

Podcast Transcript: Reducing Pesticide Use in Child Care Centers

[Theme music]

Ashley Ahearn (Narrator): You're listening to Environmental Health Chat – a show from the National Institute of Environmental Health Sciences that explores the connections between our health and our world.

I'm Ashley Ahearn.

More than 60% of children in the U.S. under the age of six are enrolled in early care and education and child care programs, spending an average of 35 hours per week in a center with other children and child care providers.

So, it's worth exploring their potential exposures in these places.

Abbey Alkon (AA): And we know that they are exposed to some pesticides when things are being used inside the child care center, like sprays, and things that they're worried about in terms of getting rid of pests that are in a child care center.

Narrator: Dr. Abbey Alkon is a professor at the University of California, San Francisco School of Nursing, and she's a pediatric nurse practitioner and epidemiologist by training. With funding from the NIEHS, Dr. Alkon has been exploring pesticide exposure in child care centers, and how to educate and empower caregivers to adopt safer practices.

Children are particularly vulnerable to pesticide exposures during critical periods in their growth and development. That's because they eat, drink, and breathe more than adults per kilogram of body weight, and they spend a lot of time on the ground where pesticides may settle.

AA: And when they're on the ground, we know they have hand-to-mouth activity. So, they touch things that are on the ground – that could be a pesticide that was sprayed and is now on the ground – and they put their hands in their mouth, and now that pesticide is in their mouth and going to be ingested into their body.

Narrator: Some research has shown that exposure to indoor pesticides is related to children developing attention and learning problems and even cancer later on in life. But being around pests can also have negative health effects. For example, cockroaches and mice are a source of indoor allergens and exposure to these pest allergens has been linked with more severe asthma symptoms.

But how to manage pests without using harmful pesticides? Well, there are many techniques that make up what is known as integrated pest management, and Dr. Alkon hopes her research inspires more child care providers to adopt these techniques.

AA: And the approach is to look at prevention and how pests get into a building, and to think about how pesticides get into the building, and to look at a way of preventing that. So, integrated pest management is a low-cost, simple way of reducing the exposure of pesticides in an indoor environment.

Narrator: There are a wide array of practices that can help eliminate pests from an indoor space without using pesticides. Step one, Dr. Alkon says: look at their access points. How are they getting in?

AA: Is there a broken screen so that the mosquitoes can fly in? Actually, it has to do a lot with the structure of a building, some buildings are more permeable to animals coming in and out, and so those are things that we do look at when we're thinking about preventing pests from coming into the building.

Narrator: For example, sealing and caulking any holes that could allow ants, cockroaches, rodents, and other pests to get into your building. Vines and other plants that grow too close to the exterior of a building can also help pests gain access.

Then, Dr. Alkon says, it's about looking at the indoor environment itself – what is attracting the pests? Kids are notorious for dropping scraps of food, which can attract ants and rodents. So, vacuuming and sweeping up crumbs, as well as making sure food canisters and trash containers are secure and closed tightly can help reduce pests.

But, nature usually finds a way – and pests do get into our homes and buildings. Dr. Alkon says using traps and bait instead of harmful chemical sprays is a safer way to tackle a pest problem.

AA: Spraying should be the very last resort, because, as we know, spraying is in the air and it settles on the ground, which is where the children spend their time, which is where the dust settles, and so that's what we're trying to prevent. If you have a lens of prevention, you can work with child care providers or teachers who every day, are dealing with a lot of children, and if they change their practices and can reduce the exposure pesticides for this group of children that they take care of over many years, we can have an impact on a large group of children.

Narrator: Dr. Alkon's research takes a multi-faceted approach to both understanding which pesticides children may be exposed to in child care centers, and how education and intervention might reduce those exposures and change pest management practices. Her first NIEHS-funded research project in this area was called the Healthy Children and Environment Study and was inspired by the work of Dr. Brenda Eskenazi and Dr. Asa Bradman.

Dr. Alkon and her team worked with 84 different child care centers in five California counties over a period of six years. They did an intervention in half the participating centers in order to compare their results with the control centers. In the centers that received the intervention the team started with an educational workshop, conducted an assessment of their pest management practices, and then provided monthly consultations with the child care center director for seven months.

AA: We had developed an integrated pest management toolkit that is specific for child care centers, and it's actually on our website, and it's free, and it's in English and Spanish, so we make sure that everybody has a copy of that. And when we do the workshop, another thing that we do is we provide what we call a toolbox of things you need to make it easier for you to address some of the problems.

Narrator: ...things like bait traps, long-handled dusters to remove dust and cobwebs in hard-to-reach places, and caulking guns to seal up holes where pests may be getting in.

Once Dr. Alkon and her team had conducted the initial educational workshops, they needed to gather data about what kinds of pesticides were present in the centers and at what levels. They used two techniques to do this, the first was a special vacuum. I know, not super exciting, but it's a tried-and-true method to gather dust from the places where children were spending time.

AA: The circle-time rug, or carpet, is what we want to get our dust from because we know the children are sitting there and spending time there during the day. So, we asked the teachers, you know, where is the circle-time carpet? And we put a tape around about a 3-foot square, and we go back and forth on this carpet until we get a certain level of dust that we can see in this special vacuum cleaner.

Narrator: The second technique involved silicone wristbands that were developed by Dr. Kim Anderson at Oregon State University. With parental consent, five children in each center would wear the wristbands while on site and the bands would later be analyzed for pesticides.

AA: But we also didn't want the children who were not enrolled in our study to feel bad, so we bought what we call faux wristbands. So, everybody got a wristband, but the five children that were in the study and the one to two teachers, they wore a different color, a different kind that was analyzed later for pesticides. So, we actually were quite successful in getting these wristbands with the data that we were interested in. It worked quite well.

Narrator: They identified six pesticides in the centers they studied. Thankfully, none of them were at alarming levels.

AA: But we were surprised to find so many pesticides in the child care centers. So just to give you an example of some of the pesticides that we found were bifenthrin, chlorpyrifos, cypermethrin, fipronil-sulfide, and we found cis- and trans-permethrin. Those were the most common ones that we found in the dust and also in the wristbands.

Narrator: Dr. Alkon's research, at its core, is about education and collaboration in order to change behavior. That meant doing an on-site assessment and intervention with participating centers to look at possible changes that could be made to reduce pests and therefore, the need for pesticide use. Then, they'd put together a list of integrated pest management goals in collaboration with the director and staff of the child care center.

AA: So we look for the places that we know are vulnerable, and we write them up, and we give it to the director, and we say to the director, you know, knowing that these are some of the things that we know could help reduce the amount of pests in your center, what do you think we can work on together over the next seven months? And they give us a priority list of what are the things that we could do in the next seven months, and maybe some things that would be more long-term. And so, the child care health consultant looks at that, and every month focuses on one of those things to help them make things better and to change.

Narrator: So, one month it might be about organizing a storage closet that had pests hiding out in it, or another month a center might work on tackling an ant problem in the kitchen or caulking off entrance pathways that were identified in the initial site assessment.

There are so many ways that child care providers and parents can reduce children's pesticide exposure – be it at child care or in their homes. Good ventilation and air circulation is key. Keeping the place clean is also important. Dr. Alkon recommends regularly dusting, vacuuming, and doing a deep clean at least once a year. Taking shoes off when children come into the

space can also reduce the transmission of outdoor pesticides. And finally, Dr. Alkon said that pesticide levels were lower among children who washed their hands more frequently.

At the end of the seven months, Dr. Alkon and her team went back and did another round of data collection, using the wristbands and the special vacuum again, to see how things had changed. They also conducted a survey of child care providers at the beginning of the study and at the end assessing their knowledge about integrated pest management techniques.

AA: And there was a significant improvement after our training and our seven-month intervention. Also, there was less clutter in their storage closets. We found that they were using more of the tight-fitting lids. And also, we talk about fresh air, which is really good for providing fresh air and healthy air for the kids, and they were using more ventilation systems and opening the windows. And then the other big thing about pests is they love garbage, so one of the things we talk about is to have the garbage containers having lids and linings, and the centers that were in our study used those practices more than the control centers.

Narrator: Dr. Alkon did not find a significant reduction in pesticides in the first three years of the study, but she's eager to see the results from the second half of the study, which should be ready in the next six months. She says there were two key lessons from the Healthy Children and Environment Study that have informed her new research in this area.

The first came from analyzing the background pesticide levels in the participating counties where they gathered their data. The state of California requires that when pesticides are sprayed on agricultural fields, they must be reported to the California Department of Pesticide Regulation.

Dr. Alkon found that the child care centers located closer to San Francisco had lower pesticide levels than those in the counties of the Central Valley, which is heavily agricultural.

AA: That was really important to me, because when we had an opportunity to write our next grant, I wanted to really concentrate in the Central Valley, because that was really the area where the children were at the highest risk.

Narrator: Dr. Alkon's second big learning was about sharing results with individual study participants in a way that was meaningful and useful to them. For example, instead of using the chemical name of the pesticide that was found in the child care center, she shares the brand name of the pesticide product that most people might recognize on the shelf at the hardware store.

AA: What's important is that we want to make sure that when we do our reporting back, we're doing it in a way that's relevant to the child care director and also it is relevant for their community. And so this time, we're going to first spend the whole year meeting with people in the community who are working in the child care field, who are working in environmental justice, environmental health, and who really know their communities well to find out what would be the most culturally and relevant way to share information about pesticides.

Narrator: With a new round of funding from the NIEHS, Dr. Alkon is zeroing in on the Central Valley of California and she's expanding her staff to include people who are bilingual and

bicultural so that communication can happen more fluidly in Spanish and English throughout the research. Reporting back results in a timely and useful manner is a top priority with this grant.

She'll also be focusing on family child care homes as opposed to child care centers because they are located in the home of the director of the program and tend to serve younger infants and toddlers, who are more vulnerable to pesticide exposure.

AA: And in my experience in the past when I worked with family child care home directors, is that they were so responsive to information about pesticides and ways to reduce their exposure. I always remember going out to one of the family child care homes and telling them about having plants right next to their foundation and how that could be a problem for pests. I came back a month later, they had already cut back all of their plants and I was just so impressed. Child care centers have more challenges – they can't make changes that quickly – so I thought it would be really great to be working with family child care homes this time.

Narrator: The new study will work with 30 family child care homes over the next four years. It's designed to be more qualitative and Dr. Alkon is focused on figuring out the best ways to share results about the pesticides they detect in the centers so that child care providers can make changes based on the data.

AA: And what we're hoping to learn is about best practices specific to family child care homes. And then hopefully, with that information, we can go to legislators or licensing and share some of the things that we've learned to see if there can be some policy change. So we will work with our partners and see what we can do.

Narrator: There are many challenges facing child care professionals and child care centers and homes. Staff turnover tends to be high, which makes it difficult to conduct ongoing research that involves follow up visits and assessments.

But Dr. Alkon says that throughout her research she has been inspired by the dedication of child care providers and the important role they play in our society.

AA: I think child care programs are such a unique place where children are learning so many skills. They're learning developmental skills, they're learning emotional skills, having new relationships with their peers, and exploring the world. And I feel like that is such a nurturing, wonderful environment that I've always wanted to see those children have a really healthy and safe place to play and to feel free and trust their providers and to really grow and be nurtured. And I guess it's just been my passion to find ways to help child care providers and work with them to make sure that their environments are healthy and safe for young children, because children are the future of our world, and we want them to grow and nurture and to be healthy.

[Music fades up]

Narrator: I'm Ashley Ahearn. Thanks for listening to Environmental Health Chat.