

LEAD-SAFE HOMES, HEALTHY FAMILIES.

Four weeks, four webinars, one goal: eliminate lead hazards from Virginia's homes.

WEBINAR #1AUGUST 19TH

Plumbum Persists: Housing and Public Health

Dr. Danny Avula Dr. Jennifer Ross Hope F. Cupit Queen Zakia Shabazz

Richmond City Health District and Virginia Poverty Law Center invite you to learn how lead continues to impact resident health across the Commonwealth.

Health is Housing... and Housing is Health

Danny TK Avula MD, MPH Director, Richmond and Henrico Health Departments









RICHMOND CITY W | HENRICO COUNTY

Social Determinants of Health



Housing First



🛠 Housing quality

Housing that is safe, dry, clean, maintained, adequately ventilated, and free from pests and contaminants, such as lead, radon, and carbon monoxide, can reduce the incidence of negative health outcomes such as injuries, asthma, cancer, neurotoxicity, cardiovascular disease, and poor mental health.

\$ Housing affordability

Affordable housing enables people to pay for other basic needs such as utilities, food, and medical care, which can reduce the incidence of negative health outcomes such as malnutrition, diabetes, anxiety, and depression.

Housing community

Neighborhoods free from segregation and concentrated poverty, and in which residents have close and supporting relationships with one another, can improve physical and mental health by reducing stress and exposure to violence and crime as well as improving school performance and civic engagement.

Housing location

Easy access to public transportation, parks and recreation, quality schools, good jobs, healthy foods, and medical care can help reduce the incidence of chronic disease, injury, respiratory disease, mortality, and poor mental health.

Source: Adapted from Human Impact Partners, 29th Street/San Pedro Street Area Health Impact Assessment (2009), accessed Jan.22, 2016, http://www.humanimpact.org/downloads/san-pedro-st-area-hia-full-report

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Richmond and HOLC (Redlining)



 RICHMOND CITY
 Image: Health district

 Health district
 Health district

Low Birth Weight



Gonorrhea Rates



Life Expectancy



RICHMOND CITY

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Richmond Region Market Value Analysis

February, 2018

RICHMOND CITY

HENRICO COUNTY

HEALTH DISTRICT



Fostering an equitable and healthy Richmond Region

Areas Affordable at up to 80% Median Household Income



 RICHMOND CITY
 Image: Health district

 Health district
 Health district



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ABOUT FRAMEWORK RESEARCH TOOLS RCDA PARTNERS NEWS

REGIONAL HOUSING FRAMEWORK

The Framework is an initiative of the Partnership for Housing Affordability to create a three-year, solutions-oriented action plan for increasing

housing affordability in the Richmond region, including Chesterfield, Richmond, Henrico, Hanover, and Ashland.

🛠 Housing quality

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Richmond one of the Most Challenging Places to Live with Asthma:



2. Richmond, Virginia

Richmond is #2 on our Asthma Capital list, but is top in the nation for the number of asthma fatalities the city's high poverty rate of 26.2% is a factor. Low-income families may face poorly maintained rental nousing, urban locations with high pollution and lack of resources to pay for proper care. With a high pollen count and higher-than-average emergency room visits, it's no surprise Richmond is near the top of the list.

Lead Poisoning





RICHMOND CITY







HENRICO COUNTY HEALTH DISTRICT

Plumbism Persists

Jennifer A. Ross, MD, MPH

August 19, 2020

UNIVERSITY of VIRGINIA

University of Cincinnati

2011 - 2016 UC College of Medicine, UC College of Public Health, Cincinnati Children's Environmental Health and Lead Clinic

Children's Hospital of The King's Daughters

2016 - 2019

Pediatric Residency, Eastern Virginia Medical School, American Academy of Pediatrics, American Medical Association



University of Virginia

2019 - present

Medical Toxicology Fellowship, Blue Ridge Poison Center, UVA Addiction Clinic, American College of Medical Toxicology, American Academy of Clinical Toxicology





Images courtesy of med.uc.edu, chkd.org, uvahealth.com

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Item Two: Sources of lead

Item Three: Clinical outcomes associated with

elevated blood lead levels

Item Four: Treatment of lead toxicity

Item Five: Required testing in Virginia



History of lead toxicity

- Dioscorides (Greek physician in second century BC)
 - Observed adverse cognitive effects
- Pliny (Roman savant, AD 23 -79)
 - Cautioned of the dangers of inhaled fumes from lead smelting
 - Theory that "sapa" contributed to the downfall of the Romans
- Benjamin Franklin (1763)
 - "dry gripes" abdominal pain
 - "dangles" wrist drop
 - "gripes" rum distillation in leaden condensing coils
- Lead salts such as lead acetate or "sugar of lead" (19th century)
 - Used medicinally to control diarrhea and bleeding
 - Andrew Jackson (1767 1845)

History of lead toxicity

In 1874, the Lancet published a letter on lead toxicity from occupational hazards (i.e. working in lead factories):

it is best	LEAD-POISONING.	
The	a de la construcción de la constru	
e all	THE following is a copy of a letter addressed to the Local	
, we	Government Board by direction of the guardians of Mile-	
the	end Old Town on the subject of lead-poisoning through	
ally	working at lead mills :	
our	Bancroft-road, Mile-end, London, E., 3rd July, 1874	
) are	Sir,-I am directed by the board of guardians to draw	
.tlas	your serious attention to the large number of persons con-	
ces-	stantly under treatment for "lead-poisoning" arising from	
pur-	their working in colour and white-lead factories, and the	
et"	have during the nast twelve months been twenty on a second	
not	patients under the care of the parish medical officers, tensh	
tho-	whom, being in a bad state, were admitted into the infirmery	
	of the workhouse. It should be observed that the persons	
ject	so affected whom the medical officers of this parish attend	
verk	affects of land-noisoning so produced The adjoining prime	

History of lead toxicity

- 1897 Childhood plumbism recognized in Australia
 - Lead-paint banned in 1914
- 1917 Childhood plumbism recognized in U.S.
- 1943 Recognized association between plumbism and neurological symptoms in children
- 1960's CDC defined lead poisoning with levels > 60 μg/dl









Sources of lead

Air	Leaded gasoline (pre-1976 in the US), industrial emissions
Dust	Home dust from deteriorated lead paint
Food	Lead solder in cans (pre-1991 in the US), unregulated dietary supplements, moonshine, contaminated imported foods, lead leached from leaded crystal or ceramics
Other	Complementary and alternative medicines, children's toys and jewelry (imported products), cosmetics, leaded ink, vinyl mini-blinds
Paint	Especially pre-1978 homes
Soil	From yards contaminated by deteriorated lead paint, lead industry emissions, roadways with high leaded gasoline use
Water	Leached from leaded plumbing (pipes, solder)

Sources of lead

Ingestion (eating)

Inhalation (breathing)

- Adults absorb 10% of ingested lead
- Children absorb >50% of ingested lead
- Factors that enhance absorption: fasting, deficiency of iron, calcium, or zinc
- About 40% of inhaled lead is absorbed
- Smallest particles reach the lungs
- Breathing faster = more inhaled lead

Lead can cross from mother to baby starting at the 12th week of pregnancy.

Clinical outcomes

In 1979, children with elevated lead levels in their teeth were identified to have later deficits in their psychologic performance and schoolwork abilities.

The New England Journal of Medicine

Copyright, 1979, by the Massachusetts Medical Society

Volume 300

MARCH 29, 1979

Number 13

DEFICITS IN PSYCHOLOGIC AND CLASSROOM PERFORMANCE OF CHILDREN WITH ELEVATED DENTINE LEAD LEVELS

HERBERT L. NEEDLEMAN, M.D., CHARLES GUNNOE, ED.D., ALAN LEVITON, M.D., ROBERT REED, PH.D., HENRY PERESIE, PH.D., CORNELIUS MAHER, PH.D., AND PETER BARRETT, B.S.

Abstract To measure the neuropsychologic effects of unidentified childhood exposure to lead, the performance of 58 children with high and 100 with low dentine lead levels was compared. Children with high lead jevels scored significantly less well on the Wechsler intelligence Scale for Children (Revised) than those other variables studied.

Also evaluated by a teachers' questionnaire was the classroom behavior of all children (2146 in number) whose teeth were analyzed. The frequency of nonadaptive classroom behavior increased in a doserelated fashion to dentine lead level. Lead expo-

Clinical outcomes

Brain

- Sluggishness and fatigue
- Ataxia (impaired balance)
- Cerebral edema (swelling of the brain)
- Altered mental status
- Coma
- Seizures
- Learning disabilities
- Personality changes

Vision and Hearing

• Deficits and loss

Blood

• Anemia

Musculoskeletal

- Myalgias (muscle pain)
- Arthralgia (joint pain)
- "Lead lines"

Hands and Feet

- Neuropathy
- Loss of motor nerves (wrist drop)

Gastrointestinal

- Nausea and vomiting
- Abdominal pain
- Anorexia
- Constipation
- Pica (eating thing's that aren't food)

Kidneys

- Gout (a form of arthritis)
- Hypertension (high blood pressure)

Fertility

- Menstrual irregularity
- Increased infertility
- Increased stillbirths and miscarriages
- Reduced sperm counts and motility



Lead levels

>10 mcg/dL >20 mcg/dL >30 mcg/dL >40 mcg/dL >60 mcg/dL >70 mcg/dL >80 mcg/dL >85 mcg/dL >130mcg/dL Hearing, growth, IQ deficits
↓ Nerve conduction
Impaired vitamin D metabolism
↓ Hemoglobin synthesis
Colic
Anemia
Renal injury
Encephalopathy
Death





Department of Health and Human Services Centers for Disease Control and Prevention



Treatment

First, removal from the source of lead exposure.

- Chelation: agents that bind to lead that is then excreted from the body
- Determined by:
 - Age of the patient
 - Blood lead concentration
 - Clinical symptoms

(typical course decreases lead content by 1-2%)

 Recommended in children with lead levels > 45 mcg/dL

Relatively inefficient process

Testing

All Medicaid enrolled children are required to be tested at both 12 and 24 months of age, in addition to children who are:

- Eligible for or receiving benefits from Medicaid or WIC;
- Living in or regularly visiting housing or child care facility built before 1960;
- Living in or regularly visiting housing built before 1978 with peeling or chipping paint or recent (within the last 6 months), ongoing or planned renovations;
- Living with or regularly visiting housing in which one or more persons have evidence of lead exposure;
- Living with an adult whose job or hobby involves exposure to lead;
- Living near an active lead smelter, battery recycling plant, or other industry likely to release lead;
- The child's parent or guardian requests the child's blood be tested due to any suspected exposure;
- Recent refugee, immigrant, or child adopted from outside the U.S.

Guidelines for management of children with confirmed blood lead levels >5 μg/dL for children

BLOOD LEAD LEVEL (µg/dL)	ACTION	TIME FRAME
5-9	 Child's healthcare provider: Provides educational materials to include dietary and environmental information Monitors blood lead level with follow up test 	Within 3 months
10-14	 Case manager coordinates with child's healthcare provider: Provides educational materials to include dietary and environmental information Perform nursing assessment Follow-up blood lead testing within 30 days to assure not rising Refer for WIC and social services, if needed 	Within 30 days
15-19	 Above actions, plus: Proceed according to actions for 20-44 µg/dL if: A follow-up blood lead is 15 or above, or the blood lead level is increasing 	Within 2 weeks
20-44	Above actions, plus : • Coordinate a timely environmental investigation	Within 1 week
45-69	Above actions, plus : • Consider chelation	Within 48 hours
70 and above	Above actions, plus : Hospitalize child and begin medical treatment (chelation therapy as appropriate) immediately. Contact Emergency Lead Healthcare 866-SOS-LEAD (866-767-5323) for consultation and assistance	Immediate, Within 24 hours



Resources

Thanks to Dr. Christopher Holstege.

- Centers for Disease Control and Prevention. https://cdc.gov
- Nelson LS, et al. Goldfrank's Toxicologic Emergencies, 11th edition.
- Virginia Department of Health. https://www.vdh.virginia.gov



Lead Presentation Hope F. Cupit SERCAP, INC.

Presented by Southeast Rural Community Assistance Project, Inc.

August 19, 2020

About SERCAP

- Southeast Rural Community Assistance Project, Inc. (SERCAP) is a 501(C)3 nonprofit organization focused on improving the quality of life for people living in communities across the Southeast United States.
- Since 1969, we've advocated to ensure every single person living in our service area has daily access to clean
 and affordable drinking water, working indoor plumbing and wastewater facilities, and safe and affordable
 housing in which to live.
- Our advocacy and technical expertise in affordable water and wastewater facilities, community development, and environmental health has resulted in people staying in school and out of jail, prevented cases of hepatitis, meningitis, typhus and cancer, and has created and supported sustained economic activity in rural communities across the Southeast.



What is lead?

- Lead (Pb) is a dense, relatively soft, malleable metal
- Low Tensile Strength
- Relatively Easy to smelt
- Widely available



Possible Health Effects caused by high lead levels

- Lead is a cumulative toxin no immunity
- Repeated exposure causes amounts to accumulate in the body
- Physiological damage
- Effects Central and peripheral nervous systems
- Gastrointestinal tract
- Kidney
- Haematological system



What do you mean by Plumbosolvency?

- The ability of a solvent, notably water, to dissolve lead
- More common in older pipes
- Water attacks lead pipes and lead solder
- Some private plumbing systems still contain lead piping
- Especially the lead pipe service line from road to house
- This is the greatest source of plumbosolvency



Lead poisoning can harm your child. Lead poisoning can cause behavior and learning problems. By the time you notice it may be too late. Get your child tested for lead.

Using A Water Filter - Being Healthy Is Essential

- Eating clean food and drinking pure water is vital for being healthy in our life.
- But do you think the water you obtain in the house is clean?
- Drinking of unfiltered water can affect your health adversely. Thus, it is important to clean the water before drinking it.
- Sometimes, people think boiling the water can remove all the impurities and pathogenic microorganisms in it.



Using A Water Filter, cont.

- For eliminating all the possible contaminations from the water all you may need is the water filter.
- The contaminations in the water usually affect the smell and the taste of the water.



Filters to consider for the removal of Lead in drinking water

- Certification: All of the filters listed in this presentation are certified by the Water Quality Association (WQA) to the NSF/ANSI 53 Lead-certification standard
- We do not recommend the purchase of water filters from Amazon or other sellers outside of big box stores like Walmart, Target, Grocery stores, Home Depot, etc. There have been reports of "brands" that have misleading claims about effectiveness and other sellers making "fake filters" using brand names like PUR, Brita etc.



Filters to consider for the removal of Lead in drinking water, cont.

• Pitcher Filters

- Brita Longlast Pitcher Cartridge #: OB06
 - Tested extensively in VT lab
- **DuPont Traditional Pitcher** (WFPT100) Cartridge #: WFPTC100
 - Purchased, but not performance tested in VT lab
- **PUR Lead Reduction Pitcher** Cartridge #: PPF951K3
 - Tested extensively in VT lab
- ZeroWater Pitcher Cartridge #: ZF201
- Great Value Lead Removal Pitcher Filter Cartridge #: WFGV1000
 - Not tested in VT lab, was not available for purchase



Filters to consider for the removal of Lead in drinking water, cont.

Faucet- Tested extensively in VT Lab

- Brita Basic Cartridge #: FR-200
- Culligan Faucet Cartridge #: FM-R
- **PUR Basic** Cartridge #: RF-3375
- **PUR Mineral Clear** Cartridge #: RF-9999

TESTED Once in VT Lab

- **DuPont Deluxe** Cartridge #: WFFMC300
- **DuPont Premiere** Cartridge #: WFFMC100
- Instapure F5 Complete Faucet Cartridge #: TAP-COM-REPL-2

Case Study in Virginia





A look at Virginia

 (3%) of the Community Water Systems (CWS) and (4.7%) Non-Transient Non-Community Water System (NTNCWS) experienced a lead action level exceedance (ALE) of 15 parts per billion (ppb) for at least one sample site and a number of systems had multiple sites exceed the ALE.

• What is a CWS and what is a NTNCWS?

- A CWS is defined as a waterworks that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents
- A Non-Transient Non-Community Water System (NTNCWS) is defined as a waterworks that is not a community waterworks and that regularly serves at least 25 of the same persons over six months out of the year. Examples of NTNCWS include schools and daycare centers.

How SERCAP is helping!

- We started a lead service line replacement program
- Homeowners must be income eligible
- We provide up to 5,000 to remove lead pipes in the home
- The VDH has a program for localities to remove lead service lines and we are working with the department
- SERCAP will also provide filters for homeowners if there is a concern about lead in the water. Must have a cluster of a minimum of 6 homes in a community.



For More Information- Contact

SERCAP, Inc. Attn: Hope F. Cupit, CEO 347 Campbell Avenue, SW Roanoke, VA 24016 (540) 345-1184, ext. 140 hcupit@sercap.org WWW.sercap.org





Thank You!





#Lead2020: Lead-Safe Homes, Healthy Families and Toxic Politics

19 August 2020





LEAD AND ITS EFFECT ON PEOPLE ACTIVITY

MEDICAL + EDUCATION + HOUSING



Lead Poisoning, Safe / Affordable Housing and Environmental Justice

What is Environmental Justice?

"the <u>fair treatment</u> and <u>meaningful involvement</u> of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies"

EJ not only refers to the Natural (air, water, land)

But also must include the

CULTURAL (ethnic identity of people, history of community, ...
SOCIAL (existing /lacking public services such as health, education, ...
ECONOMIC (individual/collective wealth, employment, local businesses, ...
POLITICAL (local, state, federal) components of a community.



"CHILDREN ARE THE ONLY FUTURE OF ANY PEOPLE"

DR. FRANCES CRESS WELSING









LEAD POISONING IS THE NUMBER ONE ENVIRONMENTAL THREAT TO YOUNG CHILDREN

LEAD IS A **HEAVY** METAL



This Deadly Element offers absolutely no benefits to the human body









1522 East 18th Street, Richmond, VA



CHILDREN ARE THE <u>ONLY FUTURE</u> OF ANY PEOPLE

A Child Is A Terrible Thing To Waste! What are we <u>prepared</u> and <u>willing</u> to do to <u>protect</u> and <u>ensure</u> our <u>future</u>?



CHOOSE WELLNESS







ZAKI SHABAZZ

UPAL'S POSTER CHILD POISONED 1996

Read about Zaki's battle with lead poisoning in *Triumphing Over Lead* The sequel to A Child is a Terrible Thing to Waste!

Look out lead we're coming for you!









United Parents Against Lead & Other Environmental Hazards









LEAD-SAFE HOMES, HEALTHY FAMILIES.

Four weeks, four webinars, one goal: eliminate lead hazards from Virginia's homes.

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