



Home WORK

By Kathleen McGarvey/Photographs by Adam Fenster

S PRINCIPAL OF ROCHESTER'S ENRICO FERMI SCHOOL 17 FROM 1990 TO 2002, Ralph Spezio did everything he could to serve his students well. He created a Montessori preschool on the elementary school campus, collaborated with the Medical Center and another local hospital to establish a community health and dental clinic attached to the school, forged a partnership with the Eastman School to create a stringed orchestra for students, and fostered an active, expansive parent-teacher association.

"I thought it was my job to level the playing field" for children at the school on Rochester's west side, says Spezio, in a neighborhood with a 98 percent poverty rate.

But despite his best efforts, some of Spezio's pupils seemed beyond his help. "I had a core of kids with real, serious behavior and learning problems," he says. They had poor memories, trouble with language, and difficulty focusing. They were hyperactive, impulsive, and sometimes enraged.

One day in 1999, in a regular meeting to assess students for placement in special education, Spezio heard one nurse in attendance say to another as she looked at a child's medical file, "Here's another one."

Spezio asked what she meant. She pointed to the blood lead level marked in the file. "This child's lead poisoned," she said. "They're all lead poisoned."

Spezio was startled, and horrified. He contacted the county's health director, Andrew Doniger, also a clinical professor of pediatrics at the School of Medicine and Dentistry, to review his students' public health records. Spezio credits Doniger's responsiveness as key. "If he had circled the wagons, that would have made it much more difficult," Spezio says. "But as a pediatrician, he put children first."

What Spezio discovered in the files was arresting: 41 percent of the children at his school had a history of elevated levels of lead in their blood.

And those were just the children who had had their blood lead levels tested. Although New York state law mandates tests at ages one and two, many children aren't tested. "I had a whole other group with symptoms and no test," he says.

Spezio went public with his discovery, and Rochester doctors, nurses, educators, community leaders, and others came together for an emergency meeting at School 17; in 2000, they coalesced into a formal group, the Coalition to Prevent Lead Poisoning.

A partnership involving University and community scientists and educators has become a model for reducing the risks Rochester children face from lead poisoning.

HOUSE HAZARDS: The former principal of a Rochester elementary school, Ralph Spezio began advocating for new lead safety rules after discovering that lead poisoning was common among his students, many of whom had been exposed to the toxin in their own homes.



officials, researchers, public interest lawyers, health insurers, property owners, and concerned citizens.

“That’s the beauty of this coalition,” says Mel Callan, a board member of the coalition and a family nurse practitioner at Highland Family Medicine Center, a University affiliate. “I’ve been involved in so many community organizations, and this has been a stellar effort, where so many people from the community came together to solve this one problem.”

It’s a problem with high stakes. Studies at the time of the coalition’s founding showed that children in the city of Rochester had a rate of elevated blood lead levels 10 times the national average. Lead poisoning has no cure, and its effects are lifelong. “If you steal someone’s IQ—and that’s what lead does—you’ve stolen their future,” says Spezio, who’s now a doctoral student at the Warner School, studying how children’s brains might compensate for the effects of lead poisoning.

A SOFT METAL, LEAD HAS BEEN IN HUMAN USE since about 3500 BCE. In the 1970s, the federal government mandated its removal from paint and gasoline; paint became lead-free in the United States in 1978, and lead was phased out of use in fuel between 1976 and 1996. As a result, the nation’s population experienced a drop in its lead levels, and lead removal was hailed as a public health success.

But lead lingers.

In homes built before 1978, residents are still at risk of exposure to lead paint. And in the city of Rochester, where the housing stock is among the oldest in the state, 87 percent of homes were built before 1970.

“There’s not much hazard if paint is intact,” says Stanley Schaffer, an associate professor of general pediatrics who has been a member of the coalition since its first days. Danger comes when paint degrades or is ground into dust from friction on windows, doors, floors, or stairs. As children ingest paint chips and inhale paint dust, lead enters their bodies. And in Rochester’s poorest neighborhoods, much of the housing stock is in neglected condition.

The numbers bore out the grim threat. A 2002 report commissioned by the Monroe County Department of Public Health found that almost 25 percent of children living in Rochester’s high-risk neighborhoods—in some neighborhoods, the number topped 30 percent—had blood levels above 10 micrograms of lead per deciliter of blood, what the Centers for Disease Control calls a “level of concern.” Nationally, that figure is 1.6 percent.

The data also showed a stark racial disparity: a third of African-American children under age 5 in upstate New York live in one of the state’s 36 high-risk zip codes for lead poisoning; so do 12.3 percent of Latino children, and 3.9 percent of white, non-Hispanic children.

And in Rochester, nearly 78 percent of Latino children and 80 percent of African-American children under age 5 live in a high-risk zip code.

In December, the coalition—in which the University is a partner—received one of five 2009 Environmental Justice Achievement Awards given by the Environmental Protection Agency. In part through the coalition’s efforts, lead poisoning of children in Monroe County has fallen 84 percent over the past decade, and Rochester has become a model for other cities combating their own lead problem. The effort has been successful in great part because it has involved such a broad swath of the community, those behind it say: child advocates, neighborhood organizations, doctors, nurses, educators, housing

COMBATING LEAD: For some properties, EPA-certified workers are needed to conduct a full lead abatement, but in most cases, lead hazard work doesn’t require such measures—a key aspect of Rochester’s lead safety success.



Children's brains grow most in the period up to age three, when synaptic connections are forming. "Yet at the same time, these children are at greatest risk of being exposed to lead," says Schaffer. Toddlers are mobile and busy putting things in their mouths, "and the lead can have devastating effects on their brain development.

"The kids are being set up to fail, and they're much more likely, research has shown, to drop out of school, get in trouble with the law, and even be incarcerated, at some point," Schaffer says.

"The downstream costs for lead poisoning are astronomical," says Callan, in special education, health care, and criminal justice.

BECAUSE LEAD POISONING CAN'T BE CURED, THE KEY IS PREVENTION. Primary prevention, as public health officials call it, aims to clean up lead conditions before children are affected. Secondary prevention—monitoring kids' lead levels and then acting to clean up lead hazards in the homes of those with elevated levels—"uses our kids as the canary in the coal mine," says Callan.

Recognizing that primary prevention is preferable, the federal government adopted the national goal of ending childhood lead poisoning

LEAD TESTERS: Steven Turner from Rochester's Action for a Better Community and Katrina Korfmacher from the University's Environmental Health Sciences Center discuss lead testing in a Rochester neighborhood.

by 2010. To achieve prevention, coalition members knew they had to tackle the housing stock. University research and outreach played important roles in bringing about changes.

Studies carried out in the 1990s at the Medical Center showed that even slightly elevated levels of lead in children's blood have an impact on cognitive development and IQ—and, critically, the research directly tied blood lead levels to levels of lead in dust on the floors of the children's homes. University researchers, including Deborah Cory-Slechta, a professor of environmental medicine, also participated in a landmark study published in 2003, indicating that children experience health problems even when their blood lead levels are below those deemed safe by the Centers for Disease Control and Prevention.

"I've been of the opinion there should be no specific 'level of concern' since any exposure to lead potentially can cause harm," says Schaffer. "There's no level below which lead is safe."

Today, through the Environmental Health Sciences Center and other departments, University researchers continue to (Continued on page 32)

Living Lead-Safe

Found in many urban, rural, and suburban houses built before 1978, lead can be inside or outside or in soil around homes. Here are some simple steps you can take to protect your family from lead:

- **Arrange for a lead inspection** to be sure your home is lead safe, and consult with your pediatrician on testing your kids for lead exposure.
- **Make sure** children don't chew painted surfaces.
- **Wash children's hands** often, especially before eating.
- **Clean floors, windowsills, and other surfaces** with a wet mop or sponge.
- **Remove street shoes** when you enter your home.
- **Regularly wash toys** and other items children put in their mouths.
- **Use a vacuum cleaner** with a HEPA filter, which traps lead dust.
- **Use lead-safe work practices** when remodeling.
- **Plant grass** to cover soil with high lead levels.
- **Provide children** with foods high in calcium and iron, which help reduce the absorption of lead.

For more about lead safety:

- **Rochester's Coalition to Prevent Lead Poisoning:** www.lead-safe-by-2010.org
- **The EPA's National Lead Information Center:** 800-424-LEAD
- **Centers for Disease Control and Prevention:** www.cdc.gov/nceh/lead
- **U.S. Department of Housing and Urban Development:** www.hud.gov/offices/lead

(Continued from page 25) investigate lead's role in osteoporosis, fetal growth restriction, and brain cancer.

Joan Roby Davison, cochair of the coalition and coordinator of the Empire State Housing Alliance, credits the University not just with producing vital research but also with helping to make that research accessible.

"I'm not a scientist; I'm not a researcher," she says. "I'm a community advocate, but I couldn't do my work without that research and without people who can help me understand the data and convey it to the city council" and other decision makers.

KATRINA SMITH KORFMACHER, AN ASSISTANT professor of environmental medicine, works explicitly to bridge the University and the community on matters of environmental health. She's the deputy director of community outreach and education at the Environmental Health Sciences Center. In March she won one of the 2010 Dr. David Satcher Community Health Improvement Awards for her efforts to reduce lead exposure for children in Monroe County. The award—created by the Center for Community Health—is named in honor of the former surgeon general, a 1972 graduate of Rochester's pediatric residency program, and recognizes those who have made significant contributions to community health in the greater Rochester region through research, education, clinical services, or outreach efforts.

"My research focuses on the use of science in policy decisions, especially when community groups are involved," says Korfmacher. She has had a role in many dimensions of the coalition, from helping to make the science accessible to laypeople and analyzing and promoting local and state policy changes to supporting the coalition's organizational development and contributing to its projects and programs.

One such project was Get the Lead Out, a partnership with Orchard Street Community Health Center, local government agencies, and several community groups to test the homes of children at risk of lead poisoning. Medical students helped to educate families about lead's dangers, followed up with property owners, and managed data. In the years since the coalition's founding, University faculty, staff, and students have worked with the county, the city school district, and community organizations to promote public awareness, provide assistance to landlords, homeowners, and renters, and facilitate blood lead testing.

Cost was an issue from the start. Korfmacher and other coalition members knew that they could only convince the city to act if they could demonstrate that mandated lead repairs would be affordable. Lead abatement—the full-scale removal of lead from a structure—was simply too expensive. But new research showed that such inexpensive measures as repainting, scraping "friction" areas down to bare wood—lead dust is generated when painted surfaces





are rubbed and worn, as when a window is raised and lowered—and installing vinyl liners in window frames could make the needed difference. The city and its landlords might not be able to remove lead completely, the coalition argued, but they could afford to contain it to make Rochester “lead safe.”

The University and coalition partners created a “lead lab” to demonstrate, borrowing a house and, with volunteers, making it lead safe for just \$500 more than a landlord would have spent otherwise to ready it for a new tenant.

“People would come in and say, ‘Oh, this is what you’re talking about. This isn’t rocket science,’” Korfmacher says.

The coalition’s efforts culminated with the 2005 passage of an ordinance requiring inspection for lead paint hazards as part of the city’s certificate of occupancy process. To pass inspection, a residence must have intact paint inside and out, have no bare soil around the edge of the house, and—in high-risk areas—pass a test for lead in dust. Because a 2002 county study identified “hot spots” of lead poisoning in the city’s most economically distressed neighborhoods, the legislation was tailored to target those areas first.

THE EFFORT TO COMBAT LEAD POISONING IN Rochester continues, with an ongoing education campaign for parents and health care providers to be sure that they are following state requirements for lead testing. Even today, just half of the two-year-olds in Rochester’s Monroe County are tested.

“Although tremendous progress has been made, there’s still a lot of work to be done, and we dare not declare victory and say the problem has been solved—because, unfortunately, this is a problem that’s going to be with us for some time to come,” says Schaffer.

Spezio, who is now a senior associate and community liaison in the Department of Community and Preventive Medicine, attributes Rochester’s success to two factors. “I get calls from around the country asking how we’re sustaining our work,” he says. “We’re putting children first, always, and we have partners with us for the long haul. And one of those is the University.”

And while the fight isn’t over, Korfmacher sees hope for other public health and environmental challenges in the strides the coalition has already made.

“Problems of environmentalism and public health often require solutions at the local level. Our role in figuring out a way of bringing together all the different actors” to tackle together the problem of lead “is already being used as a model for addressing other issues, such as childhood obesity, in this community and others.” **R**

CLEAN UP: Korfmacher takes dust samples from a porch, a site where lead is commonly found. Thanks in part to the work of the University and community coalition, the simple dust test is required for rental properties in areas of Rochester at high risk for lead.