



SAFER SCHOOLS AND CAMPUSES **BEST PRACTICES CLEARINGHOUSE**

Lessons from the Field - Indoor Air Quality and Ventilation in America's K-12 Schools: Guidance and Strategies for Improved Results

Wednesday, June 30, 2021 | 3:00 - 4:15 PM ET

Transcript

Greta Colombi:

Good afternoon and welcome everyone to today's Lessons from the Field webinar, indoor air quality and ventilation and America's K-12 schools, guidance and strategies for improved results. On behalf of the US Department of Education we are pleased to have you with us today. In fact over 1100 people register for today's webinar, so we expect additional people will be joining us as we kick off today. Thanks to all of you who have already joined us online. My name is Greta Colombi, I'm the Deputy Director for the National Center on Safe Supportive Learning Environments or NCSSE. And I will be moderating today's webinar.

NCSSE is funded by the Office of Safe and Supportive Schools within the Office of Elementary and Secondary Education. On the next slide, want to share a little bit about NCSSE. Basically, you can go to our website to access a range of resources and learn more about us. We focus on school climate and issues for conditions for learning and we encourage you to visit our website to learn more. To give you a sense of what the website looks like and what it includes here we share an image of our homepage on the left, along with some of our most popular products on the right. Please note all materials that you see today, including the slides, referenced resources, and archived version of the recording will be available on the event web page within this website. Some items including the slides and BIOS have already been posted. Please also note you can access previous Lessons from the Field sessions by visiting the webinar series webpage, which is also listed here.

So before introducing today's first speaker, we'd like to ask you three questions via a poll to get a better sense of who has joined us today and to gain a sense of how well you think you're doing to address this very important topic. So in a

moment, a window will appear on your screen, and it will include those three questions. As you answer your questions, you can use the scroll bar on your right to move down so that you can answer each. The first question is, do you work in administration, building and grounds, capital projects, facilities and maintenance, safety and security or other? And we welcome you to specify any other areas within our chat. The second question is, do you represent a school, working from a school, a local education agency, a state education agency, from a community? Are you a contractor? Or other. And again, we encourage you to specify that in the chat. And when you specify that in the chat, it couldn't be good for you to do number one, and then have your response if it's about number one, and then put a number two if you're speaking about number two.

And then the third question is, how well do you feel your indoor air quality program is functioning? And we give a range of responses from excellent to poor and not applicable for those who are not actively responsible for a program. We're just going to give a couple of moments for you to be able to respond. And when we start seeing the numbers slow down, we will close the poll and I'll be able to share the results with you. So far, it looks like most of those who are on with us today work in administration or in other. And so far, it's looking like we have a real mix of folks from schools, LEA's, SEA's and other. And yeah, okay. And so we have closed it for now. And we encourage you if you haven't already, put your responses in the chat, if you chose other encourage you to continue answering those in.

So again, as I've mentioned, the largest proportion of you work in administration, that's 33%. But that still means that we have a nice mix of folks representing also facilities and maintenance, safety and security. And I'm seeing other folks who are architects, and other building engineers. And in terms of where people are coming from, most of you are coming from a school, but we have a large number of folks also from state education agencies, as well as the other. And we're seeing a variety of other kinds of categories in our chat and welcome you to just take a look at those.

And then finally, as I had mentioned, there are a lot of folks who say that the third question is not applicable, that's the largest proportion. But for those who did say it was applicable, most of you feel like your indoor air quality program is functioning well at about average. So thank you so much for sharing who you are and how you're feeling about your program. We are now ready to just talk about what we're going to be doing for the webinar today. So after finishing up this introduction, today, we will be kicking off the event with federal updates on key information from the US Department of Education, the Centers for Disease Control and Prevention and the Environmental Protection Agency. After some quick introductions to three practitioners, we will then have a panel discussion digging into common questions and concerns related to indoor air quality and ventilation as we continue to contend with the COVID 19 pandemic.

With that, I would like to introduce you to our first speaker, Ruth Ryder. She is the Deputy Assistant Secretary for the Office of Elementary and Secondary

Education at the US Department of Education. As Ruth introduces the other speakers, please know that the BIOS for all speakers are archived on the event webpage listed on this slide and shared it in the chat box. Ruth.

Ruth Ryder:

Thank you Greta, and welcome to everyone who is joining us today. On behalf of the entire Department of Education including Secretary Cardona, I want to thank you for joining us on this important topic. All of us at the department are keenly aware of the challenges building maintenance staff, educators, parents, caretakers and students have faced throughout the COVID 19 pandemic. Well, our resilience has been tested, critical lessons have been learned that can inform practice as we return to in person learning in the fall. Part of our effort at the department to showcase effective practices is the establishment of Best Practices Clearinghouse whose web address is posted in the chat box for you to access.

Through the Clearinghouse, the department will continue to provide resources for community, schools, educators and families as we work together to reopen our schools for in person learning and support the needs of students, particularly those who have been most greatly impacted by the pandemic. As an extension of the Clearinghouse, this Lessons from the Field webinar series has been part of our effort to highlight the effective tools, techniques and strategies employed by everyday practitioners to address the challenges of the pandemic and strengthen the resilience of the education system. Today's session is another opportunity for us to continue that journey by exploring resources and strategies for maintaining the indoor air quality of school facilities. As states and districts continue to plan for in person instruction in the fall, the department recognizes that schools are engaging in this work from a variety of starting points.

Some schools have brand new facilities and ventilation systems. Others have systems that are decades old. But regardless of a school's existing capacity as it stands today, there are manageable solutions to these concerns and clear steps that can be taken to improve safety for in person instruction in both the short and long term. We're excited to share some of those practices with you today. And to help us explore the topic we're joined today by several speakers with significant experience in this area. Today's lineup of presenters includes Diane Rentner, education and program specialist in the Department's Office of State and Grantee Relations. During the panel portion of the event, Diane will be joined by Jane Hess with the Office of the General Counsel at the department.

We will also hear from Kenneth Mead Senior Research Engineer at the Centers for Disease Control and Prevention. And Tracy Enger indoor air quality for schools program leader at the Environmental Protection Agency. Following their brief presentations, we will conduct a panel discussion which will include three field practitioners with deep experience to share regarding indoor air quality, and ventilation. These speakers are Fred Remelius, Director of Operations for the Upper Merion Area School District in King of Prussia, Pennsylvania. Mark Cocco, safety manager for the Martin County School District in Stuart, Florida.

And Ricky Martinez, Assistant Director of facilities services for the Salt Lake City School District in Salt Lake City, Utah.

We have a great presentation for you today and let's kick it off with Diane Rentner from the Department of Education. Diane.

Diane Rentner:

Thanks Ruth. My main role in the Department of Education is to act as a policy lead on the three K-12 COVID relief programs, the ESSER program, the GEER program, and the EANS program. But today, I am hoping to share with you some information that will help states and school districts undertaking projects to improve indoor air quality and ventilation at school facilities using a ESSER funds. So let's get started.

By way of background, I just want to make sure we're all on the same page when we're talking about ESSER, we mean all the different iterations of ESSER. You may or may not know this, but the first ESSER program was authorized under the CARES Act, then there was additional funding provided under the CRRSA Act and then was recently under ARP ESSER more funds were given. And the programs all have a little bit different uses of funds in statute but, the department has determined that all of these funds apply across all three programs. So when we say ESSER, and you can use extra funds for this or that we mean, all ESSER funds. And I also want to encourage you too to look at the use of funds FAQ's that the Department issued in late May. There's a ton of information, including some examples on how to safely reopen schools, and some of the guidelines that you should be aware of.

There's a link I believe in chat to those FAQs. And I also wanted to one thing that's included in those FAQs, is that GEER funds can be used for the same purposes as the ESSER funds unless the governor has specified that funds be used for a specific purpose. So, if your school system got a gear grant and the governor hasn't placed any requirements around it, you can also use gear funds for the same activities. So with regard to ventilation and indoor air quality, the statute is pretty clear that ESSER funds can be used for these purposes. In particular, there's two uses of funds under the statute. One says that, the ESSER funds can be used for school facility repairs and improvements to enable schools to reduce the risk of virus transmission exposure to environmental health hazards and to support student health needs.

And then there's a second one that is even more direct. It allows ESSER funds to be used for inspection, testing, maintenance, repair, replacement and upgrade projects to improve the indoor air quality in school facilities, including mechanical and non-mechanical, heating, ventilation and air conditioning systems, filtering, purification and other air cleaning, fans, control systems and window and door repair and replacement. So clearly, using ESSER funds to improve indoor air quality is an allowable use of funds. But before a school system, or a state considers requests to use these funds to do any indoor air quality improvements, we urge everybody to review questions V six and V seven in the ESSER and GEER FAQ document that I referenced a few minutes ago.

These questions in particular include some of the federal requirements that apply when using federal education funds for construction, renovation, repairs. And include the cost principles under the uniform guidance, prior approval requirements, which I'm going to spend a lot of time on today, because there's a lot of confusion around that and that's an important step in the process. Those two FAQs also talked about the Davis Bacon prevailing wage requirements and finally, the Department of Education's own regulations around construction. So those are some very important questions that you should be reviewing and be aware of as you move forward.

So knowing that school systems wanted to move quickly on making these repairs, and improvements to ventilation systems, and also understanding that there is some confusion about this because not everybody's in the same place and familiar with using federal funds for these types of activities. The department share the information that's contained in the next several slides during the June 17 2021 office hour sessions that we held with grantees, in order to help add some clarity to this process. I say this so that you know that this information is not in the use of funds FAQs, but it's instead, here in the slides and is also included in the slides that are on the department's, I believe our ESSER website under the office hours tab. So these slides and you can also visit that website to get this information if you need to reference it.

So what we've tried to do in these slides is address some general questions that we've received from states and provide those answers. So, one of the first questions we got is, does the department determine a process the states must use for granting prior approval to their LEAs for capital expenditures? And the short answer is, no. The department does not determine the process for granting prior approval for capital expenditures such as HVAC projects. SEAs can establish their own process that ensures that the expenditures meet the applicable, statutory and regulatory requirements. So, in establishing these processes, we again realize that states are in different places. So what we're telling states is that, you can use or modify a current procedure that you use for prior approval for other federal programs. You could also consider hiring or finding a building expert who knows the applicable state, local and federal requirements, who could assist with review of these prior approval requests. And states could also consult with other SEAs who may have facility programs and more experience with this to learn from their experiences.

Another step that SEAs could take to speed along and make this process a little bit more smoothly, is to establish a checklist of items that LEAs would need to complete when they're submitting their prior approval requests. And these checklists could include information such as, the name of the school facility where the repair or the construction is going to take place. The source and amounts of funds that are available for the project, some information on the need for the funds to do the project, how it's related to COVID-19 cost estimates, and other details that would support reasonableness and allowability of expenditures. So this slide has a lot more information that I shared. So again, this is one of those that maybe you should return to as you move forward in

developing fire pool processes or as a school district determining what you might need to submit to your state.

One quick note, there seem to be some confusion too around the department's construction regulations. And so we just want to note that some HVAC upgrades may constitute minor remodeling, and therefore would not be subject to the department's applicable construction regulations. So that might be good news, but then you need to delve into that a little bit deeper to see if your specific project meets that definition. Another aspect to prior approval that we've received some questions about is the bidding process. And we've been asked is SEA prior approval required for LEA bidding is advertised? And the answer is, no. SEA prior approval is not required before school district begins the bidding process. Therefore, An LEA ESSER project that an SEA is approving, and has been initiated or is already underway should not have to be rebid. So hopefully that will help move things along if LEA started this process, earlier now you need to get prior approval from the state.

And related to this, we've been asked about the prior approval timeline. When does prior approval have to occur? And the answer is it can come at any point in the project timeline up until the point that reimbursement using ESSER funds occurs. And we know that SEAs have flexibility in determining their prior approval processes. But ideally, we encourage that the SEA review process should be completed as soon as possible on the project's timeline. So switching topics now a little bit away from prior approval, we were also asked about the applicability of the National Environmental Policy Act to construction projects undertaken by LEAs using ESSER funds. The short answer is that NEPA does not apply to LEA construction projects. It only applies to construction projects that are directly operated and managed by the US Department of Education.

But having said that, the department encourages SEAs to require some type of environmental assessment for LEA projects that involve breaking new ground, such as expanding the size of an existing facility or replacing it. These assessments may already be required by some state laws, and it's a prudent step that would help to assess any potential environmental and ramifications of expanding or replacing school facilities and ensure compliance with any applicable federal state or local environmental requirements. So finally, I hope that this brief presentation has provided you some information that will help you with moving forward with these projects. And I urge you again to review the FAQ document and the information shared in the slides. And if after looking at all of that you still have questions, please send an email to your state's mailbox and we will do our best to answer it to help you information you need to move forward. Thanks.

Ruth Ryder:

Thanks, Diane. That was a lot of information. And I know that Daniel has been noting in the chat where you can get the slides if you have not downloaded them yet. I also want to note that I've been watching the chat box and there have been questions coming in and many of them are very specific questions. And we tend to like to have a little conversation before we answer those kinds

of questions, because a lot of times there are nuances to them. So please do take advantage of the OESC mailbox that Diane has provided here and we will get back to you. And also the office hours that Diane mentioned are also a really helpful venue for getting answers to your questions. So thanks so much, Diane. We're going to turn now to our presenter from CDC, Dr. Kenneth Mead, who's going to share some details on the key role of building ventilation and maintaining quality. turning it over to you, Ken.

Kenneth Mead:

Thank you Ruth. So as discussed, I'm going to discuss CDC's guidance for ventilation and buildings. This is normally about a 45 minute conversation and I'm going to try to do it today in about eight to 10 minutes. So, going to be a very high level detail, there'll be several references and links for those of you who wish to dive in deeper. And of course, my contact information was on the first slide, and the CDC info web addresses on my last slide so you can follow up with us if you like for further consultation. The other thing I need to say is that my words today are my own, CDC is not going to be using me for any new policy announcements today. So if I accidentally say something that complex what's on the CDC website, I've made a mistake and please forgive me.

But jumping forward to May of this year, the CDC released a science brief on transmission that was trying to clarify some vagueness that was out there in the world as far as how COVID was being transmitted. And then that briefing, they indicated that the principal mode by which people are infected with SARS-CoV-2, the virus that causes COVID, is through exposure to respiratory fluids carrying infectious virus. And they said that exposure occurs in one of three or in three principal ways. Either inhalation of very fine respiratory droplets in aerosol particles, deposition of respiratory droplets and particles on exposed mucous membranes, or touching mucous membranes with your hands that may have been soiled either directly by touching a virus containing respiratory fluids or indirectly by touching surfaces that were contaminated.

The risk of SARS-CoV-2 infection varies according to the amount of virus to which a person is exposed. It's important concept the dose makes a big difference. Transmission of SARS-CoV-2 from inhalation of virus in the air farther than six feet from infectious source can occur. Now, it's important not to get distracted by terminology. And this was part of the reasons I think, for the reason for the science brief release needed to come out. Different professions and in that I'm talking about clinicians, aerosol scientists, engineers, industrial hygienists, microbiologist, and more, have all been trying to step up and do their part in regards to responding to the pandemic. However, we don't all use the same terminology. And so what I would ask today is to ask you to focus not on the name, but just think that if it's small enough, if whatever is being discussed, is small enough to float in the air, then recognize that ventilation interventions can help prevent its distribution, can lower that dose that a person's exposed to, and thus reduce the risk of exposure.

The chart on the right hand side of the screen shows a variety of different size particles, and the time it takes for them to settle. And so the one I like to point

out here is if we look at the 10 micron particle, which is twice the size of what the critical world considers for an airborne, a traditional airborne exposure. Well, that 10 micron particle, it still takes over eight minutes for that particle to settle from our breathing heights of five feet down to the ground. So if you have ventilation in the room, which usually you will have some form, and that's going to be in the neighborhood of 20 to 25 to 30 feet per minute, then during that 8.2 minutes, you can see that, that particle is going to travel some distance during that time period, and likely will travel farther than six feet if it's allowed to.

On the next slide, you'll see two references here. These are the two key references the CDC guidance that I'm speaking from, and they're there for your information, I believe they're also being posted in the chat box. Now, probably everybody on this call's heard the phrase, CDC recommends a layered approach to exposure to SARS-CoV-2. And the graphic you see on the screen now is not a CDC graphic. However, I liked it because in my mind anyway help to exemplify that layered approach concept that Swiss cheese model, where the virus particles have to take a tortured path in order to get from one side to the other. And the more difficult the path we can get by inserting more interventions into that process, the more protective it's going to be for the person on the right hand side.

Now, the interventions are not listed in any priority or order that's there. But I'd like to propose that we can even take just the ventilation concept alone and apply our own Swiss cheese model. So there's multiple ventilation options, some of them are short term options that we can do immediately, and others are more long term options that might require system redesigns, or system expansions and so forth. So the more options even within ventilation that we can insert into our Swiss cheese model, the more protective we're going to be.

One of the key concepts has to deal with the issue of SARS-CoV-2 transmission, it happens more readily indoors than it does outdoors. Outdoors, even a light breeze on a per hour wind and one mile per hour is the same as 88 feet per minute. That wind will rapidly reduce airborne contaminant concentration. Now I happen to be speaking to you from Kansas today. And it's a very rare day in Kansas that we have a wind that's one mile per hour or less. So normally, I can tell you that Mother Nature is going to do a fantastic job of diluting and doing so rapidly contaminant from an infectious source. Indoors then, what do we need to do? We need to come up with protective inhalation practices and interventions that acts similarly to reduce the airborne concentrations of virus and reduce the overall viral dose to occupants.

But to do that, we need to recognize a certain benchmark and that reoccupying a building during the pandemic, and as we are moving forward. In most cases, re-occupancy should not require a new building ventilation systems. In some cases, it may but in most cases, if you had buildings, providing healthy code compliant indoor air quality prior to the pandemic, and even not perfectly good indoor air quality but approximate good indoor air quality, then they can be

improved for pandemic occupancy using less costly interventions. So what are some of the interventions or steps for steps beyond code compliant minimums? We can do ventilation system upgrades or improvements that can increase the delivery of clean air and dilute potential contaminants. Remember, that's our goal is dilution.

Consult experienced heating ventilation air conditioning professionals when you need to, when the task being consulted are outside of your in house expertise. CDC guidance, on the webpage as I mentioned earlier, presents a list of ventilation interventions that we call tools in the mitigation toolbox. And those can help reduce the concentration of viral particles in the air. Each tool can contribute towards a reduction in risk, and then implementing multiple tools like that multiple slices of Swiss cheese at the same time, is consistent with the CDC's layered approach and will increase overall effectiveness. Using these tools can reduce the risk of exposure to the virus and the spread of disease. But it's important to remember that it's not going to eliminate the risk completely. Tools can be universally applied across indoor environments. But choosing which tool applies to which environment can be challenging.

You might choose a different tool, for instance, in a gymnasium, or in a lunchroom, then you're going to use in a nurse's office. The specific combination of tools used in any point in time can change. For example, the tool you use during spring and fall when temporary weather it might be around, could be very different than what you might use if it's minus 15 degrees outdoors. The building owner or operator with expert consultation as needed should identify which exposure reduction tools are appropriate for each building throughout the year. In addition to buildings, the same ventilation improvement concepts can be applied to vehicles, including public transportation, or even school buses. At the end of our ventilation guidance on the ventilation and building page, we have a list of ventilation FAQs, that are mostly instructive comments intended to help people understand how to implement those recommendations.

One particular FAQ is highlighted on our next slide, which talks about many new air disinfection devices being marketed for their ability to inactivate SARS. Now we recognize that people are being hit with a lot of options in terms of what they should use and they need to know what works and what doesn't work. We provide some guides there, but the most important thing I could say there is that if somebody is trying to sell you a product, it's important that that product was tested, both for efficacy on its ability to inactivate virus as well as safety under conditions that are consistent with the intended use. If you're going to put it in your multi or your 1000 cubic feet gymnasium, then the test results need to be more rigorous than something that occurred within a small one by one foot box. And so we would ask that, in addition, you also consider that the protective guidance has to apply to all occupants that are going to enter that zone.

So occupational health criteria for workers is not necessarily applicable. What's more important is you consider occupancy for people who may have health

conditions, for instance, that might make them more susceptible to the technology being utilized. And so with that, I conclude my presentation and you'll again, see the information for contacting CDC info there on the slide. Thank you.

Ruth Ryder: Thank you Ken and thank you for all the helpful information, the links and the FAQs. That is a lot of really good information. We're going to turn now to our final federal agencies speaker before kicking off our panel discussion. Tracy Washington Enger from the EPA, Tracy has provided significant leadership to preparation for today's event. And we really appreciate the great partnership that we have with Tracy and EPA. Tracy.

Tracy Enger: Ruth, thank you so much, and thank you for the opportunity to be here today and to share our resources with everyone. So we at EPA have been working collaboratively with our colleagues at ED to provide the technical support that school districts and state and local education agencies may need to most effectively both acquire and use ARP funds to make both immediate and lasting IAQ improvements to school facilities. So during this webinar, I will have the opportunity to introduce you to the EPA resources, which are cited specifically in the Department of ED's use of funding guidance, and how these resources can be used to in coordination with CDC's school reopening guidance to really put lasting change in place in your schools.

So the CDC guidance focuses, as you know, on a wide range of issues targeted at the pandemic. And as Ken referenced, the guidance continues to change and to evolve with the science. So initially, as many of us know, the majority of the facility's guidance was directed at things like surface cleaning and disinfection. The new CDC school reopening guidance has been expanded to include ventilation. And this is great because it recognizes the value of indoor air quality and positions school districts and LEAs and SEAs to advocate for funding to implement effective sustainable ventilation and IAQ practices. So the guidance hinges on these three sort of overarching approaches. So it's increasing ventilation rates, enhanced filtration, and supplemental ventilation with affordable air cleaners. However, the devil's in the details, right? So how school districts take action to implement these approaches will vary widely depending on the particular conditions of each school, and in some cases, each classroom.

So I wish I could give you a magic pill, I wish there was a one size fits all solution but there's not, there's just not. But, by employing these proven strategies strategically, every school district can immediately take crucial steps to reopen safely, while putting long term plans in place to ensure schools remain open safely and provide healthy learning environments and teaching environments for the students and staff. So in the CDC model and what Ken was referring to that Swiss cheese layered approach, I'm going to be focusing again really primarily on that slice that applies to ventilation and HVAC systems, particularly for indoor air quality.

So the EPA IAQ tools for schools resources are designed to help folks be able to operationalize the various guidance that they're receiving from many sources to start effectively taking action right now. And the thing that's really important, one of the things that Ken referenced about, addressing HVAC systems and addressing ventilation is if you had a fully operational system to begin with, or if you're already providing something near the recommended standards of ventilation, then you likely don't have to make a lot of changes. What we know about schools and school districts, however, is that many of them based on GAO reports and reports from other educational organizations is that, we were starting behind the ball with the [inaudible 00:35:45] maintenance when it comes to indoor air quality. Even given that, however, school districts we know using these tools can quickly start to identify and prioritize a comprehensive indoor air quality management plan for reopening using the EPA IAQ tools for schools kit, and the accompanying resources and materials, including the indoor air quality tools for schools preventive maintenance guidance, the framework for effective school IAQ management, and the seven technical solutions.

So, these materials really are there to help provide kind of a primer that you can use to tailor items such as our ventilation checklist and other IAQ tools for schools materials to meet the specific needs of your schools. And then you can use the resources and materials in the IAQ tool for schools coordinators guide, and the IAQ backgrounder to explore the basics of school ventilation systems, and prepare yourself and train your staff to take action to reduce aerosol exposures. So all of the materials are there. The framework for effective IAQ management demonstrates how school districts can implement the kit using six key drivers along with successful strategies. So when you're developing, particularly your COVID response plan, or immediately reopening schools, a lot of schools will start by employing strategies that are under the assess driver. And in that way, you can conduct an HVAC assessment to evaluate the conditions of your existing systems and equipment.

And what that will do, that assessment will provide you with the data and information you need to have to use the plan and X drivers to prioritize and address critical issues. Like ventilation upgrades, it'll help you know whether or not you need to replace or repair or how you can use operable windows or not, it will help with the details of those decisions. Same with filter selection, what MERV rating will my system handle? Can I actually go up to a MERV 13? Or do I need something that is a lower MERV rating, but it's going to do work more effectively with my HVAC system. And it'll also help you figure out things like, what type, how many and where to place supplemental air cleaners, so the specifics of actually operationalizing that larger guidance.

In addition to the framework, the action kit offers seven technical solutions. So these are the major issues that the action kit and the framework can be used to address in order to achieve reliable, clean, efficient and healthy indoor environments and schools. So right now, all the focus is on healthy age back solutions and it is that that is a really important solution. But the success of those HVAC issues is interdependent on managing all of the other IAQ factors

like, cleaning and maintenance and moisture control, and energy efficiency as well. So you can think about these seven technical solutions, kind of like the layered risk reduction approach to indoor quality, right? We need to have all of these things working together to give our HVAC systems a fighting chance.

So we also know that IAQ management is not a one and done solution. This is not something that we're going to focus on right now for the pandemic, and there be able to walk away from. For long term planning and sustained success, preventive maintenance is essential. So the indoor air quality tools for schools preventive maintenance guidance, provides customizable Excel spreadsheet checklists for all of the technical solutions, including HVAC, source control, cleaning and maintenance, along with inventory lists and a model plan to help schools operationalize the recommended activities that are ongoing throughout the academic year and will be gone going long beyond the pandemic. So our response to EPA to the pandemic was swift and thorough. EPA has produced guidance and resources to help respond to COVID-19 including a frequently asked questions web page, and is being constantly updated. So every time you go back there we are following the science and putting in new information.

As well as a page that is dedicated specifically to indoor air quality and Coronavirus. EPA is also released a list list and a registered antimicrobial products to be used against COVID-19 along with information about how to check these products against registration numbers. And although pesticide products may not carry the safer choice label, EPA offers the design for the environment labeled to use on antimicrobial products and many of the products that you will see are both DFE certified, as well as on EPA's list and for COVID use. So a lot of information that I've provided here today, but I want you to know that EPA also offers a free, ongoing indoor air quality professional webinar training series. All of those webinars are available online and on demand for your convenience.

The IAQ masterclass series is designed to provide foundational, technical knowledge and to improve a sustained IAQ management programs. We also have our Knowledge to Action Professional webinar series that builds on the masterclass. But also in 2020, we added a webinar series that is focused on creating healthy learning environments through virus control. So specifically aimed at addressing corporate related issues. All of our webinars are free and available online to view at your convenience. After completing each one, and the evaluation for each one, you can immediately receive your certificate of completion.

So you can find all of our resources and more at our website. So be assured that you have all of the IAQ tools, resources and support you need to start taking action right now to reopen our schools quickly, safely and responsibly and to keep them open. So please, as you have questions or in anyway that we can support your efforts, we certainly want to do that, so reach out to me at any time. And thanks again to our colleagues at Department of Ed [inaudible 00:42:34] for providing this opportunity.

Ruth Ryder: Thank you so much, Tracy really appreciate all this great information. I love a good checklists. And I liked the six key drivers and the seven technical solutions and those are very helpful resources for the field so thank you so much. We're going to turn now to our panelists. And we're going to hear a little bit from each one of our panelists, and then we will move to a panel discussion. So we are going to start with Fred Remelius. Fred, would you mind talking a few minutes about your efforts in King of Prussia?

Fred Remelius: This slide is a picture of me sort of at the beginning of the pandemic, when we were just all really freaking out about what was going on and so forth. And I just want to absolutely thank the CDC and the US EPA, for all of their guidance that helped us figure out how to move forward. It wasn't easy, but for as a school administrator, who's responsible for facilities, their guidance really helped give me the tools that I needed. And it also helped shield me as an individual from all the various attacks and opinions that people have about how it should be done. So I really appreciate all their help, and because of them, we're ready to move forward. And this is the one slide that was used earlier, at one of the presentations I did with the EPA, and I just absolutely love it.

Because what it really does is it drives home, that right at the center of indoor air quality, and energy efficiency is having a effective preventive maintenance program, and a lot of school districts don't. And the couple of reasons to do that is that, I'm just remind you that, COVID isn't gone yet, the flu is definitely coming back and asthma is going to be with us here for ever. And asthma affects one in 10 students and staff. And so that's a real important thing to keep in mind. And then the return on investment of a real preventive maintenance program is huge. There's nothing more that your financial manager or your business administrator can do that will get him that kind of return on investment. And just a basic preventive maintenance program will re-yield some really huge energy cost savings, and that you can then turn, turn around and use to upgrade your buildings and keep them going longer.

Ruth Ryder: Thank you so much, Fred. We always really appreciate hearing from the people who are on the ground, or in this case in the buildings, doing the really important work. Let's turn now to Mark Cocco from Martin County School District in Florida, Mark.

Mark Cocco: Good afternoon everybody and I appreciate everybody being on here for this session. I want to talk about, I've been doing indoor air quality for 20 years, I've been in the field for 35 years. So one of the things that I learned really quickly is that indoor air quality is not just a job for one person. When I came to the school district, there was nobody that understood indoor air quality very well and trying to go at it alone was just not an option. I tried it didn't work very well, so I endeavored to get the support from the school board, the superintendent, principals, staff, and all departments. And we even let the public know that what we were attempting to do to improve the indoor air quality throughout our schools. Because when we got here we had a lot of systems that are old, we still have systems that are old. But we had to focus a lot on funding, what our

policies were going to be, how we were going to dress it, what those procedures are, and what the rules are. So we had to get everybody involved and start from scratch.

And the technical part of it is, we need to get everybody involved from all the departments, from maintenance from facilities, safety, risk management, the teachers, the schools and tell them what we're going to do. So we're trying to keep all the stakeholders informed, preventative measures. We have do and don't list that we distribute to the schools on what they can and can't have in their schools, like ozone generators, those kind of things. And then we all focused on the corrective actions like when we would get a complaint, we would go through there now, we wouldn't initially start everybody showing up. But I would take some general information on when we got a complaint, how we would... What issues that people were having.

So when we did that, I would enlist the help of the maintenance or people that would be involved in that situation, as we came to know more and more about it. So each step and each phase of the IAQ program followed the indoor air tools for schools. And we wanted to make sure that we were doing what we could on every step of the way and keeping everybody informed. Because the first time one of these issues gets out into the public, and in the newspaper and on the media, you've already lost the battle and you're trying to make up for amends that the people are going to have an issue with. So remember, the focus is on the children in the school. And what we want to do is make it the safest, cleanest environment we possibly can for the schools.

Ruth Ryder: Thank you Mark. I really appreciate the approach of making sure that everyone is involved. That is so important. Now we're going to turn to our third panelist, Ricky Martinez, Assistant Director of facilities services in Salt Lake City, Ricky.

Ricky Martinez: Thank you, Ruth. And yes, I third that on thank you to the CDC and the EPA for your guidance and involving us in this webinar to help other districts, other departments and each other too, so. This slide is very, I love this picture. This is our whole facility service team, custodians, HVAC, maintenance, painters, plumbers, everyone. This is our first event we had after the pandemic because we were all vaccinated, and we're able to have an actual event. So we took a day to appreciate everyone on all the hard work they did through this pandemic, because like Mark said, it takes a team, not one department, not one person, not one group could do any indoor air quality successful and air quality procedures or policies.

So we did this, this picture right here is, we did a team building exercise where we had 31 bikes donated to us. And we had them divide up in teams put them together and they're going to, the bikes will be donated to underprivileged kids that can't afford bikes. But as we go together, it was tough. We stuck with our guns, with our cleaning and disinfecting policies. Because we are already, I feel ahead of the game, with what chemicals and procedures we had, we didn't have to make too many adjustments on how we clean, because we already were in

that prepare for infection control through the flu season like Fred said that, "You're cleaning for the flu and cold the same way you're going to clean for COVID." In this thing, we just upped the frequency, we just tweaked it a bit instead of doing it, touch points and surfaces twice a day, we upped it to three or four times a day.

So that one was very easy to adjust to. With our ventilation, we had to make some adjustments with filters like Tracy was saying earlier, moving up to MERV 13, could our HVAC systems handle the MERV 13? Which, yes, we tried three schools, we slowly rolled it out and we're able to know that most of our schools can take MERV 13 so we adjust to the MERV 13 filters. We increased our air flows, we set our setpoint so, our dampers can stay up longer, so you get some fresh air in there. And Mark your perfect segue for this is communications. We got ahead of everything, and instead of waiting for people to ask us what we were doing, we got ahead and said, "This is what we are doing. We are putting in MERV 13, we have this type of cleaner, we are doing this many times a day." We felt like, let's get ahead of this, so it doesn't meet the press on bad news. So that's what we did here in Salt Lake and we felt like it was successful.

And because we didn't start our school right off the bat, we did a online learning, we didn't really start until January. That allowed us time to make these adjustments, and to get the communication out there.

Ruth Ryder:

Thank you, Ricky and Mark, and, Fred, appreciate your really practical information. We're going to turn now to the panel discussion. And if I could invite everyone to join me on the screen.

So I just want to acknowledge that this is an area where we have been getting a number of questions from the beginning of our webinar series. So we are excited to be able to have this conversation and we have been collecting the questions, and we have some of them that we're going to be posing to our panelists. So the first question I'm going to ask, Fred if you would start, what are the most important IAQ practices, procedures and policies you established in your district that allowed you to pivot and respond to COVID effectively? What are some of the IAQ protocols you will be sustaining post pandemic?

Fred Remelius:

On my introductory slide, Upper Merion has always had a preventive maintenance program in place. And when COVID came around, we really doubled down on making sure that we were doing preventative maintenance. Because at the end of the day, it's all about the air that you breathe, it's all about the making sure the equipment works, right and so forth. And preventive maintenance, clean air filters, if you clean air, it's just that simple. Preventive maintenance, make sure that your outside air dampers open up when they're supposed to, so that you're getting the ventilation that you need. Basic PM, it saves you money in electricity, so that you can in turn, roll that around and use it into your budget to do things.

And historically, since the 1960s, we've known that PM will save you somewhere in your work 12 to 18%, in your utility costs. And for a large school district, that's a huge chunk of change that really matters. And the return on investment, there was a study done that showed that preventive maintenance for a good system, the return on investment is over 500% and there is no program your, financial manager or anybody else can do that's not some sort of bizarre scheme that will get you that kind of return on your investment. Some of my equipment, like a chiller is worth a million dollars a pop. And so if you're not maintaining that stuff, you're going to pay for it down the road, and that will take money away from other things.

And preventive maintenance in the grand scheme of things is cheap. To go through and do a survey of a district we know for a fact it's about five cents a square foot. To inventory all of the equipment, do the preventive, write the procedures and download it into a software system. And we also know that, mechanics in the grand scheme of things are really cheap, they're hard to find, but they're really cheap. And you're looking at, 20 to 40 cents a square foot. But stop and think what a new building cost. A new building is 200 to \$300 a square foot. And so the preventive maintenance is so cheap, and the benefits and the return on that investment are so high that really, if I were driving all of this, I'd be taking the extra money and that's where I would start and then go do the upgrades in the renovations.

Ruth Ryder:

Thank you, Fred. Ricky you want to jump in on this?

Ricky Martinez:

Yeah. I'll go on a different I mean, that's great, Fred. Ours was, our infection control, training and preparedness, like I said in other slide. this is what I hang my hat on and why we were successful with COVID. When we first started, we were already trained for the flu season, we already had our guys prepared. And just so happens, the chemicals we were using was on the EPN end list to fight COVID. It was a safer green sealed, what it was is hydrogen peroxide, and hypochlorous acid. So we are already in that process and like I said, all we had to do is tweak it and do it more frequent. The later thing on that is, our emergency preparedness. Here in Utah, we're preparing for the big earthquake, you know that they keep telling us that, we're going to get the big one. So here in our district, we had a emergency preparedness, sea can our trailer that we stored all of our equipment for when that happens.

Well, in that we had a stockpile and 95 masks. So we were ahead of the game, and even preparing our guys with the PPE. And so very easy to adjust to, we already had the trust in with our teachers, our administrators, our superintendent, that we were doing the job. So they didn't make the plan for us, because if you don't have a trusted plan, or a good plan in place, someone will make that plan for you. And that plan may not be the one you like. So have a great plan, make sure you're implementing it, make sure you're training your guys not just on how to do it physically, but how they communicate it. You want to prepare them to educate the educators, pretty much. You're going to educate the teachers on what you're using, you're going to educate the

administrators or what you're using. You're going to educate community on what you're doing. And if your staff does not know how to communicate that, then they lose trust, they lose credibility, and then you're going to have to put out some fires.

So that's the one thing we really focused on is education. It's huge in the indoor air quality thing. Preventive maintenance, yes, what we're using, yes, but communicating is so huge, and building positive relationships with stakeholders, and building that trust. And that's the one thing that we learned from this. And also we learned that moving forward is, hey, you don't have to buff halls as much anymore, and that's a good indoor air quality thing. Because we were focusing more on disinfecting and sanitizing and less on buffing and our halls still look great. So what we learn from this is, hey, moving forward, let's not buffer halls that much and let's just focus on the other things. Because what we did is, we decided 10 years ago, our whole model is cleaning for health, not cleaning for shiny floors, not clean to just look good, it's to clean for health, and to reduce asthma triggers and allergy triggers. Not just for students and staff but for our employees too.

Ruth Ryder: Thank you both so much. This sounds like very practical advice, preventive maintenance, infection control, planning, communication. I've heard the communication theme throughout the presentations today and the importance of building trust. Let's move on to the next question. And I'm going to ask Mark to respond to this one. From a school district perspective. How are you prioritizing the uses of ESSER funds?

Mark Cocco: Well, in our school district, a lot of money is going both to the educational side of it and some of is going to the operational side of the coin. So but the funds that are being allocated from ESSER to the facilities end of it, we're really focusing on the repair and replacement of equipment, particularly HVAC equipment. And we're also looking at reprioritizing a lot of that to focus on ventilation where we're in a position now where we're building two new schools. We're building an athletic facility, and we're building another cafeteria, we combine our cafeterias and auditoriums. So we're looking at increasing the ventilation opportunities in those buildings to make them both environmentally friendly, less and more energy conservation, while still providing the expected comfort here in South Florida because of, we have high humidity pretty much, nine months a year. So we want to make sure that we're, like, Fred was talking about those outside air dampers are so important.

And anytime I've seen them fail, they always fell in the open position. Fred, I don't know about up there. But so we're sucking in that outside air all the time when the gets coming in when the air conditioning is off and not treating it. So that's where we find our biggest, biggest issues that we want to focus ESSER or funds on.

Ruth Ryder: Thanks, Mark. Diane, Jane, do you have anything to add to that about the uses of ESSER funds?

Diane Rentner: I can just add something quickly. Clearly school districts have complete control over how they spend their ESSER funds. But I would say from the department's perspective, the kind of twin encouragements would be first of all, to take steps to reopen school safely in the fall. And clearly the discussion we're having today is a big part of that. And then the same level, and just as important, maybe even more importantly, is take steps to address funding loss. So whether that summer programs are preparing for the school year, of how to tackle that, but I'd say those would be the two areas that would be strongly encouraged. But again, districts have complete control over how they use their funds, as long as it's along the allowable uses.

Jane Hess: And the only thing I would add, which Diane mentioned earlier is that the uses of funds are broad. And she referenced the May document that kind of extensively lists many of the things that can be done with the funds. And I think also that the link to that has been put in the chat. So if anyone has further questions, that'd be a great place to start.

Diane Rentner: Thanks, Jane. I know that the team worked really hard on that guidance document. So we want everybody to use it. Okay, let's move on to the next question. There are many new air cleaning devices using various technologies that are being marketed during the COVID 19 pandemic. In the short term, how is the average consumer supposed to know whether a given device works as promised? And where do they turn? Tracy, could we start with you on that?

Tracy Enger: Absolutely. And actually, Ken did a great job of already starting to answer this question during his presentation. And talking about making sure that you are seeing the data from providers that is relevant to the situation that you want to use. And so the thing to keep in mind right now is return to the principle of first do no harm, right? So you want to make sure that the choices that you are making continue to be driven by the principles that you have used previously, as well. Hopefully, we have school districts that have purchasing policies in place already, return to those purchasing policies. This is not the time to lose your religion around this right? And this is the time to really stick to your previous principles. Even though we know that there's an urgency here, that does not allow you to start cutting corners, right? And so definitely, using the plans that you have, consulting the expert agencies, go to the CDC website, go to our website at EPA, look for what we're saying about emerging technologies.

Every proven technology now at one time was an emerging or a starting out technology and we have done diligent work out with the science on those technologies to establish that they're proven. Ones that are yet unproven, you're going to have to do a little bit more homework involving those, looking at things like third party certification. You heard Ricky talking about Green Seal and other organizations our Safer Choice third party certification. Use those third party certifiers, but especially demand documentation from manufacturers that provide proven results, given the circumstances under which you're going to be using those things. And then of course, always using things as they are labeled

and in the way that they're supposed to be used in training your staff to be able to do that.

Diane Rentner: Thanks, Tracy. Ricky, would you like to add in on that?

Ricky Martinez: Yes, I mean, exactly, Tracy, that's exactly what you do. You ask for the proof. Where's the proof? Where's the third party certifications? Don't be afraid to ask. I mean, there's going to come snake oil, everything's going to come out of this pandemic. People are going to want to make a buck. "Hey, I got the best, the greatest, the newest, it's going to clean the air." Where's the proof? Where's the third party certifications? Where's the lab results? Ask for these. We're in the process of doing that right now. We're looking at air cleaners, like the UV cleaners and stuff like that, but we're going to do our homework. You said it perfect, Tracy, you got to do your homework.

Ask if anybody else is using it? Is there a district using this? Is there a company using this? And we're going to go to that company. One thing that we really want to look for is, where's the measuring tool and how you know it's working? I want to find out how you are justifying even though you do have all these proof. I want to prove myself because, if you don't have a tester to show people that it's working, then how do you know? And how do you yourself tell someone, yes, it's working without that proof. Now with on-site generation, we do have testers, we do have third party certifiers, we do have all this stuff to back that that really works.

The air is a little bit more difficult. We are trying some dry misting out. We have seen some lab results, but we're still not there yet. We're still doing our homework, we're not sure if it safe be... Not say everything is it safe to do around people? Do you have to do it unoccupied or can you do it occupied? So my thing is, do your homework like Tracy said. Get 30 parts certifiers and ask if anybody else is using it and see how they like it and see what they're doing to test and make sure it's going.

Diane Rentner: Thank you, Ricky. We have several questions left, but not much time. I'm going to jump to the last question. Schools are starting in a wide range of different places, when it comes to ventilation systems. What are initial steps that schools can take, regardless of their existing capacity? How can they balance short term and long term goals? And if we could start with Ken and then we'll move to Tracy?

Kenneth Mead: Sure. Yeah. I believe, I think the existing guidance offered by CDC, EPA, even ASHRAE, and others addresses question fairly well. Where school districts have the available technical resources analysis, these resources should be familiar with the guidance has been posted, and how it gets implemented and know what skill sets they have, that they possessed. And then when they need to go outside because what they're looking at or what they're contemplating doing is outside their expertise. And when outside expertise is needed, and make sure

that the person that you've hired to advise you is aware of the guidance that has been posted.

In the end, every school or every district is going to make their own decisions. But I would proceed it with caution. If your consultant the steering you away from what has generally become consensus guidance in terms of the tried and proven protective approaches. This might be one of those circumstances where it may not be the wisest choice, for instance, to take the road less traveled.

Tracy Enger:

You're absolutely right, Ken. And I would just say, the same thing that you heard with the opening question to our actual school district folks, what prepared you to be successful in this moment and to pivot so successfully? And it was having a comprehensive plan in place to address these issues. And so I'm going to take this moment to implore you that as you are taking immediate actions, using the resources that are available to you from CDC, and from EPA, and all of our tools and resources to address the current needs of this pandemic, that you are also in taking this moment when we have everyone's attention, we have everyone is wrapped around this issue and they are willing to do the work. Take the opportunity to use these funds, to use this interest and this desire to put in place sustainable, long lasting programs that will continue to pay dividends over and over health wise, facilities wise, academic performance wise.

So put those programs in place now. And institutionalize that behavior through training and through your use the checklists and put these plans in place. And so a number of the questions that have been coming in about roofs and brick buildings and building envelope, all of those things can be addressed with a comprehensive plan that you put in place. And so when the next health issue comes down the road, because it's not a matter of if, but when you are then prepared and we're not spinning, but we are actually pivoting. But to pivot, you have to have one foot grounded. So get grounded now, so you're prepared for the next thing that comes along.

Ruth Ryder:

Thank you, Tracy. That's great advice. And we really all appreciate your expertise. All of you on the panel, thank you so much for joining us today. I've learned a lot, I hope that our participants have also. So thank you all, for all of your work that you are doing to support everyone and back to you, Greta.

Greta Colombi:

Thank you, Ruth. So based on the previous webinars, we have heard that you want more. So based on that your input I'm happy to report there are more Lessons from the Field sessions on the way that addressed the topics you have requested. As you can see here, we are planning six additional webinars during the summer as part of the series to support you all as you return to school for school year 2021/22. In July, we'll have a focus session on returning to school, and then one on supporting one of the most critical supports for our students in schools, the teachers and staff. In August, we'll have a two part session on re-engaging students including focusing on supporting special student populations. And then in September, we will focus on early childhood and nutrition and wellness.

We welcome your input on precisely what you would like to learn. So where you ask, you can share those details as you complete the feedback form for today's event. As we close, we are posting the link for the feedback form on screen. I encourage everyone who attended today to take just a minute to provide us feedback on today's session, and share what topics and the format you prefer for the series. In addition, please visit our website where today's presentation will be posted and you can listen to an archived version of the presentation. You can also see all the slides that the speaker shared along with links to the resources referenced during the session.

As a reminder, we will be capturing all the questions posted in the chat so that we can make sure the information is shared with the Department of Education to inform upcoming events in the Lessons from the Field webinar series and beyond. With that, I really want to thank Diane, Ken, Tracy, Fred, Mark, Ricky and Jane for the excellent information that you shared today. We also want to thank you over 600 people for your active engagement. You all shared great questions and provided us with great information within the chat to inform webinars that we will be doing over the next few months and beyond again. We will leave Zoom open for the next five minutes so that folks can click on the feedback link to go to the survey or provide additional questions or comments in the chat.

Again, we greatly appreciate your time today. And thank you all for what you do to provide students with safe supportive learning environments. Have a good afternoon. Until next time, take care.