; 79] In 2018, EPA lowered lead dust hazard standards, which apply to inspections, risk assessments, and abatement activities in certain school and child care facilities. However, the new standards (10 µg/ft^2 for floors and 100 µg/ft^2 for window sills) are based on protection at the outdated BLL "level of concern" of 10 µg/dL. Recently, the 9th Circuit Court ruled these revised standards violated the Toxic Substances Control Act because they are not health-based and ordered EPA to update its definition of lead-based paint, lead dust hazards, and lead soil hazards.[80]

- **The CHPAC recommends that EPA move in a timely manner to follow the court instructions and further reduce the lead dust standards, as well as lead-based paint and lead in soil standards. EPA should align inspection, risk assessment, and clearance standards.**

The standard for lead at Comprehensive Environmental Response Compensation and Liability Act (CERCLA) and Resource Conservation and Recover (RCRA) sites is "...to limit exposure to soil lead levels such that a typical (or hypothetical) child or group of similarly exposed children would have an estimated risk of no more than 5% of exceeding a 10 µg/dL blood lead level" (per OSWER Directive 9355.4-12, July 14, 1994). This standard was set at a time when the CDC blood lead action level was 10 µg/dL.

- **The CHPAC recommends that this standard be updated to account for the CDC's most recent blood lead reference value and to consider the higher cumulative and aggregate exposures that children may face when attending school or child care in communities with CERCLA or RCRA cleanup sites.**

<u>Pesticide exposures in schools and child care settings</u>

Pesticide exposures may occur from direct use within school and child care buildings and grounds, as well as from off-site applications made in proximity to school and child care facilities. Children may also ingest pesticides from residues in the food supply for the facility.[81] Children are especially vulnerable to health effects from pesticides because their bodies are rapidly growing and developing. Epidemiologic studies have demonstrated associations between early life exposure to pesticides and a broad range of health outcomes such as pediatric cancers, decreased cognitive function, and behavioral problems.[81] In pregnancy, exposures have been associated with adverse birth outcomes including preterm birth and low birth weight.[81] Related animal toxicology studies provide supportive biological plausibility for these findings.[81]

The current COVID-19 pandemic has amplified the need to examine and address pesticide exposures in school and child care settings due to an increase in disinfectant use to reduce transmission of the SARS-CoV-2 virus. Disinfectants may contain ingredients known to cause or exacerbate asthma (e.g., quaternary ammonium compounds), skin sensitization (e.g., chlorine bleach), or other health hazards, even during proper use. Pregnant people in school and child care settings should also be cautious regarding their exposure to disinfection products.[82] There has been an increase in disinfectant-related illness and injury since the start of the pandemic. For example, calls to U.S. Poison Control Centers related to cleaners and disinfectants increased by approximately 20 percent during the first quarter of 2020 compared to 2019, and 40 to 47 percent of these calls were for exposures to children younger than five years old.[83] Acute disinfectant-related illness and injury is of particular concern for young children in child care settings.[81]

Integrated pest management (IPM) is an effective way to reduce children's exposure to both pests and chemical pesticides applied in and around schools and child care facilities. In 2015 EPA launched the School IPM Initiative and, in 2016, convened a roundtable of 17 national organizations representing schools, health, pest management associations, and federal agencies. These organizations endorsed the Principles of Agreement on school IPM and committed to disseminating IPM information to their members to support increased school implementation. In addition, EPA's Biopesticides and Pollution Prevention Division developed a Strategic Plan for School Integrated Pest Management for Federal Fiscal Years 2016-2017. However, few states require the use of IPM in and around schools and child care centers, and a study of child care centers in California found gaps in staff knowledge and implementation of safe pesticide practices.[84] The first and only National Environmental Health Survey of Child Care Centers in 2001 detected pesticide residues in the majority of environmental samples.[85] Therefore, the CHPAC recommends that EPA:

- **Update its Strategic Plan for School Integrated Pest Management**
    - EPA should evaluate the progress made on the objectives in the 2016-2017 plan to inform the new or updated plan.
    - EPA should include objectives to increase implementation of IPM practices in child care facilities in addition to schools.

The updated strategic plan could serve to guide the agency's educational outreach and other activities with clear and measurable outcomes and timelines.

- **Provide increased and sustained educational outreach to administrators, staff, and facility managers of schools and child care programs (through its regional Schools Coordinators and Children's Environmental Health Coordinators, and their partners) as well as licensed pest management professionals using excellent existing resources**. These resources include:
    - EPA's existing IPM tools and guidance, such as the
        - School IPM webinars, blogs, articles, and training and certification
        - IPM in Child Care Centers guidance
    - IPM Guide for Family Child Care Homes and the IPM Toolkit for Early Care and Education Programs developed by the California Childcare Health Program, University of California, San Francisco School of Nursing
    - EHCC's Pesticide factsheet (in English and Spanish) and Pesticide module within the comprehensive interactive e-learning course

EPA's current IPM outreach materials do not address safe disinfectant practices. Moreover, even in states with school and child care IPM requirements, disinfectants are often exempt (e.g., California's Healthy Schools Act). While EPA has widely communicated about List N, the list of products that are known or anticipated to kill SARS-CoV-2, the Agency has not promoted the list of Design for the Environment (DfE) disinfectant products for use against SARS-CoV-2 to the same degree. CHPAC recommends that EPA:

- **Reestablish and strengthen the DfE program to certify disinfectants less hazardous for human health.** These are products in the least hazardous classes of EPA's acute toxicity category hierarchy, those that are unlikely to have carcinogenic or endocrine disruptor properties and those unlikely to cause developmental, reproductive, mutagenic, or neurotoxicity issues. EPA should make its List N SARS-CoV-2 list disinfectant list searchable by this certification and promote this new feature. EPA should also consider adding additional screening criteria to qualify antimicrobial products for the DfE logo, such as respiratory irritation and skin sensitization**.**
- **Add safe disinfectant use to EPA's existing IPM outreach and education efforts.** The guidance must help school and child care programs identify when and where disinfectants are needed, select safer disinfectant active ingredients/products, and use them in a manner that minimizes children's exposure. Guidance about safe disinfectant use should consider existing resources such as Green Cleaning, Sanitizing, and Disinfecting: A Toolkit for Early Care and Education and Safer Disinfectant Use During the COVID-19 Pandemic materials created by the Western States Pediatric Environmental Health Specialty Unit (WSPEHSU), the National Pesticide Information Center's Reducing Disinfectant Exposures in the Workplace video, and the Children's Environmental Health Network's Safer Cleaning, Sanitizing and Disinfecting in Child Care Facilities webinar series.

School and child care facilities located in proximity to agricultural operations also presents a risk of unintended exposure through pesticide drift, volatilization, and track-in. The CHPAC recommends that EPA:

- **Continue to refine exposure models (e.g., the Volatilization Screening Tool) and child-specific methodology for bystander exposure and risk assessments.**
- **Until each pesticide can be fully reassessed for bystander risks as part of registration review, Office of Pesticide Programs should develop criteria to trigger label language for adequate buffer zone restrictions on use of agricultural pesticides around school and child care facilities based on the pesticide's toxicity, application methods, and volatilization potential.**
- **Create an air monitoring network to assess pesticide exposures in agricultural communities with a focus on school and child care sites.**
- **Work with delegated state and tribal field programs to develop and disseminate information to schools and child care programs in agricultural communities about what to do if pesticide drift occurs and strategies to reduce agricultural pesticide exposures in these settings (e.g., vegetative buffers).**

Activities to Enhance EPA Efforts Specific to Children's Environmental Health in School and Child Care Settings

The CHPAC was asked to recommend additional activities EPA should undertake in collaboration with EPA programs and regions and external stakeholders to support improvements in children's environments in schools and child care settings.

Environmental health education in school and child care settings

EPA plays an important role in outreach and education related to environmental hazards and children's health. The committee offers several recommendations to enhance this work.

Enhance existing education and outreach materials

- **Conduct an evaluation of the dissemination and distribution of existing EPA educational materials.** EPA has excellent resources for educators, school administrators, government agencies, caregivers, and parents or guardians. This includes Healthy School Environments, School Siting Guidelines, the 2017 Sensible Steps to Healthier School Environments, and Healthy Child Care. We emphasize the

need to bolster the dissemination of these resources throughout this letter, including EPA's Indoor Air Quality and IPM toolkits. EPA should establish and monitor dissemination goals for specific educational materials, and key parties and collaborators should have the opportunity to identify priority areas for new resource development. A substantial program evaluation would include metrics such as number of schools and child care facilities reached, quantity of materials with language translations, frequency at which resources are downloaded, and feedback on recommendations for additional or updated materials.

- **To enhance efficiency, focus on increased and sustained promotion of educational materials and trainings developed by key parties and collaborators.** Other organizations have also developed educational materials that provide effective, actionable, and evidence-based guidance on the reduction of environmental hazards in and around child care facilities and schools. For example, the CEHN's EHCC education, training, and endorsement program[26] offers comprehensive and Spanish-translated educational resources, training, and technical assistance to the child care community nationwide. EHCC's guidance covers indoor air quality, lead, radon, and pesticide hazards, as well as potentially hazardous chemicals in consumer goods and materials found in child care facilities (e.g., flame retardants in children's nap mats, asthma triggers from the use of cleaning products and art supplies). ATSDR has created excellent guidance on the safe siting of child care facilities (Choose Safe Places for Early Care and Education). Organizations such as Healthy Schools Network and the Coalition for Healthier Schools also provide resources, such as the Green Cleaning for Healthy Schools and the Healthy Products for Healthy Schools toolkits, and a clearinghouse of information on environmental hazards and actions to reduce exposures in school settings. EPA's regional Schools Coordinators and Children's Environmental Health Coordinators can serve an important function in dissemination of these materials.
- **Continue to prioritize education and outreach for school and child care professionals serving low-income communities and communities of color.** Most of EPA's outreach to schools and child care programs is conducted through regional staff. Prioritization of outreach should lean on their knowledge about which communities in their respective regions are overburdened by environmental hazards and children's health disparities. For example, EPA Region 3 most recently supported EHCC trainings for child care professionals throughout under-resourced areas in the Mid-Atlantic region, and the Region 2 PEHSU supported EHCC trainings for child care providers in Puerto Rico.
- **Develop environmental health education best practices for school and child care programs.** The child care resources that EPA disseminates and promotes should reflect best practices outlined in "Caring for Our Children: National Health and Safety Performance Standards for Early Care and Education Programs".[86] EPA could work with CDC—in consultation with the U.S. Department of Education, U.S. Green Building Council's Center for Green Schools, AAP, and others—to develop similar national performance standards for healthy school environments. Outreach to state and local agencies on these guidelines would result in more widespread adoption and implementation.

Expand K-12 student education

- **EPA should continue to provide access to science-based educational materials for K-12 science, health, and civics educators, and their professional organizations (see Attachment 2 for list of relevant professional organizations) to increase education of students in environmental health.** EPA provides excellent lesson plans, guides, and other resources for educators on its Learning and Teaching About the Environment webpage. To ensure increased adoption and use, EPA should enhance and expand promotion of these resources and provide guidance on increasing the accessibility of the materials for all students, including those of different cultural and linguistic backgrounds and students in special education.

- **EPA should continue to collaborate with partners such as Scholastic and Family, Career and Community Leaders of America to engage and educate middle and high school students in environmental health, and the agency should also seek collaborations to develop educational materials geared to elementary students and plans to engage these younger learners.**

Partnerships with groups outside EPA are important to achieve increased education through innovative approaches. For example, OCHP's current partnerships with Scholastic and Family, Career and Community Leaders of America will enable EPA to accelerate its production of educational materials for middle and high school students and will also help EPA to reach more students. It is important that younger children learn about environmental health as well, and similar partnerships that target children in elementary schools would establish a foundation for deeper learning. Some potential partners are included in the Educational Corporations/Organizations section of Attachment 2.

Improve child care workforce education

- **EPA should leverage and support accredited environmental health education and training efforts for child care professionals.** Environmental health is often overlooked in workforce development curricula for early childhood care and education degrees. Examples of environmental health education and training to consider include EHCC's curriculum and e-learning course, as well as non-regulatory incentive programs (such as the Maryland Excels Eco-Friendly Achievement for Maryland child care programs). EPA could work with the HHS National Center on Early Childhood Quality Assurance to increase adoption of EHCC endorsement into state quality rating and improvement systems. In doing this work, EPA should connect partners who have existing curriculum with collaborators who have greater reach into certain segments of the school and/or child care community. This facilitation would avoid unnecessary duplication of educational materials and support good will and a sustained collaborative and innovative spirit among partner organizations. EPA can work with the HHS Administration for Children and Families to incorporate environmental health into training requirements for federally funded child care programs. This effort could be as simple as including EHCC's e-learning course, which is approved for adult learning hours in 48 states including Washington DC, Guam, and the U.S. Virgin Islands.[26] EPA should explore ways for child care workers to access environmental health training at affordable rates.

Develop culturally appropriate and multilingual education and outreach materials

To be most effective, educational materials should reflect the lived experience of the target audience. One example of an effective collaboration to develop culturally-appropriate materials was EPA's Office of Environmental Justice's new curriculum, Lead Awareness in Indian Country: Keeping our Children Healthy, which included input from 80 tribal governments and organizations. The materials are designed to balance technical information and localized knowledge so instructors have the space and flexibility to deliver unique messages tailored to their communities. This excellent model could be expanded to other topics and communities.

EPA has supported the development of relevant and rigorous curricula and educational materials for children's environmental health that are inaccessible to children and families that are not fluent in English. New and existing educational content related to child care and school settings must include translations for those who live in the U.S. but for whom English is not their primary language at home and/or in school. The translation of materials must also consider cultural context (e.g., significant differences in the Spanish language spoken in different countries).

In order to effectively reach and meet the needs of diverse linguistic and cultural audiences, we recommend that EPA:

- **Financially support the translation and cultural adaptation of educational materials** This applies to both materials that are already a part of EPA's children's environmental health efforts as well as new materials. To be inclusive and to reduce disparities in health and education, the upfront costs of production must include translation and cultural adaptation for multiple cultural groups.
- **Partner with organizations that represent and serve diverse populations in the U.S.** Potential collaborators that could engage with EPA to prepare translated and culturally appropriate educational materials include the Hispanic Federation, Migrant HeadStart, National Indian Child Care Association, and the NAACP. Local knowledge and risks must be included to the extent possible so that communities can respond most effectively. Local organizations may include community organization and action groups, environmental and environmental justice groups, and indigenous communities both with and without federal tribal recognition. Methods to collect feedback and other evaluation metrics should be included to ensure linguistic and cultural audiences are effectively reached.

Partnerships to support improvements in children's environments in schools and child care settings

Broaden relationships with more key parties and collaborators

The CHPAC was asked to consider stakeholders with whom EPA should partner to improve CEH in schools and child care, and types of activities these partnerships should include. EPA has a long history of nurturing and sustaining partnerships with other government entities, professional and advocacy organizations, and diverse community groups. EPA maintains well-established relationships with AAP, school nursing organizations, and PEHSUs to advocate for environmental health education programs and improved state and local school health policy.

- **Throughout this letter, and within Attachment 2, we recommend additional key parties and collaborators whose missions and goals align with the protection of children's environmental health as well as partnerships that can be leveraged to effectively address the priority areas and additional activities previously described.** Examples of key partners include state and local health departments, local planning and zoning departments, school boards, school nurses, school facility managers, child care licensing agencies, child care professionals, Head Start programs, local community organizations, and places of religious worship that provide child care services but may be exempt from licensing regulations in some states. EPA can better reach home-based child care providers and potentially more unlicensed "friends, family, and neighbor care" providers through education partnerships with nonprofit organizations already active in this space, such as EHCC and the National Center for Healthy Housing. Both organizations are working with the National Association for Family Child Care to draft and release the latter's first ever national accreditation standards focused on lead hazards.

Improve coordination of efforts

Children's environmental health in school and child care settings is relevant to many of the offices within the EPA and addressed across multiple federal agencies and levels of government. In times of limited resources, it is critical that government entities not duplicate efforts and instead leverage resources to ensure the maximum impact. CHPAC recommends that EPA:

- **Enhance coordination between the EPA programs.** OCHP should serve as the key entity to catalog children's environmental health activities across the Agency; facilitate agency progress in promoting environmental health in school and child care settings; and improve coordination of its Regional Children's Environmental Health Coordinators and School Coordinators. The regional coordinators could then more effectively collaborate with their corresponding regional PEHSUs and ATSDR offices

to provide education and outreach on environmental health in school and child care settings to the key collaborators listed in Attachment 2.

- **Increase coordination between EPA and federal, tribal, state, territorial, and local government partners to leverage limited resources and avoid duplication or conflicting efforts.** EPA does not have a specific legislative mandate to improve and maintain healthy environments in school and child care settings. Therefore, it is critical that EPA partner with other agencies that have legal mandates to ensure safe schools and child care settings. Attachment 2 includes potential federal agency partners for cross-agency strategic planning, which could be facilitated using the Presidential Task Force on Environmental Health Risks and Safety Risks to Children. CHPAC recommends that the task force, which is currently co-chaired by the OCHP director, prioritize children's environmental health in schools and child care, and that sustained support be provided for the important inter-agency work of the task force.

Advance Research on School and Child Care Environments and Children's Health

EPA has long supported children's environmental health research. Of note, EPA, in collaboration with the National Institute of Environmental Health Sciences (NIEHS), funded the Children's Environmental Health and Disease Prevention Research Centers in 1997 [87]. Studies of cohorts of children throughout the U.S. provided scientific data that were instrumental in informing policy decisions related to environmental pollutants and children's health. Each of these funded centers had an expectation to engage the community in understanding the impact of environmental exposures on child health, including all the settings in which children live, play, and learn. In 2019, the EPA ceased its participation in this funding partnership, losing the opportunity to advance the science of children's environmental health, including possible future studies focused on school and child care environments. In 2001, EPA conducted a "First National Environmental Health Survey of Child Care Centers" in collaboration with the U.S. Department of Housing and Urban Development and the U.S. Consumer Product Safety Commission. This research effort provided valuable information about levels of lead, pesticides, and allergens in a representative sample of licensed child care centers across the country. EPA also recently partnered with other federal agencies to fund the "STAR Healthy Schools: Environmental Factors, Children's Health and Performance, and Sustainable Building Practices" research grant program. This program aims to "inform school building design, construction and operation practices in order to foster safe and healthy school environments and maximize student achievement and teacher and staff effectiveness."[88] The results of these studies are now being published and the data can be used to inform school policymakers, facility operators and designers.[89] This program is a first step to address the research gaps that exist regarding indoor air quality and safe materials for sustainable and healthy school and child care facilities.

To further expand upon these research efforts, we recommend that EPA:

- **Alone, or in partnership with NIEHS, fund the development and operation of a nationwide research program focusing on school and child care settings to increase understanding of children's potential exposures to environmental hazards and the associated health impacts.** This program should ensure that funded studies consistently measure common elements such as demographics, environmental concentrations, biomarker levels, and health outcomes. In recognition of the priority for environmental justice, research should incorporate equity throughout the data lifecycle from funding selection; to project design and data collection; to analysis, interpretation and communication. Research should also be community-driven and include groups and individuals embedded in communities.[90] EPA should spearhead a central coordinating center to manage and standardize the contributions from this work, as well as to support data management and statistical analysis. A coordinated national research program would increase knowledge of exposures and child health outcomes in these important settings and help refine priorities and emerging issues.

- **Develop an external-facing clearinghouse portal for findings from EPA-funded efforts, along with related outside research efforts.** Findings from these research efforts should be made available and accessible to researchers and stakeholders on a user-friendly web portal for transparency and to drive further research efforts and other actions.
- **Take a research-to-action approach.** Findings from both EPA-funded and outside research efforts should be used to inform actions such as guidance, rulemaking, and partnerships with agencies that can fund schools to make needed changes.
- EPA should explore mechanisms to expand its partnership with the Environmental Influences on Child Health Outcomes (ECHO) program, particularly in the analysis of environmental impacts and effects on pregnancy outcomes and child health. The ECHO program was established as part of the NIH and aims to bring separate cohorts together to address research questions about effects of a broad range of early environmental exposures on child health and development. Many of the cohorts being followed were partly established with funding from the EPA and all are following children long-term. The ECHO program offers an outstanding opportunity to assess the importance of environmental exposures that occur in child care and school settings.

Summary

The committee appreciates the opportunity to focus on how EPA can enhance its current work on protecting children's health in school and child care settings. EPA is already engaged in notable activities to address priority areas, conduct outreach in communities with disproportionate exposures and to key partners, and to leverage partnerships with other agencies and organizations, but more remains to be done. Our recommendations detailed above are also listed in an addendum to this letter (Attachment 3), but in general, the committee identified major priority areas of concern including air quality, climate change/disaster preparedness, and lead and pesticide exposures in school and child care settings. As the committee examined these specific areas of exposure, two overarching themes emerged. First, our specific recommendations point to how little is known about the exposures children and pregnant people face every day in their school and child care environments and the need for a surveillance or tracking system to monitor the most prevalent issues in these settings. Second, the committee strongly encourages EPA to view the health and safety of schools and child care settings through an equity lens. Long term disparities exist in the infrastructure and resources available in schools and child care across our country. Thus, it is imperative for EPA to prioritize and carry out activities focused on facilities in the most disrepair and located in communities at risk for multiple environmental injustices. The committee commends the EPA on its current efforts to improve environmental health education in school and child care settings, and our recommendations focus on evaluating the sufficiency of materials and their cultural appropriateness, including translation to other languages. We offer several suggestions for expanded partnerships and new programs addressing educational gaps. Finally, we have recommended research programs to expand EPA's work in generating new scientific evidence on the hazards associated with school and child care settings.

EPA plays a critical role in protecting children from environmental exposures hazardous to their health. Addressing hazards in schools and child care facilities is an important component of a comprehensive approach. Thank you for the opportunity to provide recommendations on how EPA can enhance its current efforts in these settings.

Sincerely,

Deanna Scher, Ph.D.
Chair

cc: Jeanne Briskin, Director, Office of Children's Health Protection
Nica Louie, CHPAC Designated Federal Official, Office of Children's Health Protection

References

1. U.S. Department of Education. National Center for Education Statistics. 2020. [accessed Nov. 12, 2020] https://nces.ed.gov/.
2. National Resource Center for Health and Safety in Child Care and Early Education. Environmental Health in Early Care and Education. A joint collaborative project of American Academcy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education; 2020. https://nrckids.org/CFOC/Environmental_Health
3. Juster FT, Ono H, Stafford FP. Changing Times of American Youth: 1981-2003. Ann Arbor, MI: Institute for Social Research, University of Michigan; 2004. http://ns.umich.edu/Releases/2004/Nov04/teen_time_report.pdf
4. National Center for Education Statistics. Schools and Staffing Survey (SASS). U.S. Department of Education, National Center for Education Statistics; 2007-2008. [accessed March 5, 2021] https://catalog.data.gov/ne/dataset/schools-and-staffing-survey-2007-08.
5. National Center for Education Statistics. National Teacher and Principal Survey (NTPS). U.S. Department of Education, National Center for Education Statistics; 2017-2018. [accessed March 5, 2021] https://nces.ed.gov/surveys/ntps/.
6. U.S. Census Bureau. Data USA: Childcare Workers - Diversity. https://www.census.gov/programs-surveys/acs/microdata.html; 2021. [accessed March 5, 2021] https://datausa.io/profile/soc/childcare-workers#demographics.
7. Sampson N. Environmental justice at school: Understanding research, policy, and practice to improve our children's health. The Journal of School Health. 2012; 82(5):246-252. 10.1111/j.1746-1561.2012.00694.x
8. U.S. GAO. Schoool Facilities: America's Schools Report Differing Conditions. Washington, DC; 1996. GAO/HEHS-96-103 https://www.gao.gov/assets/hehs-96-103.pdf
9. Grineski SE, Collins TW. Geographic and social disparities in exposure to air neurotoxicants at U.S. public schools. Environmental research. 2018; 161:580-587. 10.1016/j.envres.2017.11.047
10. Berner MM. Building conditions, parental involvement, and student achievement in the District of Columbia public school system. Urban Education. 1993; 28(1):6-29. 10.1177/0042085993028001002
11. Mendell MJ, Eliseeva EA, Davies MM, Lobscheid A. Do classroom ventilation rates in California elementary schools influence standardized test scores? Results from a prospective study. Indoor Air. 2016; 26(4):546-557. 10.1111/ina.12241
12. Mendell MJ, Heath GA. Do indoor pollutants and thermal conditions in schools influence student performance? A critical review of the literature. Indoor Air. 2005; 15(1):27-52. 10.1111/j.1600-0668.2004.00320.x
13. Shendell DG, Barnett C, Boese S. Science-based recommendations to prevent or reduce potential exposure to biological, chemical, and physical agents in schools. Journal of School Health. 2004; 74(10):390-396. 10.1111/j.1746-1561.2004.tb06603.x
14. Shendell DG, Prill R, Fisk WJ, Apte MG, Blake D, Faulkner D. Associations between classroom CO2 concentrations and student attendance in Washington and Idaho. Indoor Air. 2004; 14(5):333-341. 10.1111/j.1600-0668.2004.00251.x
15. Daisey JM, Angell WJ, Apte MG. Indoor air quality, ventilation and health symptoms in schools: an analysis of existing information. Indoor Air. 2003; 13(1):53-64. 10.1034/j.1600-0668.2003.00153.x
16. Chaudhuri N. Interventions to improve children's health by improving the housing environment. Reviews in Environmental Health. 2004; 19(3-4):197-222.
17. Landrigan PJ. Children's environmental health: A brief history. Academic Pediatrics. 2016; 16(1):1-9. 10.1016/j.acap.2015.10.002
18. Landrigan PJ, Miodovnik A. Children's health and the environment: An overview. Mount Sinai Journal of Medicine. 2011; 78(1):1-10. 10.1002/msj.20236

19. Pronczuk J, Surdu S. Children's environmental health in the twenty-first century. Annals of the New York Academy of Sciences. 2008; 1140:143-154. 10.1196/annals.1454.045
20. Vanos JK. Children's health and vulnerability in outdoor microclimates: A comprehensive review. Environment International. 2015; 76:1-15. 10.1016/j.envint.2014.11.016
21. U.S. GAO. K-12 Education: School Districts Frequently Identified Multiple Building Systems Needing Updates or Replacement. 2020. GAO-20-494 https://www.gao.gov/assets/710/707374.pdf
22. Evergreen Collaborative and Demos. Designing a New National Equity Mapping Program. 2020. https://www.demos.org/sites/default/files/2020-10/Designing%20a%20New%20National%20Equity%20Mapping%20Program.pdf
23. National Research Council. Science and Ddecisions: Advancing Risk Assessment. Washington, DC: The National Academies of Sciences, Engineering, and Medicine; 2009. https://www.nap.edu/catalog/12209/science-and-decisions-advancing-risk-assessment#toc
24. U.S. EPA CHPAC. Report of the School Siting Task Group of the Children's Health Protection Advisory Committee: Comments on US Environmental Protection Agency Draft Guidelines for the Siting of School Facilities U.S. Environmental Protection Agency; 2010. https://www.epa.gov/sites/production/files/2014-05/documents/chpac_sstg_report2.pdf
25. U.S. EPA CHPAC. Letter to Lisa P. Jackson, Administrator, RE: EPA School Siting Guidelines Washington, DC: U.S. Environmental Protection Agency, Children's Health Protection Advisory Committee; 2010. https://www.epa.gov/sites/production/files/2014-05/documents/chpac_school_siting_letter_3.pdf
26. Gilden R, McElroy K, Friedmann E, Witherspoon NO, Paul H. Evaluation of the Children's Environmental Health Network's environmental stewardship checklist responses. Journal of Environmental Health. 2015; 77(7):22-28.
27. American Public Health Association. Establishing Environmental Public Health Systems for Children at Risk or with Environmental Exposures in Schools. 2017. Policy Number: 201713
28. Usemann J, Decrue F, Korten I, Proietti E, Gorlanova O, Vienneau D, Fuchs O, Latzin P, Röösli M, Frey U. Exposure to moderate air pollution and associations with lung function at school-age: A birth cohort study. Environment International. 2019; 126:682-689. 10.1016/j.envint.2018.12.019
29. Jedrychowski WA, Perera FP, Maugeri U, Mroz E, Klimaszewska-Rembiasz M, Flak E, Edwards S, Spengler JD. Effect of prenatal exposure to fine particulate matter on ventilatory lung function of preschool children of non-smoking mothers. Paediatric and Perinatal Epidemiology. 2010; 24(5):492-501. 10.1111/j.1365-3016.2010.01136.x
30. Korten I, Ramsey K, Latzin P. Air pollution during pregnancy and lung development in the child. Paediatric Respiratory Reviews. 2017; 21:38-46. 10.1016/j.prrv.2016.08.008
31. Kim BJ, Seo JH, Jung YH, Kim HY, Kwon JW, Kim HB, Lee SY, Park KS, Yu J, Kim HC et al. Air pollution interacts with past episodes of bronchiolitis in the development of asthma. Allergy. 2013; 68(4):517-523. 10.1111/all.12104
32. Kalkbrenner AE, Windham GC, Serre ML, Akita Y, Wang X, Hoffman K, Thayer BP, Daniels JL. Particulate matter exposure, prenatal and postnatal windows of susceptibility, and autism spectrum disorders. Epidemiology (Cambridge, Mass). 2015; 26(1):30-42. 10.1097/ede.0000000000000173
33. Talbott EO, Arena VC, Rager JR, Clougherty JE, Michanowicz DR, Sharma RK, Stacy SL. Fine particulate matter and the risk of autism spectrum disorder. Environmental Research. 2015; 140:414-420. 10.1016/j.envres.2015.04.021
34. Min JY, Min KB. Exposure to ambient PM(10) and NO(2) and the incidence of attention-deficit hyperactivity disorder in childhood. Environment International. 2017; 99:221-227. 10.1016/j.envint.2016.11.022
35. Thygesen M, Holst GJ, Hansen B, Geels C, Kalkbrenner A, Schendel D, Brandt J, Pedersen CB, Dalsgaard S. Exposure to air pollution in early childhood and the association with Attention-Deficit Hyperactivity Disorder. Environmental Research. 2020; 183:108930. 10.1016/j.envres.2019.108930

36. Bekkar B, Pacheco S, Basu R, DeNicola N. Association of air pollution and heat exposure with preterm birth, low birth weight, and stillbirth in the US: A systematic review. JAMA Network Open. 2020; 3(6):e208243. 10.1001/jamanetworkopen.2020.8243
37. Vinikoor-Imler LC, Davis JA, Meyer RE, Messer LC, Luben TJ. Associations between prenatal exposure to air pollution, small for gestational age, and term low birthweight in a state-wide birth cohort. Environmental Research. 2014; 132:132-139. 10.1016/j.envres.2014.03.040
38. Vishnevetsky J, Tang D, Chang HW, Roen EL, Wang Y, Rauh V, Wang S, Miller RL, Herbstman J, Perera FP. Combined effects of prenatal polycyclic aromatic hydrocarbons and material hardship on child IQ. Neurotoxicology and Teratology. 2015; 49:74-80. 10.1016/j.ntt.2015.04.002
39. Klepac P, Locatelli I, Korošec S, Künzli N, Kukec A. Ambient air pollution and pregnancy outcomes: A comprehensive review and identification of environmental public health challenges. Environmental Research. 2018; 167:144-159. 10.1016/j.envres.2018.07.008
40. Guxens M, Lubczyńska MJ, Muetzel RL, Dalmau-Bueno A, Jaddoe VWV, Hoek G, van der Lugt A, Verhulst FC, White T, Brunekreef B et al. Air pollution exposure during fetal life, brain morphology, and cognitive function in school-age children. Biological Psychiatry. 2018; 84(4):295-303. 10.1016/j.biopsych.2018.01.016
41. Sunyer J, Dadvand P. Pre-natal brain development as a target for urban air pollution. Basic & Clinical Pharmacology & Toxicology. 2019; 125 Suppl 3:81-88. 10.1111/bcpt.13226
42. American Academy of Pediatrics. Ambient air pollution: Health hazards to children. Pediatrics. 2004; 114(6):1699-1707. 10.1542/peds.2004-2166
43. Brumberg H, Karr C, AAP Council on Environmental Health. Ambient air pollution: Health hazards to children. Pediatrics. 2021; 147(6):e2021051484.
44. Annesi-Maesano I, Baiz N, Banerjee S, Rudnai P, Rive S, Group S. Indoor air quality and sources in schools and related health effects. Journal of Toxicology and Environmental Health Part B, Critical Reviews. 2013; 16(8):491-550. 10.1080/10937404.2013.853609
45. Norbäck D, Wålinder R, Wieslander G, Smedje G, Erwall C, Venge P. Indoor air pollutants in schools: Nasal patency and biomarkers in nasal lavage. Allergy. 2000; 55(2):163-170. 10.1034/j.1398-9995.2000.00353.x
46. Azuma K, Jinno H, Tanaka-Kagawa T, Sakai S. Risk assessment concepts and approaches for indoor air chemicals in Japan. International Journal of Hygiene and Environmental Health. 2020; 225:113470. 10.1016/j.ijheh.2020.113470
47. Yang J, Nam I, Yun H, Kim J, Oh H-J, Lee D, Jeon S-M, Yoo S-H, Sohn J-R. Characteristics of indoor air quality at urban elementary schools in Seoul, Korea: Assessment of effect of surrounding environments. Atmospheric Pollution Research. 2015; 6(6):1113-1122.
48. Government of Taiwan. Taiwan Indoor Air Quality Management Act. 2011.
49. U.S. EPA. Coordinated Federal Action Plan to Reduce Racial and Ethnic Asthma Disparities. Washington, DC: President's Task Force on Environmental Health Risks and Safety Risks to Children; 2012. https://www.epa.gov/sites/production/files/2014-08/documents/federal_asthma_disparities_action_plan.pdf
50. U.S. EPA. Federal Agencies and Organizations Addressing Environmental Asthma. Washington, DC; 2020. [accessed Nov. 12, 2020] https://www.epa.gov/asthma/federal-agencies-and-organizations-addressing-environmental-asthma.
51. Na K, Cocker DR. Fine organic particle, formaldehyde, acetaldehyde concentrations under and after the influence of fire activity in the atmosphere of Riverside, California. Environmental Research. 2008; 108(1):7-14. 10.1016/j.envres.2008.04.004
52. Bell JE, Herring SC, Jantarasami L, Adrianopoli C, Benedict K, Conlon K, Escobar V, Hess J, Luvall J, Garcia-Pando CP et al. Ch. 4: Impacts of Extreme Events on Human Health. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. Washington, DC: U.S. Global Change Research Program; 2016. p. 99–128. 10.7930/J0BZ63ZV

53. Aguilera R, Corringham T, Gershunov A, Benmarhnia T. Wildfire smoke impacts respiratory health more than fine particles from other sources: observational evidence from Southern California. Nature Communications. 2021; 12(1):1493. 10.1038/s41467-021-21708-0
54. Kousky C. Impacts of natural disasters on children. The Future of Children. 2016; 26(1):73-92.
55. Peek L. Children and disasters: Understanding vulnerability, developing capacities, and promoting resilience — An introduction. Children, Youth and Environments. 2008; 18(1):1-29.
56. Pereira J, Vagos P, Fonseca A, Moreira H, Canavarro MC, Rijo D. The Children's Revised Impact of Event Scale: Dimensionality and measurement invariance in a sample of children and adolescents exposed to wildfires. Journal of Traumatic Stress. 2020; 34(1):35-45. https://doi.org/10.1002/jts.22634
57. Chalupka S, Anderko L. Climate change and schools: Implications for children's health and safety. Creative Nursing. 2019; 25(3):249-257. 10.1891/1078-4535.25.3.249
58. Walker T. The Heat is On: Educators, Students Forced to Deal with Sweltering Classrooms. Washington, DC: National Education Association; 2018. https://www.nea.org/advocating-for-change/new-from-nea/heat-educators-students-forced-deal-sweltering-classrooms
59. CalEPA. Guidance for Schools During Wildfire Smoke Events. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment; 2019. https://oehha.ca.gov/media/downloads/air/fact-sheet/wildfiresmokeguideschoolsada.pdf
60. Holm SM, Miller MD, Balmes JR. Health effects of wildfire smoke in children and public health tools: A narrative review. Journal of Exposure Science & Environmental Epidemiology. 2020:1-20. 10.1038/s41370-020-00267-4
61. National Association of School Nurses. Emergency Preparedness. Silver Spring, MD: National Association of School Nurses; 2019. https://www.nasn.org/advocacy/professional-practice-documents/position-statements/ps-emergency-preparedness.
62. Council on Environmental Health. Prevention of Childhood Lead Toxicity. Pediatrics. 2016; 138(1):e20161493. 10.1542/peds.2016-1493
63. Pediatric Environmental Health Specialty Units (PEHSU). Lead and Drinking Water: Information for Health Professionals across the United States. American Academy of Pediatrics, American College of Medical Toxicology, Agency for Toxic Substances and Disease Registry (ATSDR), and U.S. Environmental Protection Agency; 2016. https://www.pehsu.net/_Library/facts/LeadandDrinkingWater_62116_final.pdf
64. U.S. EPA. Basic Information about Lead in Drinking Water. U.S. Environmental Protection Agency; 2020. [accessed Nov. 12, 2020] https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water#getinto.
65. U.S. Green Building Council. Perspectives on State Legislation Concerning Lead Testing in School Drinking Water. 2018. https://www.usgbc.org/sites/default/files/2018-Lead-in-School-Drinking-Water-Full-Final-20181108_0.pdf
66. Environment America Research & Policy Center. Get the Lead Out: Ensuring Safe Drinking Water for Our Children At School. 2019. https://environmentamerica.org/sites/environment/files/reports/GetTheLeadOut_032119.pdf
67. U.S. GAO. Child Care Facilities: Federal Agencies Need to Enhance Monitoring and Collaboration to Help Assure Drinking Water is Safe from Lead. 2020. GAO-20-597https://www.gao.gov/assets/710/709703.pdf
68. Sandvig A, Kwan P, Kiremeyer G, Maynard B, Mast D, Trussell R, Trussell S, Cantor A, Prescott A. Contributions of Service Line and Plumbing Fixtures to Lead and Copper Rule Compliance Issues. Awwa Research Foundation and US Environmental Protection Agency; 2008. https://archive.epa.gov/region03/dclead/web/pdf/91229.pdf
69. U.S. EPA SAB. Subject: SAB Evaluation of the Effectiveness of Partial Lead Service Line Replacements. Washington, DC: U.S. Environmental Protection Agency; 2011. https://www.epa.gov/sites/production/files/2015-09/documents/sab_evaluation_partial_lead_service_lines_epa-sab-11-015.pdf

70. Katner A, Pieper K, Brown K, Lin HY, Parks J, Wang X, Hu CY, Masters S, Mielke H, Edwards M. Effectiveness of prevailing flush guidelines to prevent exposure to lead in tap water. International Journal of Environmental Research and Public Health. 2018; 15(7). 10.3390/ijerph15071537
71. Cwierty D. Lead in school drinking water: Opportunities for improving public health in Iowa's schools. University of Iowa Center for Health Effects of Environmental Contamination; https://cheec.uiowa.edu/sites/cheec.uiowa.edu/files/Lead%20in%20Schools_CHEEC%20IA%20Legs_ONLINE.pdf
72. Health Canada. Health Canada sets new guideline for lead in drinking water. Government of Canada; 2019. https://www.canada.ca/en/health-canada/news/2019/03/health-canada-sets-new-guideline-for-lead-in-drinking-water-latest-in-series-of-government-actions-to-protect-canadians-from-exposure-to-lead.html
73. European Union. Directive (EU) 2020/2184 of the European Parliament and of the Council of 16 December 2020 on the quality of water intended for human consumption (recast) (Text with EEA relevance). Official Journal of the European Union. 2020.
74. The White House. FACT SHEET: The American Jobs Plan. Washington, D.C.; 2021. https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/
75. U.S. EPA SAB. Science Advisory Board (SAB) Consideration of the Scientific and Technical Basis of EPA's Proposed Rule Titled National Primary Drinking Water Regulations: Proposed Lead and Copper Rule Revisions. Washington, DC: U.S. Environmental Protection Agency; 2020. EPA-SAB-20-007
76. U.S. EPA CHPAC. Letter to Andrew Wheeler, Administrator, RE: Recommendations for improving EPA risk communication for children's health risks. Washington, DC: U.S. Environmental Protection Agency, Children's Health Protection Advisory Committee; 2020. https://www.epa.gov/sites/production/files/2020-05/documents/incoming.chpac_risk_communication_letter.final_.pdf
77. U.S. EPA. Ensuring the Safety of Chemicals: EPA Not Effectively Implementing the Lead-Based Paint Renovation, Repair and Painting Rule. Washington, DC: U.S. EPA Office of Inspector General; 2019. 19-P-0302 https://www.courthousenews.com/wp-content/uploads/2019/09/epa-lead-paint.pdf
78. CDC. Blood Lead Levels in Children. Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Environmental Health Science and Practice; 2021. [accessed March 22, 2021] https://www.cdc.gov/nceh/lead/prevention/blood-lead-levels.htm.
79. CDC. Blood Lead Reference Value. Centers for Disease Control and Prevention, National Center for Environmental Health, Division of Environmental Health Science and Practice; 2020. [accessed March 22, 2021] https://www.cdc.gov/nceh/lead/data/blood-lead-reference-value.htm.
80. Schroeder M, Smith N. A Community Voice v. US EPA. United States Court of Appeals for the Ninth Circuit; 2021. https://earthjustice.org/sites/default/files/files/19-71930_documents.pdf
81. Robert J, Karr C, Council on Environmental Health. Technical report: Pesticide exposure in children. Pediatrics. 2013; 131(5):1013-1014. 10.1542/peds.2013-0577
82. Bably M, Arif AA, Post A. Prenatal use of cleaning and scented products and its association with childhood asthma, asthma symptoms, and mental health and developmental comorbidities. Journal of Asthma. 2019:1-6. 10.1080/02770903.2019.1656229
83. Chang A, Schnall A, Law R, Bronstein A, Marraffa J, Spiller H, Hays H, Funk A, Mercurio-Zappala M, Calello D et al. Cleaning and Disinfectant Chemical Exposures and Temporal Associations with COVID-19 — National Poison Data System, United States, January 1, 2020–March 31, 2020. Morbidity Mortality Weekly Report. 2020; 69:496–498. http://dx.doi.org/10.15585/mmwr.mm6916e1
84. California Dept. of Pesticide Regulation. Pest Management and Pesticide Use in California Child Care Centers. Berkeley, CA: Prepared by the Center For Children's Environmental Health Research, UC Berkeley School of Public Health; 2010.

https://cerch.berkeley.edu/sites/default/files/pest_mangement_and_pesticide_use_in_california_child_care_centers.pdf
85. Tulve NS, Jones PA, Nishioka MG, Fortmann RC, Croghan CW, Zhou JY, Fraser A, Cavel C, Friedman W. Pesticide measurements from the first national environmental health survey of child care centers using a multi-residue GC/MS analysis method. Environmental Science & Technology. 2006; 40(20):6269-6274. 10.1021/es061021h
86. American Academy of Pediatrics. Caring for Our Children: National Health and Safety Performance Standards Guidelines for Early Care and Education Programs. APHA Press; 2019. https://nrckids.org/files/CFOC4%20pdf-%20FINAL.p
87. U.S. EPA. NIEHS/EPA Children's Environmental Health and Disease Prevention Research Centers Impact Report: Protecting children's health where they live, learn, and play. Washington, DC: U.S. Environmental Protection Agency; 2017. EPA/600/R-17/407 https://www.epa.gov/sites/production/files/2017-10/documents/niehs_epa_childrens_centers_impact_report_2017_0.pdf?pdf=Childrens-Center-Report
88. U.S. EPA. Healthy Schools: Environmental Factors, Children's Health and Performance, and Sustainable Building Practices. Washington, DC; 2013. [accessed Nov. 23, 2020] https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/recipients.display/rfa_id/568/records_per_page/ALL.
89. U.S. EPA. Grantee Research Project Results Search: Research Project Database. Washington, DC; 2020. [accessed Nov. 23, 2020] https://cfpub.epa.gov/ncer_abstracts/index.cfm/fuseaction/publication.forward?RequestTimeout=180#content.
90. Brooks BW, Gerding JA, Landeen E, Bradley E, Callahan T, Cushing S, Hailu F, Hall N, Hatch T, Jurries S et al. Environmental health practice challenges and research needs for U.S. health departments. Environmental Health Perspectives. 2019; 127(12):125001. doi:10.1289/EHP5161

Attachment 1

CHPAC Charge – July 14, 2020

EPA's Role in Protecting Children from Environmental Exposures in School and Child Care Settings

BACKGROUND

The U.S. Environmental Protection Agency (EPA) works to ensure that children enjoy clean and safe environments where they live, learn and play. Addressing critical environmental issues in school settings is an Agency priority[B] because healthier school environments help ensure children are safe from environmental hazards while in school. [See EPA's Policy on Evaluating Risk to Children[C] and Executive Order 13045, Protection of Children from Environmental Health Risks and Safety Risks[D]].

American children typically spend more time in schools and childcare settings than in any other indoor environment outside the home. More than 56.6 million elementary and secondary students attend approximately 132,000 public and private schools in the United States[E], almost 20% of the U.S. population. Children on average spend 1,200 hours in a school building each year.[4,F] In addition, 11 million children less than 5 years old attend childcare programs, spending on average 36 hours per week in these programs.[G] School facilities in poor condition not only present serious health risks; data shows that unhealthy school and childcare settings can affect children's attendance, concentration and performance. Healthy school environments can decrease absenteeism among teachers and children, ensure stronger academic performance and save school money by avoiding costly cleanup and remediation.

EPA has developed numerous tools and guidance materials to support improved children's health in school settings. These tools promote consistent, but flexible and simple solutions that emphasize risk reduction, collaboration and prevention.

Office of Children's Health Protection FY2020 Schools Initiative

While EPA does not have statutory authority to directly improve and financially support enhancements to schools or childcare facility buildings, EPA has a growing interest in seeing schools and childcare facilities designed and operating in a manner to avoid adverse environmental health effects. In FY 2020, EPA's Office of Children's Health Protection (OCHP) is focusing its expertise to promote children's environmental health (CEH) in school and childcare settings nationwide through the implementation of a three-part approach:

1) providing grants to organizations and communities to address local needs (see OCHP FY 2020 Children's Healthy Learning Environments Grant Initiative);

[B] https://www.epa.gov/schools
[C] https://www.epa.gov/children/epas-policy-evaluating-risk-children
[D] https://www.epa.gov/laws-regulations/summary-executive-order-13045-protection-children-environmental-health-risks-and
[E] U.S. Department of Education, National Center for Education Statistics, https://nces.ed.gov/.
[F] Juster, T; Ono, H; Stafford, F. (2004). Changing times of American youth: 1981–2003. Ann Arbor, MI: University of Michigan, Institute for Social Research. http://ns.umich.edu/Releases/2004/Nov04/teen_time_report.pdf
[G] The National Resources Center for Health and Safety in Childcare and Early Education, https://nrckids.org/CFOC/Environmental_Health.

2) increasing knowledge of students, teachers and parents and promote action to improve the health of the school, childcare and home environment (see Scholastic, Inc. information below); and
3) establishing partnerships to leverage EPA resources and expertise to educate target school audiences (see additional Family, Career, and Community Leaders of America information below).

The first component of the initiative is EPA's FY 2020 Children's Healthy Learning Environments Grant Initiative which seeks to award two grants to a U.S. state agency, public nonprofit institution/organization, Federally Recognized Indian Tribal government, U.S. territory and possession, private nonprofit institution/organization, or a consortium of such institutions to support capacity building efforts to help school communities understand and address local environmental and public health issues that affect children[H]. Capacity building projects will improve the awardee organization's long-term effectiveness and sustainability through management practices, implementation and dedication to achieving results towards CEH. Under this competition, EPA accepted applications for projects that build capacity of decision-makers to address CEH in school and childcare environments in June 2020. Projects will demonstrate, implement or expand innovative methods and approaches to prevent and reduce exposures in schools and childcare settings. Reducing exposures to unhealthy school and childcare settings through the adoption of healthy indoor environment best practices can lead to improving children's health, attendance, concentration and performance resources used for school or childcare facilities. EPA expects to announce the selected recipients in late summer/early fall 2020.

The second component focuses on providing environmental health information, such as lesson plans, to approximately 50,000 middle school teachers and over 1.5 million students and their parents through a collaboration between OCHP and Scholastic, Inc. An example of a previous Scholastic, Inc. partnership with the federal government is the U.S. Department of Labor's "Jobs of the Future" campaign to introduce students to apprenticeships and careers and prepare them for successful entry into the workplace through development of soft skills, analyzing articles about teens working in real-world apprenticeships and learning career-related vocabulary. OCHP will work with Scholastic, Inc. to customize school CEH materials for teachers, parents and students that will be further supported by a wide range of on-line tools, including EPA lessons and accompanying student activities designed to give teachers additional support to create a robust teaching experience throughout the school year. Scholastic will develop and promote a "challenge" that will encourage teachers, parents and students to conduct an environmental health assessment of their school. Scholastic will collect and provide EPA with metrics to evaluate the number of students and teachers reached and engaged through this campaign with this content on CEH to identify further engagement opportunities.

The third component of the Healthy Schools Initiative is centered around OCHP's partnership with Family, Career, and Community Leaders of America (FCCLA),[I] a nonprofit national education organization reaching approximately 175,000 middle school and high school FFCLA members through 6,500 teachers in every state, Puerto Rico, Virgin Islands and territories. Through a memorandum of understanding, OCHP and FCCLA will promote safer K-12 school environments by reaching a new generation of high school youth. EPA will provide information on CEH in support of FCCLA's new student-led environmental health programming. This partnership will give FCCLA the opportunity to integrate and establish CEH as a priority issue for youth attention and promote EPA's environmental health information. During the 2020-2021 academic year, FCCLA will incorporate CEH into its Students

[H] https://www.epa.gov/sites/production/files/2020-04/documents/epa-oa-ochp-20-01.pdf
[I] http://fcclainc.org/about-us/

Taking Action with Recognition (STAR) Events.[J] They plan to sponsor a student Sustainability Challenge STAR event where youth from across the U.S. may design and undertake projects to increase awareness of CEH in schools and provide simple steps students can take to improve their schools' environmental conditions. FCCLA will encourage members to consider using publicly-available EPA materials in the planning and implementation of their projects. Events and activities that highlight efforts to address children's health in schools may include topics such as pesticide safety, water quality, clean air and reducing asthma triggers. The Challenge will encourage students and teachers to understand the connections between the environment and its effects on children's health and will encourage students to take positive actions to reduce environmental exposures in their schools and homes.

CHARGE QUESTIONS

1) What additional activities, projects and/or programs should the Agency and EPA's Office of Children's Health Protection (OCHP) undertake in collaboration with EPA programs and regions and external stakeholders to support improvements in children's environments in schools and childcare settings?
2) What are the highest priority activities and most cost-effective actions EPA can take into consideration?
3) What stakeholders should EPA partner with to improve CEH in schools? What kind of activities should the partnerships undertake?

[J] https://fcclainc.org/compete/star-events

Attachment 2

Key Parties and Collaborators in Schools and Child Care

Community

- Business community (e.g., Chambers of Commerce and Rotary Clubs), especially for public-private partnerships
- Churches, temples, and other places of religious worship, which often have child care centers or schools
- Libraries
- Organizations working on healthy housing and access to primary care services.
- Planning and zoning departments
- Public health departments, with staff like local health officers and registered sanitarians/environmental health specialists as well as certified health educators
- Scouts and 4-H Clubs. (Note: New EPA partnership with Boy Scouts, prior efforts for badges for Girl Scouts)
- University and college language programs (translation partnerships)

Federal Government

- Agency for Toxic Substances & Disease Registry (ATSDR)
- Centers for Disease Control and Prevention (CDC)
    - Environmental Public Health Tracking Program
- Federal Emergency Management Agency (FEMA)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute for Occupational Safety and Health (NIOSH)
- U.S. Consumer Product Safety Commission
- U.S. Department of Health and Human Services (HHS)
    - Administration for Children and Families
    - Office of Child Care
    - Office of Head Start
    - National Center on Early Childhood Quality Assurance
- U.S. Department of Education
    - Green Ribbon Schools program
- U.S. Department of Housing and Urban Development

In Schools

- Certified athletic trainers (ATCs) and team coaches (Note: They were involved in previous EPA work on pesticides)
- Parent-teacher associations or PTAs (local and national offices)
- School health centers (schools may not have a nurse, but may have an associated health center, especially in cities).
- School boards
- School nurses
- School psychologists, counselors, and/or guidance counselors

Relevant Organizations

- American Red Cross
- American School Health Association

- Child Care Aware® of America
- Children's Environmental Health Network
    - Eco-Healthy Child Care® program
- Community and state environmental justice organizations
- Healthy Schools Network
- Hispanic Federation
- National Association for the Advancement of Colored People (NAACP)
- National Association for Regulatory Administration
- National Center for Healthy Housing
- National Head Start Association
- National Indian Health Board
- National Wildlife Federation
    - Eco-Schools USA
- Organizations familiar with local populations, including spoken languages
- Pediatric Environmental Health Specialty Units (PEHSUs)
- U.S. Green Building Council
    - Leadership in Energy and Environmental Design Program
    - Green Classroom Professional Program
- Various associations for individuals with disabilities (intellectual, developmental, physical, etc.)

Professional Organizations

- American Academy of Pediatrics (AAP coordinates the PEHSUs and manages Healthy Child Care America webpage).
- American Planning Association
- American Public Health Association (APHA)
- Association for Science Teacher Education (ASTE)
- Association of State and Territorial Health Officials
- National Association for Family Child Care (NAFCC)
- National Association of County and City Health Officials
- National Association of School Nurses
- National Education Association (NEA)
- National Environmental Health Association (NEHA)
- National Medical Association (NMA)
- National Science Teaching Association (NSTA)
- Schools of Nursing or Professional Nursing Associations such as the National Association of School Nurses

Educational Corporations/Organizations

- Scholastic Corporation
- Family, Career and Community Leaders of America
- Pearson
- McGraw-Hill Education
- Houghton Mifflin Harcourt
- Sesame Workshop

Attachment 3

Recommendations

The committee is grateful for the opportunity to focus on how the EPA can enhance its current work focused on protecting children's health in school and child care settings. EPA is already doing notable activities to address priority areas, conduct education and outreach to communities and stakeholders, and leverage partnerships with other agencies and organizations. We have identified multiple areas in which future activities could augment EPA's ability to protect our nation's children, summarized below.

Overarching Priority Areas

Environmental injustice

- EPA should develop a program to fund environmental health hazard mitigation at child care centers and schools when local and state resources are inadequate.
- The committee agrees with other groups that have recommended that EPA develop a more robust assessment tool that moves beyond looking at one chemical at a time and instead consider aggregate and cumulative exposures that include settings such as a school.
- EPA should make more efforts to increase community engagement in children's environmental health in schools and child care.
- EPA should offer more technical assistance and training to tribal, state, and local decision makers on its school siting guidelines and coordinate with the ATSDR's "Choose Safe Places for Early Care and Education" program to disseminate educational materials to tribal, state, and local governments about safe child care siting.
- EPA should partner with HHS to improve environmental health in federally funded child care programs that provide care for children who bear disproportionate exposure to environmental hazards.
- EPA should expand the scope and funding of the Office of Environmental Justice (OEJ) with initiatives specifically targeted to identify disparate environmental health risks in school and child care settings and seek to mitigate them. OEJ should work collaboratively with the EPA Office of Children's Health Protection in these efforts.

Surveillance of environmental conditions

- CHPAC recommends increased surveillance of environmental hazards in the nation's school and child care settings so that it is possible to accurately assess the condition of these facilities, quantify levels of exposure to environmental hazards, monitor progress towards environmental health goals, and assess racial, ethnic, and economic inequities in environmental exposures.

Hazard-Specific Priority Areas

Ambient and indoor air quality

- EPA should improve accessibility of the EPA Indoor Air Quality Tools for Schools Kit via increased training and outreach efforts, especially to child care programs and schools that have not been successfully reached.
- EPA should identify priority indoor air pollutants, including those with outdoor sources, quantify health risks from both indoor and outdoor sources, and develop appropriate guidance on interventions in school and child care settings.

- EPA should act expeditiously to support schools in finding proven technologies that are not only effective for airborne diseases but that will also lead to sustainable improvements in the reduction of the indoor air pollutants described above.

Climate change and disaster preparedness

- EPA should develop a major initiative to evaluate interventions in school and child care facilities that decrease children's exposure in communities with air pollution exposures from wildfires and other disasters.
    - EPA should support more research on the effectiveness of filtration devices and other engineering controls/mitigation measures in improving indoor air quality in school and child care facilities.
- EPA should update several web pages (details in letter).
- EPA should work closely with other agencies to promote existing, useful guidance (details in letter).

Lead safety in schools and child care settings

Lead in drinking water

- The CHPAC supports the GAO recommendations to EPA in their report, namely, to implement the EPA and HHS MOU to ensure that drinking water is safe from lead at HHS Office of Child Care-funded centers.
- The CHPAC further recommends that HHS and EPA expand these MOU actions to cover non-federally funded licensed child care facilities and schools.
- EPA's LCR should:
    - Lower the lead action level in water from 15 ppb to be as near to the maximum contaminant level goal of 0 as possible (e.g., AAP recommendation of 1 ppb) to best protect children's health in all settings.
    - Create a "remediation trigger level" for school and child care facilities that requires mitigation if exceeded, with waivers for states that have stricter levels.
    - Prioritize accelerated full LSL replacement in schools and child care facilities.
    - Mandate testing of all outlets used for direct consumption and meal preparation (cooking, reconstituting formula, etc.) in school and child care facilities.
    - Require water purveyors to provide clear communication to schools and child care providers about testing results and lead action levels.
    - Provide financial support for mitigation in licensed home-based child care facilities.
        - CHPAC recommends that EPA partner with other government agencies to provide home-based child care providers, particularly those in under-resourced communities, with financial support to mitigate elevated lead levels in drinking water, whether from plumbing fixtures or LSLs.
- CHPAC also concurs with slightly modified recommendations recently made by the EPA Science Advisory Board on the LCR proposed rule to:
    - Require consecutive testing rounds in perpetuity at all elementary and secondary schools and child care facilities.
    - Develop and disseminate guidance to help states create facility-specific sampling plans (e.g., frequency of sampling) for schools and child care.
    - Strengthen public education and risk communication requirements to ensure consistent interpretation, implementation, and enforcement.

- EPA should provide funding or assist in finding funding for school districts and child care programs that cannot afford drinking water mitigation measures that are needed until LSLs are fully replaced.

Other sources of lead in school and child care settings

- EPA should provide education and funding resources to support testing for lead paint in school and child care settings, as well as resources to fund remediation for child care providers and school districts that demonstrate the need for financial assistance.
- CHPAC recommends that EPA expand the RRP rule to apply to all areas of a school in which elementary school-aged children spend time.
- CHPAC agrees with the following OIG recommendations on the RRP rule most relevant to schools and child care:
  - Establish Lead RRP Rule enforcement objectives, goals, and measurable outcomes.
  - Establish management oversight controls to verify that RRP Rule program guidance is followed and expectations are being met.
- CHPAC recommends that EPA move in a timely manner to follow the court instructions and further reduce the lead dust standards, as well as lead-based paint and lead in soil standards. EPA should align inspection, risk assessment, and clearance standards.
- CHPAC recommends that the lead soil standard be updated to account for the CDC's most recent blood lead reference value and to consider the higher cumulative and aggregate exposures that children may face when attending school or child care in communities with CERCLA or RCRA cleanup sites.

Pesticide exposures in schools and child care settings

- EPA should update its Strategic Plan for Integrated Pest Management.
- EPA should provide increased and sustained educational outreach to administrators, staff, and facility managers of schools and child care programs (through its regional Schools Coordinators and Children's Environmental Health Coordinators, and their partners) as well as licensed pest management professionals using existing resources.
- EPA should reestablish and strengthen the Design for the Environment for Pesticides program to certify disinfectants less hazardous for human health.
- EPA should add safe disinfectant use to its existing IPM outreach and education efforts.
- EPA should continue to refine exposure models (e.g., the Volatilization Screening Tool) and child-specific methodology for bystander exposure and risk assessments.
- Until each pesticide can be fully reassessed for bystander risks as part of registration review, EPA should develop criteria to trigger label language on buffer zone restrictions on use of agricultural pesticides around school and child care facilities based on the pesticide's toxicity, application methods, and volatilization potential.
- EPA should create an air monitoring network to assess pesticide exposures in agricultural communities with a focus on school and child care sites.
- EPA should work with delegated state and tribal field programs to develop and disseminate information to schools and child care programs in agricultural communities about what to do if pesticide drift occurs and strategies to reduce agricultural pesticide exposures in these settings.

Activities to Enhance EPA Efforts Specific to Children's Environmental Health in School and Child Care Settings

Environmental health education in school and child care settings

Enhance existing education and outreach materials

- The committee recommends that EPA conduct an evaluation of the dissemination and distribution of existing EPA educational materials.
- To enhance efficiency, EPA should focus on increased and sustained promotion of educational materials and trainings developed by key parties and collaborators.
- EPA should continue to prioritize education and outreach for school and child care professionals serving lower-income communities and communities of color.
- EPA should develop environmental health education best practices for school and child care programs.

Expand K-12 student education

- EPA should continue to provide access to science-based educational materials for K-12 science, health, and civics educators, and their professional organizations to increase education of students in environmental health.
- EPA should continue to collaborate with partners such as Scholastic and Family, Career and Community Leaders of America to engage and educate middle and high school students in environmental health, and should also seek collaborations to develop educational materials geared to elementary students and plans to engage these younger learners.

Improve child care workforce education

- EPA should leverage and support accredited environmental health education and training efforts for child care professionals.

Develop culturally appropriate and multilingual education and outreach materials

- CHPAC recommends that the EPA:
    - Financially support the translation and cultural adaptation of educational materials
    - Partner with organizations that represent and serve diverse populations in the U.S., such as the Hispanic Federation, Migrant HeadStart, National Indian Child Care Association, and the NAACP to translate and culturally adapt EPA educational materials.
        - The CHPAC recommends that EPA include methods to collect feedback and other metrics for implementation evaluation.

Partnerships to support improvements in children's environments in schools and child care settings

Broaden relationships with more key parties and collaborators

- Throughout this letter, and within Attachment 2, CHPAC recommends additional key parties and collaborators whose missions and goals align with the protection of children's environmental health as well as partnerships that can be leveraged to effectively address the priority areas and additional activities.

Improve coordination of efforts

- EPA should enhance coordination between the EPA programs.

- EPA should increase coordination between EPA and federal, tribal, state, territorial, and local government partners to leverage limited resources and avoid duplication or conflicting efforts.

Advancing Research on School and Child Care Environments and Children's Health

- EPA alone, or in partnership with NIEHS, should fund the development and operation of a nationwide research program focusing on school and child care settings to increase understanding of children's potential exposures to environmental hazards and the associated health impacts.
- EPA should develop an external-facing clearinghouse portal for findings from EPA-funded efforts, along with related outside research efforts.
- EPA should take a research-to-action approach. Research findings should be used to inform actions such as guidance, rulemaking, and partnerships with agencies that can fund schools to make needed changes.