Healthy Homes and Lead Contamination Risk

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Measuring What Matters: Neighborhood Research for Economic and Environmental Health and Justice in Richmond, North Richmond, and San Pablo

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HEALTHY HOMES AND LEAD CONTAMINATION RISK

Children like this one in Richmond are more vulnerable to lead contamination than adults.

"I am particularly concerned about my community, the one I live in. There are many children and many older homes. I have noticed that there are many children with learning problems and children with special needs, like my grandson. I can't be 100% sure, but there will always be a doubt in my mind that something in our surrounding environment, something in our home, has permanently affected my family."[1] Lilia Quiñonez's grandson is now a teenager with attention deficit disorder and learning disabilities, which she suspects are related to his exposure to lead in the paint of his family's home. When he was one and a half she took him to the pediatrician but was not able to confirm lead poisoning because the clinic said he was too old to receive a blood lead test.

Lead has long been recognized as a harmful environmental toxin, but has nonetheless been in widespread commercial use for centuries—in paint, pottery and ceramics, gasoline, water pipes, food, and medicinal coloring and additives.[2] The greatest risk of lead exposure is within the home, from ingesting lead-based paint chips or breathing lead-contaminated dust or soil.[3] Since at least the 17th century, lead was added to paint manufactured and sold throughout the United States because it increased the paint's brightness and durability.[4] In 1978, decades after lead-based paint was banned by most European nations, the U.S. government banned the use of lead in house paint.[5,6] Today, however, lead exposure from lead-based paint is still one of the largest environmental health hazards facing children throughout the nation.[7]

Lead affects practically every part of the body. It can cause permanent damage to the brain, nervous system, heart, and reproductive organs, which in turn can result in learning disabilities, behavioral problems, and at very high levels, seizures, coma, and even death.[8] There is no safe level of lead in the body, and lead will continue to accumulate in the body as long as a person is exposed to it.[9] Unfortunately, because low-level lead poisoning rarely exhibits visible symptoms, it frequently goes unrecognized.[10]

Children under the age of six are most vulnerable to lead exposure not only because their brains and nervous systems are still developing, but because their small size and play activities put them more into contact with lead sources.[11] Studies show lead exposure at a young age

can cause learning and reading disabilities, hearing and speech loss, and difficulty concentrating.[12] Consequently, lead-poisoned children are seven times more likely to drop out of school.[13] Childhood exposure to lead may also be linked to criminal and violent behavior later in life.[14] High levels of lead damage brain cells, affecting the part of the brain that controls impulsive behavior, aggression, judgment, and emotional regulation.[15] This evidence suggests that a reduction in lead exposure in children may in fact help reduce violence at the community level.

Although rates of lead poisoning have decreased nationally, not all children in the country have equally benefited from this decrease.[16] Children of minority populations and children from low-income families are more likely to have elevated blood lead levels. According to the most recent national data (1999–2002), non-Hispanic black children are 2.4 times as likely as white children to be poisoned by lead, and Mexican American children are 1.5 times more likely to be poisoned as white children.[17] Data from 1991–1994 showed prominent income disparities as well: low-income children were eight times more likely to be lead poisoned than children from higher income households.[18]

Many minority and low-income families are tenants in privately owned, older, poorly maintained housing.[19] Such housing is more likely to have uncorrected plumbing leaks, leaks in the structure of the house, holes in painted walls that are not fixed, poorly hung doors, or no regularly scheduled painting of indoor walls—all of which result in paint deterioration that produces lead hazards. According to a national study, 35% of low-income household units were found to have lead-based paint hazards, compared with 19% of middle and upper-income household units.[20]

In Contra Costa County, similar disparities exist: almost half (46%) of all county children with elevated blood lead levels live in the cities of Richmond and San Pablo.[21] The cities of Richmond and San Pablo have some of the highest numbers of families living in poverty (15.5% and 13.4% respectively), as well as the greatest proportion of children in Contra Costa County under the age of five (9.1% and 7.7% respectively). San Pablo and Richmond neighborhoods are also compromised mostly of people of color (84% and 79% respectively).[22]

WHAT DID OUR RESEARCH FIND?

This indicator estimates the level of lead exposure risk for homes within West Contra Costa County. This was done by looking at the year homes in the county were built, which can help determine if lead-based paint was used or prohibited during original construction. From this information, the relative risk of lead exposure can be estimated. It was originally intended for this indicator to track the number of lead remediation projects—the removal, enclosure, or sealing of lead paint in older residential units; however, Contra Costa County data on number of residential lead remediation projects is unavailable, and few programs exist that conduct lead inspection, remediation, or abatement within the county.

In Richmond, San Pablo, and North Richmond, 50% of homes were built before 1960, and so have high risk of lead contamination.

The potential prevalence of lead paint hazards increases with the age of a house. Figure 1 illustrates the potential relative risk of lead exposure for residents based on the year the home was constructed. Families living in homes built before 1960—when lead-based paint was still widely used and in greater concentration—are at highest risk. In fact, a national study shows that homes built before 1960 have five-to-eight times the prevalence of hazards compared with units built from 1960 to 1977.[23] Between 1960 and 1977, homebuilders began to

Figure 1. WEST COUNTY HOMES BY LEVEL OF RISK FOR LEAD CONTAMINATION

	High Risk, built before 1960	Medium Risk, built 1960–1977	Low Risk, built 1978–2007	Year Built Unknown	Total # of Homes
Richmond, Number of Homes	16,445	3,535	6,551	6,184	32,715
San Pablo, Number of Homes	5,233	2,102	1,809	1,361	10,505
North Richmond, Number of Homes	275	67	465	413	1,220
TOTAL	**21,953**	**5,704**	**8,825**	**7,958**	**44,440**

Source: Contra Costa County Mapping Information Center

avoid the use of lead-based paint in construction, which began to reduce the risk of exposure. Homes constructed 1978 or later have the lowest risk of lead hazards, due to the 1978 government ban on residential lead-based paint.

The following figures show a comparison between the level of risk of lead exposure for homes within the cities of Richmond, San Pablo, and North Richmond. In these areas as a whole, close to 22,000 of the 44,440 homes—about 50%—were built before 1960, putting families living within them at high risk of lead contamination. Figure 2 shows that specifically among the 32,715 houses in Richmond, 50% are in the high-risk category, and 11% are in the medium risk category. Within San Pablo, the distribution is similar. Of the 10,505 homes in San Pablo, 50% are at high risk and 20% are at medium risk of lead contamination. North Richmond residents are at high risk of lead poisoning in at least 23% of their homes, however with 34% of the homes of unknown age, it is possible that the actual number of high-risk homes is even greater.

A focus on the neighborhood level in Richmond (Figure 3) shows the number and proportion of high-risk homes by neighborhood. In many Richmond neighborhoods, over half of the homes are built prior to 1960, and a large number of high-risk homes in neighborhoods such as North and East Richmond, Belding Woods, Iron Triangle, and Richmond Annex puts thousands of children and families at risk for lead poisoning.

Figure 2. YEAR OF CONSTRUCTION OF WEST COUNTY HOMES

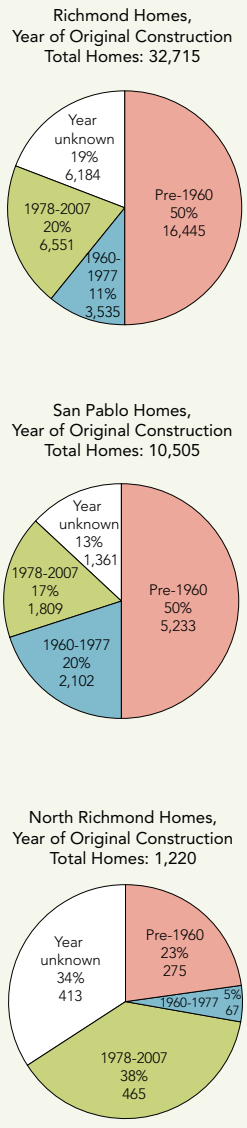
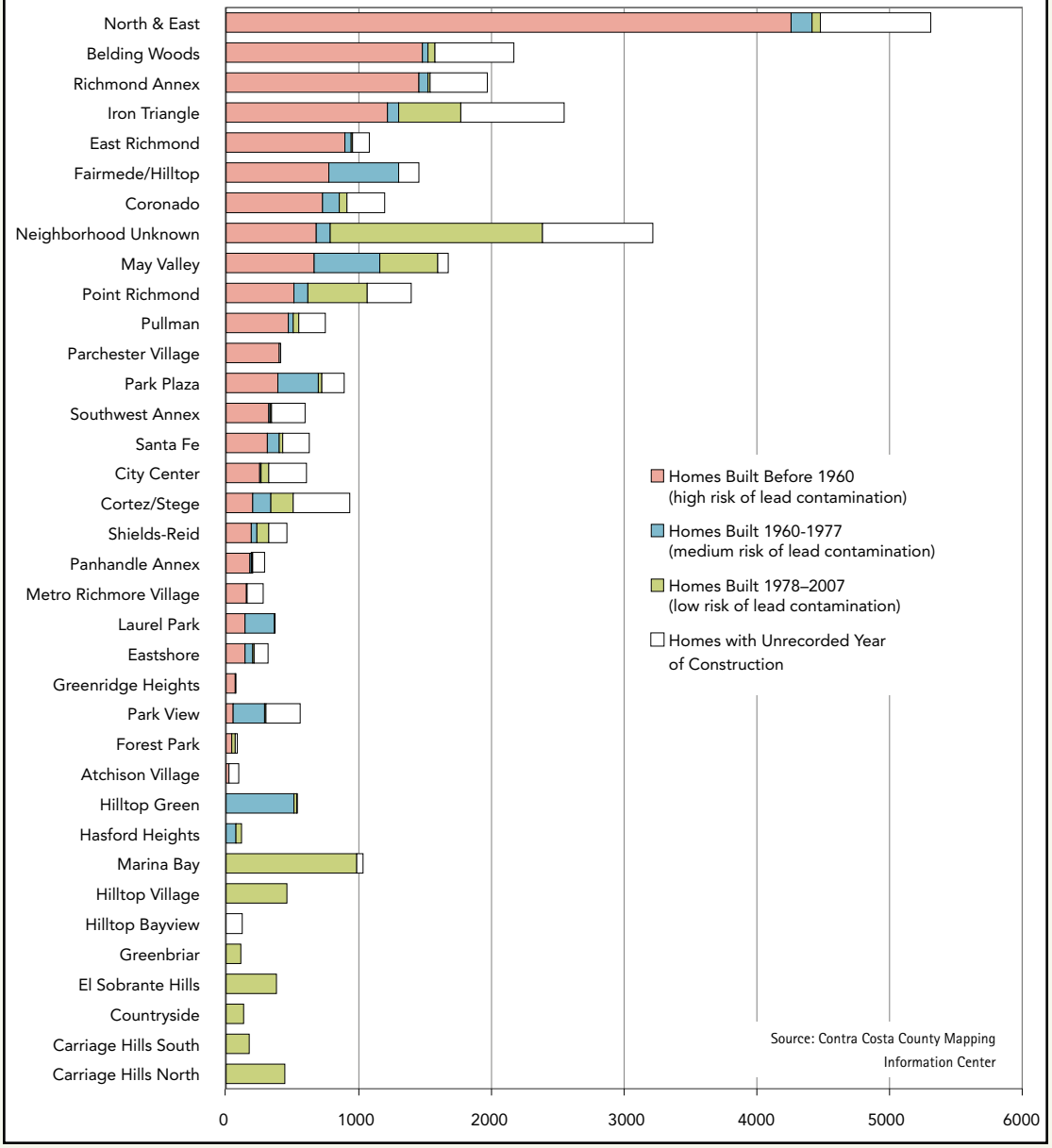


Figure 3. RISK OF LEAD CONTAMINATION IN RICHMOND HOMES, BY NEIGHBORHOOD



WHAT DOES THIS MEAN FOR WEST COUNTY?

The high number of high-risk housing units within West County mirrors the disproportionate number of lead-poisoned children in the county. According to Contra Costa County Health Services, of the more than 800 children identified with elevated blood lead levels[24] in the last eleven years, 46% live in Richmond and San Pablo,[25] although these cities together represent only 14% of the total county population. State and federal agencies recommend universal or targeted screening of all children in communities where 27% or more of housing was built before 1960.[26] With half of the total homes built prior to 1960, Richmond and San Pablo children warrant routine screenings. Even at the neighborhood level, the majority of neighborhoods of Richmond have well over 27% of homes built prior to 1960.

It is important not only to evaluate the extent of lead-contaminated housing, but also to assess what the community is doing to reduce the risk of lead poisoning in the home. Although various public and nonprofit programs are working on the issue of preventing childhood lead poisoning in Contra Costa County, few programs fund or conduct lead remediation projects. The Contra Costa County Lead Poisoning Prevention Project offers residents important prevention education, but its limited staff, resources, and financing are inadequate to conduct lead inspections and remediation. Some lead remediation in West County homes has occurred through Richmond-based Project REAL (Richmond Effort to Abate Lead). This Department of Housing and Urban Development (HUD) funded lead-hazard-reduction program inspected over 800 homes and remediated lead hazards in 450 of these homes between 1999 and 2006.[27]

Many West County homes may also receive lead remediation through individual owners and private contractors. While the best way to reduce lead poisoning is to remove lead paint altogether, its complete and permanent removal can be very costly and harmful if not completed correctly. As a result, temporary controls, which involve painting over older paint and addressing the underlying causes of paint deterioration such as leaks, friction, and chip-causing impacts, is a more widespread and accepted approach for remediation efforts.[28] Currently no local documentation system exists to monitor the number of homes remediated or to assure that remediation conducted by private contractors or residents is done safely. The considerable number of high risk homes in the county and the challenges of lead remediation work highlight the need for monitored and coordinated lead remediation efforts, particularly within the high risk neighborhoods in West County.

WHAT CAN WE DO?

Build awareness and public support.
Education plays an important role in reducing lead exposure by increasing community understanding and strengthening publicity and community support.[29] Expanding public outreach and education on lead hazards, prevention, and remediation should include ongoing multilingual efforts targeting high-risk communities. Successful methods carried out through public, private, and community agencies include:

- Demonstration homes to show the public and policy-makers how lead paint hazards can develop and to demonstrate techniques for controlling these hazards.[30]
- Lead safety education targeting new and expectant families.[31]
- Resources for rental property owners on lead safety, disclosure, and other responsibilities.[32]

Increase access and number of lead screenings.
Successful programs and policies to increase targeted lead screening by other cities have included:

- Free mobile or in-home community lead screening clinics at target neighborhoods, with on-site lead-level consultation and other community resources. These programs help address barriers to screening such as transportation, time, lack of insurance, and lack of trust in the medical system.[33, 34]
- Collaborative partnerships with churches, other faith-based organizations, schools, and community organizations to inform and promote lead screening.[35]
- Partnerships with day care centers and other early childhood programs to ensure that documentation of lead screening is in each child's file upon enrollment.[36]

Increase tracking of and resources for remediation.
The research presented here has demonstrated the critical need for lead remediation resources for West County neighborhoods. Significant help is needed in the area of detection, remediation, and prevention of lead problems specifically aimed at owners of pre-1978 residential property. Remediation work is happening through individual property owners and project-based work such as Project REAL, but many homes remain at high risk. As a first step, policy is needed to help document and report remediation projects at all levels throughout the county to prioritize high-risk areas and help assure safe remediation work.

COMMUNITY RESOURCES FOR INFORMATION AND CHANGE

Project REAL (Richmond Effort to Abate Lead)

Chidi Egbuonu
510.412.8568, 510.412.8586
Project REAL is a free Department of Housing and Urban Development (HUD) program for low-income families with children under six years old living in housing built prior to 1978. The program focuses its work in the cities of Richmond and San Pablo. It provides in-home testing for lead paint hazards, remediation of identified lead hazards, and blood-lead testing for children under age six. Project REAL is currently in the process of re-applying for funding to continue lead hazard remediation in these cities. If received, the new grant will fund remediation of 200 units over the next three years.[37]

Morada de Mujeres del Milenio (MMM)

Rosa Acosta, Program Director
510.231.0489
MMM is a San Pablo-based community organization that helps families on a range of family wellness issues. Due to the high risk of lead contamination in San Pablo neighborhoods, MMM is designing workshops around lead-poisoning awareness within the communities it serves.

Contra Costa Lead Poisoning Prevention Project

Contra Costa Health Services
597 Center Avenue, Suite 125
Martinez, CA 94553
925.313.6763
Community Wellness and Preservation Program
1.866.FIX.LEAD
www.cchealth.org/topics
As part of the county's Health Services, LPPP provides services for lead-poisoned children and their families; education and outreach to health care providers, agencies and residents; as well as information and referral to parents, home remodelers, and childcare providers.

Neighborhood Preservation Program—Contra Costa County Building Inspection Department

651 Pine St. 4th Floor
Martinez, CA 94553
925.335.1137
http://ca-contracostacounty.civicplus.com/index.asp?NID=287
The Neighborhood Preservation Program's purpose is to provide loans to low- and moderate-income persons to improve their homes by correcting health and safety problems and improving livability. The loan program is only available for owner-occupied homes. More information on types of loans, types of work completed, and eligibility requirements is available on the website.

Alliance for Healthy Homes

www.afhh.org
The Alliance for Healthy Homes is a national, nonprofit, public interest organization working to prevent and eliminate hazards in our homes that can harm the health of children, families, and other residents. For successful and innovative programs on identifying, controlling, and preventing lead poisoning in the home, see *Building Blocks for Primary Prevention: Protecting Children from Lead-Based Paint Hazards (2005).* The report can be accessed at www.afhh.org/buildingblocks.

RESEARCH METHODS

Data

Data on the year that West County homes were originally constructed was gathered from parcel data from the county tax assessor. This and other data from tax records kept by the county are included in Geographic Information Systems .shp files made available on the website of the Contra Costa County Mapping Information Center: http://www.ccmap.us. The official boundaries of Richmond neighborhoods were obtained from the staff at Richmond Mapping Services, online at http://www.ci.richmond.ca.us/index.asp?NID=865 and by telephone at 510.620.6542.

Methods

Software Needed: ArcGIS, Excel

1. Join Year of Construction to GIS point file of parcels: Contra Costa County has two sets of parcel data available on the county's Mapping Information Center website, a point file that has few housing characteristics in the attribute table, and a boundary file that has an extensive set of housing characteristics in the attribute table. To make the following analysis easier, export the attributes of the boundary file, then join them to the parcel point file using the APN numbers.

2. Group residential parcels according to the neighborhoods in which they are located: conduct a spatial join that joins the neighborhoods to the parcel point file. The attribute table should now have a column listing the name of the neighborhood where each parcel is located.

3. Create a table of the parcels in your area and their attributes: export the attribute table of the parcels. Open the new .dbf table in Excel and save it as an .xls file. Note: If there are too many parcels for the file to be opened in Excel, you may have to use Access or another database program to do this.

4. Count how many parcels have homes built before 1960, how many built between 1960 and 1977, and those built after 1977. The year a home was built tells us the relative risk of lead exposure for residents within the home. Residents living in homes built prior to 1960 are at highest risk for lead poisoning; residents living in homes built between 1960 and 1977 are at medium risk; and those living in homes built after 1977 are at lowest risk.

Do Your Own Research on Your Home's Year of Construction

To find out the year of original construction of the building on a property in Contra Costa County, use the Contra Costa Mapping Information Center web page: http://ccmap.us/gis/. Click on "Accept below disclaimer" to enter the site. In the space under "Site Address Number," type the address number of the property. In the next blank space, type the name of the street. Do not include "St" or "Ave" or any other street suffix. Under "Site Street Suffix," select the appropriate ending of the property's street name. Under "Site City," select the city in which the property is located. There may be two properties that match the address, in which case on the left side of the next page two blue boxes appear, each starting with "APN." Click on the number to the right of "APN." This is the parcel number of the property, which is used by the county to keep records about the property. The next page will show you a map of the property's location, and information about the property on the left side under "Parcel Details." Move the bar next to "Parcel Details" in order to scroll to the bottom and see the information under "Building Information." Next to "Year Built" is the year that the building was originally built. If the year is not listed, you may need to go to the Contra Costa County Tax Assessor office, located at 2530 Arnold Drive, Suite #100, Martinez, CA. The phone number for the Tax Assessor is 925.313.7400.

Photo: istockphoto.com/Glenn Bo

Lead paint can be harmful to children.

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