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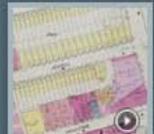
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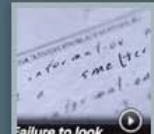
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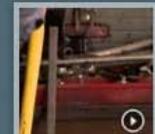
Ghost Factories: Invisible and ignored danger

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Ghost Factories: A failure to protect the public

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Ghost Factories: USA TODAY's soil testing findings

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Case Study: Tyrroler Metals

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How USA TODAY tested soil

Updated 2 weeks, 2 days



By Jason Miller, for USA TODAY

Ken Shefton sits with son Jonathan, 6, who was diagnosed with a troubling blood-lead level, at their Cleveland home.

Long-gone lead factories leave poisons in nearby yards

By Alison Young, USA TODAY

Ken Shefton is furious about what the government knew eight years ago and never told him — that the neighborhood where his five sons have been playing is contaminated with lead.

Their Cleveland home is a few blocks from a long-forgotten factory that spewed toxic lead dust for about 30 years.

The Environmental Protection Agency and state regulators clearly knew of the danger. They tested soil throughout the neighborhood and documented hazardous levels of contamination. They never did a cleanup. They didn't warn people living nearby that the tainted soil endangers their children.

"I needed to know that," Shefton said. "I've got a couple of kids that don't like to do nothing but roll around in the dirt."

More than a decade ago, government regulators received specific warnings that the soil in hundreds of U.S. neighborhoods might be contaminated with dangerous levels of lead from factories operating in the 1930s to 1960s, including the smelter near Shefton's house, Tyroler Metals, which closed around 1957.

Despite warnings, federal and state officials repeatedly failed to find out just how bad the problems were. A

14-month USA TODAY investigation has found that the EPA and state regulators left thousands of families and children in harm's way, doing little to assess the danger around many of the more than 400 potential lead smelter locations on a list compiled by a researcher from old industry directories and given to the EPA in 2001.

In some cases, government officials failed to order cleanups when inspectors detected hazardous amounts of lead in local neighborhoods. People who live nearby — sometimes directly on top of — old smelters were not warned, left unaware in many cases of the factories' existence and the dangers that remain. Instead, they bought and sold homes and let their children play in contaminated yards.

The USA TODAY investigation shows widespread government failures taking several forms:

- **A failure to look.** At dozens of sites, government officials performed cursory inquiries at best. In Minnesota, Indiana and Washington, state regulators told the EPA they could find no evidence that some smelters ever existed.

Yet in those states and others, reporters found the factories clearly documented in old insurance maps, town council minutes, city directories and telephone books —



Minnesota Historical Society

1940s: Evidence Northwestern Smelting & Refining existed in Minneapolis. State regulators in 2002 said they found no data on a smelter at this site.

even in historical photos posted on the Web.

• **A failure to act.** In Pennsylvania, Maryland and Wisconsin, the EPA sent investigators to scores of sites from 2004 to 2006 after verifying a lead smelter once operated. The investigators recommended soil tests in the neighborhoods. Most of the tests were not done.

• **A failure to protect.** Even when state and federal regulators tested soil and found high levels of lead, as they did around sites in Philadelphia, Cleveland, Chicago and Portland, Ore., they failed for years to alert neighbors or order cleanups. Some kids who played in yards with heavily contaminated soil have dangerous levels of lead in their bodies, according to medical records obtained by USA TODAY.

In response to the investigation and USA TODAY's soil tests in 21 neighborhoods, government officials are taking action at old smelter sites in 14 states, ranging from reopening flawed investigations to testing soil to cleaning up contaminated property. In March, New York City officials closed four ball fields in a Brooklyn park after learning from USA TODAY that the area was a former smelter site with elevated levels of lead.

"EPA and our state and local partners have overseen thousands of cleanups, through a variety of programs," said Mathy Stanislaus, an EPA assistant administrator. "Unfortunately, some of the sites USA TODAY identified have not yet been addressed or investigated by EPA. EPA will review USA TODAY's information to determine what steps can be taken to ensure Americans are not being exposed to dangerous levels of lead."

The EPA says it has worked with states to assess most of the sites on the 2001 list but that record-keeping is "incomplete" for many. Eighteen sites received some kind of cleanup but most weren't considered dangerous enough to qualify for federal action.

"I am convinced we have addressed the highest-risk sites," said Elizabeth Southerland, director of assessment and remediation for the EPA's Superfund program. "Absolutely and positively, we are open to reassessing sites that we now feel, based on your information, need another look."

EPA staff members said additional site reviews are underway, including checks of 48 sites the agency determined were never assessed. And the EPA said it will work with Ohio environmental regulators to re-examine the Cleveland neighborhood near Shefton's home to see whether a cleanup evaluation there is appropriate.

Ken Shefton and his family aren't waiting for the government to do a cleanup. His 6-year-old son, Jonathan, was diagnosed this spring with having an elevated level of lead in his body, Shefton said: "That was the last straw." He's in the process of selling his home. The family moved to another neighborhood last week. "Somebody needs to take care of this problem, or inform the people in this neighborhood," he said.

Concerns surfaced a decade ago

Most of the nation's lead factories — some huge manufacturing complexes and others tiny storefront melting shops — had been largely shuttered by the 1970s and

1980s. Often known as smelters, they emitted thousands of pounds of lead and other toxic metal particles into the air as they melted down batteries and other products containing lead.

The particles would land on nearby properties, potentially mixing with lead dust from automobile exhaust or paint chips — significant sources, says the government — to create a hazard. Children who play in lead-contaminated soil, sticking dust-covered hands or toys in their mouths, over time can suffer lost intelligence and other irreversible health problems.

In April 2001, environmental scientist William Eckel published a research article in the American Journal of Public Health warning about the dangers of old smelting factories. While working on his Ph.D. dissertation, Eckel had identified a historical smelting site unknown to federal and state regulators and wondered how many other sites had been forgotten over time, their buildings demolished or absorbed by other businesses.

Eckel used old industry directories, which he cross-referenced with EPA databases, to come up with a list of more than 400 potential lead-smelting sites that appeared to be unknown to federal regulators.

Eckel confirmed that 20 of the sites' addresses were factories — and not just business offices — using Sanborn fire insurance maps, which detail the historical uses of individual pieces of property. An additional 86 sites were specifically listed in directories as “plant” locations. He paid to have soil samples tested from three sites in Baltimore and five in Philadelphia. All but one of the samples exceeded the EPA's residential hazard level for lead in areas where children play.

Eckel's article warned that the findings “should create some sense of urgency for the investigation of the other sites identified here because they may represent a significant source of exposure to lead in their local environments.” The research indicates “a significant fraction” of the forgotten sites will require cleanups — likely at state and federal expense — because most of the companies went out of business long ago.

Buried by bureaucracy?

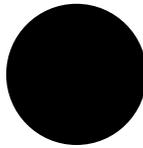
Eckel's research caught the attention of the EPA, which in 2001 asked him for a copy of his unpublished list, then

Lead in the soil

Some lead occurs naturally in surface soil, but most is from decades of airborne fallout from factories, vehicles burning leaded gasoline and flaking lead-based paint. The average lead content of U.S. soil is about 19 parts per million (ppm), the U.S. Geological Survey found several years ago.

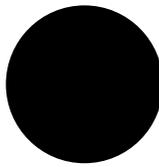
How much lead in the soil is dangerous?

A few government standards (in parts per million):



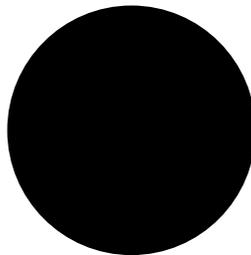
80

California's residential soil standard



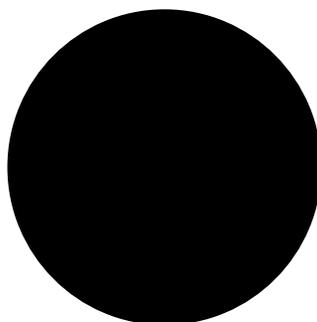
100

Minnesota's residential bare soil standard



250

Washington state's cleanup standard for unrestricted land use



400

EPA hazard level for bare soil where children play

Sources: U.S. Geological Survey, Minnesota Department of Health, California's Office of Environmental Health Hazard Assessment, Washington Department of Ecology, and the Environmental Protection Agency

By Frank Pompa, USA TODAY

shared it with EPA regional offices.

Records obtained under the Freedom of Information Act offer few details of the exact instructions the EPA gave to those receiving the list. Southerland, the EPA Superfund official, said the agency didn't provide regional offices any additional money or people to evaluate the old smelter locations. It asked only that the sites be put in their queues for possible assessment.

“We only have about 80 people and \$20 million each year to do our site assessment program,” Southerland said. About half of that money is sent by the EPA to state agencies.

Cleaning up contamination left by a smelter can be expensive. In Omaha, the EPA has cleaned up 10,000 residential yards and spent nearly \$250 million addressing a former smelter there that wasn't on Eckel's list because it was already known to the agency. Many of the factories on Eckel's list were smaller operations.

With limited resources and many contaminated sites, state and federal environmental officials have to prioritize assessing sites they consider of greatest risk, Southerland said, and drinking-water contamination tends to trump soil contamination.

In addition, Southerland said, the EPA is authorized to clean up contamination only if it can show it came from an industrial release. That can be tricky to determine in some urban areas, where the agency says it's not uncommon to find high levels of lead contamination in soil, “particularly in large cities ... due to historic gasoline emissions from vehicles, aerial deposition from industrial facilities, and lead paint,” the EPA said in a statement.

The government's efforts to investigate the sites on Eckel's list varied widely, records show. Dozens were never investigated. Others received a cursory records review or a “windshield survey” — a drive-by type of visit. Soil was tested at some sites, but the testing in some cases was limited to the former smelter's property boundaries and ignored where the wind might have carried airborne contamination; in other cases, testing was also done in nearby neighborhoods.

By 2005, concerned the list of 464 sites had been too large of a workload for the regions, officials at EPA headquarters launched their own assessment effort, Southerland said. The focus was on having regions examine a sampling of 31 sites from Eckel's list. They concluded



By Alison Young, USA TODAY

Played in lead-laden soil: McKinley Woodby holds Damien next to the boy's mother, Erin Fink, at their home near an old smelter site in Cleveland in October 2011.

many lacked evidence that they were ever smelters, according to a 2007 report obtained under FOIA marked "For Internal EPA Use Only." The report said only one of the sites determined to have been factories, Loewenthal Metals in Chicago, might qualify for a federal cleanup and the rest were being addressed by state regulators. Southerland said a North Carolina site ultimately received a federal cleanup.

Only six of EPA's 10 regional offices had undertaken some sort of smelter discovery initiative, according to the 2007 internal EPA report. Two of those initiatives — one by federal officials in Pennsylvania and Maryland, the other by EPA Region 5 and Michigan state officials — focused on sites from Eckel's list, the report said.

Michigan regulators took actions at some Detroit smelters after the Detroit Free Press in 2003 did historical research into 16 Detroit sites on Eckel's list and found smelting or foundry work at most of them. Only one site was being cleaned up at the time of the report. In 2006-07, cleanups occurred in two more neighborhoods, according to a state contractor's report.

But in scores of other cases, USA TODAY found government agencies didn't do much to protect families and children — even when their own tests showed dangerous levels of lead where people live.

Reporters scour 464 sites

The USA TODAY investigation set out to determine which sites remained unaddressed and to examine the depth and quality of any government assessments.

Reporters researched all 464 sites in 31 states that were on Eckel's list to determine how many were factories, rather than just business offices — and what, if anything,

had been done to clean up those hazardous enough to threaten people living nearby.

Reporters spent weeks in the basement of the Library of Congress, researching its extensive collection of Sanborn maps. Maps showing smelting or factories were located for more than 160 sites — including many that regulators never looked for because they lacked exact street addresses. Reporters researched old phone books and city directories, archival photograph collections, old business directories, property records and corporation filings. They filed more than 140 federal, state and local public records requests with environmental, health and other government agencies to determine what, if any, assessments had been done of the sites and the risks posed to people nearby.

As a result, the investigation found evidence of smelting, foundries or lead manufacturing at more than 230 sites in 25 states on the list of forgotten factories.

The failure to protect

Ken Shefton, his wife and five boys lived until last week in a Cleveland neighborhood a few blocks northeast of the former site of the Tyroler Metals smelter. The area's two-story wood homes, mainly built around 1900, are flanked by factories, both operating and abandoned.

A smelter operated at the Tyroler site from about 1927 through 1957, according to the state's report. Smelting no longer occurs at the site, which is now a scrap yard with a different owner.

In 2002 and 2003, state regulators from the Ohio Environmental Protection Agency— working at the request of the federal EPA — tested 12 samples of soil around the old site and in the nearby neighborhood. All but one

How lead factories can pollute soil

Old smelters had the potential to spew lead dust through smokestacks, windows and other openings. The factories might be long gone, but the lead can remain in soil for hundreds of years — along with lead from paint and vehicles that once burned leaded gasoline. Here's how:

1 During production, the heaviest particles fall closest to the factory.

2 Winds carry lighter particles beyond the factory's property.

3 Lead dust falls onto soil and buildings, accumulating over time.

4 Soil in the "dripline" of buildings can be contaminated when wind-blown particles are stopped by walls or rain washes dust off roofs.

5 Left undisturbed, the lead remains near the soil's surface.

Kids at greatest risk

Children younger than 6 are at greatest risk from lead exposure, which occurs when they put dust-covered hands or toys in their mouths.

What you can do:

- ▶ Plant shrubs at the base of the house to keep kids from playing there.
- ▶ Don't let children play in bare dirt. Cover it with grass or mulch.
- ▶ Test your soil, especially before growing a vegetable garden in urban areas.

Source: USA TODAY research

By Frank Pompa, USA TODAY

showed lead contamination above the EPA's residential hazard level of 400 parts per million (ppm) of lead in bare soil where children play. Nine of the samples had lead levels ranging from twice to five times the hazard level, according to the state's report.

The results indicated a possible "airborne depositional pattern or plume towards the northeast," the report said. In layman's terms: a fallout zone.

The state's research also identified that other smelters had been on adjacent properties dating to 1912, as well as a currently operating lead-manufacturing plant nearby. "A problem interfering with future investigation is attribution of lead contamination, due to multiple sources," the state's report said.

No matter the source, regulators never warned residents about what they found, and no cleanup occurred.

State regulators at the Ohio EPA said that without a specific polluter to blame — and force to pay for cleanup costs — there was nothing more they could do. "There are no Ohio EPA monies set aside and dedicated for this type of cleanup," the agency said in written responses to questions. "Our enforcement program focuses on responsible parties with the authority to legally compel them to fund cleanup."

Still, state regulators said that more than seven years ago they "recognized there could be potential for a health concern based on the sampling results." They said they fulfilled their duty by putting their findings about the neighborhood in a report and sending it to the EPA's regional office in Chicago. The state says it sent the report about Tyroler Metals, along with reports on eight other historical Cleveland smelter sites, to the director of

the Cleveland Department of Public Health in June 2004.

Either agency could have followed up, the state said. Neither did.

Officials at the EPA regional office said that because the site didn't meet criteria for federal Superfund action, it was the state's responsibility. Federal and state officials now plan to review the site to see whether a cleanup evaluation is appropriate, the EPA said in a written statement.

Current and former Cleveland health department officials — including Matt Carroll, who at the time was health director, and Wayne Slota, who at the time was in charge of the lead poisoning prevention division — said they don't remember receiving the state's letter and reports about Tyroler Metals.

The only smelter issue they remember involved a different site on Eckel's list: Atlas Metals, where a city park had been built atop the old smelter site and state investigators had observed children playing in dirt that tests showed was significantly contaminated.

Of the 17 Ohio sites on Eckel's list — in Cleveland, Cincinnati, Columbus and Toledo — Atlas Metals was the only one records indicate received a cleanup.

A neighborhood suffers

"I'm concerned. I really don't know what to do," said McKinley Woodby, as he held his then-15-month-old son, Damien, on his lap. "I'm just a renter. I'm on a fixed income, so it ain't like I can dig the front yard up and bring in new dirt."

"I'm not going to let (Damien) back in the yard, I know that," he said, sitting on the front steps of their home about four blocks from the Tyroler Metals site.

When USA TODAY tested soil in the family's yard where Damien played, the results showed potentially dangerous contamination in four of five samples, ranging from 577 to 1,035 ppm. Although the EPA uses 400 ppm as its residential hazard level, California's environmental health agency has set 80 ppm as the level it says will protect children who regularly play in the dirt from losing up to 1 IQ point over time.

Damien's blood was checked a few weeks before USA TODAY tested the yard. Health department records show he had a blood-lead level of 4. That's below the federal action level — set in 1991 — but current science indicates children with levels below 5 are at risk of having decreased academic achievement.

Blood test results filed with the Ohio Department of Health show that during 2007 through mid-2011 in the smelter's ZIP code about 350 kids under age 6 had reported blood-lead levels of 5 or higher. About the same number had blood-lead levels of 2 to 4. There is not a definitive way to know how prevalent lead poisoning is in the area because not all children are screened and some tests are less accurate than others.

How much the lead in the dirt is contributing to the children's blood-lead levels is unclear. But experts say that soil is an important component, along with deteriorating lead-based paint in older homes and contaminated house dust.

Bruce Lanphear, a leading expert on childhood lead poisoning, said his research has estimated that for the average child about 30% of the lead in the body comes from contaminated soil, about 30% from contaminated house dust — which includes particles of flaking paint — and about 20% from water.

"Those were the major sources, so they're all fairly important," said Lanphear, a professor of children's environmental health at Simon Fraser University in British Columbia.

A child's lead exposure can be very individualized, he said, depending on geography. For some children, it might be all about paint. "If you were to look at a community that's adjacent to a smelter, it might be that it's 80% soil, or 90% soil."

'Oh, my gosh, no, I didn't know'

In Chicago, officials have known for years about a neighborhood where contamination could pose a danger and have done little to address it. Walsh Elementary School in Pilsen is just down the block from the former site of Loewenthal Metals.

Delinda Collier said she had no idea the site used to be a lead smelter and was contaminated. There were no warning signs on the property. "Oh, my gosh, no, I didn't know," said Collier, 38, who rents an apartment across the street and lets her dog play on the vacant lot. "I'll bet nobody else does either."

Federal and state regulators knew.

Tests by the state in 2006 found the former smelter's vacant lot contaminated with up to 5,900 ppm of lead — more than 14 times the amount the EPA considers potentially hazardous in areas where children play.

"Since this site is in a residential area, the possibility of exposure is high," according to the report state officials sent to the EPA, which commissioned the work. But the site wasn't bad enough to qualify for its Superfund list, and the report was archived.

State regulators at the Illinois EPA said Loewenthal Metals was one of about 50 old smelter sites in Chicago they reviewed to varying degrees at the request of the U.S. EPA. The Loewenthal site had even been highlighted in the 2007 EPA headquarters report as the only site examined under its smelter initiative that might need a Superfund removal action.

Still, it fell through the cracks.

"We never got any follow-up instructions from them on what additional things to do with the reports we sent up to them," said Gary King, who was manager of the state agency's division of remediation management until he retired in December.

"Nonetheless, as a result, frankly, of the (open records) request that came in from USA TODAY and going back in and looking at this information ... we concluded that it would be best to send in what we call a 'removal action' referral," King said. That means the state is now formally asking the EPA to remove the contamination from the property.

The state also is formally asking the EPA to clean up a second Chicago site, Lake Calumet Smelting, where its tests in 2004 found high levels of lead — up to 768,000 ppm — on the former factory's property. The nearest homes are about a half-mile away, records show.

The failure to act

Even when officials did identify factory sites and nearby neighborhoods that could be contaminated, they failed to follow through.

The EPA's Philadelphia regional office developed one of the agency's most comprehensive smelter initiatives in response to Eckel's report. Officials there sent contractors in 2005-06 to visit most of the 71 factory sites listed in Pennsylvania, Maryland and Virginia.

The assessments confirmed dozens of the sites had had smelters, reports show, with 34 of them in troubling proximity to homes, parks and schools. As a result, EPA contractors recommended soils nearby be tested. Despite the passage of years, testing has been done at 10 sites, fewer than a third, records show.

The EPA now says the site assessment process is ongoing and the agency must prioritize its use of resources. In some cases, the EPA may not agree with its contractor's recommendations. Still, the EPA said it plans an additional assessment at several sites in late 2012 or early 2013. The "lead smelter sites at this time do not seem to pose the same threats we are encountering at other sites

in the region,” the EPA said.

The threat seemed serious to others in 2004.

At that time, state and federal health officials distributed a health alert to doctors with a map of the Pennsylvania locations on Eckel's list. The alert by the Pennsylvania Department of Health and the federal Agency for Toxic Substances and Disease Registry recommended doctors consider doing blood tests on children living near the sites to look for lead poisoning.

The EPA's Philadelphia regional office, however, says it sees no need to put out general warnings to neighbors of old smelter sites. “This type of approach would unnecessarily alarm residents and community members,” it said. The office also said it saw no need to tell Maryland's state environmental agency about the 11 smelter sites in its state on Eckel's list. Nor did the EPA region alert the state agency that federal contractors had recommended soil testing around five of them.

USA TODAY provided Maryland officials the locations of the sites — and copies of the EPA's reports.

The EPA's failure to share such information is unusual, said Art O'Connell, chief of the Maryland Department of the Environment's state Superfund program. “I don't know what happened in this particular case, but it's certainly not the norm,” he said.

As a result of the information provided by the newspaper, O'Connell said, the state recently examined the sites and determined that two former factories in Baltimore warrant further investigation: Industrial Metal Melting and Dixie Metal Co. The state has asked the EPA for funding to do soil testing and other investigation at the sites this year.

As for the three other factory sites where EPA's contractors recommended tests, O'Connell said his department believes they were small operations and had little impact on soil.

The failure to look very hard

Philadelphia-based officials started investigations; other EPA regions did far less.

Of the 120 sites on Eckel's list in New York and New Jersey, the EPA office responsible for those states sent inspectors to 14 locations. (USA TODAY found historical fire insurance maps and other documents showing evidence of smelting at 53 sites in those states.)

And even though the entire focus of Eckel's list involved smelters that had closed long ago, the EPA in 2002-03 inexplicably sent inspectors looking for active smelters at only nine of the locations.

“On each occasion, upon reaching the site where the smelter was supposedly operating, the inspector found the smelter had been closed down long ago,” said Philip Flax, an EPA senior enforcement team leader, in a letter to USA TODAY that accompanied copies of some inspection reports.

In 2005-06, the EPA visited four more sites in New York and one in New Jersey.

The New Jersey Department of Environmental Protection had files on only five of the 31 sites listed in its state, according to the department's responses to 31 separate open records requests it required USA TODAY to file. Only two of the files showed evidence the sites were smelters or lead factories. Yet USA TODAY later found evidence that 12 additional sites were factories. The state is now working with EPA to investigate, DEP spokesman Lawrence Hajna said. He also now says the department has located case files on some sites it told USA TODAY it didn't have.

In 2002 and 2003, the New York Department of Environmental Conservation did an “informal investigation” at some of the 89 sites listed in the state, spokeswoman Emily DeSantis said.

Four sites were known to the department and undergoing cleanups. At the remaining sites, the department concluded there was “no evidence” of environmental impacts or “no apparent impact,” according to information provided by DeSantis.

Yet the department provided records documenting staff visits to just 13 of those sites. Others were assessed by the department's regional offices, DeSantis said, but the department had no record of those evaluations. There was no soil testing at any of the sites, she said, but USA TODAY's findings will be reviewed for possible follow-up.

In other states, USA TODAY repeatedly located smelters that regulators said their extensive research found no evidence had existed.

The Indiana Department of Environmental Management told the EPA in 2002 they could not find the site of the former Chas. Braman & Sons factory in the north-central Indiana town of Plymouth. The list provided to them by the EPA had only a post office box as an address. “Numerous historical industrial directories, as well as Sanborn maps, were consulted without finding any reference to the site,” the state said in a 2002 report sent to the EPA.

The newspaper found a street address for the plant listed in a 1959 edition of Plymouth's telephone directory. A call to Plymouth's City Hall produced council minutes beginning in 1954 showing that emissions from the plant were a source of citizen complaints. According to a 1956 article from a local newspaper that Plymouth's city attorney found in the town's history museum, the Chas. Braman & Sons “smelting plant manufactured granular aluminum, solder and lead.”

In response to USA TODAY's findings, state regulators sent staff to Plymouth and took 24 off-site soil samples from various locations near the former facility. Another six samples were taken on the factory site, which is now a granular aluminum company.

All the state's tests showed lead levels below federal guidelines; many did not detect any lead. “We did not see anything we were concerned about,” said Mark Jaworski, a project manager in the state's site investigations section. The current owner of the aluminum com-

pany on the property, John Oliver Sr., said there has been no lead smelting since the Bramans' sold their factory around 1965.

Minnesota regulators told the EPA in a 2002 memo they were unable to confirm whether any of the seven sites in their state had been smelters. USA TODAY found evidence of historical smelting at two of them.

A state employee checked corporation records and did a drive-by of the former Hiawatha Avenue location of Northwestern Smelting & Refining in Minneapolis and noted a construction company and a bus line were among current businesses there. "No information available as to the operation of a smelter at this location," wrote Gary Krueger in his 2002 assessment.

The newspaper found photographs from the 1940s of the smelter in operation posted on the Minnesota Historical Society's website. A reporter located a historical Sanborn fire insurance map at the Library of Congress showing three smelters there at one time.

Krueger told the EPA in 2002 he couldn't find evidence of a National Lead smelter, which had been listed in St. Paul without a street address in old industry directories. "Additional use of state resources cannot be justified based solely on name of potential facility somewhere in

St. Paul," says the state's report.

A reporter located the factory by searching through old indexes to Sanborn fire insurance maps. The map shows the National Lead plant was in a warehouse district near the Mississippi River and what is now Harriet Island Regional Park and describes it as a manufacturer of lead pipe, babbitt, solder and printers' metals; it also shows melting kettles.

After being given the photos and maps found by USA TODAY, Krueger recently visited the St. Paul site and made a second visit to the Minneapolis site. Krueger, a project manager in the state's Superfund program, noted the areas have undergone redevelopment.

"Quite honestly, it really doesn't change anything," he said. Without more proof of a danger, Krueger said, his department can't justify doing any soil sampling.

USA TODAY tested soil near the former National Lead site in St. Paul and found elevated levels in street-side public rights-of-way ranging up to 539 ppm. None of the three samples taken inside the park — which is in the river's flood plain — showed lead levels above 400 ppm, the EPA's hazard level for children's play areas. Near the Minneapolis smelter site, USA TODAY's tests found varying levels of lead.

<http://usatoday30.usatoday.com/news/nation/story/2012-04-20/smelting-lead-contamination-soil-testing/54420418/1>



By Eileen Blass, USA TODAY

Kathleen Marshall reads with her toddler, Kevin, at their home in Philadelphia, where soil tests showed elevated levels of lead.

Some neighborhoods dangerously contaminated by lead fallout

By Alison Young and Peter Eisler, USA TODAY

Kathleen Marshall used to think the fenced backyard of her Philadelphia home was a safe place for her five children to play. Not anymore.

Marshall was horrified to learn that a long-forgotten factory once melted lead just across the street and that soil tests by USA TODAY indicate her yard is contaminated with hazardous levels of the toxic metal.

“You’re living here and you have no idea of what’s really in your ground, what’s in your backyard,” Marshall says now. “It’s just kind of scary to think that you’re sending your kids out to play in an area that’s hazardous.”

Hundreds of soil tests by USA TODAY in neighborhoods near former lead factories show numerous areas where the dirt is so contaminated that children should not be playing in it.

Yet they are.

Hazardous levels of lead were found in the dirt under a tricycle in Minneapolis; in the dusty doorway of a little girl’s playhouse in Hammond, Ind.; near a dropped baseball bat in a suburban Milwaukee yard; in the outfield of a baseball diamond in New York City.

The soil tests, part of an ongoing USA TODAY investigation, revealed potentially dangerous lead levels in parts of all 21 neighborhoods examined across 13 states. Although results varied house to house, the majority of

the yards tested in several neighborhoods had high lead levels – in some cases, five to 10 times higher than what the Environmental Protection Agency considers hazardous to kids.

Children who play regularly in lead-contaminated soil, just by putting dust-covered hands or toys in their mouths, are exposed to a poison studies show lowers intelligence and reduces academic achievement, delays puberty and causes other health problems.

In response to the newspaper’s soil test results, regulators in Kentucky, New Jersey, New York, Oregon and Wisconsin already are taking actions at five old factory sites.

At the national level, EPA assistant administrator Mathy Stanislaus said in a statement the agency will “review USA Today’s information to determine what steps can be taken to ensure Americans are not being exposed to dangerous levels of lead.”

The federal government had been warned a decade ago about the poison likely left behind by more than 400 companies. The factories, often referred to as “smelters,” had operated mainly from the 1930s to 1960s, but federal and state officials did little to find many of the sites, alert residents or test the soil nearby, USA TODAY reported Thursday.

Parents were shocked to learn that factories closed de-



By Todd Plitt, USA TODAY

Contamination in the outfield: Baseball fields in Brooklyn's Red Hook Park, built atop a historical smelter site, have been temporarily closed while New York City officials inspect and take steps to minimize the risk of lead exposure.

decades before their kids were born could pose a danger. They didn't know that the fallout of lead particles from factories that melted lead batteries or processed lead in furnaces for pipes and other products could remain for hundreds of years in the top few inches of soil.

The EPA knew about the smelters near Marshall's home a decade ago but never warned people living nearby and still has not done the soil tests recommended by its own contractors in February 2007.

USA TODAY's tests throughout Marshall's neighborhood found potentially dangerous levels of lead in multiple locations — including the small backyard where her children play.

The EPA says there is no immediate threat in Marshall's neighborhood and that it will begin another round of assessing the safety of the area late this year or early next year. "EPA does not notify residents of potential contamination based solely on the possibility that past industrial activities may have occurred. This type of approach would unnecessarily alarm residents and community members," the agency's Philadelphia regional office said in a written response to USA TODAY's questions.

The EPA noted it is not uncommon to find high levels of lead in soil in large urban areas because of decades of pollution from sources including flaking lead-based paint and dust from vehicles burning leaded gasoline, as well as by lead smelters and other factories. The EPA is authorized to clean up soil only if it can prove the lead came from a specific industrial release.

The lead found by USA TODAY's testing likely comes from a mixture of these sources, though old lead factories have proven to be significant polluters.

Regardless of where the lead in soil came from, the human body treats it as poison, particularly if you're a kid.

The soil tests — and the hazards they revealed

USA TODAY reporters spent two months testing soil in multiple spots in yards, with the permission of residents. The reporters also tested soil at public parks, schools, athletic fields as well as street-side strips of public land within a mile of the sites. Air-blown lead particles often drop in the immediate vicinity of factories, but the toxic dust can travel for miles.

The sites tested came from a list of more than 400 potential lead smelters believed to be unknown to federal regulators because they operated before the creation of the EPA. The list was developed by environmental scientist William Eckel, who published a 2001 article in the *American Journal of Public Health* warning that the forgotten factories might have contaminated surrounding properties.

Because most of the old smelters had operated for decades without any regulatory oversight and are now gone, little was known about the size of each factory, where they were located, how much lead they processed and how much pollution they left behind.

USA TODAY focused its testing on 21 neighborhoods, a mix of locations that varied from the urban cores of big cities to a small Midwestern town.

The reporters were trained to use \$41,000 handheld devices called XRF analyzers to test more than 800 samples of surface soil — the top layer that children's hands are most likely to touch. The devices shoot X-rays into the soil, which causes the chemicals present to give off a unique fluorescence — like a flash — that is measured by the device. The XRF analyzer is a widely accepted method of testing soil.

Elizabeth Southerland, director of the EPA's assessment and remediation division in its headquarters Superfund

program, said the agency will take a close look at the newspaper's test results.

To further confirm the validity of the XRF readings, reporters collected nearly 200 soil samples and shipped them to a lab run by soil sampling expert Howard Mielke at Tulane University for a different type of chemical analysis, with the expense covered by USA TODAY.

Under natural conditions, lead is found only in very small amounts in soil. The average in U.S. surface soils is just 19 parts per million (ppm), according to the U.S. Geological Survey.

The soil samples tested using the XRF devices showed several neighborhoods had lead levels greater than 2,000 ppm, topping 3,400 ppm in Cleveland, Portland, Ore., and Carteret, N.J. Mielke's lab often found higher levels in samples than what the devices showed in the field.

The EPA considers soil a potential hazard in children's play areas at levels above 400 ppm. Soil below the EPA threshold isn't necessarily safe: California has set a much lower standard, 80 ppm, using computer models to find a level they say is more protective of children. Of the 21 smelter neighborhoods, 80% had median soil lead levels above California's benchmark in the XRF tests.

The EPA is aware of the changing science around low-level lead exposures and is awaiting guidance from the Centers for Disease Control and Prevention before any change would be considered to the federal soil hazard level, Southerland said.

Lead levels in the soil samples collected by USA TODAY were generally highest in places like Chicago, Cleveland and Philadelphia — where old inner-city neighborhoods mingled with industrial sites. In addition to lead from old smelters, these densely populated cities would have had far more cars burning leaded gasoline than smaller cities.

In some smelter neighborhoods, the tests found few spots with high lead levels. In St. Paul, the smelter site was near the Mississippi River flood plain, where lead particles may have long ago washed away or been buried by flood-control efforts. Lead levels in tested samples were also generally low around sites in Jacksonville and suburban Tampa.

The addition or removal of dirt in any area, especially through construction or landscaping, can affect how much lead remains at the surface where people — especially children — are most likely to be exposed.

The danger posed to kids

Even trace amounts of lead — particles so tiny they're

barely visible — are enough to cause irreversible health problems in kids who ingest or inhale them.

Swallowing just 6 micrograms of lead particles a day over about three months can raise a child's blood-lead level by up to 1 point — which in turn can result in the loss of up to 1 IQ point, according to California's Office of Environmental Health Hazard Assessment. That's why the state lowered its soil standard to just 80 ppm.

To visualize how little lead that is, picture a packet of artificial sweetener, which contains 1 gram of powder. A microgram is one-millionth of a gram.

"Just touching the surface (of the soil), you get enough to make a difference in exposure," Mielke said.

A study Mielke published several years ago found children's hands picked up high levels of lead — up to 30 micrograms during a play session outdoors in soil at day care centers in inner-city New Orleans.

Children 6 and younger are at greatest risk because they routinely put things in their mouths. Their growing brains are also the most susceptible.

"They absorb much more (lead) than an adult ... probably because it mimics calcium and iron," said Bruce Lanphear a leading researcher on lead poisoning at Simon Fraser University in British Columbia.

That's why parents in neighborhoods in and around historical smelter sites in places like Philadelphia, Portland, Ore., and West Allis, Wis., have reason to be concerned.

In Philadelphia, a worried mom's story

Kathleen Marshall's row house is among dozens in the potential fallout zone of two old lead factories that operated for decades along Hedley Street near the Delaware River. USA TODAY's tests of soil in the area showed dangerous levels of lead contamination.

Across the street from her house, the Thos. F. Lukens Metal Co. made lead pipe, solder and a type of mixed metal called babbitt, from at least 1940 through 1956, and was a battery lead smelter from about 1960-63, according to the Standard Metal Directory.

Less than a quarter-mile away was an even larger factory complex: White Brothers Smelting Co., according to a historical Sanborn fire insurance map. The sprawling complex was listed in the directories as a manufacturer of babbitt and solder, metals that often included lead.

To look at the area today, residents would never know that either factory existed. The land where White Brothers once stood is largely vacant; a couple of small businesses sit atop the Lukens site.

Lead in the body

No safe level of lead in a child's body has been identified. Studies continue to document significant harm at far lower levels of exposure than previously known.

Blood-lead levels (µg/dL)* and their effect:

70+

Seizures, coma, possible death

45+

Chelation therapy recommended with medication that causes lead to be excreted in the urine

15+

Can trigger a home inspection by local health officials to identify lead source (level varies by department)

10**

Current CDC "level of concern" set in 1991

Less than 10

Decreased IQ, delayed puberty, reduced postnatal growth and decreased hearing

5***

Proposed CDC's action level

Less than 5

Decreased academic achievement, increased incidence of ADHD and problem behaviors

* µg/dL = micrograms per deciliter of blood.
** Official CDC "level of concern" set in 1991.
*** Proposed new action level recommended by CDC's scientific advisory panel in January 2012.

Sources: CDC, National Toxicology Program, USA TODAY research

Contaminated soil

USA TODAY tested soil in 21 neighborhoods near sites where lead factories once stood. For full testing details, including where high levels of lead were found in each neighborhood, go to ghostfactories.usatoday.com.

Recorded lead content (in parts per million)

Median High

80 California standard²

400 EPA standard³

Factory name	Address	City	State	Samples ¹	Median	High
A. Bercovich/Sunset Smelting	1639 18th St.	Oakland	Calif.	22	517	2,324
John T. Lewis/National Lead/Anzon	2607 E. Cumberland St.	Philadelphia	Pa.	29	506	2,803
Loewenthal Metals Corp.	947 W. Cullerton St.	Chicago	Ill.	26	463	1,608
Franklin Smelting/Ladenson Metals	3100 Castor Ave.	Philadelphia	Pa.	18	446	1,486
Tyroler Metals	5305 Sweeney Ave.	Cleveland ⁴	Ohio	48	446	2,253
White Brothers Smelting Co. & Thos. F. Lukens Metal Co.	Hedley St. south of Bath St.	Philadelphia	Pa.	54	338	2,030
U.S. Metals Refining Co.	400 Middlesex Ave.	Carteret	N.J.	49	315	3,581
Certified Metals Manufacturing/Newport Foundry	534 W. 12th St.	Newport ⁴	Ky.	52	301	1,084
Metals Refining Co./Glidden	11001 Madison	Cleveland ⁴	Ohio	45	285	3,476
Columbia Smelting & Refining Works	98 Lorraine St.	Brooklyn	N.Y.	32	247	2,116

Median High

80 California standard²

400 EPA standard³

Factory name	Address	City	State	Samples ¹	Median	High
Metals Refining Co./Glidden	1723 Summer St.	Hammond	Ind.	49	192	2,851
Niagara Falls Smelting & Refining	2200-8 Elmwood Ave.	Buffalo	N.Y.	59	181	1,235
Allied Smelting	5116 W. Lincoln Ave.	West Allis	Wis.	37	178	940
Glazier Metals	8 W. 21st St.	Richmond	Va.	42	165	1,000
Multnomah Metal Co. Works	0236 SW Flower St.	Portland	Ore.	41	158	7,427
Northwestern Smelting & Refining	2523 Hiawatha Ave.	Minneapolis	Minn.	69	127	573
Florida Smelting Co.	2726 Evergreen Ave.	Jacksonville	Fla.	19	92	530
Chas. Braman & Sons	1433 Western Ave.	Plymouth	Ind.	51	77	469
National Lead	Near Plato Boulevard West	St. Paul	Minn.	46	73	851
Florida Smelting Co.	5800 Buffalo Ave.	Jacksonville	Fla.	23	40	261
Gulf Coast Lead	11110 N. 56th St.	Temple Terrace	Fla.	41	30	1,017

¹ – Soil samples tested by X-ray fluorescence (XRF) analyzer within 1 mile of the former smelter site. ² – California has set 80 parts per million (ppm) as its standard, based on modeling by the California Office of Environmental Health Hazard Assessment estimating that a child who plays regularly in soil contaminated with just 77 ppm of lead can lose up to 1 IQ point. ³ – The EPA's hazard standard for bare residential soil where children play is 400 ppm of lead. ⁴ – Wet soil throughout testing area may result in the XRF analyzer undercounting the total lead content. Source: USA TODAY soil sampling data analysis by Paul Monies, USA TODAY; graphic by Frank Pompa, USA TODAY

USA TODAY tested 35 samples of soil around homes in a two-block stretch of Hedley Street. Twenty-seven of the samples contained elevated amounts of lead, ranging up to more than 2,000 ppm.

“Something’s got to be done. It’s got to be fixed,” said Joseph Gallagher, whose 4-year-old son, Brady, used to play in the bare dirt of their home’s small backyard. USA TODAY tested three spots in his yard, which showed 476 ppm to 771 ppm of lead.

Marshall and her family live less than a block away. Tests of four soil samples in their small backyard – strewn with toys and bicycles – had lead levels of 501 ppm to 842 ppm.

“They’re always digging in it – the baby, too,” she said.

Marshall’s baby, Kevin, had his blood tested Aug. 6, at 19 months old. It showed his blood-lead level was 7.5. That level of lead exposure is associated with decreased IQ and an increased incidence of ADHD and other issues, medical studies show.

The Children’s Hospital of Philadelphia, where the tests were done, didn’t call Marshall to let her know. She learned the results from USA TODAY, which got them with Marshall’s permission from information the hospital filed with the state health department. Children’s Hospital doesn’t routinely notify parents unless a child’s blood-lead level is a 10 or higher, said Lisa Biggs, the hospital’s medical director of primary care. That’s because the CDC set 10 as the level of concern back in 1991 – before more recent studies showed significant harms at lower levels. In January, CDC scientific advisers recommended lowering the blood-lead action level for children from 10 to 5.

“The whole thing is crazy,” Marshall said. “I think if there’s any lead in their system you should be notified.”

Contractors for the EPA went looking for the White Brothers factory in 2005, federal records show. The agency produced no records showing it looked for the nearby Lukens Metal factory.

The 2007 contractor’s report erroneously placed White Brothers about a quarter-mile northeast of where it was. The contractors fingered what was actually the former site of a different manufacturing plant, historical maps show. They recommended the EPA do soil sampling in the nearby neighborhood. In a written response to questions, the agency acknowledged the sampling never happened and said it plans to reassess the site later this year or early next year.

In the meantime, the Philadelphia Department of Public Health is taking a closer look at lead poisoning around smelter sites featured in USA TODAY’s investigation, said Nan Feyler, the department’s chief of staff. The city’s health department has traditionally focused on deteriorating lead-based paint, which it considers the primary risk to residents.

“We do take seriously, desperately seriously, the risk of lead poisoning of Philadelphia’s children,” Feyler said.

The smell Fred Kuolt will never forget

Fred Kuolt remembers horrible smells that wafted from Allied Smelting through his suburban Milwaukee neighborhood in the 1950s and 1960s, making it difficult for his wife, Lorraine, to breathe.

“When the wind was blowing from the north or northwest, you would get that odor of sulfuric acid,” said Kuolt, 94. “We had to close our windows in the summertime.”

Allied Smelting recycled lead and lead-acid batteries, and performed lead smelting and other kinds of metal

smelting from about 1950 through 1975. Another firm, Grey Iron Foundry, was at the property from about 1946 to 1950, according to state and historical records.

Today, the property is occupied by a window replacement company.

Private soil tests on the former smelter property in 1996 found lead levels as high as 210,000 ppm, according to results filed with regulators at the Wisconsin Department of Natural Resources. A tree-lined neighborhood of tidy homes, including Kuolt's, is just across West Lincoln Avenue, to the south of the site.

In 2005, state regulators told representatives for the former smelter property's owners that they needed to do more tests for soil and groundwater contamination in the area, state records show. The testing was never done and for years regulators never followed up, according to department records.

USA TODAY tested soil in the neighborhood and found potentially dangerous levels of lead in the yards of nearby homes, particularly just south of the smelter in the 2300 block of South 52nd Street. Eight of 14 samples from the yards of two homes had lead levels above the EPA's hazard standard for children's play areas.

People living at the homes tested said they had no idea a smelter used to operate nearby or that their yards might be contaminated.

Kuolt said many of his younger neighbors moved in after the smelter closed. "These people today would not even know that that existed," Kuolt said. Even back then, residents weren't worried about lead — they were focused on the acid smell, he said.

City building inspection records show that in the 1960s neighborhood residents complained to the city about particulate emissions from the plant, sulfuric acid fumes, noise and other issues.

Following USA TODAY's inquiries, the Wisconsin Department of Natural Resources in December notified the owner of the former smelter property that soil should be tested in the neighborhood and specifically along South 52nd Street, where USA TODAY found elevated lead levels, records show.

The property owner's environmental consultant has told state regulators it isn't his client's responsibility to do off-site testing for a smelter he didn't operate, records show. The property owner did not respond to interview requests, including by certified letter.

Paul Biedrzycki, environmental health director for the City of Milwaukee Health Department, said the levels of lead USA TODAY found near the former smelter aren't surprising and that health officials have long known of the potential for lead to be in urban soils from a variety of sources.

The levels above 400 ppm, especially if children are playing in bare soil, do raise concerns, he said. Yet with limited resources, Milwaukee's health department, like others around the country, focuses its efforts on lead-based paint, Biedrzycki said.

"The cumulative effect of many of these secondary sources may be the next challenge for public health," he said. "But I'd say there's still quite a bit of work to do on addressing lead-based paint as the primary source for high levels in children."

Lead in a Brooklyn baseball field

For decades, children had poured onto the baseball fields at Red Hook Park in Brooklyn after school, running the base paths and shagging fly balls. There had been no hint of the potential danger that lies just beneath that grass, where the soil is laced with lead.

It's been more than 60 years since Columbia Smelting and Refining Works ran its eight furnaces where the fields now sit. Today, lead concentrations in the soil are up to five times greater than the EPA's hazard level for play areas.

There's also lead in the nearby grass courtyards of the Red Hook Houses, Brooklyn's oldest and largest public housing complex, which sits across the street. The sprawling neighborhood of unpainted brick high-rises was built in the 1930s — when the smelter still operated — and today is home to about 6,000 people.

In March, New York City officials closed four ball fields in Red Hook Park after learning from USA TODAY the area was a former smelter site where the newspaper had found elevated levels of lead. The city could have learned a decade earlier that a smelter once occupied the property — both the U.S. EPA and the New York State Department of Environmental Conservation knew about it, but city officials said they weren't told.

In 2002, the EPA sent an inspector to look at Columbia Smelting's former location as part of an effort to examine hundreds of suspected smelting sites that had come to its attention. However, the inspector was tasked only with determining whether Columbia was still operating and in need of a waste permit. "HQ smelter initiative, nothing at site," the inspector wrote in his report on the visit to Red Hook Park.

That marked the beginning and end of any federal effort to determine whether there were lingering effects from the smelting operation.

"The purpose of these visits was to determine if lead smelters were present at these locations and, if so, if these facilities were in compliance" with waste disposal laws, said John Martin, a spokesman in EPA's Region 2 office in Lower Manhattan, which did the visits. He said the site visits were "not about going out and doing sampling or doing a risk assessment."

The EPA did share its list of suspected smelter sites, including the Red Hook Park location, with the New York DEC. But the department said it had no records of investigating or visiting the Red Hook Park site.

USA TODAY tested soil in the park and found elevated levels of lead in six of eight samples taken from the ball fields stretching across the site where the smelter was located. Four of those soil samples, all taken just beneath

the ball fields' outfield grass, showed lead concentrations above 2,000 ppm — five times the EPA's hazard level for children's play areas. Elsewhere in the park, levels were generally lower.

Across the street, in grassy areas of the Red Hook Houses, six of 16 soil samples tested from throughout the public housing complex had lead levels above 400 ppm.

New York City officials said they were unaware a lead-smelting business had once occupied a portion of the park. The city did its own soil tests and confirmed USA TODAY's findings, identifying lead concentrations as high as 2,000 ppm at the ball fields.

The fields will be closed for six to eight weeks while the city puts clay and new grass over exposed dirt as interim steps to minimize lead exposure risks, said Deputy Parks and Recreation Commissioner Liam Kavanaugh. Ultimately, "we're looking for a more permanent solution, which will probably involve reconstructing the fields so you would eliminate any elevated lead readings."

In response to public records requests from USA TODAY, neither the EPA nor the DEC produced documents indicating that information gathered in 2002 about former smelting sites was shared with local officials in New York City or other communities.

"If we had known that there was a potential for some soil contamination as a result of a prior use of the site, I'd like to think that we would have taken the actions we're taking now," Kavanaugh said.

A 30-year veteran of the city parks department, he said he was "surprised" to learn about the smelter and soil contamination at Red Hook Park from USA TODAY.

The risk of significant lead exposure to children playing in the area is low, because the ball fields don't tend to be used by toddlers, who are likely to handle the dirt or put toys and fingers in their mouths, said Daniel Kass, deputy commissioner at the city's Department of Health and Mental Hygiene. Risks are similarly low in the residential development across the street, he said, because children's play areas are paved and young children don't dig in the grassy courtyards where USA TODAY found elevated lead levels.

Kass also noted that lead poisoning rates for children in the neighborhood have been lower than many other parts of the city and no cases have been traced to contaminated soil. Still, he added, city officials "would have liked to have known" about the old smelter site when state and federal officials first became aware of it 10 years ago.

"We take all potential sources of exposure seriously," Kass said. He noted that the parks department's immediate closing of the contaminated ball fields was appropriate and the city would have "responded quite similarly" if it had learned of the problem in 2002.

"It's always better to have the information," Kass said.

In Carteret, N.J., the dust 'was everywhere'

Alex Marciniak's grandmother used to complain about the dust that spewed from the smelting plant across the

street from her home in Carteret, N.J. When the wind blew toward the modest row houses in their working-class neighborhood, the dust would foul laundry hanging in the yard. It coated people's cars, blew into their houses. It was everywhere.

"We'd have to close all the windows in the house because it was hard to breathe," Marciniak, 43, recalled of his childhood.

The smelting operation for 80 years "spewed forth enormous amounts of contaminating materials," a federal judge concluded in a June 2009 ruling on a lawsuit over the impact of the plant's historical operation on parts of the site it once occupied. "Even after (pollution) controls were put in place, the controls were inadequate, defective, and often non-functional."

At the height of its operations, more than 500,000 tons of scrap metal were fed into its smelters each year, state records and court documents show.

"Observed heavy ... emissions (100% opacity) from the smelter building," an inspector from the New Jersey Department of Environmental Protection reported after a 1982 inspection. "The observations ... were not unusual. I have been observing and reporting these problems for at least three years now."

Local regulators found similar problems. In 1984 alone, the Middlesex County (N.J.) Department of Health cited U.S. Metals for 134 violations of air-quality standards due to excessive emissions from smelter smokestacks.

In 1988, U.S. Metals signed a legal agreement to clean up the smelter site; subsequent soil tests on the property showed lead levels as high as 90,000 ppm. Tons of contaminated soil were removed from the factory property.

But regulators never checked to see whether the yards of homes across the street or down the block were contaminated.

Unlike most of the smelter sites on Eckel's list, U.S. Metals continued operating until 1986 — long enough to hit the radar of regulatory agencies.

USA TODAY tested 41 soil samples from eight yards and public rights-of-way in and around the Chrome neighborhood, which begins across the street from the U.S. Metals site. Twenty-one of those tests showed lead concentrations of 400 ppm to nearly 1,000 ppm.

In response to USA TODAY's findings, the New Jersey Department of Environmental Protection has ordered soil testing in the neighborhood later this year. The work will be done by Freeport-McMoRan Copper & Gold Inc., which became the corporate parent of U.S. Metals more than 20 years after the smelting plant was shut down.

"We reached out to the responsible party as a result of USA TODAY's inquiry," said Lawrence Hajna, a department spokesman.

Freeport-McMoRan said in a statement that it is cooperating with the state DEP and expects to take several months to set up a testing program. It noted that lead found by USA TODAY could be from other industries, lead-based paint from older houses or long-ago emis-

sions from vehicles using leaded gasoline.

In the meantime, Alex Marciniak worries about his daughter, still in elementary school. Waving toward the vacant lot, green and inviting, behind his house, he said: “I wouldn’t let her play back there.”

Hilda Rosa Burgos, a nurse with a 6-year-old son, echoed his concerns after being informed about elevated lead levels in her yard. “My son used to ... go out and play in the dirt, play back in the corner of the yard, and now we can’t do that. ... I’m confused, I don’t feel safe.”

Test results prompt Kentucky to investigate

The blockish two-story brick building next to a row of homes along West 12th Street in Newport, Ky., does little to call attention to itself. Nearly all of the windows are covered with plywood, painted gray to match the brick.

A sign is tacked above a boarded-up doorway: “L&H Tool & Die Co.”

In 1910, however, it was the Newport Foundry Co., historical fire insurance maps show. From at least 1949 to 1954, industry directories show the site was home to Certified Metals Mfg. Co., which made babbitt and solder, mixed metals that often contained lead.

Soil tests in nearby residential yards showed lead levels that could be hazardous to children. Of 30 samples taken at five homes within about two blocks of the former foundry, 19 topped 400 ppm on the XRF analyzer and reached as high as 1,084 ppm.

The soil was wet from days of rain at the time USA TODAY did its XRF sampling, and water in soil can cause the device to undercount lead. Six samples collected from the same area and sent to Tulane University showed even higher levels, up to 2,485 ppm, in all but one case.

People who live near the old factory said they never knew it once made lead products and are now concerned about the lead in nearby yards.

“If it’s a problem, I want it taken care of,” said Debra Winkle, who lives a few doors down. Although no children currently play in her yard, she hopes someday to have grandchildren who will. “I want them to be safe,” she said.

Environmental regulators at the Kentucky Division of Waste Management said they were unaware of the former foundry site until they were contacted by USA TODAY — despite it being on Eckel’s list.

After hearing about the soil test results, the state has opened an investigation of the site and potential sources of lead contamination in Newport, said Tim Hubbard, the division’s assistant director.

“Looking at the data overall, the results are not too surprising for what you might expect to see in lead levels in an urban area,” Hubbard said. “Obviously some were higher than one would like to see in any kind of setting.”

One of the difficulties of the investigation, Hubbard said, is that the lead found by USA TODAY’s tests could have come from a variety of sources. A scrap metal firm is also nearby.

Hubbard said his department could be put in a difficult spot if it finds dangerous levels of lead in residential yards — and if no obvious polluter can be definitively held responsible for a cleanup. Kentucky has only about \$400,000 a year to spend on state-funded cleanups.

“If we determine there are levels out there that need to be addressed and it is not safe to leave them where they are ... then something will be done. That’s the bottom line,” he said.

L&H Tool and Die is a division of a Cincinnati metal-working firm, Seilkop Industries. Dave Seilkop said his company bought L&H Tool and Die, which produces aluminum stampings, in 1998, and was unaware of the Newport property’s previous uses.

State health department reports show the area where the foundry once operated has been considered a high-risk area for lead poisoning. Local health officials said they think the biggest problem in the area is lead-based paint, which was widely used until the 1950s and banned from residential use in 1978. Newport, which is across the Ohio River from Cincinnati, was founded in 1792.

“If it’s in the soil ... an obvious primary factor is paint coming from the house structure,” said Steve Divine, environmental health director for the Northern Kentucky Health Department.

When investigating cases of lead-poisoned children, the department doesn’t always test the soil, Divine said. Sometimes there is no yard, or the yard has a good cover of grass over the soil, he said.

Since 2001, the department has investigated cases of lead-poisoned children at 27 homes in Newport’s 41071 ZIP code, where the former smelter is located. Of those, 13 homes had their soil tested by the inspectors, and 10 yards had lead levels above the 400 ppm hazard standard.

Still, Divine said: “Our experience is the primary culprit has been the lead paint in the structure.”

Hazards in a suburban Portland neighborhood

The lawns on and around the site of the old Multnomah Metal Works in Portland, Ore., are green and well tended, rolling out from homes that can fetch \$250,000 or more. There’s no sign of the smelter that operated in the neighborhood for 65 years.

The old smelter building was demolished in 1975; the next year, a duplex home was built there, state records show. Regulators from the Oregon Department of Environmental Quality (DEQ) discovered there had been a smelter at the site in 2002, while investigating another Multnomah Metal Co. address that turned out to be an office and storage yard.

Inspectors took four soil samples on the site in 2003 and all were above the EPA’s residential hazard standard for children’s play areas — including one spot that showed 5,120 ppm.

“Given the ... consistently high lead concentrations across the site, I consider the soil unacceptable for in-

dustrial/commercial or residential use,” DEQ toxicologist Mike Poulsen wrote to agency officials in a 2003 e-mail. “Further characterization of onsite and possibly offsite soils is warranted.”

In a separate memo, Christopher Blakeman, a DEQ project manager, noted that “children ... may be exposed to potentially threatening levels of lead in soils and/or dirt transferred into the home. Pregnant women may also face similar exposure threats.”

The state did no further testing. It never told the neighbors about the contamination or forced a cleanup, the DEQ acknowledged in response to USA TODAY’s questions. The department’s only follow-up action was to list the site on its public registry of contaminated properties.

The DEQ can issue a legal order requiring a site on the registry be cleaned up, and it generally would be the property owner’s responsibility, said Chuck Harman, a DEQ remedial-project manager who helps supervise properties on the list. The department has taken no legal action on the Flower Street property.

USA TODAY’s testing at the former smelter property and in nearby yards found high levels of lead. Tests in the yard of the duplex that sits atop the former smelter site found lead levels that peaked above 7,400 ppm. All 14 soil samples tested from the property showed lead levels above 400 ppm. At two nearby homes, 11 of 17 samples showed lead levels ranging from 400 ppm to above 1,100 ppm.

In response to USA TODAY’s test results, the DEQ has reopened discussions with the owner of the former smelter site about addressing the lead contamination, Harman said this month. It is unclear whether the state will sample any soil on neighboring properties, he said.

The results of the state’s initial soil tests in 2003 “are not really acceptable (lead) numbers,” Harman added. “I’m not sure why back then we didn’t make that decision to pursue that (site) more strongly.”

The site’s owner did not respond to interview requests or a certified letter.

Brian Morgan, a medical student who lives with his wife in one side of the duplex on the smelter property, said he was unaware of the site’s history. “We don’t have kids ... so I’m not too worried,” he said.

Neighbors were concerned, especially that the state didn’t tell them about the 2003 test results.

“Nobody ever has mentioned anything to me about it, I’ve never gotten a letter, nothing,” said Barbee Williams, who has owned a home next to the smelter site for 22 years. Three tests showed lead levels over 1,000 ppm in the soil of her yard.

Williams wonders about the berries, grapes, apples and plums she has grown in soil that might be contaminated. “I wouldn’t have planted a lot of things to eat if I had known that,” she said. “My grandchildren played out there — my grandson was a little boy with trucks, so he played in the dirt quite a bit.”

The DEQ posts its registry of contaminated properties on the Internet and people can search by ZIP code to see whether a polluted site is nearby. Notices generally aren’t sent to neighbors. “There’s not in state law a public notification process for informing neighbors at the time a site is listed,” Harman said.

If the state determines that neighboring properties are contaminated, officials typically would inform the owners, Harman added. But because the state did no off-site sampling around the old smelter, there was no evidence of a problem.

Now Portland residents like Williams understand there is a problem — an awareness she shares with Kathleen Marshall of Philadelphia, Debra Winkle of Newport, Ky., and Fred Kuolt of West Allis, Wis., each of whom was unaware, until now, of the poison in the ground.

Old lead factories may stick taxpayers with cleanup costs

Alison Young, USA TODAY

PHILADELPHIA – Several companies manufactured lead for more than 140 years at a massive factory surrounded by homes in the city’s Port Richmond area: John T. Lewis & Bros., National Lead, Anzon and others. The factory is long gone, and tests show dangerous levels of lead in nearby yards – putting children at risk of being poisoned by playing in the dirt.

Yet if homeowners want their yards to be made safe, it’s up to them – not the companies or the government -- to pay the costs of replacing contaminated soil or capping it with cement. That’s the message residents say the Environmental Protection Agency delivered at neighborhood meetings this year.

“That was 100% clear – that it was on us,” said Lisa Conway, who attended two of the meetings and hopes the new backyard sod the family had installed will protect their 8-month-old son.

“I think it’s kind of shady that nobody wants to take responsibility for all the years and decades of irresponsible contamination,” said Christina DiPietro-Sokol, who has covered her backyard in artificial turf to keep the family’s children and their huge dog from coming into contact with the dirt. Estimates to cement over it were in the thousands of dollars, she said. “We have two kids in Catholic school. We can’t do that.”

Making polluters pay for cleanups is a cornerstone of federal and state environmental laws. Although many of the companies that operated the old lead factories highlighted in USA TODAY’s ongoing “Ghost Factories” investigation ceased to exist decades ago, some companies associated with the sites are still in business today.

Yet some of these companies have undergone corporate reorganizations or used carefully worded language in purchase agreements to limit their environmental liabilities. Others have used bankruptcy to shed financial responsibility for pollution.

And in some cases, even when companies were intact and could have been held responsible, government regulators failed to act in time, a USA TODAY review shows.

The result is that taxpayers or homeowners often have to bear the cost of cleaning up the contamination -- if it happens at all. State and federal cleanup programs have limited money to take care of “orphan” environmental sites that have no private party to pay the bill. And internal memos show regulators can be reluctant to use government money to clean up lead in urban soil – even next to old lead factories – because some of the contamination may also have come from lead-based paint or cars



EILEEN BLASS, USA TODAY

Mike and Lisa Conway hope the new sod they installed in their backyard, near a former lead factory in Philadelphia, will provide a layer of protection for son Mason.

that once burned leaded gasoline, non-factory sources the agencies say they don’t have the authority or money to address.

Left undisturbed, lead dust can remain on the surface of soil for hundreds of years, posing a risk of reduced IQ and other health problems when children ingest even tiny amounts by putting dusty hands or toys in their mouths.

Officials at the EPA declined repeated requests for interviews since October. In a written statement, the EPA said it can hold companies responsible for cleanups only if it can demonstrate they have liability under the federal Superfund law, which provides the agency the authority to address environmental hazards. At the John T. Lewis factory site in Philadelphia, the EPA said it’s still evaluating options to address soil contamination in the area, including looking for financially responsible parties.

Proving responsibility can be difficult when it comes to long-closed factory sites, and legal experts said companies look for ways to shield themselves.

The costs can be staggering: Cleaning the yard around one home in Portland, Ore., will cost up to \$90,000, regulators say, and will involve removing 20 tons of lead- and arsenic-contaminated soil. The EPA has spent nearly \$250 million addressing contamination around more than 10,000 homes near a large lead smelter in Omaha.

“There are enormous amounts of money at issue in

Anzon demolished its Philadelphia factory in 1998. The company enrolled in a voluntary state cleanup program, which didn't address potential contamination in nearby neighborhoods.



FILE PHOTO BY STEVEN M. FALK, (PHILADELPHIA) DAILY NEWS

these cases. It's worth fighting for and it's worth looking for a way to avoid liability on the part of responsible parties," said environmental attorney Linda Bullen, a former EPA regional counsel now with a law firm in Las Vegas.

Robert Glicksman, professor of environmental law at George Washington University Law School, said: "The trick is distinguishing when they cross the line from clever manipulation and taking advantage of loopholes, to situations when they're abusing the process and should be held responsible for the liability."

In general, successor companies have no liability for contamination at old factories previously operated by the companies they acquired. But there are exceptions, Glicksman said, including if it can be demonstrated that the purchasing corporation is a mere continuation of the previous corporation, if there was essentially a de facto merger of the companies or if the transaction was fraudulent and intended to escape liability.

Proving those things can require interviewing former employees and gaining access to company records – which may no longer exist.

"The reality is, with many of these old sites, it's very difficult to find records," said John Cruden, who previously oversaw environmental enforcement for the U.S. Justice Department and now is president of the Environmental Law Institute in Washington, D.C.

"In truth, there's a lot of times where there simply is no viable party, that company is long gone," Cruden said. "But that's why the Superfund exists."

Yet there's a big problem, he notes: The federal Superfund for environmental cleanups lost its main funding source in 1995 – taxes on oil and chemicals, and an en-

vironmental tax on corporations, which were allowed to expire. The result is that the Superfund trust fund's balance had dropped to \$137 million by the start of 2009 from a peak in 1997 of \$5 billion (in constant 2009 dollars), according to a 2010 report by the Government Accountability Office. The report noted that the EPA's estimated costs to clean up existing Superfund sites exceeded current funding levels from Congress. The EPA said this month that the current balance of the trust fund is now about \$80 million.

So, in many cases, finding viable companies that bear legal responsibility is the key to addressing contamination. Doing so can involve unraveling tangled corporate histories. And sometimes, even when responsible companies are still in business, regulators fail to act in time.

Shedding liabilities with bankruptcy

In April, USA TODAY's "Ghost Factories" investigation revealed that the EPA was given a list in 2001 of more than 460 potentially unrecognized former sites of lead factories, which primarily operated and shut down during the 1930s to 1960s. The EPA was warned by the private researcher who compiled the list from old factory directories that many of them had likely contaminated the soil of surrounding properties with a toxic layer of lead fallout.

Despite the warnings, USA TODAY's examination of sites on the list found that federal and state regulators had done little to investigate many of them or warn thousands of families and children in harm's way.

One of those unaddressed sites is in Pittsburgh's Bloomfield neighborhood. The former Federated Metals fac-

tory there processed lead, tin, copper and other metals from 1893 to about 1951. The factory is gone, but its vandalized guard shack remains.

Although the company that operated the factory for many of its final years – the giant metals corporation ASARCO – is still in business, it says it has no responsibility for investigating or cleaning up any potential toxic fallout on nearby homes and a playground. That's because ASARCO went through bankruptcy and agreed by December 2009 to pay \$1.79 billion in cleanup costs to settle EPA and state environmental claims at more than 80 sites across the country. The EPA and state regulators never filed a claim for the Pittsburgh Federated Metals site – even though four years earlier EPA investigators had written a report about the site warning of contamination risks and the need for further investigation.

ASARCO's vice president for environmental affairs, Thomas Aldrich, said the Pittsburgh Federated Metals site was never mentioned during the bankruptcy proceedings. "Apparently, EPA knew about the site and decided not to file a claim regarding it," Aldrich said. "Any action would now be barred by the bankruptcy discharge."

The EPA said that's likely the case. The agency said it didn't have enough evidence during ASARCO's bankruptcy that a cleanup was needed at the Pittsburgh location.

And the EPA still hasn't done the additional assessment recommended by its contractors in September 2005 to determine whether the factory "contaminated nearby residential areas." That assessment is still planned, the EPA said recently, but no date was given. Pennsylvania environmental regulators haven't evaluated the site, either, and said they are "awaiting the results of EPA's study."

Meanwhile, parents like Michelle Mazzotta worry about their children playing in nearby Osceola Parklet, a popular neighborhood gathering spot that's within a few hundred feet of the now-vacant Federated Metals site. "It's kind of sad," she said, after being told about the EPA's 2005 report. "This is a big community with a lot of children in it."

Pittsburgh city officials were unaware of the potential risks identified by the EPA until contacted by USA TODAY and will be asking the state's environmental agency to do soil sampling in the area, city spokeswoman Joanna Doven said.



ALISON YOUNG, USA TODAY

Michelle Mazzotta, along with other parents, worries about her son playing in Osceola Parklet, a popular neighborhood gathering spot that's within a few hundred feet of Pittsburgh's now-vacant Federated Metals site.

Federated Metals' buildings were demolished in 2009, after years of being used to store vehicles for an auto repair business.

The University of Pittsburgh Medical Center, which cleared the factory buildings and some nearby parcels, wants to build a parking garage. UPMC spokeswoman Susan Manko said it would be "inappropriate" for the hospital to share its private environmental assessments of the property.

"Nothing in those studies indicated there was an immediate environmental concern but that UPMC may have to undertake some environmental cleanup prior to developing the property, which of course we would do," she said.

Taxpayers are now facing the bill for any action needed around the old factory.

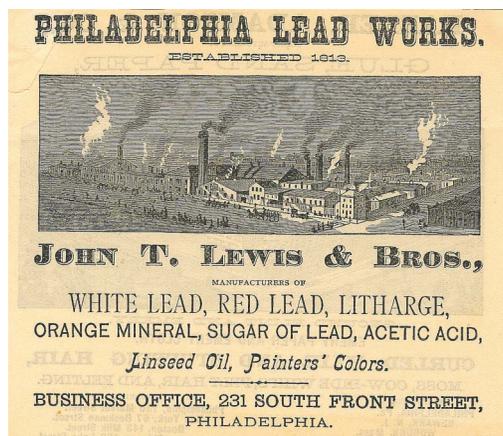
"EPA is planning a reassessment of this site to determine appropriate next steps and further actions," the agency said.

Purchasing assets, without liabilities

Bankruptcy is one way companies can shed environmental liabilities.

In other cases, decades of sales, divisions and mergers have obscured the corporate lineage of companies that operated old lead factories.

The former Glidden Co., which dates to the 1900s, once made lead-based paint and had a Metals Refining division that operated plants across the country, including sites in Cleveland and Hammond, Ind., records show. But



HISTORICAL SOCIETY OF PENNSYLVANIA

An outdated ad for a former lead factory in Philadelphia's Port Richmond area.

the company that today sells paint under the Glidden name notes that it is not the same company that operated the old lead factories and said it is not responsible for them. AkzoNobel obtained the Glidden trademark by buying another company that had previously purchased only certain parts of still another company that had acquired the old Glidden Co.

Two other old lead factory sites featured in USA TODAY's "Ghost Factories" investigation can be traced to Kaydon Corp., a publicly traded company with headquarters in Ann Arbor, Mich., and its Canfield Technologies division.

One of them is the former Thos. F. Lukens Metal Co., which operated a factory at the corner of Hedley and Bath streets in Philadelphia's Bridesburg neighborhood. A company called Lukens Metal became a part of Canfield Technologies about 30 years ago, said Chris Synosky, a long-time Canfield sales manager. Synosky said factory operations had ceased at the location and Canfield used the site for several years as a distribution warehouse.

The former Lukens factory site is across the street from homes where children live. Tests by USA TODAY have found hazardous levels of lead in nearby yards. The EPA says it plans to assess the area in 2013.

The second site is the former M.C. Canfield Sons factory site in Newark, which is now under part of a condominium complex. Tests by New Jersey regulators – in response to USA TODAY's investigation – have found high levels of lead in the soil and have asked the EPA to do a cleanup.

Kaydon vice president and general counsel Debra Crane said the company has no responsibility at the two factory sites. That's because Kaydon purchased only certain assets of Canfield Technologies in 2000 – and that purchase did not include the company's historical environmental liabilities. "We did not assume any liabilities under that asset purchase agreement," she said.

Crane added: "It's kind of a stretch, I think, to say the fact that we wanted to use a name that has recognition for marketing purposes is sufficient to require us to be liable for operations and manufacturing facilities that we've never seen, never walked on, never touched and had no connection to."

Records filed with the Securities and Exchange Commission show Kaydon "acquired substantially all of the assets" of Canfield. The unpurchased parts of Canfield Technologies remained behind in a company that was renamed as DGRM Corp. during the month of the sale. DGRM Corp. stopped filing annual reports for years af-

ter the sale and had its New Jersey corporation status revoked.

Daniel Grossman, listed as Canfield Technologies board chairman on the August 2000 name-change document, declined to be interviewed or to answer questions about what happened to DGRM Corp. and whether it has any responsibility to investigate and remediate contamination around the sites in Philadelphia and Newark.

In an e-mail, Grossman said he'd "never heard of Thos. F. Lukens Metal Co." and that the "Canfield Technologies owned by me and my partners certainly never acquired Thos. F. Lukens Metal Co."

Grossman acknowledged involvement with a Lukens firm with a slightly different name: Lukens Metal Corp. – Corp. instead of Co., and no first name or middle initial.

"Lukens Metal Corp. was merely a name-saving corporation with no assets or operations," Grossman said, noting that Canfield and later Kaydon marketed a few products under the Lukens brand.

"Whether 50-70 years ago there was a business relationship between an earlier Canfield and Thos. F. Lukens Metal Co. I have no way of knowing," Grossman said. "But even if there were, I do not believe this would have any legal relation to Canfield Technologies or Kaydon Corporation."

Pennsylvania corporation records show that the Lukens Metal Corp. that Grossman and Canfield transferred to Kaydon listed its address as "Hedley & Bath Streets" in Philadelphia when it

was incorporated in 1984. That's the same location that historical Sanborn fire insurance maps and other records show was once the Thos. F. Lukens Metal Co. factory site. The factory on Hedley Street used a shortened name -- "Lukens Metal Co." -- in advertisements for its solder products in the 1950s.

Canfield Technologies transferred the newer Lukens Metal Corp. and assigned all of its capital stock to Kaydon in 2000, according to the asset purchase agreement Kaydon filed with the Securities and Exchange Commission. Kaydon's CEO in 2001 signed papers dissolving this Lukens, records filed with Pennsylvania show.

Grossman didn't respond to questions about both Lukens companies being listed at the same Hedley Street location. Crane, Kaydon's attorney, said the two Lukens-named firms were "two separate companies," and that the Lukens Metal Corp. purchased by Kaydon never acquired the real estate at Hedley and Bath streets.

Crane said Kaydon has "absolutely nothing at all in our files about any of the old Canfield Technologies sites. But



EILEEN BLASS, USA TODAY

Certain assets of Canfield Technologies, in Sayreville, N.J., were purchased by Kaydon in 2000.



JEFF A. KOWALSKY FOR USA TODAY

USA TODAY traced two old smelter sites to Kaydon, headquartered in Ann Arbor, Mich.



EILEEN BLASS, USA TODAY

Christina DiPietro-Sokol plays with daughter Amelia at their Philadelphia home. The family covered their backyard with artificial turf, which they replace about every year, to ease any lead risks.

we wouldn't because we weren't interested in them, we didn't want them."

Grossman didn't respond to questions about the Newark location. New Jersey corporation records show that M.C. Canfield Sons changed its name to Canfield Technologies in 1996.

New Jersey environmental regulators investigating the contaminated Newark condo property also have made some initial connections between M.C. Canfield Sons and Canfield Technologies and DGRM Corp. and shared them with the EPA, according to an August 2012 state memo.

The EPA declined to be interviewed about the sites or the potential liabilities of the companies. If the agency were to incur cleanup costs, "EPA would then make a determination about a company's environmental liabilities," the agency said in a statement.

Frustration in Philadelphia

In Philadelphia, where residents say they are being told to clean up their own yards around the old John T. Lewis-National Lead-Anzon factory site, it may be difficult or perhaps impossible to hold corporations accountable.

Pennsylvania environmental regulators allowed Anzon, the last company operating the plant, to enroll in a volun-

tary state program to clean up just the factory's property around 1998 – without requiring any investigation of potential toxic fallout on the surrounding neighborhood. Successful completion of the program, known as Act 2 or the state's Land Recycling Program, generally gives companies liability relief, with a few exceptions, from "ever having to do more cleanup in the future ... either because the DEP wanted it, or because citizens sued for more cleanup," according to a Q&A document on the department's website.

Even though homes surrounded the factory, which had operated since the 1800s, the Pennsylvania Department of Environmental Protection says no testing was required to determine the extent of contamination beyond the factory's borders.

"There is no such requirement under Act 2 for sites being remediated for non-residential use. These are voluntary cleanups conducted to bring former industrial sites back into productive reuse," the DEP said in a statement.

The factory property was turned into a commercial area with shops and restaurants.

The DEP declined to be interviewed about whether the state did enough during the Anzon cleanup to protect the health of nearby residents. The department said

generally that Act 2's "liability protection only applies to the area that was investigated and remediated." DEP officials wouldn't discuss whether, as a practical matter, the passage of years has made it impossible to make Anzon pay for possible future costs. Many of Anzon's assets were sold to another company years ago, records show.

Sandy Salzman, one of the neighborhood residents who attended EPA meetings this year, said federal officials weren't optimistic about getting the factory's operators to pay for any cleanup.

"They said that would be really difficult because most of them aren't around anymore," said Salzman, executive director of the New Kensington Community Development Corp.

And the EPA said it had no federal funds for testing or cleanup, recalled Maggie O'Brien, president of Fishtown Action, a neighborhood group that hosted an EPA meeting in April.

"They were basically acting like they weren't under any obligation to do anything about it other than to tell us," O'Brien said. "They couldn't or wouldn't do anything."

The EPA is aware of community frustration. An internal agency e-mail recounts how during a community meeting in March a neighborhood group official "expressed a strong opinion that EPA should be doing more than just outreach and education as we really seemed to drop the ball since the facility closed in 1996."

Anzon was a part of the Cookson Group, a British company that continues to be a leading global supplier to the steel and foundry castings industries. Spokespeople for the Cookson Group didn't respond to repeated requests for interviews or comment. Officials at NL Industries, the company formerly called National Lead, also didn't respond to interview requests about their operation of the plant, which court records say was from 1960 to 1979.

The factory's operators did emergency cleanups along "nearby streets" in 1988 and 1991 after a plant fire and accident, according to the EPA. Around the same time, residents sued NL Industries and Anzon claiming that the plant's operations harmed their families. According to court records in the class action, Anzon entered into a settlement in the case before the trial ended. Because NL Industries didn't settle, in 1994 the case went to the jury to decide each company's liability. The jury found negligence by Anzon, including that it was liable for \$2 million for testing to determine



EILEEN BLASS, USA TODAY

EPA officials met with Philadelphia neighborhood leaders like Sandy Salzman, executive director of the New Kensington Community Development Corp., to discuss soil tests showing lead contamination.

cleanup needs in one of three geographic zones involved in the case. The jury found no negligence on the part of National Lead.

The EPA said it assessed the site in 1995, but no further action was taken "in light of pending sampling and cleanup work to be conducted " by Anzon as a part of the court settlement. Exactly what cleanup Anzon did is unclear; Cookson officials wouldn't answer USA TODAY's questions.

The EPA sent investigators back to the neighborhood in 2005, after the site was included on the 2001 list of unrecognized lead-smelter sites. They recommended soil tests, which were done in 2009. Of the 17 samples from four homes' yards, 14 had elevated lead levels, most of them well above the EPA's hazard standard for residential soil where children play.

USA TODAY tested dozens of soil samples from the neighborhood last year and also found dangerous levels of lead in area yards.

Still, internal EPA documents show that agency staff questioned whether the lead in the yards came from the massive lead factory, or perhaps from lead paint or the tailpipes of cars that once burned leaded gasoline. Urban areas, the agency has said, have many sources of lead, and the EPA is authorized to address only contamination that can be tied to factories.

At the John T. Lewis site in Philadelphia: "Continued assessment of these properties may yield properties with elevated levels of lead without clear information on the



Dig deeper online at ghostfactories.usatoday.com

major source contributor,” Jack Kelly, the EPA official assigned to the site, wrote in a “Hot Issue” memo in May to the EPA’s regional administrator. “The urban lead-in-soil problem arguably exceeds EPA’s Superfund resources making a traditional removal approach (dig & cover) likely infeasible.”

It’s unclear how much of EPA’s approach at the site is driven by the Superfund’s lack of money, and how much is driven by public health, science and what the agency is allowed to do under the law.

John Pendergrass, a senior attorney at the Environmental Law Institute, says that while the EPA needs to trace lead to a factory, “they don’t need to trace all the lead” found in the area to one specific source. Pendergrass noted that it’s possible for the EPA to do lead “species” testing that can help the agency show lead came from

the factory. “I would think in this case there would be evidence they could find to show that it comes from a smelter that had been there that long,” he said.

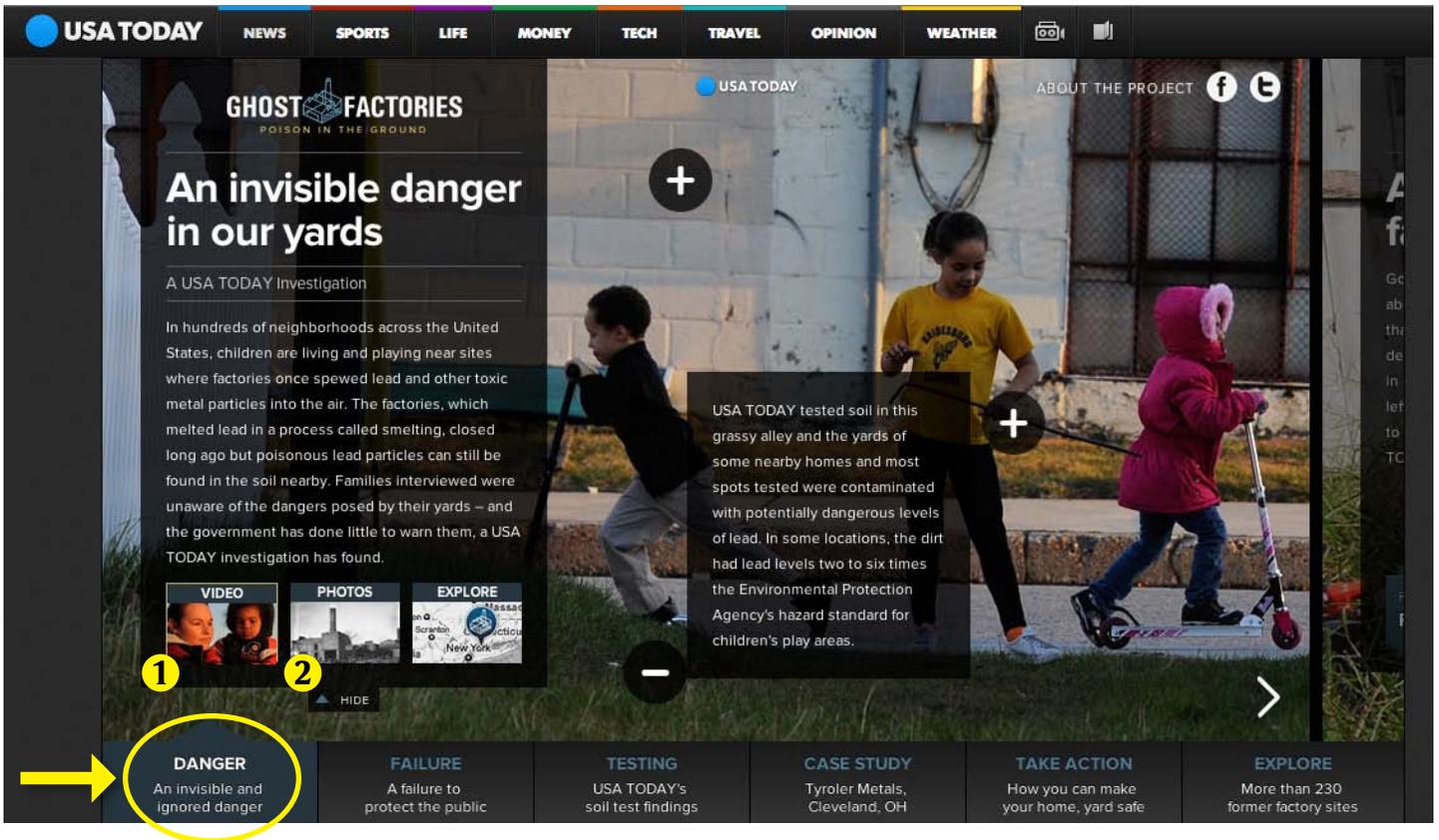
In a statement, the EPA said it “has made no decisions regarding the source of lead in sampled soils, the potential liability of any party, or response actions to be taken” and that it is still “considering the value” of doing lead species testing in the neighborhood.

The EPA said it has issued information requests to companies believed to be successors to the businesses that operated the facility and has evaluated their responses. The agency didn’t name the companies or provide further details.

“The search for financially viable potentially responsible parties is ongoing,” the EPA said.

Card 1

<http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination>



USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES
POISON IN THE GROUND

An invisible danger in our yards

A USA TODAY Investigation

In hundreds of neighborhoods across the United States, children are living and playing near sites where factories once spewed lead and other toxic metal particles into the air. The factories, which melted lead in a process called smelting, closed long ago but poisonous lead particles can still be found in the soil nearby. Families interviewed were unaware of the dangers posed by their yards – and the government has done little to warn them, a USA TODAY investigation has found.

USA TODAY tested soil in this grassy alley and the yards of some nearby homes and most spots tested were contaminated with potentially dangerous levels of lead. In some locations, the dirt had lead levels two to six times the Environmental Protection Agency's hazard standard for children's play areas.

VIDEO **PHOTOS** **EXPLORE**

1 **2**

DANGER
An invisible and ignored danger

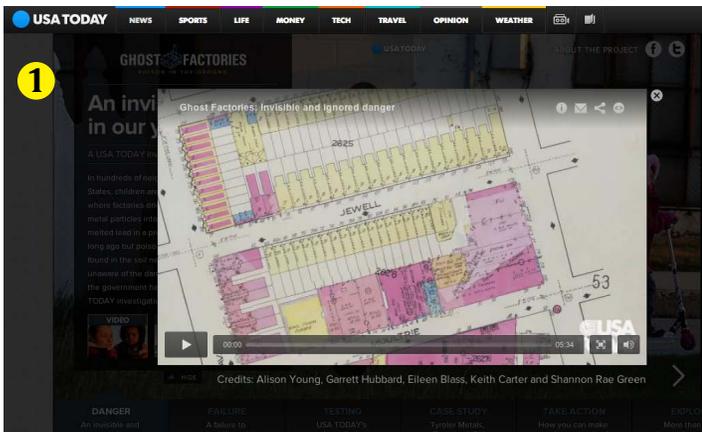
FAILURE
A failure to protect the public

TESTING
USA TODAY's soil test findings

CASE STUDY
Tyrler Metals, Cleveland, OH

TAKE ACTION
How you can make your home, yard safe

EXPLORE
More than 230 former factory sites



1

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Credits: Alison Young, Garrett Hubbard, Eileen Blass, Keith Carter and Shannon Rae Green



2

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More than 230 former factory sites

Northwestern Smelting and Refining, shown in another 1940 photo, which originally appeared in a Minneapolis newspaper.

MINNESOTA HISTORICAL SOCIETY

Card 2

<http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#failures/>

The screenshot shows the USA Today website interface. At the top, there is a navigation bar with categories: NEWS, SPORTS, LIFE, MONEY, TECH, TRAVEL, OPINION, WEATHER. Below this is a main content area for 'GHOST FACTORIES: POISON IN THE GROUND'. The main headline is 'A government's failure to protect'. The sub-headline reads: 'Government regulators were warned a decade ago about more than 400 forgotten lead smelting firms that operated in the 1930s to 1960s and may have deposited dangerous levels of lead contamination in nearby soil. Yet the EPA and state officials have left families and children in harm's way, doing little to assess the danger around many sites, USA TODAY's 14-month investigation found.' Below the text are two buttons: 'VIDEO' and 'EXPLORE'. A call to action says 'FULL SERIES COVERAGE ON USATODAY.COM' and 'READ PART I : FAILURE TO PROTECT'. A yellow circle highlights the 'FAILURE' item in the bottom navigation bar, which is described as 'A failure to protect the public'. Other navigation items include 'DANGER' (An invisible and ignored danger), 'TESTING' (USA TODAY's soil test findings), 'CASE STUDY' (Tyroler Metals, Cleveland, OH), 'TAKE ACTION' (How you can make your home, yard safe), and 'EXPLORE' (More than 230 former factory sites). A text box on the right side of the main image provides context: 'In Pennsylvania, Maryland and Wisconsin, the EPA sent investigators to dozens of sites in 2004 to 2006 after they verified a lead smelter once operated there. The investigators recommended soil tests in the neighborhoods. Most of the tests have never been done. This yard is in a neighborhood near the former White Brothers Smelting site in Philadelphia that never received recommended testing. USA TODAY's tests showed potentially dangerous levels of lead in this yard and others.'

Card 3

<http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#testing/>

The screenshot shows the USA Today website interface. At the top, there is a navigation bar with categories: NEWS, SPORTS, LIFE, MONEY, TECH, TRAVEL, OPINION, WEATHER. Below this is a main content area for 'GHOST FACTORIES: POISON IN THE GROUND'. The main headline is 'A threat in their backyards'. The sub-headline reads: 'Tests by USA TODAY in neighborhoods near former lead factories showed dirt so contaminated that children shouldn't be playing in it. The soil tests revealed potentially dangerous lead levels in areas of all 21 neighborhoods examined in 13 states. Regulators in Kentucky, New Jersey, New York, Oregon and Wisconsin have taken actions as a result of the newspaper's tests even before this report was published.' Below the text are three buttons: 'VIDEO', 'PHOTOS', and 'EXPLORE'. A call to action says 'FULL SERIES COVERAGE ON USATODAY.COM' and 'READ PART II : USA TODAY'S TESTS'. A yellow circle highlights the 'TESTING' item in the bottom navigation bar, which is described as 'USA TODAY's soil test findings'. Other navigation items include 'DANGER' (An invisible and ignored danger), 'FAILURE' (A failure to protect the public), 'CASE STUDY' (Tyroler Metals, Cleveland, OH), 'TAKE ACTION' (How you can make your home, yard safe), and 'EXPLORE' (More than 230 former factory sites). A text box on the right side of the main image provides context: 'Children ages 6 and younger are at greatest risk from lead exposure because they are constantly putting things in their mouths. Kevin Marshall, 2, spent much of the summer playing in the backyard of his family's home in Philadelphia — until USA TODAY's tests found it was contaminated with lead. A blood test in August 2011 showed he had a worrisome amount of lead in his body.'

Card 4

http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#casestudy/

USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES POISON IN THE GROUND

A neighborhood in a fallout zone

Tyroler Metals in Cleveland operated from about 1927 to 1957. Regulators investigating the forgotten smelter tested soil in 2003 and found high levels of lead indicating a possible fallout zone on a neighborhood. Yet they never told the people living nearby or ordered any cleanup, USA TODAY found. Smelting no longer occurs at the Tyroler site, which is now a scrap yard with a different owner.

VIDEO PHOTOS EXPLORE

VIEW SOIL TESTS AROUND THE SITE
READ ABOUT TYROLER METALS

USA TODAY ABOUT THE PROJECT

The state's soil tests found high levels of lead in this neighborhood and regulators said they "recognized there could be potential for a health concern." They sent their report to the U.S. EPA and Cleveland's health department in 2004. Neither agency took action. USA TODAY's recent tests found high levels of lead in families' yards. The EPA said it will now re-examine the area to see whether a cleanup evaluation is appropriate.

DANGER
An invisible and ignored danger

FAILURE
A failure to protect the public

TESTING
USA TODAY's soil test findings

CASE STUDY
Tyroler Metals, Cleveland, OH

TAKE ACTION
How you can make your home, yard safe

EXPLORE
More than 230 former factory sites

Card 5

http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#action/

USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES POISON IN THE GROUND

Where are the danger zones at your home?

Soil around homes can be contaminated with lead, even if you don't live near an old factory site. Most people are aware of the dangers of deteriorating lead-based paint. Less understood is the danger posed by soil contaminated from old factories, chipping paint and the tons of lead dust spewed for decades from the tailpipes of vehicles burning leaded gasoline. Lead dust builds up in the top few inches of the soil. If left undisturbed, it can remain there for hundreds of years.

(Note: House photo is being used for illustrative purposes only. Credit: AbleStock.com/Thinkstock)

USA TODAY ABOUT THE PROJECT

Over the years, wind and rain can deposit lead particles on the roofs and sides of homes. These particles eventually drop into soil below the home's dripline. This 3-foot-wide strip around the base of the house is one of the areas most likely to have contaminated soil, studies show. It may also contain lead from flaking paint. Don't plant vegetables or let children play in this area.

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EXPLORE
More than 230 former factory sites

Card 6a

http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#explore/

The screenshot shows the USA Today website interface. At the top, there is a navigation bar with categories: NEWS, SPORTS, LIFE, MONEY, TECH, TRAVEL, OPINION, WEATHER. Below this, there is a 'Select a state:' dropdown menu with 'California' selected, and a 'U.S. MAP' button. A list of smelting sites is displayed, organized by state: EL SEGUNDO, LOS ANGELES, OAKLAND, and SAN FRANCISCO. Each state lists several sites with their names and site numbers. At the bottom, there is a row of five buttons: DANGER, FAILURE, TESTING, CASE STUDY, TAKE ACTION, and EXPLORE. The EXPLORE button is highlighted with a yellow circle and a yellow arrow pointing to it from the TAKE ACTION button.

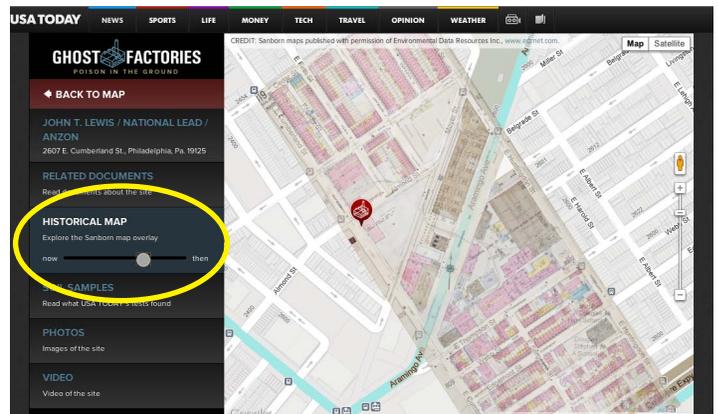
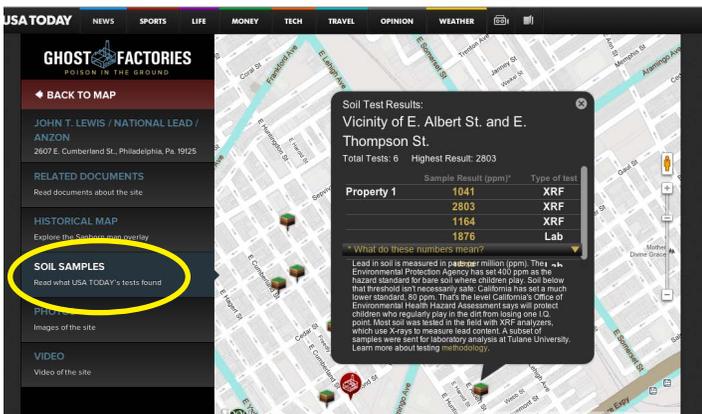
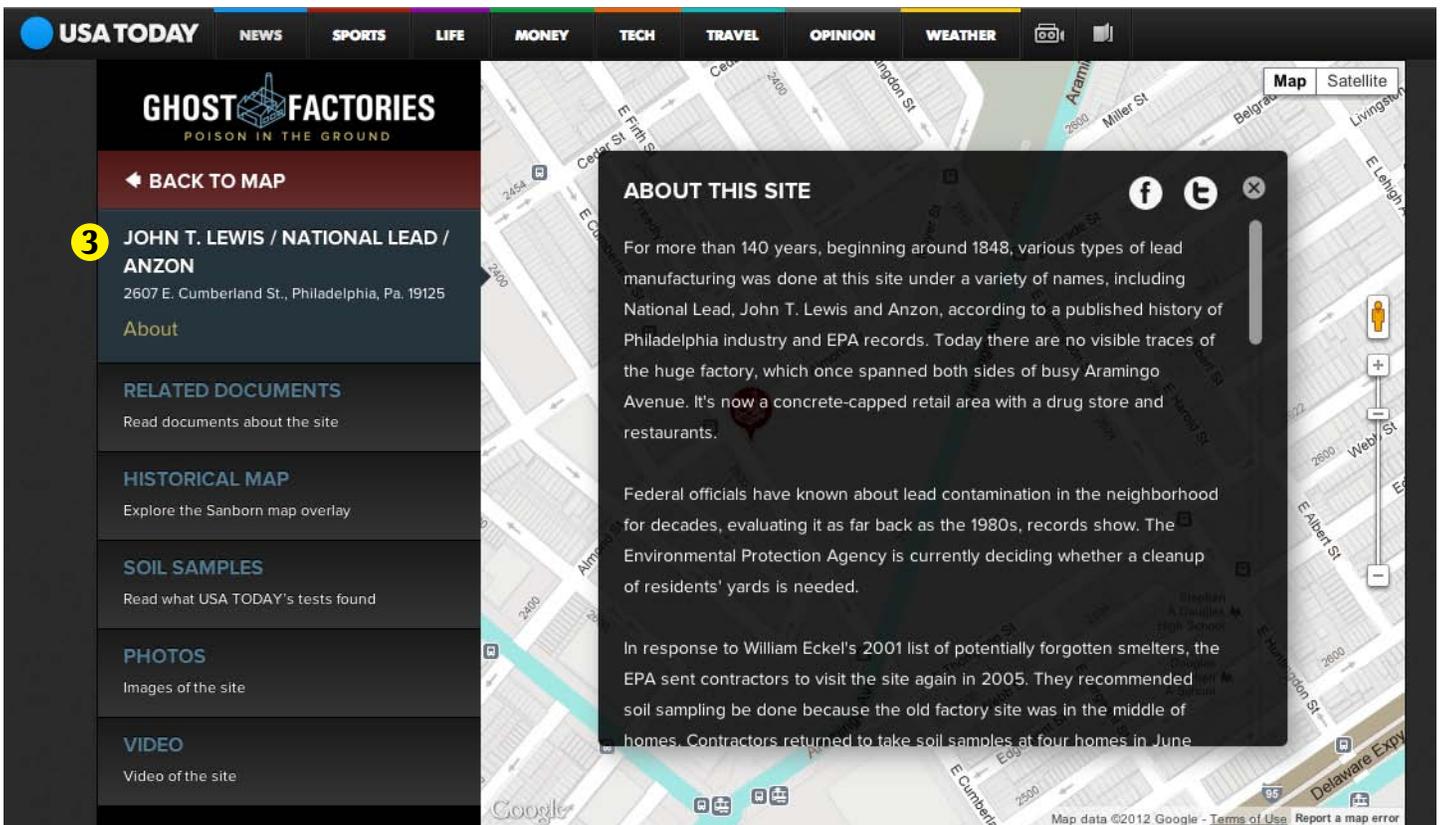
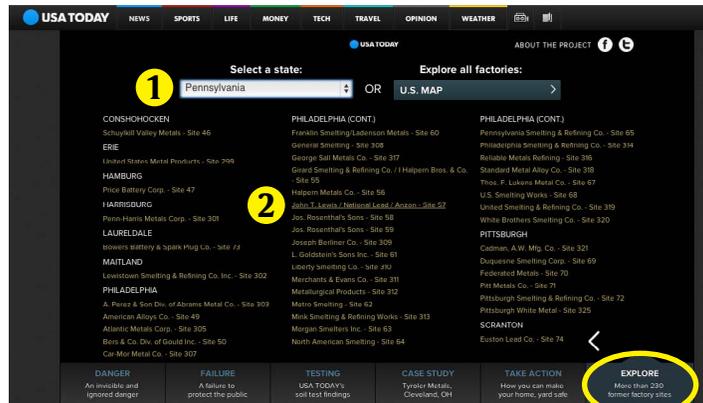
Card 6b

http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#sites/

The screenshot shows the USA Today website interface displaying a map of the United States. The map is titled 'GHOST FACTORIES POISON IN THE GROUND' and has a 'BACK TO MAIN' button. The map shows numerous pins indicating smelting sites across the United States. A legend at the bottom of the map identifies three types of sites: 'Featured USA TODAY soil testing sites' (red pin), 'USA TODAY soil testing sites' (blue pin), and 'Other factory sites' (green pin). The map also includes a 'Map' and 'Satellite' toggle, a 'SHOW ME' button, and a 'Terms of Use' link.

Site 57: John T. Lewis/National Lead/Anzon

http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#sites/57



Site 100: Loewenthal Metals, Chicago
<http://usatoday30.usatoday.com/news/nation/smelting-lead->

USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES
POISON IN THE GROUND

← BACK TO MAP

LOEWENTHAL METALS CORP.
947 W. Cullerton St., Chicago, Ill. 60608

RELATED DOCUMENTS
Read documents about the site

HISTORICAL MAP
Explore the Sanborn map overlay

SOIL SAMPLES
Read what USA TODAY's tests found

PHOTOS
Images of the site

VIDEO
Video of the site

Soil Test Results:
S. Morgan Street near W. 20th Place

Total Tests: 2 Highest Result: 1313

Property	Sample Result (ppm)*	Type of test
Property 1	933	XRF
	1313	Lab

What do these numbers mean?
Lead in soil is measured in parts per million (ppm). The Environmental Protection Agency has set 400 ppm as the hazard standard for bare soil where children play. Soil below that threshold isn't necessarily safe. California has set a much lower standard, 80 ppm. That's the level California's Office of Environmental Health Hazard Assessment says will protect children who regularly play in the dirt from losing one I.Q. point. Most soil was tested in the field with XRF analyzers, which use X-rays to measure lead content. A subset of samples were sent for laboratory analysis at Tulane University. Learn more about testing methodology.

Site 150: Kansas City Smelting & Refining (Eagle-Picher)
<http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#sites/150>

USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES
POISON IN THE GROUND

← BACK TO MAP

KANSAS CITY SMELTING & REFINING (EAGLE-PICHER)
2223 Guinotte Ave., Kansas City, Mo. 64120

RELATED DOCUMENTS
Read documents about the site

✓ EPA Region 7 Email January 2002
EPA Region 7 Email March 2002

HISTORICAL MAP
Explore the interactive Sanborn map. Navigation tools appear when your cursor hovers over the map.

EPA Region 7 Email January 2002

DOCUMENT TEXT

(In Archive) URGENT - Lead / Battery Smelters and Refineries in Missouri and Nebraska
Document originally by Timothy Curry, Bryant Burnett 01/22/2002 08:59 AM
 This message is being viewed in an archive.

To All:

I was given a list of old lead and battery refineries that was generated from a guy in headquarters who actually did the research as part of his project for his Doctorate. We (meaning management) committed to taking a look at these sites and assessing their potential to threaten human health or the environment. There are several in our region, but there are two in Kansas City, MO (several are also in Saint Louis and facilities and their addresses. Most of the facilities on the list do not exist anymore the list was generated from a 1931 directory. If you guys could at your earliest convenience, please look at the facilities and addresses and let me know if they may exist in areas that site assessment has looked at before and I would appreciate it. Also if you have state counterparts could you talk to them also because I don't want to duplicate any efforts that have already been done to assess these sites. If these have not been looked at already, I'm going to do some Pre-CERCLIS screens on these and see if any further evaluations are needed. The following are the facilities that I am looking at:

Kansas City Smelting Co
2223 Guinotte Avenue (at the corner of Park Avenue)
Kansas City, MO

Shastat Metal Corp (currently Web Productions Inc)
303 Broadway
Kansas City, MO

Western Smelting & Refining
702 Douglas Street
Omaha, NE

The Northwestern Metal Co
800 N. Stewart

Site 20: Columbia Smelting (NYC/baseball diamond)
<http://usatoday30.usatoday.com/news/nation/smelting-lead-contamination#sites/20>

USA TODAY NEWS SPORTS LIFE MONEY TECH TRAVEL OPINION WEATHER

GHOST FACTORIES
POISON IN THE GROUND

← BACK TO MAP

COLUMBIA SMELTING & REFINING WORKS
98 Lorraine St., Brooklyn, N.Y. 11231

RELATED DOCUMENTS
Read documents about the site

HISTORICAL MAP
Explore the Sanborn map overlay

now then

SOIL SAMPLES
Read what USA TODAY's tests found

PHOTOS
Images of the site

CREDIT: Sanborn maps published with permission of Environmental Data Resources Inc., www.edrnet.com

Site #20
Columbia Smelting & Refining Works
98 Lorraine St., Brooklyn, N.Y. 11231

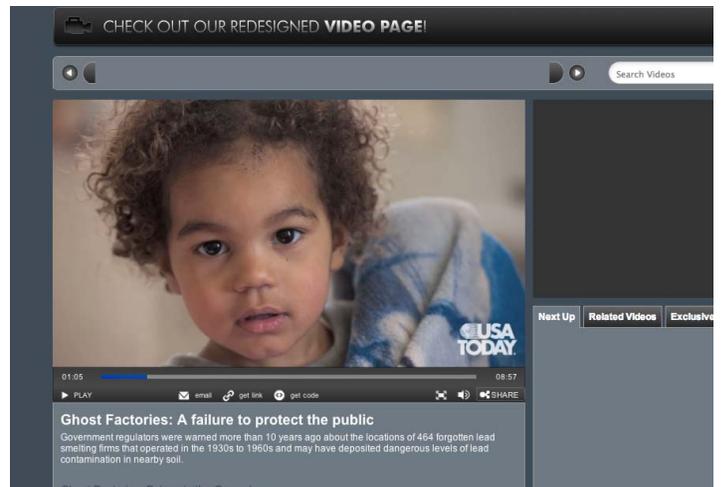
LEARN MORE ABOUT THIS SITE



“Danger: Invisible & Ignored”

<http://usat.ly/TmliT4>

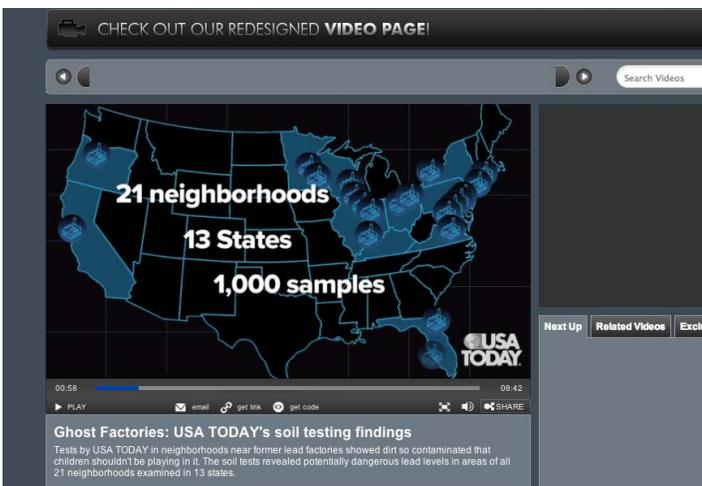
In hundreds of neighborhoods across the United States, children are living and playing near sites where factories once spewed lead and other toxic metal particles into the air.



“Failure to Protect the Public”

<http://usat.ly/YrWnUn>

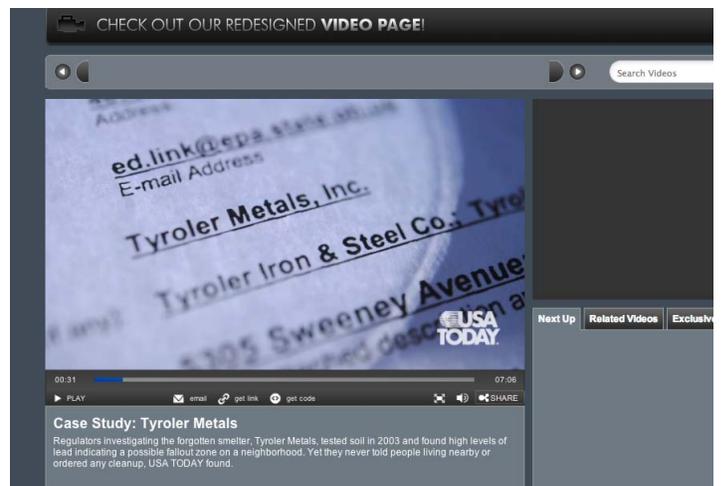
Government regulators were warned more than 10 years ago about the locations of 464 forgotten lead smelting firms that operated in the 1930s to 1960s and may have deposited dangerous levels of lead contamination in nearby soil.



“Soil Testing: USA TODAY's Findings”

<http://usat.ly/YrWzTy>

Tests by USA TODAY in neighborhoods near former lead factories showed dirt so contaminated that children shouldn't be playing in it. The soil tests revealed potentially dangerous lead levels in areas of all 21 neighborhoods examined in 13 states.



“Case Study: Tyroler Metals, Cleveland”

<http://usat.ly/TrGI1p>

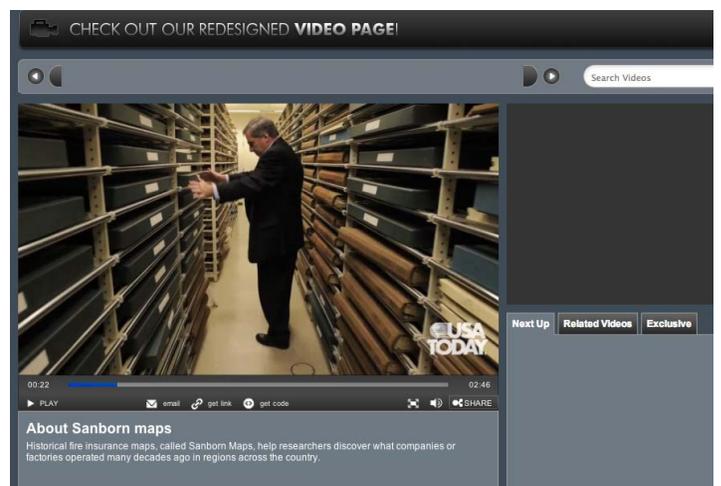
Regulators investigating the forgotten smelter, Tyroler Metals, tested soil in 2003 and found high levels of lead indicating a possible fallout zone on a neighborhood. Yet they never told people living nearby or ordered any cleanup, USA TODAY found.



“How USA TODAY Tested Soil”

<http://usat.ly/UsR5Fh>

USA TODAY tested more than 1,000 samples of soil in 21 neighborhoods near former smelting sites across the country by XRF (X-ray fluorescence) and laboratory methods to see whether potentially harmful levels of lead are present.



“About Sanborn Maps”

<http://usat.ly/Pf5eEv>

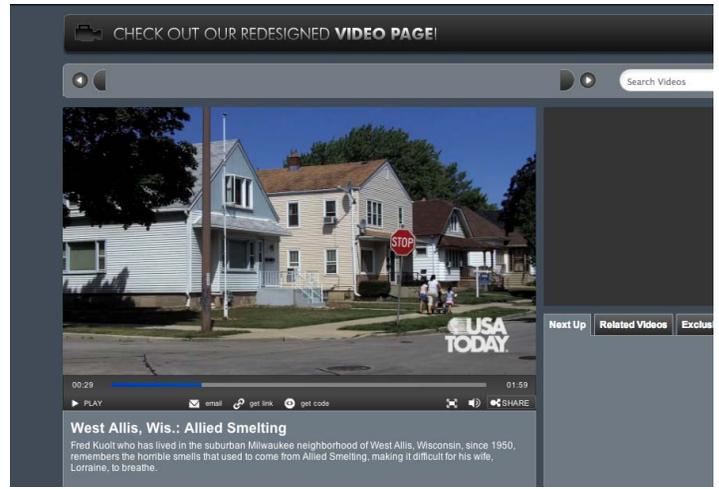
Historical fire insurance maps, called Sanborn Maps, help researchers discover what companies or factories operated many decades ago in regions across the country.



“Philadelphia: John T. Lewis/National Lead”

<http://usat.ly/SfbWd2>

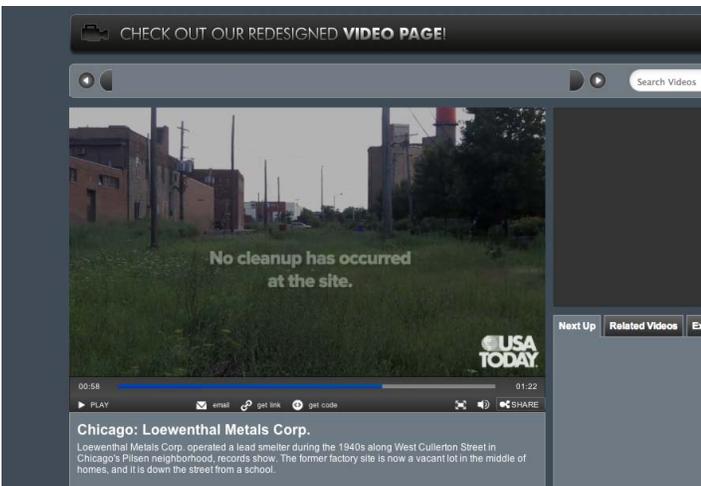
Federal officials have known about lead contamination in the neighborhood for decades, evaluating it as far back as the 1980s, records show. The Environmental Protection Agency is currently deciding whether a cleanup of residents' yards is needed.



“West Allis, WI: Allied Smelting”

<http://usat.ly/VeRpcY>

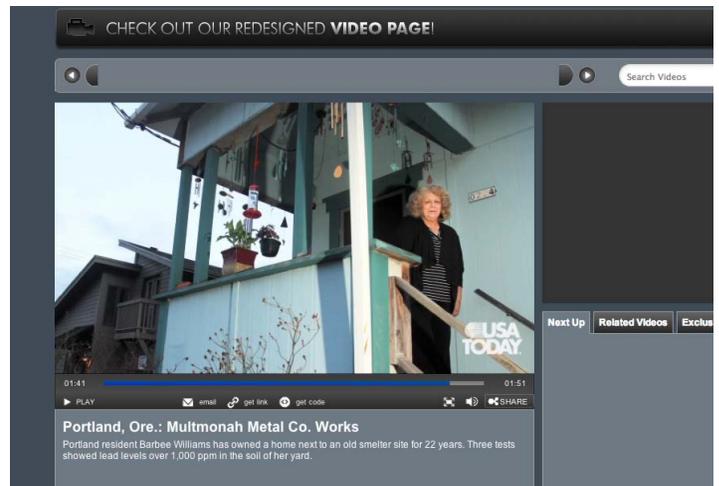
Fred Kuolt who has lived in the suburban Milwaukee neighborhood of West Allis, Wisconsin, since 1950, remembers the horrible smells that used to come from Allied Smelting, making it difficult for his wife, Lorraine, to breathe.



“Chicago: Loewenthal Metals Corp.”

<http://usat.ly/TuDzzU>

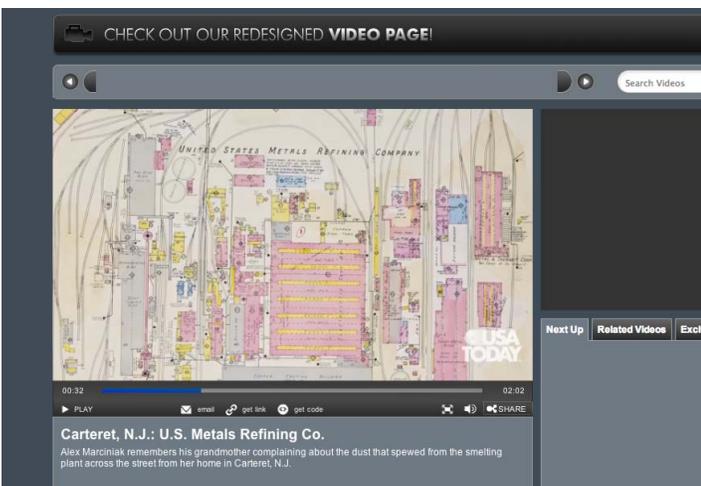
Loewenthal Metals Corp. operated a lead smelter during the 1940s along West Cullerton Street in Chicago's Pilsen neighborhood, records show. The former factory site is now a vacant lot in the middle of homes, and it is down the street from a school.



“Portland, ORE: Multnomah Metal Co. Works”

<http://usat.ly/Y77yTl>

Portland resident Barbee Williams has owned a home next to an old smelter site for 22 years. Three tests showed lead levels over 1,000 ppm in the soil of her yard.



“Carteret, NJ: U.S. Metals Refining Co.”

<http://usat.ly/SfcSxY>

Alex Marciniak remembers his grandmother complaining about the dust that spewed from the smelting plant across the street from her home in Carteret, N.J.



“Philadelphia: White Brothers Smelting Co. and Thos. F. Lukens Metal”

<http://usat.ly/Qr8fm7>

Soil testing by USA TODAY in yards and a grassy alley behind homes along Hedley Street found levels of lead contamination above the EPA's hazard level of 400 ppm for bare soil where children play.

Minneapolis: Northwestern Smelting & Refining



The area along Hiawatha Avenue, where Northwestern Smelting once operated, has been extensively redeveloped to include a light-rail line and a bike trail. USA TODAY sampled soil in the vicinity of the former site and found varying levels of lead.

Minneapolis: Northwestern Smelting & Refining

<http://www.usatoday.com/videos/news/nation/2012/12/03/1743905/>

The area along Hiawatha Avenue, where Northwestern Smelting once operated, has been extensively redeveloped to include a light-rail line and a bike trail. USA TODAY sampled soil in the vicinity of the former site and found varying levels of lead.

EPA, state respond to lead smelter sites in New Jersey



EPA and state authorities are responding to a USA TODAY investigation of lead in the ground near old lead factories. In New Jersey, some sites are receiving a clean-up, while others wait.

“EPA, state respond to lead smelter sites in New Jersey”

<http://bit.ly/TrIdg3>

EPA and state authorities are responding to a USA TODAY investigation of lead in the ground near old lead factories. In New Jersey, some sites are receiving a clean-up, while others wait.

Ghost Factories: Who is responsible for cleanups?



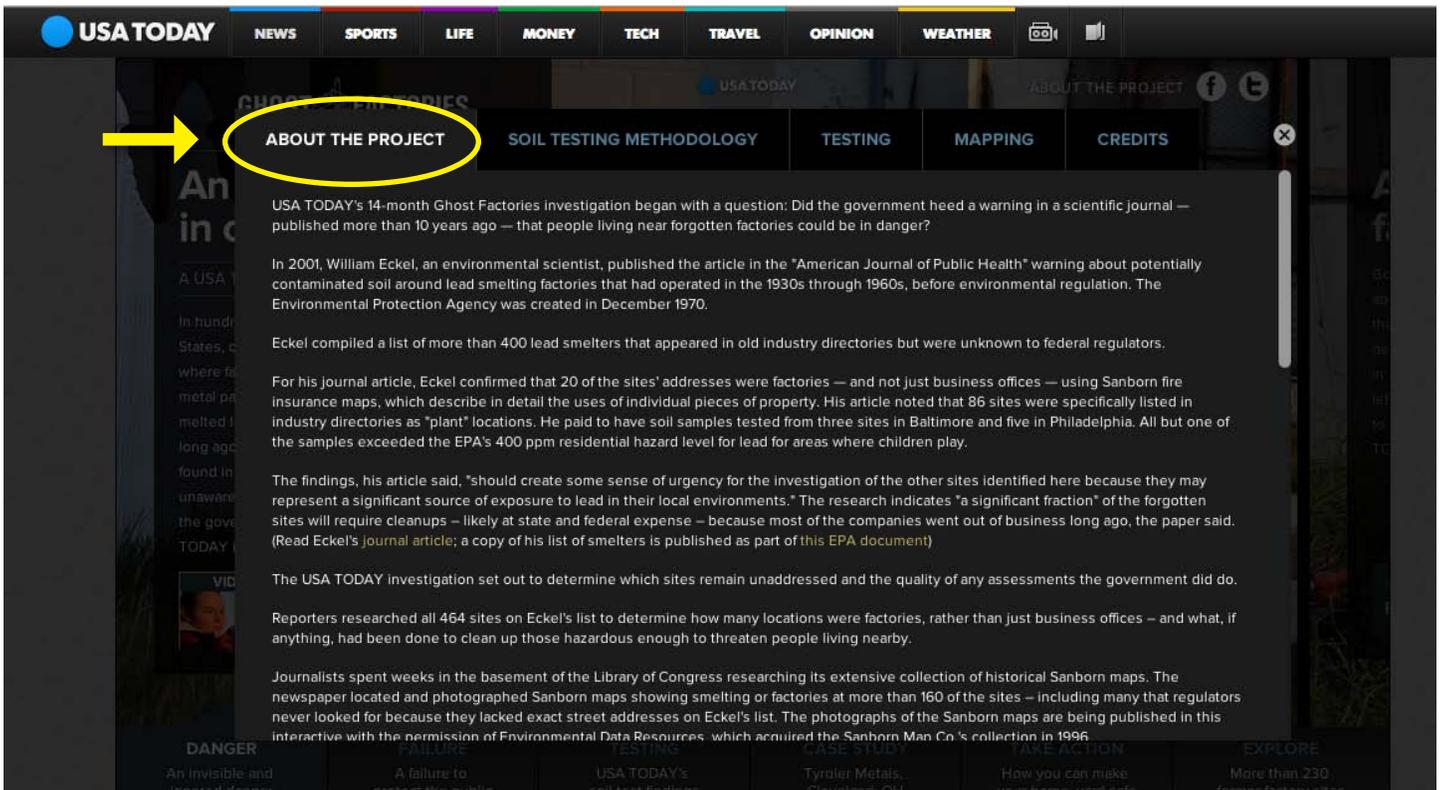
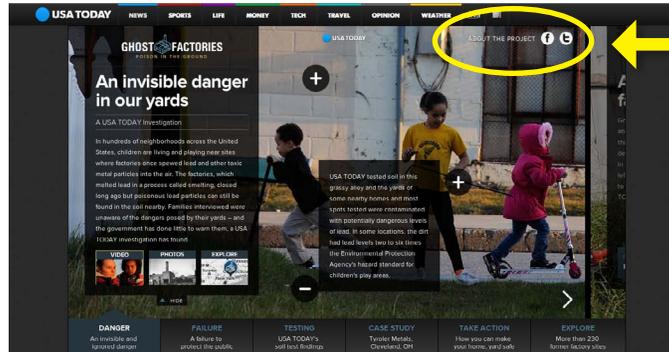
Hundreds of neighborhoods across the country are near old factory sites where poisonous lead has been found in the soil. Who is responsible for cleaning up the danger?

Who is responsible for cleanups?

<http://www.usatoday.com/videos/news/nation/2012/12/19/1779151/>

Hundreds of neighborhoods across the country are near old factory sites where poisonous lead has been found in the soil. Who is responsible for cleaning up the danger?

About this project



USA TODAY's 14-month Ghost Factories investigation began with a question: Did the government heed a warning in a scientific journal — published more than 10 years ago — that people living near forgotten factories could be in danger?

In 2001, William Eckel, an environmental scientist, published the article in the "American Journal of Public Health" warning about potentially contaminated soil around lead smelting factories that had operated in the 1930s through 1960s, before environmental regulation. The Environmental Protection Agency was created in December 1970.

Eckel compiled a list of more than 400 lead smelters that appeared in old industry directories but were unknown to federal regulators.

For his journal article, Eckel confirmed that 20 of the sites' addresses were factories — and not just business offices — using Sanborn fire insurance maps, which describe in detail the uses of individual pieces of property. His article noted that 86 sites were specifically listed in industry directories as "plant" locations. He paid to have soil samples tested from three sites in Baltimore and five in Philadelphia. All but one of the samples exceeded the EPA's 400 ppm residential hazard level for lead for areas

where children play.

The findings, his article said, "should create some sense of urgency for the investigation of the other sites identified here because they may represent a significant source of exposure to lead in their local environments." The research indicates "a significant fraction" of the forgotten sites will require cleanups — likely at state and federal expense — because most of the companies went out of business long ago, the paper said. (Read Eckel's journal article; a copy of his list of smelters is published as part of this EPA document)

The USA TODAY investigation set out to determine which sites remain unaddressed and the quality of any assessments the government did do.

Reporters researched all 464 sites on Eckel's list to determine how many locations were factories, rather than just business offices — and what, if anything, had been done to clean up those hazardous enough to threaten people living nearby.

Journalists spent weeks in the basement of the Library of Congress researching its extensive collection of historical Sanborn maps. The newspaper located and photographed Sanborn maps showing smelting or factories at more than 160 of the sites — including many that regula-

tors never looked for because they lacked exact street addresses on Eckel's list. The photographs of the Sanborn maps are being published in this interactive with the permission of Environmental Data Resources, which acquired the Sanborn Map Co.'s collection in 1996.

For 19 of the former smelter sites, USA TODAY journalists overlaid historical Sanborn map images onto modern Google satellite imagery, allowing users of the interactive to view how the area looked then and now. Where streets had changed or been eliminated, the journalists used buildings and other landmarks, such as railroad tracks or rivers, to line up images as closely as possible. About 150 other Sanborn maps shown in this interactive are not overlaid onto maps and are presented in the orientation that they were published in the company's original map books. Users will find that the Sanborn Co. drew a compass on these maps that will contribute to their viewing of these images. In some cases, USA TODAY had to combine map insets or images that spanned multiple pages to produce the overlay image.

Reporters also researched old phone books and city directories, archival photograph collections, old business directories, property records and corporation filings. They filed more than 140 federal, state and local public records requests with environmental, health and other government agencies to determine what, if any, assessments had been done of the sites and the risks they posed to people nearby. Hundreds of these documents are available for review in this interactive.

The USA TODAY investigation ultimately found evidence of smelting, foundry work, metal melting or lead manufacturing activity at more than 230 sites that were on the 2001 list of forgotten factories.

Eckel commended USA TODAY for advancing his research. "It was kind of humbling to see that someone had taken seriously enough to put that kind of effort into following up," said Eckel, who is now an EPA employee working on pesticide issues, but has not been involved in the agency's smelter work. "It kind of confirmed, validated my hope that the common person would find it all relevant."

To examine how much lead was around some of these old smelting sites, USA TODAY tested soil in 21 smelter neighborhoods in 13 states, a mix of locations that varied from the urban cores of big cities to a small Midwestern town.

Reporters were trained by Thermo Fisher Scientific, a leading scientific instrument company, to use \$41,000

handheld devices called XRF analyzers. USA TODAY rented the devices from the company. The reporters used the analyzers to test more than 800 samples of surface soil – the top layer that children's hands are most likely to touch. The devices shoot X-rays into the soil causing the elements that are present to give off a unique fluorescence – like a flash – that is measured. After 80 seconds, the devices used by USA TODAY displayed how much lead and other elements are in the sample. (XRF stands for X-ray fluorescence.)

The XRF analyzer is a widely accepted method of testing soil. To further confirm the validity of the XRF readings, reporters collected nearly 200 soil samples and shipped them to a lab run by soil sampling expert Howard Mielke at Tulane University for a different type of chemical analysis, with the expense covered by USA TODAY.

The XRF and lab tests measured the lead content of soil, but are not capable of determining the lead's source. The lead found in USA TODAY's tests is likely from a mixture of sources including factory emissions, exhaust from vehicles that once burned leaded gasoline and dust from lead-based paint. Regardless of the source, lead is poison in the body.

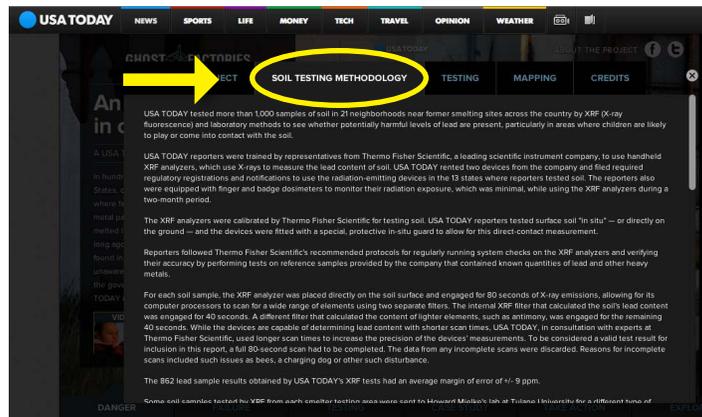
The results of USA TODAY's soil sampling are presented in this interactive. For more information about the methodology of USA TODAY's soil sampling project, go to the soil testing methodology tab.

The USA TODAY soil testing locations shown on maps in this interactive represent the hundred-block or general vicinity where soil sampling occurred and not the precise location where any samples were taken.

Each of the more than 230 former smelting sites in this interactive is plotted with an icon on a Google map so users can see roughly where the smelters were located. The plotted locations are based on address or other location information in government records; Eckel's smelter list, which was distributed to regulators by the Environmental Protection Agency; industry directories, telephone books, Sanborn maps and other reference sources. USA TODAY geocoded the markers based on location information from these sources and tried to be as precise as possible, but there is some margin for error.

USA TODAY also shot photographs and video for this interactive. Although many of the photographs and videos are of specific people or locations, the newspaper also shot images generally in the neighborhoods near old smelting sites; these images aren't meant to represent specific properties.

Soil Testing Methodology:



USA TODAY tested more than 1,000 samples of soil in 21 neighborhoods near former smelting sites across the country by XRF (X-ray fluorescence) and laboratory methods to see whether potentially harmful levels of lead are present, particularly in areas where children are likely to play or come into contact with the soil.

USA TODAY reporters were trained by representatives from Thermo Fisher Scientific, a leading scientific instrument company, to use handheld XRF analyzers, which use X-rays to measure the lead content of soil. USA TODAY rented two devices from the company and filed required regulatory registrations and notifications to use the radiation-emitting devices in the 13 states where reporters tested soil. The reporters also were equipped with finger and badge dosimeters to monitor their radiation exposure, which was minimal, while using the XRF analyzers during a two-month period.

The XRF analyzers were calibrated by Thermo Fisher Scientific for testing soil. USA TODAY reporters tested surface soil "in situ" – or directly on the ground – and the devices were fitted with a special, protective in-situ guard to allow for this direct-contact measurement.

Reporters followed Thermo Fisher Scientific's recommended protocols for regularly running system checks on the XRF analyzers and verifying their accuracy by performing tests on reference samples provided by the company that contained known quantities of lead and other heavy metals.

For each soil sample, the XRF analyzer was placed directly on the soil surface and engaged for 80 seconds of X-ray emissions, allowing for its computer processors to scan for a wide range of elements using two separate filters. The internal XRF filter that calculated the soil's lead content was engaged for 40 seconds. A different filter that calculated the content of lighter elements, such as antimony, was engaged for the remaining 40 seconds. While the devices are capable of determining lead content with shorter scan times, USA TODAY, in consultation with experts at Thermo Fisher Scientific, used longer scan times to increase the precision of the devices' measurements. To be considered a valid test result for inclusion in this report, a full 80-second scan had to be completed. The data from any incomplete scans were discarded. Reasons for incomplete scans included such issues as bees, a

charging dog or other such disturbance.

The 862 lead sample results obtained by USA TODAY's XRF tests had an average margin of error of +/- 9 ppm.

Some soil samples tested by XRF from each smelter testing area were sent to Howard Mielke's lab at Tulane University for a different type of chemical analysis. Mielke, a research professor in the department of pharmacology at Tulane School of Medicine, has published numerous scientific articles about lead contamination in soil. USA TODAY paid the costs of the lab analysis.

To collect the 191 samples for Mielke's lab, reporters scraped about three tablespoons of surface soil from the same spot tested with the XRF analyzer using a clean, stainless steel garden trowel or spoon. The soil was put in a zip-top bag labeled with its location and XRF sample number and shipped to Mielke where he performed his analysis without knowing in advance what the XRF test showed.

Later, Mielke's staff performed a regression analysis on the results from the XRF tests and from the lab tests and found they were strongly associated.

"What this means is that the two results follow the same trend and are strongly associated with each other," Mielke said. "You can assume that the XRF results reflect the reality of the soil lead and you can have confidence in your data."

In Mielke's laboratory, the soil was tested using the Chaney-Mielke Extraction Method* for soil metals (details below). The method has been used for soil analysis in numerous published studies and the results are consistent with other extraction methods used in the U.S. and abroad, Mielke said.

The lead content of soil as determined by XRF and laboratory analysis can vary at individual locations. There are several potential reasons for this. First, when the XRF analyzer is used to take an in situ sample, the analyzer's X-ray window is placed directly on the dirt's surface and the area of soil scanned is smaller than a dime. The lab samples sent to Tulane involved gathering a slightly larger – and slightly different – surface area. Wet soil can also result in XRF analyzers undercounting the lead content of soil because water can dilute the sample. In some locations, particularly in Newport, Kentucky and Cleveland, soil was wet from several days of rain at the

time USA TODAY did its XRF testing, resulting in some lab results showing significantly higher lead levels than were found by XRF.

Nevertheless, the regression analysis performed by Mielke's lab found there was a 75% fit between the samples tested by the lab and XRF methods. The analysis found that the likelihood that the results were due to chance alone was less than 1 in 10,000.

The XRF and the lab tests measured the lead content of soil, but they are not able to say what the source of that lead was. The lead found in USA TODAY's tests is likely from a mixture of sources including factory emissions, exhaust from vehicles that once burned leaded gasoline and dust from lead-based paint. Regardless of the source, lead is poison in the body.

USA TODAY focused its testing on residential areas nearest the former smelter sites, in locations that appeared to have the greatest potential to have received lead fallout. Additional samples were taken at incremental distances from the smelter sites up to a distance of one mile.

Samples were taken in private residential yards and on public property, including at schools, playgrounds and athletic fields, as well as along street-side public right of ways.

Sampling in private residential yards was done with the written permission of property residents. Samples were taken from a variety of spots in a residential yard, with an emphasis on children's play areas and areas of bare soil. Where possible, one sample was taken in the home's "dripline," the area next to the structure where lead levels can be highest because of accumulation of windblown lead particles or flaking lead paint.

If a sampling location was covered with grass, a clean stainless steel garden trowel was used to peel back the sod, allowing the sample to be taken on the soil immediately below. While a grass covering can protect children from contact with contaminated soil, that protective cover may not exist in the future if the grass dies.

USA TODAY has posted the general locations of where it tested soil in its online interactive. The soil testing locations shown on maps in this interactive represent the hundred-block or general vicinity where soil sampling occurred and not the precise location where any samples were taken. Residents of homes tested in this project agreed to allow USA TODAY to publish their results, without publishing their exact street addresses.

* The Chaney-Mielke Extraction Method, according to information provided by Mielke: "The extraction procedure for analysis of soil samples involves room temperature leachate methods using 1M nitric acid (HNO₃) was developed by Rufus Chaney and Howard Mielke at the U.S. Department of Agriculture. It is a method that correlates well with total methods (Mielke et al., 1983; U.S. EPA, 1996.) The method resembles physiologic conditions compared with extraction methods using boiling, concentrated HNO₃. A major advantage of this extraction method is that compared with boiling nitric acid it is extremely safe and can be conducted in an open laboratory, typical of laboratory conditions found at most academic institutions. The analytical results are generally conservative for soil lead at the highest range and closely associated with boiling concentrated nitric acid methods (e.g. R² = 0.97, p-value < 0.0001) over the entire range of results. The extraction protocol involves mixing 0.4 g of dry and sieved (#10 USGS-2 mm) soils with 1 M HNO₃ and agitated at slow speed on an Eberbach shaker for two hours at room temperature (~22 °C). The extract is then centrifuged (10 min at 1600 xg) and filtered using Fisherbrand® P4 paper. The extract is stored in 20 ml polypropylene scintillation vials until analyzed. A Spectro Analytical Instruments CIROS® CCD Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES) is used to analyze the metals in each sample. The ICP-AES is calibrated with NIST traceable standards, and a laboratory reference at a rate of 1 per 15 samples is analyzed during each run."

Long-gone lead factories leave poisons in nearby yards

By Alison Young, USA TODAY

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Ken Shefton is furious about what the government knew eight years ago and never told him — that the neighborhood where his five sons have been playing is contaminated with lead.



Their Cleveland home is a few blocks from a long-forgotten factory that spewed toxic lead dust for about 30 years.

The [Environmental Protection Agency](#) and state regulators clearly knew of the danger. They tested soil throughout the neighborhood and documented hazardous levels of contamination. They never did a cleanup. They didn't warn people living nearby that the

By Jason Miller, for USA TODAY

Ken Shefton sits with son Jonathan, 6, who was diagnosed with a troubling blood-lead level, at their Cleveland home.

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This 1940 photo shows Northwestern Smelting and Refining at 2523 Hiawatha Ave. in Minneapolis. State regulators told the EPA in 2002 they found no information that a smelter once operated at the site.

tainted soil endangers their children.

INTERACTIVE: [Explore more than 230 lead-factory sites](#)

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"I needed to know that," Shefton said. "I've got a couple of kids that don't like to do nothing but roll around in the dirt."

More than a decade ago, government regulators received specific warnings that the soil in hundreds of U.S. neighborhoods might be contaminated with dangerous levels of lead from factories operating in the 1930s to 1960s, including the smelter near Shefton's house, Tyroler Metals, which closed around 1957.

Despite warnings, federal and state officials repeatedly failed to find out just how bad the problems were. A 14-month USA TODAY investigation has found that the EPA and state regulators left thousands of families and children in harm's way, doing little to assess the danger around many of the more than 400 potential lead smelter locations on a list compiled by a researcher from old industry directories and given to the EPA in 2001.

In some cases, government officials failed to order cleanups when inspectors detected hazardous amounts of lead in local neighborhoods. People who live nearby — sometimes directly on top of — old smelters were not warned, left unaware in many cases of the factories' existence and the dangers that remain. Instead, they bought and sold homes and let their children play in contaminated yards.

PHOTOS: [In the fallout zone: A Cleveland neighborhood](#)

READ DAY 2: [Some neighborhoods dangerously contaminated by lead fallout](#)

The USA TODAY investigation shows widespread government failures taking several forms:

•**A failure to look.** At dozens of sites, government officials performed cursory inquiries at best. In Minnesota, Indiana and Washington, state regulators told the EPA they could find no evidence that some smelters ever existed.

Yet in those states and others, reporters found the factories clearly documented in old insurance maps, town council minutes, city directories and telephone books — even in historical photos posted on the Web.

•**A failure to act.** In Pennsylvania, Maryland and Wisconsin, the EPA sent investigators to scores of sites from 2004 to 2006 after verifying a lead smelter once operated. The investigators recommended soil tests in the neighborhoods. Most of the tests were not done.

•**A failure to protect.** Even when state and federal regulators tested soil and found high levels of lead, as they did around sites in Philadelphia, Cleveland, Chicago and Portland, Ore., they failed for years to alert neighbors or order cleanups. Some kids who played in yards with heavily contaminated soil have dangerous levels of lead in their bodies, according to medical records obtained by USA TODAY.

Read more

Day 2 story: [Some neighborhoods dangerously contaminated by lead fallout](#)

Explore: [Review more than 230 old lead-factory sites nationwide](#)

In response to the investigation and USA TODAY's soil tests in 21 neighborhoods, government officials are taking action at old smelter sites in 14 states, ranging from reopening flawed investigations to testing soil to cleaning up contaminated property. In March, [New York City](#) officials closed four ball fields in a Brooklyn park after learning from USA TODAY that the area was a former smelter site with elevated levels of lead.

"EPA and our state and local partners have overseen thousands of cleanups, through a variety of programs," said Mathy Stanislaus, an EPA assistant administrator. "Unfortunately, some of the sites USA TODAY identified have not yet been addressed or investigated by EPA. EPA will review USA TODAY's information to determine what steps can be taken to ensure Americans are not being exposed to dangerous levels of lead."

The EPA says it has worked with states to assess most of the sites on the 2001 list but that record-keeping is "incomplete" for many. Eighteen sites received some kind of cleanup but most weren't considered dangerous enough to qualify for federal action.

How lead factories can pollute soil

Old smelters had the potential to spew lead dust through smokestacks, windows and other openings. The factories might be long gone, but the lead can remain in soil for hundreds of years — along with lead from paint and vehicles that once burned leaded gasoline. Here's how:

1 During production, the heaviest particles fall closest to the factory.

2 Winds carry lighter particles beyond the factory's property.



3 Lead dust falls onto soil and buildings, accumulating over time.

4 Soil in the "dripline" of buildings can be contaminated when wind-blown particles are stopped by walls or rain washes dust off roofs.

5 Left undisturbed, the lead remains near the soil's surface.

Kids at greatest risk
Children younger than 6 are at greatest risk from lead exposure, which occurs when they put dust-covered hands or toys in their mouths.

What you can do:

- ▶ Plant shrubs at the base of the house to keep kids from playing there.
- ▶ Don't let children play in bare dirt. Cover it with grass or mulch.
- ▶ Test your soil, especially before growing a vegetable garden in urban areas.

Source: USA TODAY research
By Frank Pompa, USA TODAY

"I am convinced we have addressed the highest-risk sites," said Elizabeth Southerland, director of assessment and remediation for the EPA's Superfund program. "Absolutely and positively, we are open to reassessing sites that we now feel, based on your information, need another look."

EPA staff members said additional site reviews are underway, including checks of 48 sites the agency determined were never assessed. And the EPA said it will work with Ohio environmental regulators to re-examine the Cleveland neighborhood near Shefton's home to see whether a cleanup evaluation there is appropriate.

Ken Shefton and his family aren't waiting for the government to do a cleanup. His 6-year-old son, Jonathan, was diagnosed this spring with having an elevated level of lead in his body, Shefton said: "That was the last straw." He's in the process of selling his home. The family moved to another neighborhood last week. "Somebody needs to take care of this problem, or inform the people in this neighborhood," he said.

Concerns surfaced a decade ago

Most of the nation's lead factories — some huge manufacturing complexes and others tiny storefront

melting shops — had been largely shuttered by the 1970s and 1980s. Often known as smelters, they emitted thousands of pounds of lead and other toxic metal particles into the air as they melted down batteries and other products containing lead.

The particles would land on nearby properties, potentially mixing with lead dust from automobile exhaust or paint chips — significant sources, says the government — to create a hazard. Children who play in lead-contaminated soil, sticking dust-covered hands or toys in their mouths, over time can suffer lost intelligence and other irreversible health problems.

Lead: The danger

Many people are aware of the risk of lead-based paint in older homes. Less known is that your home could be surrounded by

In April 2001, environmental scientist William Eckel published a [research article](#) in the *American Journal of Public Health* warning about the dangers of old smelting factories. While working on his Ph.D. dissertation, Eckel

is that your home could be surrounded by lead-contaminated soil, even if you don't live near an old factory site. Lead particles can build up in the top few inches of soil from several sources: lead-based paint, factory emissions and exhaust from vehicles that once burned leaded gasoline.

What you can do

Create a barrier: Avoid letting children play in bare soil, especially in a city. Laying down a thick layer of sod, mulch or even a blanket can reduce their exposure to lead dust in soil. Consider replacing contaminated soil with clean dirt. Keep children's play areas and vegetable gardens away from the "dripline" around the base of homes or garages, where soil is more likely to be contaminated from airborne lead particles and flaking paint.

Wash up: Children are exposed to lead dust by putting dirty hands or toys in their mouths. Wash hands and toys frequently. "For lead, there's no five-second rule. If you drop a lollipop in the dirt or window well, you can't put it back in your mouth. Either wash it off or throw it away," said Mary Jean Brown, chief of the Centers for Disease Control and Prevention's lead poisoning prevention branch.

Eat well: Good nutrition can protect children from the effects of lead exposure. "If you don't have enough calcium or iron, your body will absorb (more) lead," Brown said.

Get tested: Pediatricians and local health departments can test children's blood to measure lead levels. Local health departments can provide advice on how to test homes, yards and gardens for lead.

Keep surfaces clean: Household dust can be a major source of lead exposure for children. "Contaminated soils do come into people's homes and get incorporated into house dust," said Miriam Rotkin-Ellman, an environmental scientist with the Natural Resources Defense Council. Leave shoes at the door to avoid tracking contaminated soil inside. Wet-mop floors and wet-wipe surfaces -- especially window ledges -- every two to three weeks, the CDC advises.

had identified a historical smelting site unknown to federal and state regulators and wondered how many other sites had been forgotten over time, their buildings demolished or absorbed by other businesses.

Eckel used old industry directories, which he cross-referenced with EPA databases, to come up with a list of more than 400 potential lead-smelting sites that appeared to be unknown to federal regulators.

Eckel confirmed that 20 of the sites' addresses were factories — and not just business offices — using Sanborn fire insurance maps, which detail the historical uses of individual pieces of property. An additional 86 sites were specifically listed in directories as "plant" locations. He paid to have soil samples tested from three sites in Baltimore and five in Philadelphia. All but one of the samples exceeded the EPA's residential hazard level for lead in areas where children play.

Eckel's article warned that the findings "should create some sense of urgency for the investigation of the other sites identified here because they may represent a significant source of exposure to lead in their local environments." The research indicates "a significant fraction" of the forgotten sites will require cleanups — likely at state and federal expense — because most of the companies went out of business long ago.

Buried by bureaucracy?

Eckel's research caught the attention of the EPA, which in 2001 asked him for a copy of his unpublished list, then shared it with EPA regional offices.

Records obtained under the [Freedom of Information Act](#) offer few details of the exact instructions the EPA gave to those receiving the list. Southerland, the EPA Superfund official, said the agency didn't provide regional offices any additional money or people to evaluate the old

By Alison Young

smelter locations. It asked only that the sites be put in their queues for possible assessment.

"We only have about 80 people and \$20 million each year to do our site assessment program," Southerland said. About half of that money is sent by the EPA to state agencies.

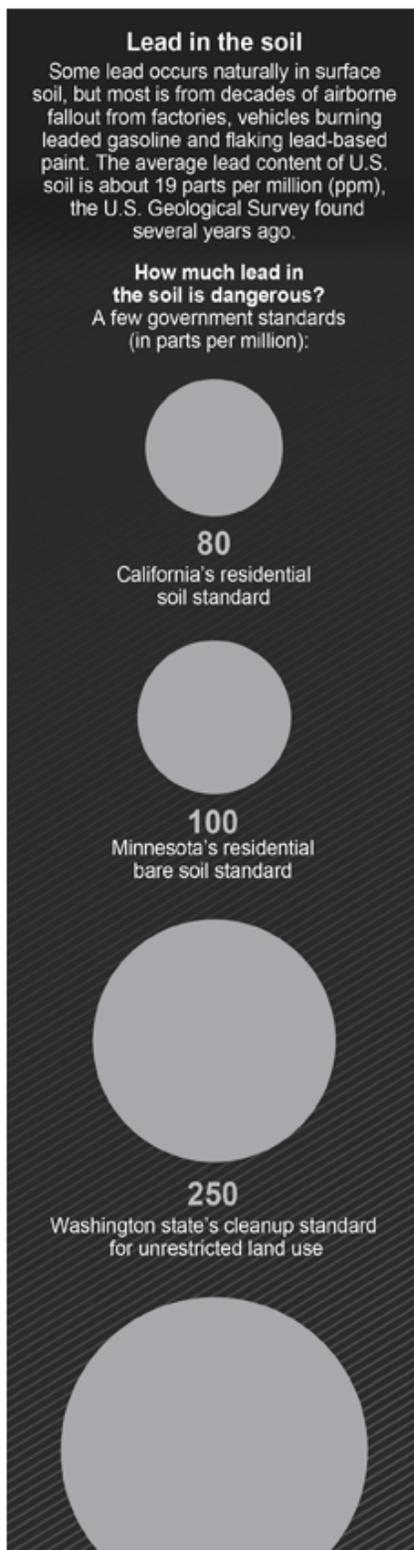
Cleaning up contamination left by a smelter can be expensive. In Omaha, the EPA has cleaned up 10,000 residential yards and spent nearly \$250 million addressing a former smelter there that wasn't on Eckel's list because it was already known to the agency. Many of the factories on Eckel's list were smaller operations.

With limited resources and many contaminated sites, state and federal environmental officials have to prioritize assessing sites they consider of greatest risk, Southerland said, and drinking-water contamination tends to trump soil contamination.

In addition, Southerland said, the EPA is authorized to clean up contamination only if it can show it came from an industrial release. That can be tricky to determine in some urban areas, where the agency says it's not uncommon to find high levels of lead contamination in soil, "particularly in large cities ... due to historic gasoline emissions from vehicles, aerial deposition from industrial facilities, and lead paint," the EPA said in a statement.

The government's efforts to investigate the sites on Eckel's list varied widely, records show. Dozens were never investigated. Others received a cursory records review or a "windshield survey" — a drive-by type of visit. Soil was tested at some sites, but the testing in some cases was limited to the former smelter's property boundaries and ignored where the wind might have carried airborne contamination; in other cases, testing was also done in nearby neighborhoods.

By 2005, concerned the list of 464 sites had been too large of a workload for the regions, officials at EPA headquarters launched their own assessment effort, Southerland said. The focus was on having regions examine a sampling of 31 sites from Eckel's list. They concluded many lacked evidence that they were ever smelters, according to [a 2007 report](#) obtained under FOIA marked "For Internal EPA Use Only." The report said only one of the sites determined to have been factories, Loewenthal Metals in Chicago, might qualify for a federal cleanup and the rest were being addressed by state regulators. Southerland said a [North Carolina](#) site ultimately received a federal cleanup.



Only six of EPA's 10 regional offices had undertaken some sort of smelter discovery initiative, according to the 2007 internal EPA report. Two of those initiatives — one by federal officials in Pennsylvania and Maryland, the other by EPA Region 5 and Michigan state officials — focused on sites from Eckel's list, the report said.

Michigan regulators took actions at some Detroit smelters after the *Detroit Free Press* in 2003 did historical research into 16 Detroit sites on Eckel's list and found smelting or foundry work at most of them. Only one site was being cleaned up at the time of the report. In 2006-07, cleanups occurred in two more neighborhoods, according to a state contractor's report.

But in scores of other cases, USA TODAY found government agencies didn't do much to protect families and children — even when their own tests showed dangerous levels of lead where people live.

Reporters scour 464 sites

The USA TODAY investigation set out to determine which sites remained unaddressed and to examine the depth and quality of any government assessments.

Reporters researched all 464 sites in 31 states that were on Eckel's list to determine how many were factories, rather than just business offices — and what, if anything, had been done to clean up those hazardous enough to threaten people living nearby.

Reporters spent weeks in the basement of the [Library of Congress](#), researching its extensive collection of Sanborn maps. Maps showing smelting or factories were located for more than 160 sites — including many that regulators never looked for because they lacked exact street addresses. Reporters researched old phone books and city directories, archival photograph collections, old business directories, property records and corporation filings. They filed more than 140 federal, state and local public records requests with



environmental, health and other government agencies to determine what, if any, assessments had been done of the sites and the risks posed to people nearby.

As a result, the investigation found evidence of smelting, foundries or lead manufacturing at more than 230 sites in 25 states on the list of forgotten factories.

The failure to protect

Ken Shefton, his wife and five boys lived until last week in a Cleveland neighborhood a few blocks northeast of the former site of the Tyroler Metals smelter. The area's two-story wood homes, mainly built around 1900, are flanked by factories, both operating and abandoned.

A smelter operated at the Tyroler site from about 1927 through 1957, according to the state's report. Smelting no longer occurs at the site, which is now a scrap yard with a different owner.

In 2002 and 2003, state regulators from the [Ohio Environmental Protection Agency](#)—working at the request of the federal EPA — tested 12 samples of soil around the old site and in the nearby neighborhood. All but one showed lead contamination above the EPA's residential hazard level of 400 parts per million (ppm) of lead in bare soil where children play. Nine of the samples had lead levels ranging from twice to five times the hazard level, according to the state's report.

The results indicated a possible "airborne depositional pattern or plume towards the northeast," [the report](#) said. In layman's terms: a fallout zone.

The state's research also identified that other smelters had been on adjacent properties dating to 1912, as well as a currently operating lead-manufacturing plant nearby. "A problem interfering with future investigation is attribution of lead contamination, due to multiple sources," the state's report said.

No matter the source, regulators never warned residents about what they found, and no cleanup occurred.

State regulators at the Ohio EPA said that without a specific polluter to blame — and force to pay for cleanup costs — there was nothing more they could do. "There are no Ohio EPA monies set aside and dedicated for this type of cleanup," the agency said in written responses to questions. "Our enforcement program focuses on responsible parties with the authority to legally compel them to fund cleanup."

Still, state regulators said that more than seven years ago they "recognized there could be potential for a health concern based on the sampling results." They said they fulfilled their duty by putting their findings about the neighborhood in a report and sending it to the EPA's regional office in Chicago. The state says it sent the report about Tyroler Metals, along with reports on eight other historical Cleveland smelter sites, to the director of the Cleveland Department of Public Health in June 2004.

Either agency could have followed up, the state said. Neither did.

Officials at the EPA regional office said that because the site didn't meet criteria for federal Superfund action, it was the state's responsibility. Federal and state officials now plan to review the site to see whether a cleanup evaluation is appropriate, the EPA said in a written statement.

Current and former Cleveland health department officials — including [Matt Carroll](#), who at the time was health director, and Wayne Slota, who at the time was in charge of the lead poisoning prevention division — said they don't remember receiving the state's letter and reports about Tyroler Metals.

The only smelter issue they remember involved a different site on Eckel's list: Atlas Metals, where a city park had been built atop the old smelter site and state investigators had observed children playing in dirt that tests showed was significantly contaminated.

Of the 17 Ohio sites on Eckel's list — in Cleveland, Cincinnati, Columbus and Toledo — Atlas Metals was the only one records indicate received a cleanup.

A neighborhood suffers



By Alison Young, USA TODAY

McKinley Woodby holds Damien next to the boy's mother, Erin Fink, at their home near an old smelter site in Cleveland in October 2011. Damien played in the lead-laden soil.

"I'm concerned. I really don't know what to do," said McKinley Woodby, as he held his then-15-month-old son, Damien, on his lap. "I'm just a renter. I'm on a fixed income, so it ain't like I can dig the front yard up and bring in new dirt."

"I'm not going to let (Damien) back in the yard, I know that," he said, sitting on the front steps of their home about four blocks from the Tyroler Metals site.

When USA TODAY tested soil in the family's yard where Damien played, the results showed potentially dangerous contamination in four of five samples, ranging from 577 to 1,035 ppm. Although the EPA uses 400 ppm as its residential hazard level, California's environmental

health agency has set 80 ppm as the level it says will protect children who regularly play in the dirt from losing up to 1 IQ point over time.

Damien's blood was checked a few weeks before USA TODAY tested the yard. Health department records show he had a blood-lead level of 4. That's below the federal action level — set in 1991 — but current science indicates children with levels below 5 are at risk of having decreased academic achievement.

Blood test results filed with the Ohio Department of Health show that during 2007 through mid-2011 in the smelter's ZIP code about 350 kids under age 6 had reported blood-lead levels of 5 or higher. About the same number had blood-lead levels of 2 to 4. There is not a definitive way to know how prevalent lead poisoning is in the area because not all children are screened and some tests are less accurate than others.

How much the lead in the dirt is contributing to the children's blood-lead levels is unclear. But experts say that soil is an important component, along with deteriorating lead-based paint in older homes and contaminated house dust.

Bruce Lanphear, a leading expert on childhood lead poisoning, said his research has estimated that for the average child about 30% of the lead in the body comes from contaminated soil, about 30% from contaminated house dust — which includes particles of flaking paint — and about 20% from water.

"Those were the major sources, so they're all fairly important," said Lanphear, a professor of children's environmental health at Simon Fraser University in British Columbia.

A child's lead exposure can be very individualized, he said, depending on geography. For some children, it might be all about paint. "If you were to look at a community that's adjacent to a smelter, it might be that it's 80% soil, or 90% soil."

'Oh, my gosh, no, I didn't know'

Dig deeper



[Explore more than 230 old lead-factory sites](#)

In Chicago, officials have known for years about a neighborhood where contamination could pose a danger and have done little to address it. Walsh Elementary School in Pilsen is just down the block from the former site of Loewenthal Metals.

Delinda Collier said she had no idea the site used to be a lead smelter and was contaminated. There were no warning signs on the property. "Oh, my gosh, no, I didn't know," said Collier, 38, who rents an apartment across

[nationwide, historical maps, videos and photos.](#)

the street and lets her dog play on the vacant lot. "I'll bet nobody else does either."

Federal and state regulators knew.

Tests by the state in 2006 found the former smelter's vacant lot contaminated with up to 5,900 ppm of lead — more than 14 times the amount the EPA considers potentially hazardous in areas where children play.

"Since this site is in a residential area, the possibility of exposure is high," according to [the report](#)  state officials sent to the EPA, which commissioned the work. But the site wasn't bad enough to qualify for its Superfund list, and the report was archived.

State regulators at the Illinois EPA said Loewenthal Metals was one of about 50 old smelter sites in Chicago they reviewed to varying degrees at the request of the U.S. EPA. The Loewenthal site had even been [highlighted in the 2007 EPA headquarters report](#)  as the only site examined under its smelter initiative that might need a Superfund removal action.

Still, it fell through the cracks.

"We never got any follow-up instructions from them on what additional things to do with the reports we sent up to them," said [Gary King](#), who was manager of the state agency's division of remediation management until he retired in December.

"Nonetheless, as a result, frankly, of the (open records) request that came in from USA TODAY and going back in and looking at this information ... we concluded that it would be best to send in what we call a 'removal action' referral," King said. That means the state is now formally asking the EPA to remove the contamination from the property.

The state also is formally asking the EPA to clean up a second Chicago site, Lake Calumet Smelting, where its tests in 2004 found high levels of lead — up to 768,000 ppm — on the former factory's property. The nearest homes are about a half-mile away, records show.

The failure to act

Even when officials did identify factory sites and nearby neighborhoods that could be contaminated, they failed to follow through.

The EPA's Philadelphia regional office developed one of the agency's most comprehensive smelter initiatives in response to Eckel's report. Officials there sent contractors in 2005-06 to visit most of the 71 factory sites listed in Pennsylvania,

Maryland and Virginia.

The assessments confirmed dozens of the sites had had smelters, reports show, with 34 of them in troubling proximity to homes, parks and schools. As a result, EPA contractors recommended soils nearby be tested. Despite the passage of years, testing has been done at 10 sites, fewer than a third, records show.

The EPA now says the site assessment process is ongoing and the agency must prioritize its use of resources. In some cases, the EPA may not agree with its contractor's recommendations. Still, the EPA said it plans an additional assessment at several sites in late 2012 or early 2013. The "lead smelter sites at this time do not seem to pose the same threats we are encountering at other sites in the region," the EPA said.

The threat seemed serious to others in 2004.

At that time, state and federal health officials distributed a health alert to doctors with a map of the Pennsylvania locations on Eckel's list. The [alert by the Pennsylvania Department of Health](#) and the federal Agency for Toxic Substances and Disease Registry recommended doctors consider doing blood tests on children living near the sites to look for lead poisoning.

The EPA's Philadelphia regional office, however, says it sees no need to put out general warnings to neighbors of old smelter sites. "This type of approach would unnecessarily alarm residents and community members," it said. The office also said it saw no need to tell Maryland's state environmental agency about the 11 smelter sites in its state on Eckel's list. Nor did the EPA region alert the state agency that federal contractors had recommended soil testing around five of them.

USA TODAY provided Maryland officials the locations of the sites — and copies of the EPA's reports.

The EPA's failure to share such information is unusual, said Art O'Connell, chief of the Maryland Department of the Environment's state Superfund program. "I don't know what happened in this particular case, but it's certainly not the norm," he said.

As a result of the information provided by the newspaper, O'Connell said, the state recently examined the sites and determined that two former factories in Baltimore warrant further investigation: Industrial Metal Melting and Dixie Metal Co. The state has asked the EPA for funding to do soil testing and other investigation at the sites this year.

As for the three other factory sites where EPA's contractors recommended tests, O'Connell said his department believes they were small operations and had little impact on soil.

The failure to look very hard

Philadelphia-based officials started investigations; other EPA regions did far less.

Of the 120 sites on Eckel's list in [New York](#) and [New Jersey](#), the EPA office responsible for those states sent inspectors to 14 locations. (USA TODAY found historical fire insurance maps and other documents showing evidence of smelting at 53 sites in those states.)

And even though the entire focus of Eckel's list involved smelters that had closed long ago, the EPA in 2002-03 inexplicably sent inspectors looking for active smelters at only nine of the locations.

"On each occasion, upon reaching the site where the smelter was supposedly operating, the inspector found the smelter had been closed down long ago," said Philip Flax, an EPA senior enforcement team leader, in a letter to USA TODAY that accompanied copies of some inspection reports.

In 2005-06, the EPA visited four more sites in New York and one in New Jersey.

The [New Jersey Department of Environmental Protection](#) had files on only five of the 31 sites listed in its state, according to the department's responses to 31 separate open records requests it required USA TODAY to file. Only two of the files showed evidence the sites were smelters or lead factories. Yet USA TODAY later found evidence that 12 additional sites were factories. The state is now working with EPA to investigate, DEP spokesman Lawrence Hajna said. He also now says the department has located case files on some sites it told USA TODAY it didn't have.

In 2002 and 2003, the [New York Department of Environmental Conservation](#) did an "informal investigation" at some of the 89 sites listed in the state, spokeswoman Emily DeSantis said.

Four sites were known to the department and undergoing cleanups. At the remaining sites, the department concluded there was "no evidence" of environmental impacts or "no apparent impact," according to information provided by DeSantis.

Yet the department provided records documenting staff visits to just 13 of those sites. Others were assessed by the department's regional offices, DeSantis said, but the department had no record of those evaluations. There was no soil testing at any of the sites, she said, but USA TODAY's findings will be reviewed for possible follow-up.

In other states, USA TODAY repeatedly located smelters that regulators said their extensive research found no evidence had existed.

The Indiana Department of Environmental Management told the EPA in 2002 they could not find the site of the former Chas. Braman & Sons factory in the north-central Indiana town of Plymouth. The list provided to them by the EPA had only a post office box as an address. "Numerous historical industrial directories, as well as Sanborn maps, were consulted without finding any reference to the site," the state said in a 2002 report sent to the EPA.

The newspaper found a street address for the plant listed in a 1959 edition of Plymouth's telephone directory. A call to Plymouth's City Hall produced council minutes beginning in 1954 showing that emissions from the plant were a source of citizen complaints. According to a 1956 article from a local newspaper that Plymouth's city attorney found in the town's history museum, the Chas. Braman & Sons "smelting plant manufactured granular aluminum, solder and lead."

In response to USA TODAY's findings, state regulators sent staff to Plymouth and took 24 off-site soil samples from various locations near the former facility. Another six samples were taken on the factory site, which is now a granular aluminum company.

All the state's tests showed lead levels below federal guidelines; many did not detect any lead. "We did not see anything we were concerned about," said Mark Jaworski, a project manager in the state's site investigations section. The current owner of the aluminum company on the property, John Oliver Sr., said there has been no lead smelting since the Bramans' sold their factory around 1965.

Minnesota regulators told the EPA in a [2002 memo](#) they were unable to confirm whether any of the seven sites in their state had been smelters. USA TODAY found evidence of historical smelting at two of them.

A state employee checked corporation records and did a drive-by of the former Hiawatha Avenue location of Northwestern Smelting & Refining in Minneapolis and noted a construction company and a bus line were among current businesses there. "No information available as to the operation of a smelter at this location," wrote Gary Krueger in his 2002 assessment.

The newspaper found photographs from the 1940s of the smelter in operation posted on the Minnesota Historical Society's website. A reporter located a historical Sanborn fire insurance map at the Library of Congress showing three smelters there at one time.

Krueger told the EPA in 2002 he couldn't find evidence of a National Lead smelter, which had been listed in St. Paul without a street address in old industry directories. "Additional use of state resources cannot be justified based solely on name of potential facility somewhere in St. Paul," says the state's report.

A reporter located the factory by searching through old indexes to Sanborn fire insurance maps. The map shows the National Lead plant was in a warehouse district near the [Mississippi River](#) and what is now Harriet Island Regional Park and describes it as a manufacturer of lead pipe, babbitt, solder and printers' metals; it also shows melting kettles.

After being given the photos and maps found by USA TODAY, Krueger recently visited the St. Paul site and made a second visit to the Minneapolis site. Krueger, a project manager in the state's Superfund program, noted the areas have undergone redevelopment.

"Quite honestly, it really doesn't change anything," he said. Without more proof of a danger, Krueger said, his department can't justify doing any soil sampling.

USA TODAY tested soil near the former National Lead site in St. Paul and found elevated levels in street-side public rights-of-way ranging up to 539 ppm. None of the three samples taken inside the park — which is in the river's flood plain — showed lead levels above 400 ppm, the EPA's hazard level for children's play areas. Near the Minneapolis smelter site, USA TODAY's tests found varying levels of lead.

•COMING NEXT: More tests, more contamination

Additional reporting by Peter Eisler. Contributing: Adam Kerlin, Brad Heath, Nicole Dao, Paul Monies and Barbara Hansen.

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Some neighborhoods dangerously contaminated by lead fallout

By Alison Young and Peter Eisler, USA TODAY

Updated 4/20/2012 3:16 PM

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Ghost Factories: USA TODAY's soil testing findings

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[Kathleen Marshall](#) used to think the fenced backyard of her Philadelphia home was a safe place for her five children to play. Not anymore.



Marshall was horrified to learn that a long-forgotten factory once melted lead just across the street and that soil tests by USA TODAY indicate her yard is contaminated with hazardous levels of the toxic metal.

"You're living here and you have no idea of what's really in your ground, what's in your backyard," Marshall says now. "It's just kind of scary to think that you're sending your kids out to play in an area that's hazardous."

By Eileen Blass, USA TODAY

Kathleen Marshall reads with her toddler, Kevin, at their home in Philadelphia, where soil tests showed elevated levels of lead.

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in parts of all 21 neighborhoods examined across 13 states. Although results varied house to house, the majority of the yards tested in several neighborhoods had high lead levels — in some cases, five to 10 times higher than what the [Environmental Protection Agency](#) considers hazardous to kids.

READ DAY 1: Long-gone lead factories leave dangerous poisons

Lead in the body

No safe level of lead in a child's body has been identified. Studies continue to document significant harm at far lower levels of exposure than previously known.

Blood-lead levels (µg/dL)* and their effect:

70+

Seizures, coma, possible death

45+

Chelation therapy recommended with medication that causes lead to be excreted in the urine

15+

Can trigger a home inspection by local health officials to identify lead source (level varies by department)

Hundreds of soil tests by USA TODAY in neighborhoods near former lead factories show numerous areas where the dirt is so contaminated that children should not be playing in it.

Yet they are.

INTERACTIVE: [Explore more than 230 lead-factory sites](#)

VIDEO: [USA TODAY's soil testing findings](#)

PHOTOS: [Philadelphia's Hedley Street neighborhood](#)

Hazardous levels of lead were found in the dirt under a tricycle in Minneapolis; in the dusty doorway of a little girl's playhouse in Hammond, Ind.; near a dropped baseball bat in a suburban Milwaukee yard; in the outfield of a baseball diamond in [New York City](#).

The soil tests, part of an ongoing USA TODAY investigation, revealed potentially dangerous lead levels

Children who play regularly in lead-contaminated soil, just by putting dust-covered hands or toys in their mouths, are exposed to a poison studies show lowers intelligence and reduces academic achievement, delays puberty and causes other health problems.

In response to the newspaper's soil test results, regulators in Kentucky, [New Jersey](#), [New York](#), Oregon and Wisconsin already are taking actions at five old factory sites.

At the national level, EPA assistant administrator Mathy Stanislaus said in a statement the agency will "review USA Today's information to determine what steps can be taken to ensure Americans are not being exposed to

10**
 Current CDC "level of concern"
 set in 1991

Less than 10
 Decreased IQ, delayed puberty, reduced
 postnatal growth and decreased hearing

5***
 Proposed CDC action level

Less than 5
 Decreased academic achievement,
 increased incidence of ADHD and
 problem behaviors

* µg/dL = micrograms per deciliter of blood.
 ** Official CDC "level of concern" set in 1991.
 *** Proposed new action level recommended by
 CDC's scientific advisory panel in January 2012.

Sources: CDC, National Toxicology Program,
 USA TODAY research

dangerous levels of lead."

The federal government had been warned a decade ago about the poison likely left behind by more than 400 companies. The factories, often referred to as "smelters," had operated mainly from the 1930s to 1960s, but federal and state officials did little to find many of the sites, alert residents or test the soil nearby, USA TODAY reported Thursday.

Parents were shocked to learn that factories closed decades before their kids were born could pose a danger. They didn't know that the fallout of lead particles from factories that melted lead batteries or processed lead in furnaces for pipes and other products could remain for hundreds of years in the top few inches of

soil.

The EPA knew about the smelters near Marshall's home a decade ago but never warned people living nearby and still has not done the soil tests recommended by its own contractors in February 2007.

USA TODAY's tests throughout Marshall's neighborhood found potentially dangerous levels of lead in multiple locations — including the small backyard where her children play.

The EPA says there is no immediate threat in Marshall's neighborhood and that it will begin another round of assessing the safety of the area late this year or early next year.

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"EPA does not notify residents of potential contamination based solely on the possibility that past industrial activities may have occurred. This type of approach would unnecessarily alarm residents and community members," the agency's Philadelphia regional office said in a written response to USA TODAY's questions.

The EPA noted it is not uncommon to find high levels of lead in soil in large urban areas because of decades of pollution from sources including flaking lead-based paint and dust from vehicles burning leaded gasoline, as well as by lead smelters and other factories. The EPA is authorized to clean up soil only if it can prove the lead came from a specific industrial release.

The lead found by USA TODAY's testing likely comes from a mixture of these sources, though old lead factories have proven to be significant polluters.

Regardless of where the lead in soil came from, the human body treats it as poison, particularly if you're a kid.

The soil tests — and the hazards they revealed

Explore the sites



[Explore more than 230 old lead-factory sites nationwide, historical maps, soil testing results.](#)

USA TODAY reporters spent two months testing soil in multiple spots in yards, with the permission of residents.

The reporters also tested soil at public parks, schools, athletic fields as well as street-side strips of public land within a mile of the sites. Air-blown lead particles often drop in the immediate vicinity of factories, but the toxic dust can travel for miles.

The sites tested came from a list of more than 400 potential lead smelters believed to be unknown to federal regulators because they operated before the creation of the EPA. The list was developed by environmental scientist William Eckel, who published a 2001 article in the *American Journal of Public Health* warning that the forgotten factories might have contaminated surrounding properties.

Because most of the old smelters had operated for decades without any regulatory oversight and are now gone, little was known about the size of each factory, where they were located, how much lead they processed and how much pollution they left behind.

VIDEO: [USA TODAY's soil testing findings](#)

USA TODAY focused its testing on 21 neighborhoods, a mix of locations that varied from the urban cores of big cities to a small Midwestern town.

The reporters were trained to use \$41,000 handheld devices called XRF analyzers to test more than 800 samples of surface soil — the top layer that children's hands are most likely to touch. The devices shoot X-rays into the soil, which causes the chemicals present to give off a unique fluorescence — like a flash — that is measured by the device. The XRF analyzer is a widely accepted method of testing soil.

Elizabeth Southerland, director of the EPA's assessment and remediation division in its headquarters Superfund program, said the agency will take a close look at the newspaper's test results.

To further confirm the validity of the XRF readings, reporters collected nearly 200 soil samples and shipped them to a lab run by soil sampling expert Howard Mielke at [Tulane University](#) for a different type of chemical analysis, with the expense covered by USA TODAY.

Under natural conditions, lead is found only in very small amounts in soil. The average in [U.S. surface soils](#) is just 19 parts per million (ppm), according to the [U.S. Geological Survey](#).

The soil samples tested using the XRF devices showed several neighborhoods had lead levels greater than 2,000 ppm, topping 3,400 ppm in Cleveland, Portland, Ore., and Carteret, N.J. Mielke's lab often found higher levels in samples than what the devices showed in the field.

The EPA considers soil a potential hazard in children's play areas at levels above 400 ppm. Soil below the EPA threshold isn't necessarily safe: California has set a much lower standard, 80 ppm, using computer models to find a level they say is more protective of children. Of the 21 smelter neighborhoods, 80% had median soil lead levels above California's benchmark in the XRF tests.

The EPA is aware of the changing science around low-level lead exposures and is awaiting guidance from the Centers for Disease Control and Prevention before any change would be considered to the federal soil hazard level, Southerland said.

Lead levels in the soil samples collected by USA TODAY were generally highest in places like Chicago, Cleveland and Philadelphia — where old inner-city neighborhoods mingled with industrial sites. In addition to lead from old smelters, these densely populated cities would have had far more cars burning leaded gasoline than smaller cities.

In some smelter neighborhoods, the tests found few spots with high lead levels. In St. Paul, the smelter site was near the [Mississippi River](#) flood plain, where lead particles may have long ago washed away or been buried by flood-control efforts. Lead levels in tested samples were also generally low around sites in Jacksonville and suburban Tampa.

The addition or removal of dirt in any area, especially through construction or landscaping, can affect how much lead remains at the surface where people — especially children — are most likely to be exposed.

The danger posed to kids

What blood tests show

A blood test can measure a child's lead exposure, which at low levels produces no obvious symptoms. Whether children are routinely tested can depend on where they live and on perceptions about their risk for lead poisoning. Many children who should be tested aren't. Even when tested, parents may not be alerted to early signs of danger.

What you can do

Insist on results: When your child receives a blood-lead test, make sure the health care provider gives you specific results. Too many providers tell parents a lead test is "negative" or "normal" -- when the result shows a low, but potentially worrisome level of lead. Parents need "to obtain the exact number of their blood-lead value," said John Rosen, professor of pediatrics at the [Children's Hospital](#) at Montefiore in New York City.

Beware of old standards: Many parents aren't alerted if a blood-lead level is below 10, a standard set by the Centers for Disease Control and Prevention in 1991. In January, scientific advisers to the [CDC](#) recommended reducing that standard to 5. Lead poisoning researcher Bruce Lanphear says children should have a blood-lead level of 1 or less, but those living in older homes with deteriorating paint or in areas with contaminated soil will have more difficulty avoiding exposure.

Know the new science: A recent review of studies by the National Toxicology Program, a federal health agency, found "sufficient" evidence that exposure by children to small amounts of lead -- in some cases less than half the CDC's 20-year-old action level -- is associated with decreased intelligence and academic achievement, and an increased incidence of [ADHD](#), behavioral problems and other health issues.

Even trace amounts of lead — particles so tiny they're barely visible — are enough to cause irreversible health problems in kids who ingest or inhale them.

Swallowing just 6 micrograms of lead particles a day over about three months can raise a child's blood-lead level by up to 1 point — which in turn can result in the loss of up to 1 IQ point, according to California's Office of Environmental Health Hazard Assessment. That's why the state lowered its soil standard to just 80 ppm.

To visualize how little lead that is, picture a packet of artificial sweetener, which contains 1 gram of powder. A microgram is one-millionth of a gram.

"Just touching the surface (of the soil), you get enough to make a difference in exposure," Mielke said.

A study Mielke published several years ago found children's hands picked up high levels of lead — up to 30 micrograms during a play session outdoors in soil at day care centers in inner-city [New Orleans](#).

Children 6 and younger are at greatest risk because they routinely put things in their mouths. Their growing brains are also the most susceptible.

"They absorb much more (lead) than an adult ... probably because it mimics calcium and iron," said Bruce Lanphear a leading researcher on lead poisoning at Simon Fraser University in British Columbia.

That's why parents in neighborhoods in and around historical smelter sites in places like Philadelphia, Portland, Ore., and [West Allis](#), Wis., have reason to be concerned.

In Philadelphia, a worried mom's story

other health issues.

"The evidence in this report is that the elimination of all lead exposure in our environment is our best course of action," said Andrew Rooney, a senior health scientist at the program.

Prevent exposure: Don't wait for a blood test to show that your child has been exposed before taking simple actions to look for lead hazards and make your home and yard safe. "Waiting for them to hit a number, whatever number, is too late," said Mary Jean Brown, chief of the CDC's lead poisoning prevention branch. Keep children away from bare soil by planting grass or covering it with a thick layer of mulch; make sure their hands and toys are washed frequently; inspect homes for flaking lead-based paint; and wet-mop floors and windowsills regularly to reduce contaminated house dust.

By Alison Young



By Eileen Blass, USA TODAY

Clayton Marshall, 6, Angelina Marshall, 8, and Kayla Marshall, 4, play in Philadelphia, just up the street from two former factories.

In Philadelphia, a worried mom's story

Kathleen Marshall's row house is among dozens in the potential fallout zone of two old lead factories that operated for decades along Hedley Street near the [Delaware River](#). USA TODAY's tests of soil in the area showed dangerous levels of lead contamination.

Across the street from her house, the Thos. F. Lukens Metal Co. made lead pipe, solder and a type of mixed metal called babbitt, from at least 1940 through 1956, and was a battery lead smelter from about 1960-63, according to the Standard Metal Directory.

Less than a quarter-mile away was an even larger factory complex: White Brothers Smelting Co., according to a historical Sanborn fire insurance map. The sprawling complex was listed in the directories as a manufacturer of babbitt and solder, metals that often included lead.

To look at the area today, residents would never know that either factory existed. The land where White Brothers once stood is largely vacant; a couple of small businesses sit atop the Lukens site.

MORE: [Map](#), [video](#), [photos of Thos. F. Lukens site](#)

USA TODAY tested 35 samples of soil around homes in a two-block stretch of Hedley Street. Twenty-seven of the samples contained elevated amounts of lead, ranging up to more than 2,000 ppm.

"Something's got to be done. It's got to be fixed," said Joseph Gallagher, whose 4-year-old son, Brady, used to play in the bare dirt of their home's small backyard. USA TODAY tested three spots in his yard, which showed 476

ppm to 771 ppm of lead.

Marshall and her family live less than a block away. Tests of four soil samples in their small backyard — strewn with toys and bicycles — had lead levels of 501 ppm to 842 ppm.

"They're always digging in it — the baby, too," she said.

Marshall's baby, Kevin, had his blood tested Aug. 6, at 19 months old. It showed his blood-lead level was 7.5. That level of lead exposure is associated with decreased IQ and an increased incidence of ADHD and other issues, medical studies show.

The [Children's Hospital of Philadelphia](#), where the tests were done, didn't call Marshall to let her know. She learned the results from USA TODAY, which got them with Marshall's permission from information the hospital filed with the state health department. Children's Hospital doesn't routinely notify parents unless a child's blood-lead level is a 10 or higher, said Lisa Biggs, the hospital's medical director of primary care. That's because the CDC set 10 as the level of concern back in 1991 — before more recent studies showed significant harms at lower levels. In January, CDC scientific advisers recommended lowering the blood-lead action level for children from 10 to 5.

"The whole thing is crazy," Marshall said. "I think if there's any lead in their system you should be notified."



By Eileen Blass, USA TODAY

Joseph Gallagher supervises son Brady in front of their home on Hedley Street in Philadelphia, not far from the old sites of Thos. F. Lukens Metal Co. and White Brothers Smelting.

Contractors for the EPA went looking for the White Brothers factory in 2005, federal records show. The agency produced no records showing it looked for the nearby Lukens Metal factory.

The 2007 contractor's report erroneously placed White Brothers about a quarter-mile northeast of where it was. The contractors fingered what was actually the former site of a different manufacturing plant, historical maps show. They recommended the EPA do soil sampling in the nearby neighborhood. In a written response to questions, the agency acknowledged the sampling never happened and said it plans to reassess the site later this year or early next year.

In the meantime, the Philadelphia Department of Public Health is taking a closer look at lead poisoning around smelter sites featured in USA TODAY's investigation, said Nan Feyler, the department's chief of staff. The city's health department has traditionally focused on deteriorating lead-based paint, which it considers the primary risk to residents.

"We do take seriously, desperately seriously, the risk of lead poisoning of Philadelphia's children," Feyler said.

The smell Fred Kuolt will never forget



By Alison Young, USA TODAY

Fred Kuolt: "Sulfuric acid" fumes made breathing hard for his wife and forced him to shut the windows in his suburban Milwaukee home.

Fred Kuolt remembers horrible smells that wafted from Allied Smelting through his suburban Milwaukee neighborhood in the 1950s and 1960s, making it difficult for his wife, Lorraine, to breathe.

"When the wind was blowing from the north or northwest, you would get that odor of sulfuric acid," said Kuolt, 94. "We had to close our windows in the summertime."

Allied Smelting recycled lead and lead-acid batteries, and performed lead smelting and other kinds of metal smelting from about 1950 through 1975. Another firm, Grey Iron Foundry, was at the property from about 1946 to 1950, according to state and historical records.

Today, the property is occupied by a window replacement company.

MORE: [Allied Smelting map](#), [soil sample results](#)

Private soil tests on the former smelter property in 1996 found lead levels as high as 210,000 ppm, according to results filed with regulators at the [Wisconsin Department of Natural Resources](#). A tree-lined neighborhood of tidy homes, including Kuolt's, is just across West Lincoln Avenue, to the south of the site.

In 2005, state regulators told representatives for the former smelter property's owners that they needed to do more tests for soil and groundwater contamination in the area, state records show. The testing was never done and for years regulators never followed up, according to department records.

USA TODAY tested soil in the neighborhood and found potentially dangerous levels of lead in the yards of nearby homes, particularly just south of the smelter in the 2300 block of South 52nd Street. Eight of 14 samples from the yards of two homes had lead levels above the EPA's hazard standard for children's play areas.

People living at the homes tested said they had no idea a smelter used to operate nearby or that their yards might be contaminated.

Kuolt said many of his younger neighbors moved in after the smelter closed. "These people today would not even know that that existed," Kuolt said. Even back then, residents weren't worried about lead — they were focused on the acid smell, he said.

City building inspection records show that in the 1960s neighborhood residents complained to the city about particulate emissions from the plant, sulfuric acid fumes, noise and other issues.

Following USA TODAY's inquiries, the Wisconsin Department of Natural Resources in December notified the owner of the former smelter property that soil should be tested in the neighborhood and specifically along South 52nd Street, where USA TODAY found elevated lead levels, records show.

The property owner's environmental consultant has told state regulators it isn't his client's responsibility to do off-site testing for a smelter he didn't operate, records show. The property owner did not respond to interview requests, including by certified letter.

Paul Biedrzycki, environmental health director for the City of Milwaukee Health Department, said the levels of lead USA TODAY found near the former smelter aren't surprising and that health officials have long known of the potential for lead to be in urban soils from a variety of sources.

The levels above 400 ppm, especially if children are playing in bare soil, do raise concerns, he said. Yet with limited resources, Milwaukee's health department, like others around the country, focuses its efforts on lead-based paint, Biedrzycki said.

"The cumulative effect of many of these secondary sources may be the next challenge for public health," he said. "But I'd say there's still quite a bit of work to do on addressing lead-based paint as the primary source for high levels in children."

Lead in a Brooklyn baseball field



By Todd Pitt, USA TODAY

Baseball fields in Brooklyn's Red Hook Park, built atop a historical lead-smelter site, have been temporarily closed while New York City officials inspect and take steps to minimize the risk of lead exposure.

For decades, children had poured onto the baseball fields at Red Hook Park in Brooklyn after school, running the base paths and shagging fly balls. There had been no hint of the potential danger that lies just beneath that grass, where the soil is laced with lead.

It's been more than 60 years since Columbia Smelting and Refining Works ran its eight furnaces where the fields now sit. Today, lead concentrations in the soil are up to five times greater than the EPA's hazard level for play areas.

There's also lead in the nearby grass courtyards of the Red Hook Houses, Brooklyn's oldest and largest public housing complex, which sits across the street. The

sprawling neighborhood of unpainted brick high-rises was built in the 1930s — when the smelter still operated — and today is home to about 6,000 people.

In March, New York City officials closed four ball fields in Red Hook Park after learning from USA TODAY the area was a former smelter site where the newspaper had found elevated levels of lead. The city could have learned a decade earlier that a smelter once occupied the property — both the U.S. EPA and the [New York State Department of Environmental Conservation](#) knew about it, but city officials said they weren't told.

MORE: [Columbia Smelting and Refining Works soil results, photos, map](#)

In 2002, the EPA sent an inspector to look at Columbia Smelting's former location as part of an effort to examine hundreds of suspected smelting sites that had come to its attention. However, the inspector was tasked only with determining whether Columbia was still operating and in need of a waste permit. "HQ smelter initiative, nothing at site," the inspector wrote in his report on the visit to Red Hook Park.

That marked the beginning and end of any federal effort to determine whether there were lingering effects from the smelting operation.

"The purpose of these visits was to determine if lead smelters were present at these locations and, if so, if these facilities were in compliance" with waste disposal laws, said [John Martin](#), a spokesman in EPA's Region 2 office in [Lower Manhattan](#), which did the visits. He said the site visits were "not about going out and doing sampling or doing a risk assessment."

The EPA did share its list of suspected smelter sites, including the Red Hook Park location, with the New York DEC. But the department said it had no records of investigating or visiting the Red Hook Park site.

USA TODAY tested soil in the park and found elevated levels of lead in six of eight samples taken from the ball fields stretching across the site where the smelter was located. Four of those soil samples, all taken just beneath the ball fields' outfield grass, showed lead concentrations above 2,000 ppm — five times the EPA's hazard level for children's play areas. Elsewhere in the park, levels were generally lower.

Across the street, in grassy areas of the Red Hook Houses, six of 16 soil samples tested from throughout the public housing complex had lead levels above 400 ppm.

New York City officials said they were unaware a lead-smelting business had once occupied a portion of the park. The city did its own soil tests and confirmed USA

TODAY's findings, identifying lead concentrations as high as 2,000 ppm at the ball fields.

The fields will be closed for six to eight weeks while the city puts clay and new grass over exposed dirt as interim steps to minimize lead exposure risks, said Deputy Parks and Recreation Commissioner Liam Kavanagh. Ultimately, "we're looking for a more permanent solution, which will probably involve reconstructing the fields so you would eliminate any elevated lead readings."

In response to public records requests from USA TODAY, neither the EPA nor the DEC produced documents indicating that information gathered in 2002 about former smelting sites was shared with local officials in New York City or other communities.

Read more

Day 1 story: [Long-gone lead factories leave dangerous poisons](#)

How: [Review more than 230 old lead-factory sites nationwide](#)

"If we had known that there was a potential for some soil contamination as a result of a prior use of the site, I'd like to think that we would have taken the actions we're taking now," Kavanagh said.

A 30-year veteran of the city parks department, he said he was "surprised" to learn about the smelter and soil contamination at Red Hook Park from USA TODAY.

The risk of significant lead exposure to children playing in the area is low, because the ball fields don't tend to be used by toddlers, who are likely to handle the dirt or put toys and fingers in their mouths, said Daniel Kass, deputy commissioner at the city's [Department of Health](#) and Mental Hygiene. Risks are similarly low in the residential development across the street, he said, because children's play areas are paved and young children don't dig in the grassy courtyards where USA TODAY found elevated lead levels.

Kass also noted that lead poisoning rates for children in the neighborhood have been lower than many other parts of the city and no cases have been traced to contaminated soil. Still, he added, city officials "would have liked to have known" about the old smelter site when state and federal officials first became aware of it 10 years ago.

"We take all potential sources of exposure seriously," Kass said. He noted that the parks department's immediate closing of the contaminated ball fields was appropriate and the city would have "responded quite similarly" if it had learned of the problem in 2002.

"It's always better to have the information," Kass said.

In Carteret, N.J., the dust 'was everywhere'

Alex Marciniak's grandmother used to complain about the dust that spewed from the smelting plant across the street from her home in Carteret, N.J. When the wind blew toward the modest row houses in their working-class neighborhood, the dust would foul laundry hanging in the yard. It coated people's cars, blew into their houses. It was everywhere.

"We'd have to close all the windows in the house because it was hard to breathe," Marciniak, 43, recalled of his childhood.

The smelting operation for 80 years "spewed forth enormous amounts of contaminating materials," a federal judge concluded in a June 2009 ruling on a lawsuit over the impact of the plant's historical operation on parts of the site it once occupied. "Even after (pollution) controls were put in place, the controls were inadequate, defective, and often non-functional."

At the height of its operations, more than 500,000 tons of scrap metal were fed into its smelters each year, state records and court documents show.

"Observed heavy ... emissions (100% opacity) from the smelter building," an inspector from the [New Jersey Department of Environmental Protection](#) reported after a 1982 inspection. "The observations ... were not unusual. I have been observing and reporting these problems for at least three years now."

Local regulators found similar problems. In 1984 alone, the Middlesex County (N.J.) Department of Health cited U.S. Metals for 134 violations of air-quality standards due to excessive emissions from smelter smokestacks.

MORE: [U.S. Metals photos](#), [video](#), [map](#), [soil sample results](#)

In 1988, U.S. Metals signed a legal agreement to clean up the smelter site; subsequent soil tests on the property showed lead levels as high as 90,000 ppm. Tons of contaminated soil were removed from the factory property.

But regulators never checked to see whether the yards of homes across the street or down the block were contaminated.

Unlike most of the smelter sites on Eckel's list, U.S. Metals continued operating until 1986 — long enough to hit the radar of regulatory agencies.

USA TODAY tested 41 soil samples from eight yards and public rights-of-way in and around the Chrome neighborhood, which begins across the street from the U.S. Metals

site. Twenty-one of those tests showed lead concentrations of 400 ppm to nearly 1,000 ppm.

In response to USA TODAY's findings, the New Jersey Department of Environmental Protection has ordered soil testing in the neighborhood later this year. The work will be done by Freeport-McMoRan Copper & Gold Inc., which became the corporate parent of U.S. Metals more than 20 years after the smelting plant was shut down.

"We reached out to the responsible party as a result of USA TODAY's inquiry," said Lawrence Hajna, a department spokesman.

Freeport-McMoRan said in a statement that it is cooperating with the state DEP and expects to take several months to set up a testing program. It noted that lead found by USA TODAY could be from other industries, lead-based paint from older houses or long-ago emissions from vehicles using leaded gasoline.

In the meantime, Alex Marciniak worries about his daughter, still in elementary school. Waving toward the vacant lot, green and inviting, behind his house, he said: "I wouldn't let her play back there."

Hilda Rosa Burgos, a nurse with a 6-year-old son, echoed his concerns after being informed about elevated lead levels in her yard. "My son used to ... go out and play in the dirt, play back in the corner of the yard, and now we can't do that. ... I'm confused, I don't feel safe."

Test results prompt Kentucky to investigate

The blockish two-story brick building next to a row of homes along West 12th Street in Newport, Ky., does little to call attention to itself. Nearly all of the windows are covered with plywood, painted gray to match the brick.

A sign is tacked above a boarded-up doorway: "L&H Tool & Die Co."

In 1910, however, it was the Newport Foundry Co., historical fire insurance maps show. From at least 1949 to 1954, industry directories show the site was home to Certified Metals Mfg. Co., which made babbitt and solder, mixed metals that often contained lead.

Soil tests in nearby residential yards showed lead levels that could be hazardous to children. Of 30 samples taken at five homes within about two blocks of the former foundry, 19 topped 400 ppm on the XRF analyzer and reached as high as 1,084 ppm.

MORE: [Newport soil sample results, photos, map](#)

The soil was wet from days of rain at the time USA TODAY did its XRF sampling, and water in soil can cause the device to undercount lead. Six samples collected from the same area and sent to Tulane University showed even higher levels, up to 2,485 ppm, in all but one case.

People who live near the old factory said they never knew it once made lead products and are now concerned about the lead in nearby yards.

"If it's a problem, I want it taken care of," said Debra Winkle, who lives a few doors down. Although no children currently play in her yard, she hopes someday to have grandchildren who will. "I want them to be safe," she said.

Environmental regulators at the Kentucky Division of Waste Management said they were unaware of the former foundry site until they were contacted by USA TODAY — despite it being on Eckel's list.

After hearing about the soil test results, the state has opened an investigation of the site and potential sources of lead contamination in Newport, said Tim Hubbard, the division's assistant director.

"Looking at the data overall, the results are not too surprising for what you might expect to see in lead levels in an urban area," Hubbard said. "Obviously some were higher than one would like to see in any kind of setting."

One of the difficulties of the investigation, Hubbard said, is that the lead found by USA TODAY's tests could have come from a variety of sources. A scrap metal firm is also nearby.

Hubbard said his department could be put in a difficult spot if it finds dangerous levels of lead in residential yards — and if no obvious polluter can be definitively held responsible for a cleanup. Kentucky has only about \$400,000 a year to spend on state-funded cleanups.

"If we determine there are levels out there that need to be addressed and it is not safe to leave them where they are ... then something will be done. That's the bottom line," he said.

L&H Tool and Die is a division of a Cincinnati metalworking firm, Seilkop Industries. Dave Seilkop said his company bought L&H Tool and Die, which produces aluminum stampings, in 1998, and was unaware of the Newport property's previous uses.

State health department reports show the area where the foundry once operated has been considered a high-risk area for lead poisoning. Local health officials said they think

the biggest problem in the area is lead-based paint, which was widely used until the 1950s and banned from residential use in 1978. Newport, which is across the [Ohio River](#) from Cincinnati, was founded in 1792.

"If it's in the soil ... an obvious primary factor is paint coming from the house structure," said Steve Divine, environmental health director for the Northern Kentucky Health Department.

When investigating cases of lead-poisoned children, the department doesn't always test the soil, Divine said. Sometimes there is no yard, or the yard has a good cover of grass over the soil, he said.

Since 2001, the department has investigated cases of lead-poisoned children at 27 homes in Newport's 41071 ZIP code, where the former smelter is located. Of those, 13 homes had their soil tested by the inspectors, and 10 yards had lead levels above the 400 ppm hazard standard.

Still, Divine said: "Our experience is the primary culprit has been the lead paint in the structure."

Hazards in a suburban Portland neighborhood



By Thomas Patterson, (Salem, Ore.) Statesman Journal

Barbee Williams has lived next door to a former smelter site in Portland, Ore., for 22 years. Three soil tests showed lead levels over 1,000 ppm in her yard.

The lawns on and around the site of the old Multnomah Metal Works in Portland, Ore., are green and well tended, rolling out from homes that can fetch \$250,000 or more. There's no sign of the smelter that operated in the neighborhood for 65 years.

The old smelter building was demolished in 1975; the next year, a duplex home was built there, state records show. Regulators from the Oregon Department of Environmental Quality (DEQ) discovered there had been a smelter at the site in 2002, while investigating another Multnomah Metal Co. address that turned out to be an office and storage yard.

Inspectors took four soil samples on the site in 2003 and all were above the EPA's residential hazard standard for children's play areas — including one spot that showed

5,120 ppm.

"Given the ... consistently high lead concentrations across the site, I consider the soil unacceptable for industrial/commercial or residential use," DEQ toxicologist Mike Poulsen

wrote to agency officials in a 2003 e-mail. "Further characterization of onsite and possibly offsite soils is warranted."

MORE: [Multnomah Metal Co. soil sample results, video, photos](#)

In a separate memo, Christopher Blakeman, a DEQ project manager, noted that "children ... may be exposed to potentially threatening levels of lead in soils and/or dirt transferred into the home. Pregnant women may also face similar exposure threats."

The state did no further testing. It never told the neighbors about the contamination or forced a cleanup, the DEQ acknowledged in response to USA TODAY's questions. The department's only follow-up action was to list the site on its public registry of contaminated properties.

The DEQ can issue a legal order requiring a site on the registry be cleaned up, and it generally would be the property owner's responsibility, said Chuck Harman, a DEQ remedial-project manager who helps supervise properties on the list. The department has taken no legal action on the Flower Street property.

USA TODAY's testing at the former smelter property and in nearby yards found high levels of lead. Tests in the yard of the duplex that sits atop the former smelter site found lead levels that peaked above 7,400 ppm. All 14 soil samples tested from the property showed lead levels above 400 ppm. At two nearby homes, 11 of 17 samples showed lead levels ranging from 400 ppm to above 1,100 ppm.

In response to USA TODAY's test results, the DEQ has reopened discussions with the owner of the former smelter site about addressing the lead contamination, Harman said this month. It is unclear whether the state will sample any soil on neighboring properties, he said.

The results of the state's initial soil tests in 2003 "are not really acceptable (lead) numbers," Harman added. "I'm not sure why back then we didn't make that decision to pursue that (site) more strongly."

The site's owner did not respond to interview requests or a certified letter.

Brian Morgan, a medical student who lives with his wife in one side of the duplex on the smelter property, said he was unaware of the site's history. "We don't have kids ... so I'm not too worried," he said.

Neighbors were concerned, especially that the state didn't tell them about the 2003 test results.

"Nobody ever has mentioned anything to me about it, I've never gotten a letter, nothing," said Barbee Williams, who has owned a home next to the smelter site for 22 years. Three tests showed lead levels over 1,000 ppm in the soil of her yard.

Williams wonders about the berries, grapes, apples and plums she has grown in soil that might be contaminated. "I wouldn't have planted a lot of things to eat if I had known that," she said. "My grandchildren played out there — my grandson was a little boy with trucks, so he played in the dirt quite a bit."

The DEQ posts its registry of contaminated properties on the Internet and people can search by ZIP code to see whether a polluted site is nearby. Notices generally aren't sent to neighbors. "There's not in state law a public notification process for informing neighbors at the time a site is listed," Harman said.

If the state determines that neighboring properties are contaminated, officials typically would inform the owners, Harman added. But because the state did no off-site sampling around the old smelter, there was no evidence of a problem.

Now Portland residents like Williams understand there is a problem — an awareness she shares with Kathleen Marshall of Philadelphia, Debra Winkle of Newport, Ky., and Fred Kuoit of West Allis, Wis., each of whom was unaware, until now, of the poison in the ground.

Contributing: Paul Monies and Brad Heath

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Old lead factories may stick taxpayers with cleanup costs



Making polluters pay for cleanups is a cornerstone of environmental laws. But in the case of old smelter sites, some firms have either reorganized or used bankruptcy to shed financial responsibility.



(Photo: Eileen Blass, USA TODAY)

STORY HIGHLIGHTS

- **Making polluters pay for cleanups at old lead factory sites can be complicated to impossible**
- **The federal Superfund for cleanups at 'orphan' sites lost its main funding source in 1995**
- **Lead contamination of urban soil exceeds Superfund resources, EPA memo about one factory site says**

PHILADELPHIA – Several companies manufactured lead for more than 140 years at a massive factory surrounded by homes in the city's Port Richmond area: John T. Lewis & Bros., National Lead, Anzon and others. The factory is long gone, and tests show dangerous levels of lead in nearby yards – putting children at risk of being poisoned by playing in the dirt.

Yet if homeowners want their yards to be made safe, it's up to them – not the companies or the government -- to pay the costs of replacing contaminated soil or capping it with cement. That's the message residents say the Environmental Protection Agency delivered at neighborhood meetings this year.

"That was 100% clear – that it was on us," said Lisa Conway, who attended two of the meetings and hopes the new backyard sod the family had installed will protect their 8-month-old son.

"I think it's kind of shady that nobody wants to take responsibility for all the years and decades of irresponsible contamination," said Christina DiPietro-Sokol, who has covered her backyard in artificial turf to keep the family's children and their huge dog from coming into contact with the dirt. Estimates to cement over it were in the thousands of dollars, she said. "We have two kids in Catholic school. We can't do that."



Lisa Conway, 31, and husband Mike Conway, 32, at home with their 7 1/2-month-old son, Mason. They live near the former John T. Lewis/National Lead/Anzon lead factory site in Philadelphia.
(Photo: Eileen Blass, USA TODAY)

Making polluters pay for cleanups is a cornerstone of federal and state environmental laws. Although many of the companies that operated the old lead factories highlighted in USA TODAY's ongoing "Ghost Factories" investigation ceased to exist decades ago, some companies associated with the sites are still in business today.

Yet some of these companies have undergone corporate reorganizations or used carefully worded language in purchase agreements to limit their environmental liabilities. Others have used bankruptcy to shed financial responsibility for pollution.

FULL COVERAGE: [Ghost Factories: Poison in the ground](#)

INTERACTIVE: [An invisible danger in our yards](#)

STORY: [Part One: Closed lead factories leave poison in yards](#)

STORY: [Part Two: Some areas contaminated by lead fallout](#)

And in some cases, even when companies were intact and could have been held responsible, government regulators failed to act in time, a USA TODAY review shows.

The result is that taxpayers or homeowners often have to bear the cost of cleaning up the contamination -- if it happens at all. State and federal cleanup programs have limited money to take care of "orphan" environmental sites that have no private party to pay the bill. And internal memos show regulators can be reluctant to use government money to clean up lead in urban soil -- even next to old lead factories -- because some of the contamination may also have come from lead-based paint or cars that once burned leaded gasoline, non-factory sources the agencies say they don't have the authority or money to address.

Left undisturbed, lead dust can remain on the surface of soil for hundreds of years, posing a risk of reduced IQ and other health problems when children ingest even tiny amounts by putting dusty hands or toys in their mouths.

Officials at the EPA declined repeated requests for interviews since October. In a written statement, the EPA said it can hold companies responsible for cleanups only if it can demonstrate they have liability under the federal Superfund law, which provides the agency the authority to address environmental hazards. At the John T. Lewis factory site in Philadelphia, the EPA said it's still evaluating options to address soil contamination in the area, including looking for financially responsible parties.

Proving responsibility can be difficult when it comes to long-closed factory sites, and legal experts said companies look for ways to shield themselves.





The costs can be staggering: Cleaning the yard around one home in Portland, Ore., will cost up to \$90,000, regulators say, and will involve removing 20 tons of lead- and arsenic-contaminated soil. The EPA has spent nearly \$250 million addressing contamination around more than 10,000 homes near a large lead smelter in Omaha.

"There are enormous amounts of money at issue in these cases. It's worth fighting for and it's worth looking for a way to avoid liability on the part of responsible parties," said environmental attorney Linda Bullen, a former EPA regional counsel now with a law firm in Las Vegas.

Robert Glicksman, professor of environmental law at George Washington University Law School, said: "The trick is distinguishing when they cross the line from clever manipulation and taking advantage of loopholes, to situations when they're abusing the process and should be held responsible for the liability."

In general, successor companies have no liability for contamination at old factories previously operated by the companies they acquired. But there are exceptions, Glicksman said, including if it can be demonstrated that the purchasing corporation is a mere continuation of the previous corporation, if there was essentially a de facto merger of the companies or if the transaction was fraudulent and intended to escape liability.

Proving those things can require interviewing former employees and gaining access to company records – which may no longer exist.

"The reality is, with many of these old sites, it's very difficult to find records," said John Cruden, who previously oversaw environmental enforcement for the U.S. Justice Department and now is president of the Environmental Law Institute in Washington, D.C.

"In truth, there's a lot of times where there simply is no viable party, that company is long gone," Cruden said. "But that's why the Superfund exists."

Yet there's a big problem, he notes: The federal Superfund for environmental cleanups lost its main funding source in 1995 – taxes on oil and chemicals, and an environmental tax on corporations, which were allowed to expire. The result is that the Superfund trust fund's balance had dropped to \$137 million by the start of 2009 from a peak in 1997 of \$5 billion (in constant 2009 dollars), according to a 2010 report by the Government Accountability Office. The report noted that the EPA's estimated costs to clean up existing Superfund sites exceeded current funding levels from Congress. The EPA said this month that the current balance of the trust fund is now about \$80 million.

So, in many cases, finding viable companies that bear legal responsibility is the key to addressing contamination. Doing so can involve unraveling tangled corporate histories. And sometimes, even when responsible companies are still in business, regulators fail to act in time.

Shedding liabilities with bankruptcy

In April, USA TODAY's "Ghost Factories" investigation revealed that the EPA was given a list in 2001 of more than 460 potentially unrecognized former sites of lead factories, which primarily operated and shut down during the 1930s to 1960s. The EPA was warned by the private researcher who compiled the list from old factory directories that many of them had likely contaminated the soil of surrounding properties with a toxic layer of lead fallout.

Despite the warnings, USA TODAY's examination of sites on the list found that federal and state regulators had done little to investigate many of them or warn thousands of families and children in harm's way.

One of those unaddressed sites is in Pittsburgh's Bloomfield neighborhood. The [former Federated Metals factory](#) there processed lead, tin, copper and other metals from 1893 to about 1951. The factory is gone, but its vandalized guard shack remains.



Most of the factory buildings of the Federated Metals plant in Pittsburgh's Bloomfield neighborhood were demolished in 2009, but the vandalized shell of the old guard shack remains.
(Photo: Alison Young, USA TODAY)

Although the company that operated the factory for many of its final years – the giant metals corporation ASARCO – is still in business, it says it has no responsibility for investigating or cleaning up any potential toxic fallout on nearby homes and a playground. That's because ASARCO went through bankruptcy and agreed by December 2009 to pay \$1.79 billion in cleanup costs to settle EPA and state environmental claims at more than 80 sites across the country. The EPA and state regulators never filed a claim for the Pittsburgh Federated Metals site – even though four years earlier [EPA investigators had written a report about the site](#) warning of contamination risks and the need for further investigation.

ASARCO's vice president for environmental affairs, Thomas Aldrich, said the Pittsburgh Federated Metals site was never mentioned during the bankruptcy proceedings. "Apparently, EPA knew about the site and decided not to file a claim regarding it," Aldrich said. "Any action would now be barred by the bankruptcy discharge."

The EPA said that's likely the case. The agency said it didn't have enough evidence during ASARCO's bankruptcy that a cleanup was needed at the Pittsburgh location.

And the EPA still hasn't done the additional assessment recommended by its contractors in September 2005 to determine whether the factory "contaminated nearby residential areas." That assessment is still planned, the EPA said recently, but no date was given. Pennsylvania environmental regulators haven't evaluated the site, either, and said they are "awaiting the results of EPA's study."

Meanwhile, parents like Michelle Mazzotta worry about their children playing in nearby Osceola Parklet, a popular neighborhood gathering spot that's within a few hundred feet of the now-vacant Federated Metals site. "It's kind of sad," she said, after being told about the EPA's 2005 report. "This is a big community with a lot of children in it."



Michelle Mazzotta of Pittsburgh said she was unaware a large metal refining factory once operated in her neighborhood. She now worries about her children playing in a nearby park. (Photo: Alison Young, USA TODAY)

Pittsburgh city officials were unaware of the potential risks identified by the EPA until contacted by USA TODAY and will be asking the state's environmental agency to do

soil sampling in the area, city spokeswoman Joanna Doven said.

Federated Metals' buildings were demolished in 2009, after years of being used to store vehicles for an auto repair business.

The University of Pittsburgh Medical Center, which cleared the factory buildings and some nearby parcels, wants to build a parking garage. UPMC spokeswoman Susan Manko said it would be "inappropriate" for the hospital to share its private environmental assessments of the property.

"Nothing in those studies indicated there was an immediate environmental concern but that UPMC may have to undertake some environmental cleanup prior to developing the property, which of course we would do," she said.

Taxpayers are now facing the bill for any action needed around the old factory.

"EPA is planning a reassessment of this site to determine appropriate next steps and further actions," the agency said.

Purchasing assets, without liabilities

Bankruptcy is one way companies can shed environmental liabilities.

In other cases, decades of sales, divisions and mergers have obscured the corporate lineage of companies that operated old lead factories.

The former Glidden Co., which dates to the 1900s, once made lead-based paint and had a Metals Refining division that operated plants across the country, including sites in [Cleveland](#) and [Hammond, Ind.](#), records show. But the company that today sells paint under the Glidden name notes that it is not the same company that operated the old lead factories and said it is not responsible for them. AkzoNobel obtained the Glidden trademark by buying another company that had previously purchased only certain parts of still another company that had acquired the old Glidden Co.

Two other old lead factory sites featured in USA TODAY's "Ghost Factories" investigation can be traced to Kaydon Corp., a publicly traded company with headquarters in Ann Arbor, Mich., and its Canfield Technologies division.

One of them is the former Thos. F. Lukens Metal Co., which operated a factory at the corner of Hedley and Bath streets in Philadelphia's Bridesburg neighborhood. A company called Lukens Metal became a part of Canfield Technologies about 30 years

ago, said Chris Synosky, a longtime Canfield sales manager. Synosky said factory operations had ceased at the location and Canfield used the site for several years as a distribution warehouse.

The former Lukens factory site is across the street from homes where children live. Tests by USA TODAY have found hazardous levels of lead in nearby yards. The EPA says it plans to assess the area in 2013.

The second site is the former [M.C. Canfield Sons factory site](#) in Newark, which is now under part of a condominium complex. Tests by New Jersey regulators – in response to USA TODAY's investigation – have found high levels of lead in the soil and have asked the EPA to do a cleanup.

Kaydon vice president and general counsel Debra Crane said the company has no responsibility at the two factory sites. That's because Kaydon purchased only certain assets of Canfield Technologies in 2000 – and that purchase did not include the company's historical environmental liabilities. "We did not assume any liabilities under that asset purchase agreement," she said.

Crane added: "It's kind of a stretch, I think, to say the fact that we wanted to use a name that has recognition for marketing purposes is sufficient to require us to be liable for operations and manufacturing facilities that we've never seen, never walked on, never touched and had no connection to."

Records filed with the Securities and Exchange Commission show Kaydon "acquired substantially all of the assets" of Canfield. The unpurchased parts of Canfield Technologies remained behind in a company that was renamed as DGRM Corp. during the month of the sale. DGRM Corp. stopped filing annual reports for years after the sale and had its New Jersey corporation status revoked.

Daniel Grossman, listed as Canfield Technologies board chairman on the August 2000 name-change document, declined to be interviewed or to answer questions about what happened to DGRM Corp. and whether it has any responsibility to investigate and remediate contamination around the sites in Philadelphia and Newark.

In an e-mail, Grossman said he'd "never heard of Thos. F. Lukens Metal Co." and that the "Canfield Technologies owned by me and my partners certainly never acquired Thos. F. Lukens Metal Co."

Grossman acknowledged involvement with a Lukens firm with a slightly different name: Lukens Metal Corp. – Corp. instead of Co., and no first name or middle initial.

"Lukens Metal Corp. was merely a name-saving corporation with no assets or operations," Grossman said, noting that Canfield and later Kaydon marketed a few products under the Lukens brand.

"Whether 50-70 years ago there was a business relationship between an earlier Canfield and Thos. F. Lukens Metal Co. I have no way of knowing," Grossman said. "But even if there were, I do not believe this would have any legal relation to Canfield Technologies or Kaydon Corporation."



The site of the former M.C. Canfield Sons factory in Newark, which once made solder and other lead-containing products, is now under part of a large condominium complex. Solder is a type of mixed-metal, which historically often contained lead. When melted it was used to join other metals together.*(Photo: John DaSilva)*

[Pennsylvania corporation records show](#) that the Lukens Metal Corp. that Grossman and Canfield transferred to Kaydon listed its address as "Hedley & Bath Streets" in Philadelphia when it was incorporated in 1984. That's the same location that historical Sanborn fire insurance maps and other records show was once the Thos. F. Lukens

Metal Co. factory site. The factory on Hedley Street used a shortened name -- "Lukens Metal Co." -- in [advertisements for its solder products](#) in the 1950s.

Canfield Technologies transferred the newer Lukens Metal Corp. and assigned all of its capital stock to Kaydon in 2000, according to [the asset purchase agreement](#) Kaydon filed with the Securities and Exchange Commission. Kaydon's CEO in 2001 signed papers dissolving this Lukens, records filed with Pennsylvania show.

Grossman didn't respond to questions about both Lukens companies being listed at the same Hedley Street location. Crane, Kaydon's attorney, said the two Lukens-named firms were "two separate companies," and that ~~the~~ Lukens Metal Corp. purchased by Kaydon never acquired the real estate at Hedley and Bath streets.

Crane said Kaydon has "absolutely nothing at all in our files about any of the old Canfield Technologies sites. But we wouldn't because we weren't interested in them, we didn't want them."

Grossman didn't respond to questions about the Newark location. New Jersey corporation records show that M.C. Canfield Sons changed its name to Canfield Technologies in 1996.

New Jersey environmental regulators investigating the contaminated Newark condo property also have made some initial connections between M.C. Canfield Sons and Canfield Technologies and DGRM Corp. and shared them with the EPA, [according to an August 2012 state memo](#).

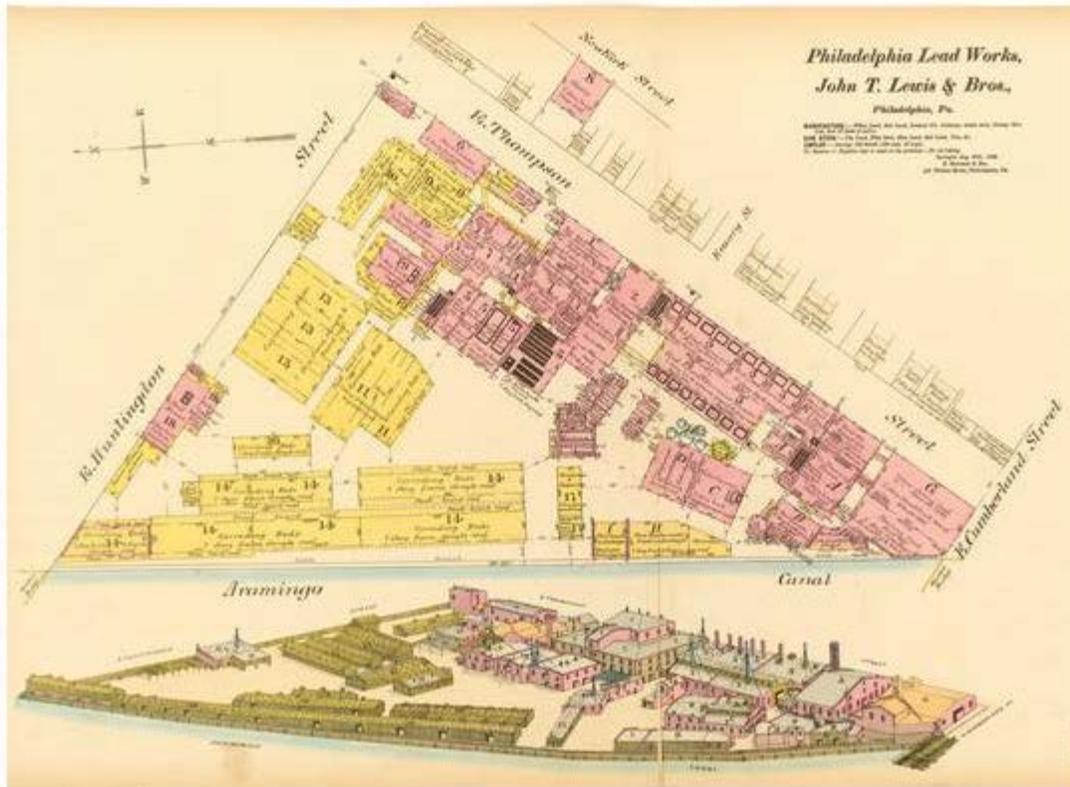
The EPA declined to be interviewed about the sites or the potential liabilities of the companies. If the agency were to incur cleanup costs, "EPA would then make a determination about a company's environmental liabilities," the agency said in a statement.

Frustration in Philadelphia

In Philadelphia, where residents say they are being told to clean up their own yards around the old [John T. Lewis-National Lead-Anzon factory site](#), it may be difficult or perhaps impossible to hold corporations accountable.

Pennsylvania environmental regulators allowed Anzon, the last company operating the plant, to enroll in a voluntary state program to clean up just the factory's property around 1998 -- without requiring any investigation of potential toxic fallout on the surrounding neighborhood. Successful completion of the program, known as Act 2 or

the state's Land Recycling Program, generally gives companies liability relief, with a few exceptions, from "ever having to do more cleanup in the future ... either because the DEP wanted it, or because citizens sued for more cleanup," according to a Q&A document on the department's website.



The operations of the John T. Lewis & Bros. lead factory are shown in this 1889 industrial site map and drawing. Various companies did lead manufacturing at the site for more than 140 years.
(Photo: Courtesy of The Bridgeman Art Library)

Even though homes surrounded the factory, which had operated since the 1800s, the Pennsylvania Department of Environmental Protection says no testing was required to determine the extent of contamination beyond the factory's borders.

"There is no such requirement under Act 2 for sites being remediated for non-residential use. These are voluntary cleanups conducted to bring former industrial sites back into productive reuse," the DEP said in a statement.

The factory property was turned into a commercial area with shops and restaurants.

The DEP declined to be interviewed about whether the state did enough during the Anzon cleanup to protect the health of nearby residents. The department said generally that Act 2's "liability protection only applies to the area that was investigated and remediated." DEP officials wouldn't discuss whether, as a practical matter, the passage of years has made it impossible to make Anzon pay for possible future costs. Many of Anzon's assets were sold to another company years ago, records show.

Sandy Salzman, one of the neighborhood residents who attended EPA meetings this year, said federal officials weren't optimistic about getting the factory's operators to pay for any cleanup.

"They said that would be really difficult because most of them aren't around anymore," said Salzman, executive director of the New Kensington Community Development Corp.

And the EPA said it had no federal funds for testing or cleanup, recalled Maggie O'Brien, president of Fishtown Action, a neighborhood group that hosted an EPA meeting in April. "They were basically acting like they weren't under any obligation to do anything about it other than to tell us," O'Brien said. "They couldn't or wouldn't do anything."





EPA officials met with neighborhood leaders, including Sandy Salzman, earlier this year to discuss soil tests showing lead contamination in the yards of some homes near the former John T. Lewis-National Lead-Anzon factory site. Federal officials were not optimistic about getting the factory's former operators to pay for any cleanup, said Salzman, executive director of the New Kensington Community Development Corp. (Photo: Eileen Blass, USA TODAY)

The EPA is aware of community frustration. An [internal agency e-mail recounts](#) how during a community meeting in March a neighborhood group official "expressed a strong opinion that EPA should be doing more than just outreach and education as we really seemed to drop the ball since the facility closed in 1996."

Anzon was a part of the Cookson Group, a British company that continues to be a leading global supplier to the steel and foundry castings industries. Spokespeople for the Cookson Group didn't respond to repeated requests for interviews or comment. Officials at NL Industries, the company formerly called National Lead, also didn't respond to interview requests about their operation of the plant, which court records say was from 1960 to 1979.

The factory's operators did emergency cleanups along "nearby streets" in 1988 and 1991 after a plant fire and accident, according to the EPA. Around the same time, residents sued NL Industries and Anzon claiming that the plant's operations harmed their families. According to court records in the class action, Anzon entered into a settlement in the case before the trial ended. Because NL Industries didn't settle, in 1994 the case went to the jury to decide each company's liability. The jury found negligence by Anzon, including that it was liable for \$2 million for testing to determine cleanup needs in one of three geographic zones involved in the case. The jury found no negligence on the part of National Lead.

The EPA said it assessed the site in 1995, but no further action was taken "in light of pending sampling and cleanup work to be conducted " by Anzon as a part of the court settlement. Exactly what cleanup Anzon did is unclear; Cookson officials wouldn't answer USA TODAY's questions.

The EPA sent investigators back to the neighborhood in 2005, after the site was included on the 2001 list of unrecognized lead-smelter sites. They recommended soil tests, [which were done in 2009](#). Of the 17 samples from four homes' yards, 14 had elevated lead levels, most of them well above the EPA's hazard standard for residential soil where children play.

USA TODAY tested dozens of soil samples from the neighborhood last year and also found dangerous levels of lead in area yards.

Still, internal EPA documents show that agency staff questioned whether the lead in the yards came from the massive lead factory, or perhaps from lead paint or the tailpipes of cars that once burned leaded gasoline. Urban areas, the agency has said, have many sources of lead, and the EPA is authorized to address only contamination that can be tied to factories.

At the John T. Lewis site in Philadelphia: "Continued assessment of these properties may yield properties with elevated levels of lead without clear information on the major source contributor," Jack Kelly, the EPA official assigned to the site, [wrote in a "Hot Issue" memo in May](#) to the EPA's regional administrator. "The urban lead-in-soil problem arguably exceeds EPA's Superfund resources making a traditional removal approach (dig & cover) likely infeasible."

It's unclear how much of EPA's approach at the site is driven by the Superfund's lack of money, and how much is driven by public health, science and what the agency is allowed to do under the law.

John Pendergrass, a senior attorney at the Environmental Law Institute, says that while the EPA needs to trace lead to a factory, "they don't need to trace all the lead" found in the area to one specific source. Pendergrass noted that it's possible for the EPA to do lead "species" testing that can help the agency show lead came from the factory. "I would think in this case there would be evidence they could find to show that it comes from a smelter that had been there that long," he said.

In a statement, the EPA said it "has made no decisions regarding the source of lead in sampled soils, the potential liability of any party, or response actions to be taken" and that it is still "considering the value" of doing lead species testing in the neighborhood.

The EPA said it has issued information requests to companies believed to be successors to the businesses that operated the facility and has evaluated their responses. The agency didn't name the companies or provide further details.

"The search for financially viable potentially responsible parties is ongoing," the EPA said.