

Health Justice Strategies to Eradicate Lead Poisoning: An Urgent Call to Action to Safeguard Future Generations

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Abstract:

Despite over a century of evidence that lead is a neurotoxin that causes irreparable harm, today, lead continues to pervade children's environments and remains a constant threat to health and wellbeing. One in three homes across the United States housing children under the age of six has significant lead-based paint hazards that place occupants at risk of permanent neurological harm and lifelong poor health risks. Federal, state, and local governments must use a range of primary prevention strategies in order to fully eradicate the risks and protect children from lead poisoning. This Article provides a comprehensive examination of best practices for addressing lead poisoning and proposes urgent reform measures at the local and state levels. Successful interventions ultimately prioritize health justice strategies and rely on community ownership and cross-sector participation; dedicate significant resources and funding to completely eliminate lead in the environment; and prioritize primary prevention practices that identify lead-based paint hazards before children are exposed.

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INTRODUCTION

Over the past century, tens of millions of children have been poisoned by lead. Despite early warnings of its toxic effects,¹ the heavy metal was used extensively in the American home.² Today, lead is prevalent in children’s environments—from the homes in which they live to the water they drink—and it remains a constant threat to health and wellbeing. Children are most often exposed to lead hazards in the form of chipping and peeling lead-based paint, lead-contaminated dust, and lead-contaminated soil in and around pre-1978 homes.³ Over thirty-seven million homes (34.9% of all housing units) in the United States have lead-based paint that will become a lead hazard if not closely monitored and maintained,⁴ and, of these, twenty-three million homes contain active lead hazards.⁵ Nationwide, one in three homes with children under the age of six has significant lead-based paint hazards that place occupants at risk of grave harm.⁶

Despite ample evidence of the danger of lead-based paint and lead dust, executives in the paint and lead industries, including Sherwin Williams, manufactured and promoted lead-based paint for use on and in residential homes during the 20th Century.⁷ The Lead Industries Association spearheaded a successful

1. See generally A. Jefferis Turner, *On Lead Poisoning in Children*, 1 BRIT. MED. J. 895 (1909) (discussing the signs and symptoms of lead poisoning in children); see also David Rosner & Gerald Markowitz, *A ‘Gift of God’?: The Public Health Controversy over Leaded Gasoline during the 1920s*, 75 AM. J. PUB. HEALTH 344 (1985) (arguing that the public, scientists, and government officials were aware of the dangers posed by the introduction of lead into gasoline as early as the 1920s).

2. See generally GERALD MARKOWITZ & DAVID ROSNER, *LEAD WARS: THE POLITICS OF SCIENCE AND THE FATE OF AMERICA’S CHILDREN*.

3. Lead in soil, water, and consumer products are other common sources of exposure. See Arthur Delaney, *Lots of Cities Have the Same Lead Pipes That Poisoned Flint*, HUFFINGTON POST (Jan. 28, 2016), https://www.huffpost.com/entry/lead-pipes-everywhere_n_56a8e916e4b0f71799288f54; Michael Hawthorne, *Chicago to Test for Lead in Water on Higher-Risk Streets*, CHI. TRIB. (Aug. 2, 2016), <https://www.chicagotribune.com/investigations/ct-chicago-water-testing-20160801-story.html>. Chicago mandated leaded pipes until the mid-1980s. *Id.*; see also CTRS. FOR DISEASE CONTROL & PREVENTION, *CHILDHOOD LEAD POISONING* (2013), https://www.cdc.gov/nceh/lead/factsheets/Lead_fact_sheet.pdf; *Lead and Drinking Water from Private Wells* (2015), <https://www.cdc.gov/healthywater/drinking/private/wells/disease/lead.html>.

4. U.S. DEP’T OF HOUS. & URBAN DEV., *AMERICAN HEALTHY HOMES SURVEY: LEAD AND ARSENIC FINDINGS*, 1, 15 (2011), https://www.hud.gov/sites/documents/AHHS_REPORT.PDF. [hereinafter AMERICAN HEALTHY HOMES SURVEY]

5. *Id.* at ES-1 (“23.2 million homes (22%) have [lead-based paint] hazards”).

6. *Id.* (“Of 16.8 million homes with children under the age of 6, 5.7 million (3.4%) have [lead-based paint]”).

7. See GERALD MARKOWITZ & DAVID ROSNER, *supra* note 2, at 40. (“[T]he industry made it its business to promote the metal as good for society and to challenge assertions that lead in the atmosphere was dangerous.”); see also *People v. ConAgra Grocery Prods. Co.*, 17 Cal. App. 5th 51, 82 (Ct. App. 2017) (“[P]laintiff’s experts testified to even more specific conclusions: ‘Sherwin-Williams had actual knowledge about the hazards of lead as early as 1900.’”).

campaign to defeat legislative attempts to control the neurotoxin and diverted attention away from the paint and lead industries' roles in lead poisoning by blaming the problem on the parents and the cleanliness of housing.⁸ As a result of this industry opposition, the use of lead-based paint in housing was not banned nationwide until 1978, years after the United Nations' ban and despite ample evidence of its dangers.⁹

Unlike most public health issues, which can be addressed by regulating the source of harm, lead poisoning cannot be eliminated through the regulation of lead and lead-based paint alone. Rather, because "legacy lead" saturates children's environments, lead poisoning can only be prevented by eliminating sources of exposure.¹⁰ Unable to justify the costs associated with lead elimination, federal and local governments settled on reactive approaches that fall short of prevention. As a result, and despite undisputed scientific evidence of lead's toxicity and widespread knowledge about how to eliminate the hazard, current public policy follows a predominately "wait and see" approach, in which children are biologic monitors for lead hazards.¹¹

Children who live in impoverished communities have the highest prevalence of elevated blood lead levels.¹² The risk of lead poisoning falls disproportionately on minority children, with non-Hispanic Black children nearly three times as likely as White children to have highly elevated blood lead levels and the subsequent disabling conditions.¹³ In one study, lead toxicity prevalence rates among children

8. See generally David Rosner & Gerald Markowitz, *Building the World That Kills Us: The Politics of Lead, Science, and Polluted Homes, 1970 to 2000*, 42 J. URB. HIST. 323 (2016).

9. CPSC Announces Final Ban on Lead-Contaminated Paint, U.S. CONSUMER PROD. SAFETY COMMISSION (Sep. 2, 1977), <https://www.cpsc.gov/Recalls/1977/cpsc-announces-final-ban-on-lead-containing-paint>.

10. *Public Health Statement for Lead*, AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY (Aug. 2007), <https://www.atsdr.cdc.gov/phs/phs.asp?id=92&tid=22> ("However, elemental lead cannot be broken down.").

11. Comm. on Envtl. Hazards & Comm. on Accident & Poison Prevention, *Statement of Childhood Lead Poisoning*, 79 PEDIATRICS 457, 463 (1987), <https://pediatrics.aappublications.org/content/pediatrics/79/3/457.full.pdf>.

12. See Elise Gould, *Childhood Lead Poisoning: Conservative Estimates of the Social and Economic Benefits of Lead Hazard Control*, 117 ENVTL. HEALTH PERSPS. 1162, 1162–63 (2009); Jaime Raymond et al., *Lead Screening and Prevalence of Blood Lead Levels in Children Aged 1–2 Years — Child Blood Lead Surveillance System, United States, 2002–2010 and National Health and Nutrition Examination Survey, United States, 1999–2010*, 63 MORBIDITY & MORTALITY WKLY. REP. 36, 39 (2014) (indicating that 5.3% of children one to two years of age with blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$ are on Medicaid while merely 2.1% of children not insured by Medicaid have blood lead levels ≥ 5 $\mu\text{g}/\text{dL}$).

13. See Robert L. Jones et al., *Trends in Blood Lead Levels and Blood Lead Testing Among US Children Aged 1 to 5 Years, 1988–2004*, 123 PEDIATRICS e376, e380 (2009) ("A higher percentage of children with BLLs . . . were non-Hispanic black (3.4% vs 1.2% for Mexican American and 1.2% for non-Hispanic white children)").

in Black and Hispanic neighborhoods topped 90% of the child population.¹⁴ The authors concluded, “lead toxicity is a source of ecological inequity by race and a pathway through which racial inequality literally gets into the body.”¹⁵

Because lead is a neurotoxin with no safe level of human exposure, the public health consequences of reactive and siloed policy interventions are severe.¹⁶ Lead poisoning causes irreversible neurological harm that affects bodily functions, growth, cognition, behavior, and development.¹⁷ Adults are at elevated risk for chronic renal failure, premature death, and hypertension and coronary heart disease, and lead exposure may be the leading risk factor for death from cardiovascular disease.¹⁸ The financial consequences of these outcomes include billions of dollars in public spending on health care, special education, juvenile justice, and other social services.¹⁹

14. Robert J. Sampson & Alix S. Winter, *The Racial Ecology of Lead Poisoning: Toxic Inequality in Chicago Neighborhoods, 1995–2013*, 13 *DUBOIS REV.: SOC. SCI. RES. ON RACE* 261, 279 (2016).

15. *Id.* at 279.

16. *Childhood Lead Poisoning Prevention*, CTNS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/nceh/lead/default.htm> (last accessed Mar. 3, 2020).

17. Even at the lowest levels of exposure, lead poisoning can lead to reduced IQ, diminished intellectual and academic abilities, academic failure, juvenile delinquency, high blood pressure, learning disabilities, behavioral problems, developmental delay, and premature death. See WORLD HEALTH ORG., *LEAD POISONING AND HEALTH* (Aug. 23, 2019), <https://www.who.int/en/news-room/fact-sheets/detail/lead-poisoning-and-health>. Lead exposure is a risk factor for adult onset disability and disease, including neurological disorders, adult hypertension, heart disease, stroke, kidney malfunction, elevated blood pressure, osteoporosis, cognitive decline, and cardiovascular disease. See NAT'L TOXICOLOGY PROGRAM, U.S. DEPT. OF HEALTH & HUMAN SERVS., *NTP MONOGRAPH: HEALTH EFFECTS OF LOW-LEVEL LEAD 1*, 19–43 (2012), https://ntp.niehs.nih.gov/ntp/ohat/lead/final/monographhealtheffects/lowlevellead_newissn_508.pdf; Gould, *supra* note 12, at 1162–64; Bruce P. Lanphear, *The Conquest of Lead Poisoning: A Pyrrhic Victory*, 115 *ENVTL. HEALTH PERSPS.* A484, A484 (2007) (citing Andy Menke et al., *Blood Lead Below 0.48 μmol/L (10 μg/dL) and Mortality Among US Adults*, 114 *CIRCULATION* 1388 (2006); Brian S. Schwartz et al., *Occupational Lead Exposure and Longitudinal Decline in Neurobehavioral Test Scores*, 16 *EPIDEMIOLOGY* 106 (2005); Marc G. Weisskopf et al., *Cumulative Lead Exposure and Prospective Change in Cognition Among Elderly Men: The VA Normative Aging Study*, 160 *AM. J. EPIDEMIOLOGY* 1184 (2004); Bruce P. Lanphear et al., *Cognitive Deficits Associated with Blood Lead Concentrations <10 μg/dL in US Children and Adolescents*, 115 *PUB. HEALTH REPS.* 521, 526–28 (2000); Bruce P. Lanphear et al., *Low-Level Environmental Lead Exposure and Children's Intellectual Function: An International Pooled Analysis*, 113 *ENVTL. HEALTH PERSPS.* 894, 897–98 (2005); Bruce P. Lanphear et al., *Low-Level Lead Exposure and Mortality in US Adults: A Population-Based Cohort Study*, 3 *LANCET PUB. HEALTH* E177 (2018); Letter from Sheela Sathyanarayana, Chair, Children's Health Prot. Advisory Comm., to Gina McCarthy, Adm'r, Env'tl. Prot. Agency 1, 2 (Jan. 8, 2015), https://www.epa.gov/sites/production/files/2015-01/documents/naaqs_for_lead_letter.pdf (stating that at blood lead level of 0.1 μg/dL, lead poisoning was associated with a one-point IQ loss, as well as other neurological and other health and developmental harms).

18. Lanphear et al., *Low-Level Exposure and Mortality*, *supra* note 17, at E177.

19. HEALTH IMPACT PROJECT, 10 *POLICIES TO PREVENT AND RESPOND TO CHILDHOOD LEAD*

To prepare policymakers to address this urgent health and safety threat to children,²⁰ this Article provides a comprehensive examination of best practices for the elimination of lead poisoning in the United States and proposes urgent reform measures at the local and state levels.²¹ As discussed herein, ultimately, the success

EXPOSURE 1, 86 (AUG. 2017), http://www.pewtrusts.org/~media/assets/2017/08/hip_childhood_lead_poisoning_report.pdf; COLUMBIA LAW SCH. HEALTH JUSTICE ADVOCACY CLINIC, THE COST OF CHILDHOOD LEAD POISONING IN THE UNITED STATES OF AMERICA 1, <https://www.networkforphl.org/wp-content/uploads/2020/03/Cost-of-Childhood-Lead-Poisoning-in-US.pdf> (last accessed Mar. 7, 2020).

20. See Deborah Bennett et al., *Project TENDR: Targeting Environmental Neuro-Developmental Risks*, *The TENDR Consensus Statement*, 124 ENVTL. HEALTH PERSPS. A118, A118 (2016) (citing Bruce P. Lanphear, *The Impact of Toxins on the Developing Brain*, 36 ANN. REV. PUB. HEALTH 211 (2015); Kristen Lyall, Rebecca J. Schmidt & Irva Hertz-Picciotto, *Maternal Lifestyle and Environmental Risk Factors for Autism Spectrum Disorders*, 43 INT’L J. EPIDEMIOLOGY 443 (2014); Deborah Rice & Stan Barone Jr., *Critical Periods of Vulnerability for the Developing Nervous System: Evidence from Humans and Animal Models*, 108 ENVTL. HEALTH PERSPS. 511 (2000)); see also National Ambient Air Quality Standards for Lead, 73 Fed. Reg. 66,963, 66,972 (Nov. 12, 2008) (to be codified at 40 C.F.R. pts. 50, 51, 53, 58); ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, CTNS. FOR DISEASE CONTROL & PREVENTION, LOW LEVEL LEAD EXPOSURE HARMS CHILDREN: A RENEWED CALL FOR PRIMARY PREVENTION 1 (2012), https://www.cdc.gov/nceh/lead/acclpp/final_document_030712.pdf; AGENCY FOR TOXIC SUBSTANCES & DISEASE REGISTRY, U.S. DEP’T OF HEALTH AND HUMAN SERVS., TOXICOLOGICAL PROFILE FOR LEAD 1, 31 (2019), https://www.ncbi.nlm.nih.gov/books/NBK158766/pdf/Bookshelf_NBK158766.pdf (“MRLs [minimum risk levels] were not derived for lead because a clear threshold for some of the more sensitive effects in humans has not been identified.”); CTNS. FOR DISEASE CONTROL & PREV., CDC RESPONSE TO ADVISORY COMMITTEE ON CHILDHOOD LEAD POISONING PREVENTION RECOMMENDATIONS IN “LOW LEVEL LEAD EXPOSURE HARMS CHILDREN: A RENEWED CALL OF PRIMARY PREVENTION 1, 5 (2012), https://www.cdc.gov/nceh/lead/acclpp/cdc_response_lead_exposure_recs.pdf (“CDC will emphasize that the best way to end childhood lead poisoning is to prevent, control or eliminate lead exposures. Since no safe blood lead level in children has been identified, a blood lead ‘level of concern’ cannot be used to define individuals in need of intervention.”); *HUD Proposes New Rule to Help Children Exposed to Lead Paint Hazards: Lower Definition of “Elevated Blood Lead Levels” in Young Children to Match CDC*, U.S. DEP’T OF HOUS. & URBAN DEV. (Aug. 31, 2016), <https://archives.hud.gov/news/2016/pr16-129.cfm>; *Basic Information About Lead in Drinking Water*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water> (last accessed Nov. 24, 2017) (“EPA and the Centers for Disease Control and Prevention (CDC) agree that there is no known safe level of lead in a child’s blood. Lead is harmful to health, especially for children.”). The effects of lead are particularly dangerous for children because the “blood-brain” barrier is less effective in children than it is for mature adults. Theodore I. Lidsky & Jay S. Schneider, *Lead Neurotoxicity in Children: Basic Mechanisms and Clinical Correlates*, 126 Brain 5, 6 (2003).

21. For a detailed analysis and discussion of the United States’ toxic legacy of lead poisoning, the social determinants of lead poisoning, the legislative history of federal lead poisoning prevention laws, lead poisoning in federally assisted housing, and the importance of fighting for the elimination of lead poisoning, see generally the companion article, Emily A. Benfer, *Contaminated Childhood: How the United States Failed to Prevent the Chronic Lead Poisoning of Low-Income Children and Communities of Color*, 41 HARV. ENVTL. L. REV. 493 (2017), and the books, MONA HANNA-ATTISHA, *WHAT THE EYES DON’T SEE* (2019); MARKOWITZ & ROSNER, *supra* note 2.

of these interventions is dependent upon community ownership, prioritizing primary prevention practices that identify lead-based paint hazards before children develop lead poisoning, and dedicating significant funding to eliminate lead hazards. For a detailed analysis and discussion of the United States' toxic legacy of lead poisoning, the social determinants of lead poisoning, the legislative history of federal lead poisoning prevention laws, lead poisoning in federally assisted housing, and the importance of fighting for the elimination of lead poisoning, please see the companion articles, *Duty to Protect, Contaminated Childhood*, and the books *Lead Wars* and *What the Eyes Don't See*.²²

I. A HEALTH JUSTICE FRAMEWORK FOR LEAD POLICY

Health justice requires that all persons have equal ability to be free from the social determinants²³ that jeopardize their health and well-being.²⁴ At the same time, it requires equal access to opportunity and the ability to fully participate in society.²⁵ Lead policy, if it is to eliminate lead poisoning, must abide by health justice principles and strategies. The best practices described throughout this article are premised on the following foundational principles: (1) primary prevention approaches must be prioritized; (2) the whole community must be the focus in high risk areas; (3) affected populations, especially low-income and traditionally marginalized communities, must be engaged as leaders in lead poisoning prevention; (4) interprofessional collaboration among community members and diverse stakeholders is critical to eliminating lead poisoning; and (5) the health of children and low-income communities of color must be prioritized in all policies.

A. Primary Prevention Approaches Must be Prioritized

According to the Centers for Disease Control and Prevention, “because no level of lead in a child’s blood can be specified as safe, primary prevention must serve as the foundation of the effort” to eliminate lead poisoning.²⁶ In light of the

22. See generally Benfer, *Contaminated Childhood*, *supra* note 21; Emily Benfer et al., *Duty to Protect: Enhancing the Federal Framework to Prevent Childhood Lead Poisoning and Exposure to Environmental Harm*, 18 YALE J. OF HEALTH POL., L. & ETHICS 1 (2019); see also HANNA-ATTISHA, *WHAT THE EYES DON'T SEE*, *supra* note 21; MARKOWITZ & ROSNER, *supra* note 2.

23. The social determinants of health are defined as the conditions in which people are born, grow, work, play, and live. *Social Determinants of Health*, WORLD HEALTH ORG., http://www.who.int/social_determinants/sdh_definition/en/ (last accessed Mar. 7, 2020).

24. For an overview of the health justice approach to policymaking, see Emily A. Benfer, *Health Justice: A Framework (and Call to Action) for the Elimination of Health Inequity and Social Justice*, 65 AM. U. L. REV. 275, 278–79 (2015).

25. See *id.* at 281.

26. CTRS. FOR DISEASE CONTROL AND PREVENTION, PREVENTING LEAD POISONING IN YOUNG

irreversible nature of lead poisoning, children can no longer continue to play the role of proverbial “canary in the coalmine,” identifying lead hazards with their developing bodies. “Screening children for elevated BLLs [blood lead levels] and [addressing] their housing only when their BLL is already elevated should no longer be acceptable practice.”²⁷ Rather, policymakers must make every effort to develop and implement strategies to address the conditions that disproportionately affect low-income communities and eliminate lead hazards *before* a child is lead poisoned.²⁸ Primary prevention is the most reliable and cost-effective measure to protect children and individuals from exposure to hazards and must be prioritized. Section II, *infra*, details policy measures rooted in this principle.

B. Intervention Must Focus on the Whole Community

It is widely recognized that lead poisoning affects low-income communities of color at a disproportionate rate. It is also well-documented that this disparity is due to longstanding structural racism and systemic factors. Given the lasting segregation by race and income, and the steadily increasing rates of lead poisoning among children of color, “demographic- and place-centered policy has greater potential to reach children and communities who can benefit the most.”²⁹ In order to address the historic roots of this disparity, a whole community approach is critical.

In a 2018 editorial in *JAMA Pediatrics*, Dr. Jessica Wolpaw Reyes proposed that, instead of solely targeting homes child by child, policy should prioritize “(1) the sources of exposure that are likely to affect the most children and (2) the children who are most likely to experience elevated blood lead levels.” The first priority places emphasis on remediating public sources of lead hazards, such as playgrounds and schools, pre-1978 rental units, and lead in water. This “exposure centric” approach maximizes the impact of a single intervention. Dr. Reyes’

CHILDREN: A STATEMENT BY THE CENTERS FOR DISEASE CONTROL AND PREVENTION 1, 1 (2005), <http://www.cdc.gov/nceh/lead/publications/PrevLeadPoisoning.pdf>. In public health, primary prevention approaches aim to prevent the development of disease entirely, while secondary prevention is designed to identify a disease at its earliest stages, before symptoms appear. Tertiary prevention is directed at preventing further deterioration in those who already have symptoms of disease. *See Primary, Secondary and Tertiary Prevention*, INST. FOR WORK & HEALTH (Apr. 2015), <https://www.iwh.on.ca/what-researchers-mean-by/primary-secondary-and-tertiary-prevention>.

27. *See generally* ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, LOW LEVEL EXPOSURE HARMS CHILDREN, *supra* note 20, at 15, ix.

28. In contrast, secondary prevention is designed to identify a disease at its earliest stages, while tertiary prevention is directed at preventing further deterioration in those who already have symptoms of disease. *See Primary, Secondary and Tertiary Prevention*, *supra* note 26.

29. Jessica Wolpaw Reyes, *A Social Justice Framework for Lead Policy*, 172 *JAMA PEDIATRICS* 912, 913 (2018) (“Essentially, hypersegregation by race and income has gathered the risks and the most at-risk children together, making primary prevention at the community level an excellent policy choice.”).

second priority focuses public policy on the whole communities where children are most at risk of lead poisoning. In these communities, home-centered interventions may not be the best policy tool.³⁰ This shift in lead policy focus from an individual lead poisoned child to a community at risk could not only result in a reduction of lead poisoning rates, it could also support broader movements to address structural racism and housing and environmental injustice in low-income communities of color. Before any interventions can be implemented, states and cities must lay the groundwork for ongoing collaboration across fields and with affected communities.

Community development offers a model for community investment and outreach. The strategy includes efforts to “improve the physical, economic, and social environment by promoting affordable housing, small-business development, job creation, and social cohesion.”³¹ As an anti-poverty tool, community development emphasizes investment in “affordable housing, small-business development, job creation, and social cohesion.”³² These efforts are important on two levels to address the health issues stemming from lead poisoning. First, community development is focused on addressing poverty, a social determinant of poor health. Children living in inadequate homes and low-income communities are at increased risk of behavioral and developmental problems, infectious and chronic diseases, and injury.³³ Local home assistance programs help communities by providing grants for repairs. Without such assistance, homes deteriorate, causing hazardous conditions that harm residents and the wider community.³⁴ Second, a focus on the community empowers individuals to mobilize and counteract specific environmental and health inequities in the long run.³⁵ A community-based process of eliminating lead poisoning would focus on primary prevention in entire blocks

30. *Id.*

31. Amanda Cassidy, *Community Development and Health*, HEALTH AFFAIRS 1, 1 (Nov. 10, 2011). For a more detailed discussion on community development, see generally Alexander von Hoffman, *The Past, Present, and Future of Community Development in the United States, Investing in What Works for America's Communities*, (Joint Ctr. For Housing Stud., Harv. U., Paper No. W12-6, 2012), https://www.jchs.harvard.edu/sites/default/files/w12-6_von_hoffman.pdf.

32. See Cassidy, *supra* note 31.

33. *Housing's and Neighborhoods' Role in Shaping Children's Future*, U.S. DEP'T OF HOUS. & URBAN DEV. (2014), <https://www.huduser.gov/portal/periodicals/em/fall14/highlight1.html>.

34. JOINT CTR FOR HOUS. STUDIES, HARVARD UNIV., *THE US HOUSING STOCK: READY FOR RENEWAL, IMPROVING AMERICA'S HOUSING 2013* 1, 7 (2013), https://www.jchs.harvard.edu/sites/default/files/harvard_jchs_remodeling_report_2013_0.pdf.

35. According to the U.S. Commission on Civil Rights, “[m]eaningful public participation by affected communities in the decision-making process is one of the cornerstones of environmental justice. The input of communities of color and low-income communities is integral to decision-making, planning, monitoring, problem-solving, and implementation and evaluation of environmental policies and practices.” U.S. COMM’N ON CIVIL RIGHTS, *NOT IN MY BACKYARD: EXECUTIVE ORDER 12,898 AND TITLE VI AS TOOLS FOR ACHIEVING ENVIRONMENTAL JUSTICE* 1, 169 (2003), <https://www.usccr.gov/pubs/envjust/ej0104.pdf>.

rather than individual homes.³⁶ Community development groups could create programs to educate community members about lead poisoning risks and prevention resources and train the workforce necessary for inspection and lead hazard reduction and abatement.

For example, Neighborhood Housing Services, a national community-based organization, works in specific communities to rehabilitate dilapidated homes (including lead abatement), carry out homeowner and financial literacy trainings for community members, and create community spaces.³⁷ These efforts create stable, revitalized neighborhoods with safe, affordable homes.³⁸ Renewing and increasing focus on community development that includes lead hazard abatement is crucial in eliminating lead poisoning.

It is well-documented that greater investment in low-income communities can lead to increased housing stability, less strain on families, and lower levels of violence.³⁹ Without such assistance, conditions in older low-income neighborhoods will continue to deteriorate, causing health hazards that harm residents and the community.⁴⁰ Any community development program must emphasize healthy homes strategies that address hazards, specifically lead poisoning.⁴¹

C. Low-Income and Traditionally Marginalized Communities Must be Engaged as Leaders in Lead Poisoning Prevention

Environmental inequality demonstrates the importance of focusing interventions on disadvantaged communities of color in poor neighborhoods with higher rates of lead poisoning, rather than on individual units.⁴² Especially in these communities, the elimination of lead poisoning is not possible unless the people most impacted by lead poisoning have the opportunity and the tools to participate in the development and implementation of lead poisoning prevention strategies.⁴³

36. See generally Joseph M. Braun et al., *Effect of Residential Lead-Hazard Interventions on Childhood Blood Lead Concentrations and Neurobehavioral Outcomes: A Randomized Clinical Trial*, 172 JAMA PEDIATRICS 934 (2018).

37. See, e.g., NHS OF NEW HAVEN, <https://nhsofnewhaven.org/> (last visited Mar. 7, 2020).

38. *About NHS New Haven*, NHS OF NEW HAVEN, <https://nhsofnewhaven.org/about/> (last visited Mar. 7, 2020).

39. See Alistair Woodward & Ichiro Kawachi, *Why Reduce Health Inequalities?*, 54 J. EPIDEMIOLOGY & CMTY. HEALTH 923, 924 (2000); Benfer, *supra* note 24, at 347; and Kevin Park, *Good Home Improvers Make Good Neighbors 1*, 19 (Joint Ctr. For Housing Stud., Harv. U., Paper No. W08-2, 2008), https://www.jchs.harvard.edu/sites/default/files/w08-2_park.pdf.

40. JOINT CTR FOR HOUS. STUDIES, *THE US HOUSING STOCK: READY FOR RENEWAL*, *supra* note 34, at 7.

41. *Id.* at 10.

42. See Reyes, *A Social Justice Framework for Lead Policy*, *supra* note 29, at 912–13.

43. The Health Impact Project report followed this model, conducting listening sessions and interviews of community members and parents directly affected by toxic lead, in addition to

Lead poisoning will continue to disproportionately affect low-income communities of color if residents are not given the opportunity to reverse the historic lack of bargaining power and become agents of change.⁴⁴ Communities and individuals affected by health inequity are “best positioned to identify the major challenges to overcoming inequity and to evaluate the viability of proposed solutions.”⁴⁵ However, in the case of lead poisoning, legal, social, historical and medical complexity, coupled with general lack of information, has created barriers to community empowerment and engagement. In the community-based participatory approach, a tool developed by the public health field, affected individuals interact with policymakers while identifying issues and developing strategies that address social determinants of poor health.⁴⁶ In order to be effective, the approach must include the education of low-income communities in current legal rights and remedies, policy reform recommendations, scientific definitions of lead hazards, health effects of even low blood lead levels, and best practices for protecting children from exposure to lead hazards. Community members should be offered trainings in grassroots organizing, leadership, and other community-based participatory approaches. At a minimum, community members must be consulted during the development, implementation, and enforcement of lead poisoning prevention laws, regulations, and policies. Community members should be informed about both the policy considerations and the justification behind decision making that affects their families.

At the same time, advocates and decision-makers must be cognizant of the underlying demands on the time of low-income residents that can prevent engagement. To reach low-income communities, decision-makers should: (1) meet individually with key community leaders, (2) attend existing stakeholder meetings, and (3) develop a committee of core neighborhood leaders.⁴⁷ By providing decision-makers with a deeper understanding of the specific needs of each community, such actions can help inform decision-makers of how to best craft engagement and education spaces.

quantitative analyses, to find solutions for lead poisoning’s impact on public health and health equity. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19.

44. Woodward & Kawachi, *supra* note 39, at 924.

45. Benfer, *supra* note 24, at 346.

46. See generally Barbara A. Israel et al., *Community-Based Participatory Research: A Capacity-Building Approach for Policy Aimed at Eliminating Health Disparities*, 100 AM. J. PUB. HEALTH 2094 (2010) (describing efficacy of Detroit Community-Academic Urban Research Center, a CBPR partnership between neighborhood organizations, Detroit Department of Health, health systems, and academic institutions). See also Benfer, *supra* note 24 (describing application of the community-based participatory approach to community engagement beyond research).

47. Planning & Zoning Center at Michigan State University, *A Guidebook to Community Engagement: Involving Urban and Low-Income Populations in an Environmental Planning Process*, September 2014, available at https://www.canr.msu.edu/uploads/375/65818/GuidebooktoCommunityEngagement_FINAL_Sept2014_1.pdf.

These long-term engagement strategies allow affected individuals to interact with policymakers while identifying issues and mechanisms to address social determinants of poor health.⁴⁸ Without focusing on individual empowerment and participation within the community, lead poisoning prevention work will fall short of its ultimate goals. In order to eliminate lead poisoning and for the maximum benefit, residents of high-risk neighborhood must be able to participate in the creation and implementation of the interventions.⁴⁹

D. Interprofessional Collaboration Among Community Members and Diverse Stakeholders is Critical to Eliminating Lead Poisoning

Widespread collaboration and commitment are critical to eliminating lead poisoning. Numerous governmental organizations, advocacy groups, and community development agents have an interest in lead poisoning prevention.⁵⁰ Such entities might include: local health departments that investigate cases of lead poisoning; building code enforcement agencies that address structural violations in a unit; homeowner advocacy groups that assist landlords in navigating regulations; tenant and housing advocacy groups that advocate for increased tenant rights; community development groups that secure funding to rehabilitate neighborhoods; hospitals and medical providers that identify and treat lead poisoned children; community-based organizations and organizers that work within affected communities; environmental justice advocates that address causes of pollution and environmental harm to residents; healthy homes advocates that seek to improve the energy-efficiency and safety of the home; educators that

48. See Barbara A. Israel et al., *Review of Community-Based Research: Assessing Partnership Approaches to Improve Public Health*, 19 ANN. REV. PUB. HEALTH 173, 177–79 (1998) (explaining that participatory approaches can be instrumental in poverty reduction strategies and improved health outcomes by: (1) recognizing community as a unit of identity; (2) building on strengths and resources within the community; (3) facilitating a collaborative, equitable partnership that increases community ownership and control; (4) integrating knowledge and action for mutual benefit of all partners; (5) promoting a co-learning and empowering process that attends to social inequalities; (6) disseminating findings and knowledge gained to all partners); see also PUB. HEALTH LEADERSHIP SOC’Y, PRINCIPLES OF THE ETHICAL PRACTICE OF PUBLIC HEALTH 1, 2–3 (2002), https://www.apha.org/-/media/files/pdf/membergroups/ethics/ethics_brochure.ashx.

49. See S. Leonard Syme & Miranda L. Ritterman, *The Importance of Community Development for Health and Well-Being*, 3 COMMUNITY DEV. INV. REV. 1, 1 (2009) (“[N]o matter how elegantly wrought a physical solution, no matter how efficiently designed a park, no matter how safe and sanitary a building, unless the people living in those neighborhoods can in some way participate in the creation and management of these facilities, the results will not be as beneficial as we might hope. It turns out that, for maximum benefit, physical improvements must be accompanied by improvements in the social fabric of the community.”).

50. See CHANGE LAB SOLUTIONS, UP TO CODE: CODE ENFORCEMENT STRATEGIES FOR HEALTHY HOUSING 1, 14 (2015), https://www.changelabsolutions.org/sites/default/files/Up-tp-Code_Enforcement_Guide_FINAL-20150527.pdf (emphasizing the need for “intragovernmental communication and collaboration”) [hereinafter UP TO CODE].

respond to learning delays and behavioral problems among students exposed to lead hazards; civil rights advocates seeking to secure fair housing and address discrimination on the basis of race and other protected classes; design labs that analyze social problems and evaluate the user experience of interventions; and most important the people directly affected by lead poisoning, among others. Ultimately, lead poisoning touches every sector of the community and those who serve it.

These entities and individuals often work in the same communities in unintentional silos or without coordination.⁵¹ A growing recognition that stakeholders across disciplines have similar objectives, targets, and challenges⁵² has increased national momentum towards cross-sector collaboration.⁵³ Inclusive partnerships and resource sharing are critical to addressing lead poisoning and its roots in structural racism and poverty.⁵⁴ In order to increase and encourage collaboration, state and local jurisdictions should replace barriers to, or mandates against, cross-sector and cross-system initiatives with incentives.⁵⁵ Together, the

51. See Cassidy, *supra* note 31.

52. See *id.*

53. See Emily A. Benfer & Allyson E. Gold, *There's No Place Like Home: Reshaping Community Interventions and Policies to Eliminate Environmental Hazards and Improve Population Health for Low-Income and Minority Communities*, 11 HARV. L. & POL'Y REV. S1, S45 (2017) ("There is growing recognition that the community development and public health fields have similar objectives, targets, and challenges, and national momentum towards cross-sector collaboration is increasing.") (citing Bethany Rogerson et al., *A Simplified Framework for Incorporating Health into Community Development Initiatives*, 33 HEALTH AFF. 1028, 1028 (2014)); Paul W. Mattessich & Ela J. Rausch, *Cross-Sector Collaboration to Improve Community Health: A View Of The Current Landscape*, 33 HEALTH AFF. 1968, 1968 (2014). For example, at the federal level, identifying, designing, and implementing health-based solutions would require multiple entities, including the Departments of Health and Human Services, Education, Agriculture, Housing, Transportation, and the Internal Revenue Service, Environmental Protection Agency (EPA). Yet, each department and agency has different deadlines, evaluation systems, and reporting requirements, complicating partnerships. The Partnership for Sustainable Communities is an example of a successful interagency program between HUD, Department of Transportation, and the EPA to coordinate resources and achieve agency mission. See U.S. ENVTL. PROT. AGENCY, CREATING EQUITABLE, HEALTHY, AND SUSTAINABLE COMMUNITIES: STRATEGIES FOR ADVANCING SMART GROWTH, ENVIRONMENTAL JUSTICE, AND EQUITABLE DEVELOPMENT 1, 46 (2013), <https://www.epa.gov/sites/production/files/2014-01/documents/equitable-development-report-508-011713b.pdf>.

54. At the second annual New England Lead Poisoning Conference, the plenary panel consisted of major players in advocating for lead prevention in Claremont, New Hampshire — the Mayor, the CEO of the hospital, the superintendent of schools, a community advocate from Southwest Community Services, the city manager, and a building inspector. All panelists spoke about their individual roles in the city's initiative, but also about the importance of relationships and working beyond siloes. New England Lead Conference, *Conference & Registration Information 3* (Nov. 1, 2017), <http://35vcuc2ted113iiuuk1smndg.wpengine.netdna-cdn.com/wp-content/uploads/2017/09/2017-New-England-Lead-Conference-Registration.pdf>.

55. Wilhelmine D. Miller, Tabashir Sadegh-Nobari & Marsha Lillie-Blanton, *Healthy Starts for All: Policy Prescriptions*, 40 AM. J. PREVENTIVE MED. S19, S30 (2011).

community development, health, government, and other sectors, can design holistic interventions to improve the health and environment of the community.⁵⁶

E. The Health of Low-Income People, Children, and Communities of Color Must be Prioritized in All Policies

State and local governments should also consider the impact of their policies consider the impact on community health, low-income individuals, children, and communities of color. Health care alone only contributes to ten to fifteen percent of overall health and longevity.⁵⁷ Social, physical, and economic environments and conditions have a far greater impact on individual health and well-being.⁵⁸ Because the social determinants of health are often affected by government decision-making, it is imperative that states take an elevated “health in all policies” approach to policy development that anticipates possible negative health consequences for low-income people, children, and communities of color. Policymakers must monitor legislation and remove laws that negatively impact low-income and minority populations. This analysis must take place before the harm occurs. “[S]tates must (1) evaluate how a law might be applied, intentionally or inadvertently, to the disadvantage of marginalized individuals; and (2) examine the potential health effects on the entire population, paying special attention to marginalized individuals.”⁵⁹ Tools, such as the Environmental Impact Assessment, Health Equity Impact Assessment, or the Child Impact Assessment, can be used to identify deleterious health effects that disproportionately impact children, low-income people, and communities of color.⁶⁰ Failure to take these precautions will result in policies that either perpetuate health inequity or create new health hazards.

56. U.S. ENVTL. PROT. AGENCY, CREATING EQUITABLE, HEALTHY, AND SUSTAINABLE COMMUNITIES, *supra* note 53, at 2.

57. J. Michael McGinnis, Pamela Williams-Russo & James R. Knickman, *The Case for More Active Policy Attention to Health Promotion*, 21 HEALTH AFFAIRS 78, 78 (2002).

58. Only 25% of individual health is determined by genetics, medical care, and health behaviors, while 75% of health is determined by social and environmental factors. *NCHHSTP Social Determinants of Health*, CTRS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/nchhstp/socialdeterminants/index.html> (last accessed Mar. 8, 2020); *What Drives Health*, ROBERT WOOD JOHNSON FOUNDATION: COMMISSION TO BUILD A HEALTHIER AMERICA, <http://www.commissiononhealth.org/WhatDrivesHealth.aspx> (last accessed Mar. 8, 2020).

59. Benfer, *supra* note 24, at 341.

60. KIDSIMPACT: ADVOCATES FOR CHILDREN, kidsimpact.org (last visited Mar. 8, 2020); *HIAs and Other Resources to Advance Health-Informed Decisions: A Toolkit to Promote Healthier Communities Through Cross-Sector Collaboration*, PEW, <https://www.pewtrusts.org/en/research-and-analysis/data-visualizations/2015/hia-map?sortBy=relevance&sortOrder=asc&page=1> (last updated April 1, 2020).

II. ENGAGE IN PRIMARY PREVENTION PRACTICES TO PREVENT LEAD POISONING

Current state and local responses to lead poisoning largely fail to prevent exposure to lead hazards. While some jurisdictions employ innovative approaches designed to identify and remove lead hazards before children are exposed, they are the exception to the rule. The overwhelming majority of jurisdictions employ a “downstream” approach that does not identify lead hazards or provide a right of action until the harm has already occurred—when it is too little, too late.⁶¹ Further exacerbating the ineffectiveness of most interventions, commonplace strategies are often fragmented and lack interprofessional and interdepartmental cooperation.

The reactive public policy approach is often attributed to concerns over the cost of comprehensive lead hazard inspections and remediation or abatement, fear that remediation will result in a loss of affordable housing stock, belief that property rights of a landlord supersede tenants’ rights to live in housing that is free of health hazards, lack of investment in preventative lead remediation, lack of inspectors or remediation and abatement firms in a community, blaming parents or cultural practices for children’s exposure to lead, and silos between city and state officials tasked with safeguarding the public from lead hazards making interventions challenging to implement. As discussed herein, these concerns do not justify the failure to eliminate lead poisoning. Rather, they should be further explored and, if substantiated, addressed as part of a comprehensive lead poisoning prevention strategy.

To effectively address lead poisoning, state and local jurisdictions must replace traditional approaches with prevention-oriented strategies. There is no single “silver bullet” to eliminating lead poisoning. Rather, successful lead poisoning prevention requires employing a variety of complementary strategies that are both community-wide and individual-centric, as well as catered to the unique structure, resources, and characteristics of the area.

This section describes primary prevention strategies that would prevent lead poisoning. Namely, state and local governments must identify the presence of lead-based paint and lead hazards through regular lead hazard inspections of homes and rental units, especially in high risk areas. In addition, state and local governments must define lead hazards based on the evolving science and identify all sources of exposure in the community. Robust enforcement of any lead poisoning prevention laws and the use of technology and data in identifying high risk areas and children are critical components of any primary prevention strategy.

61. Bruce P. Lanphear, *Childhood Lead Poisoning Prevention: Too Little, Too Late*, 293 JAMA 2274, 2274–75 (2005).

A. Proactive Lead Hazard Inspections

All pre-1978 properties that have not been abated of lead should be inspected for lead hazards before being leased, during tenancy, and prior to sale. Requiring property owners to obtain a lead poisoning prevention certification prior to conveying an interest in the property would quickly identify the location of lead-based paint and lead hazards in a community, provide notices to occupants and, where remediated or abated, decrease rates of lead poisoning. Most importantly, lead hazard inspections shift the burden of identifying lead hazards from children to entities that have control over, and/or can influence the state of the property.

1. Pre-1978 Rental Unit Inspections

Several states and cities mandate proactive rental inspections (“PRI”) to address habitability violations and lead hazards.⁶² Under PRI programs, local officials inspect rental housing on a periodic basis and/or at tenant turnover to ensure that the home is safe for occupancy. The efficacy of PRI is well-documented. For example, in Sacramento, California, officials implemented a PRI system for substandard housing conditions, after which “dangerous housing and building cases dropped by twenty-two percent.”⁶³ In Los Angeles, California, officials established a “Systemic Code Enforcement Program” in 1998, resulting in inspections of ninety percent of multifamily dwellings, the subsequent correction of more than 1.5 million habitability violations, and the reinvestment of \$1.3 billion into the city’s housing supply.⁶⁴

The PRI approach has had a similar effect on lead poisoning rates. Rhode Island’s certificate system, which requires landlords to inspect and obtain lead-safe or lead-free certificates for rental properties,⁶⁵ “significantly reduced [the lead burden] after [lead hazard mitigation certificates] were obtained, demonstrating that [pre-rental lead hazard inspections] could have a protective effect for

62. See, e.g., SAN DIEGO, CAL., MUNICIPAL CODE § 54.1009 (2019); D.C. CODE § 8-231.04 (2012); MD. CODE ANN., ENV’T. § 6-815 (West 2019); 150 MASS. CODE REGS. 460.100 (2017); DETROIT, MICH., CODE OF ORDINANCES §§ 9-1-82(d), 9-1-83 (2017); GRAND RAPIDS, MICH., CITY CODE §§ 304.2.1, 10003 (2018); ROCHESTER, N.Y., MUNICIPAL CODE § 90-55 (2019); TOLEDO, OHIO, MUNICIPAL CODE § 1760.04(14) (2018); PHILA, PA., MUNICIPAL CODE § 6-803(3)(b) (2016); R.I. LEAD MITIGATION REGULATIONS RULE 6D (2005); BURLINGTON, VT., CODE OF ORDINANCES § 18-112(a)(2) (2019); ST. LOUIS, WASH., ORDINANCE § 69202 (2012).

63. Benfer & Gold, *supra* note 53, at S28.

64. *Id.* at S28–S29.

65. Richard Salit, *Study: Compliance with R.I.’s Lead-Paint Law Low, but Children’s Exposure Reduced*, PROVIDENCE J. (July 7, 2014), <http://www.providencejournal.com/breaking-news/content/20140707-study-compliance-with-r.i.s-lead-paint-law-low-but-childrens-exposure-reduced>.

children.”⁶⁶ In 2006, the city of Rochester, New York incorporated pre-rental lead hazard inspections into the city’s certificate of occupancy requirement for rental properties.⁶⁷ The prevalence of elevated blood lead levels among tested children dropped from 8.3%, just two years before the inspections were implemented, to 4.4% two years after implementation.⁶⁸ Similarly, the number of lead poisoning cases dropped 98% in Maryland after PRI laws were enacted in 1994.⁶⁹ The Maryland PRI law requires owners to present a lead-safe certificate from an accredited inspector at initial registration and tenant turnover.⁷⁰ At the core of Maryland’s success is enforcement. In enforcing these requirements, Maryland’s Department of the Environment files between five hundred and eight hundred violation notices annually, and the attorney general’s office is responsible for enforcing actions against noncompliant owners.⁷¹ Many PRI programs give tenants the right to request a lead hazard inspection in pre-1978 units with, or regularly visited by, a pregnant woman or child under the age of six, and may also request a clearance report prior to occupying the unit and at any time during tenancy.⁷² These laws protect high-risk populations and give tenants more control over conditions in their home.

The City of Philadelphia too has established a strong PRI program that ties compliance with lead inspections and lead safety certification to rental licensure.⁷³ When landlords apply for a new or annual renewal of a rental license, they must identify each housing unit in their buildings built before 1978 and certify that the

66. Michelle L. Rogers et al., *Primary Prevention of Lead Poisoning: Protecting Children from Unsafe Housing*, 104 AM. J. PUB. HEALTH e119, e122 (2014).

67. Katrina S. Korfmacher, Maria Ayoob & Rebecca Morley, *Rochester’s Lead Law: Evaluation of a Local Environmental Health Policy Innovation*, 120 ENVTL. HEALTH PERSPS. 309, 310 (2012); see generally KATRINA SMITH KORFMACHER, BRIDGING SILOS: COLLABORATING FOR ENVIRONMENTAL HEALTH AND JUSTICE IN URBAN COMMUNITIES (2019); *Lead Paint — Get Prepared*, City of Rochester, NY, <http://www.cityofrochester.gov/article.aspx?id=8589936091>.

68. Byron S. Kennedy, et al., *Decline in Elevated Blood Lead Levels Among Children* 46 AM. J. PREV. MED. 259 (2014); Korfmacher, Ayoob & Morley, *supra* note 67, at 312.

69. Jay Apperson, *Lead Poisoning Cases Drop in Baltimore and in Maryland*, Department of the Environment Moves to Reduce Potential Exposure in More Homes, MARYLAND.GOV (Sept. 3, 2015), <http://news.maryland.gov/mde/2015/09/03/lead-poisoning-cases-drop-in-baltimore-and-in-maryland-department-of-the-environment-moves-to-reduce-potential-exposures-in-more-homes/>.

70. The Green & Healthy Homes Initiative has commented on the efficacy of Maryland’s model. See GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN TO END CHILDHOOD LEAD POISONING: A BLUEPRINT FOR ACTION 1, 15 (2016), <https://www.greenandhealthyhomes.org/wp-content/uploads/strategic-plan.pdf>.

71. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 42.

72. See, e.g., D.C. CODE § 8-231.04(c) (2020); see also Katrina S. Korfmacher & Michael L. Hanley, *Are Local Laws the Key to Ending Childhood Lead Poisoning?*, 38 J. HEALTH POL., POL’Y & L. 757, 776 (2013).

73. Department of Public Health, City of Philadelphia, *A Landlord’s Guide to the Philadelphia Lead Disclosure and Certification Law 1*, 7 (Nov. 2018) https://www.phila.gov/media/20181109120607/LandlordGuidance_2018.pdf.

lead inspection requirements have been met. The law allows the city to increase compliance by linking the Health Department's database with the License and Inspections database. Rental licenses are automatically denied for property owners who are out of compliance, reducing enforcement costs and building predictability into the system.⁷⁴

Currently, thirteen cities, five states, and the District of Columbia are the only jurisdictions that require any form of proactive lead hazard inspection in the private rental market. (See Table 1.) The types of inspection vary across jurisdictions and can include visual assessment, risk assessment, clearance testing, lead paint XRF testing, and dust wipe testing. It is well documented that visual assessments alone are incapable of identifying lead hazards that result in lead poisoning and are not the preferred method of inspection.⁷⁵ Dust wipes are a "point in time" inspection that only identify the presence of lead in dust, and not the source of the lead hazard. Cleaning prior to a dust wipe examination can alter the accuracy of the test. Lead-based paint inspections utilize sampling or x-ray fluorescence testing to measure the concentration of lead in paint on a surface-by-surface basis, enabling the owner to manage all lead-based paint, since the exact locations have been identified. Risk assessments are on-site investigations to determine the existence, nature, severity, and location of lead-based paint hazards and are accompanied by a report explaining the results and options for reducing lead-based paint hazards.⁷⁶ Where feasible, jurisdictions should require a combination risk assessment and lead-based paint inspection in rental housing, as well as lead water, lead plumbing and service line identification, which is rarely included in these inspections.

The timing of the inspections varies as well. Some jurisdictions mandate inspections at the time of tenant turnover, while others require inspections after a set period of time (e.g., twelve months, two years, three years, five years, or six years). A presumption of lead-based paint in pre-1978 units exists in San Diego, California; Washington, D.C.; Detroit, Michigan; Rochester, New York; Syracuse, New York, and in the state of Vermont.⁷⁷ Enforcement mechanisms also vary;

74. City Council of Philadelphia, *Philadelphia City Council Passes Landmark Legislation to Require Lead Certification in Rental Properties* (September 26, 2019) <http://phlcouncil.com/philadelphia-city-council-passes-landmark-legislation-to-require-lead-certification-in-rental-properties/>; Catalina Jaramillo, *City Hall is uniting around a lead poisoning law hated by landlords*, PLANPHILLY (July 29, 2019), <https://why.org/articles/city-hall-is-uniting-around-a-lead-poisoning-law-hated-by-landlords/>.

75. Benfer, *supra* note 21, at 527.

76. *See Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition)*, U.S. DEP'T OF HOUS. & URBAN DEV. (2012), https://www.hud.gov/program_offices/healthy_homes/lbp/hudguidelines; *see also* 40 C.F.R. § 745.227(d)(11).

77. New York City presumes lead-based paint if a child under six resides in a pre-1960 unit or in a unit built between 1960–1978 if the owner has knowledge of lead-based paint. N.Y.C. ADMIN. CODE, tit. 27, ch. 2, §§ 27-2056.1–27.2056.18 (2019).

some include civil and criminal penalties,⁷⁸ civil penalties alone,⁷⁹ and a private right of action for injunctive relief.⁸⁰

Every PRI inspection law includes exemptions. In numerous cities, a certificate of “lead-free” or multiple clearance reports over a specified length of time qualify a unit for exemption.⁸¹ Owner occupied units, units without occupants under age six, hotels, shelters, federally assisted housing, single occupancy units, elderly housing, vacation or short-term rentals, among others, are often exempt.⁸² Because many of these units are often occupied, frequented, or will eventually be occupied by children under age six, it is highly recommended that exemptions only be granted in extreme circumstances. Applying proactive rental inspection policies to all rental units can also avoid unintended consequences, such as discrimination against families with young children, a violation of the Fair Housing Act.

78. SAN DIEGO, CAL., MUNICIPAL CODE §§ 54.1013, 54.1015 (2019); D.C. CODE §§ 8-231.05, 8-231.15, 8-231.16 (2012); DETROIT, MICH., CODE OF ORDINANCES § 9-1-20 (2017); N.Y.C. ADMIN. CODE, tit. 27, ch. 2, § 27-2056.4(g) (2019); 42 R.I. GEN. LAWS ANN. §§ 42-128.1-11, 45-24.2-7, 45-24.3-18 (West. 2019); 18 VT. STAT. ANN. §1760(a) (2019).

79. MD. CODE ANN., ENV'T. §§ 6-843, 6-849, 6-850, 7-226 (West 2019); MASS. GEN. LAWS ch. 111, § 198 (2017); GRAND RAPIDS, MICH., CITY CODE § 8.503 (2018); ROCHESTER, N.Y., MUNICIPAL CODE § 90-70B (2019).

80. 42 R.I. GEN. LAWS ANN. § 42-128.1-10(b) (West. 2019).

81. SAN DIEGO, CAL., MUNICIPAL CODE § 54.1007(b) (2019); D.C. CODE § 8-231.04 (2012); MD. CODE ANN., ENV'T. § 6-803(b) (West 2019); N.J. STAT. ANN. § 52:27D-437.12 (West 2019); N.Y.C. ADMIN. CODE, tit. 27, ch. 2, § 27-2056.15(c) (2019); VT. STAT. ANN. §1759(a) (2019).

82. *See, e.g.*, MASS. GEN. LAWS ch. 111, § 199B (2017); N.J. STAT. ANN. § 52:27D-437.12 (West 2019); NEWARK, N.J., CODE § 16:3-20.2 (2019); ROCHESTER, N.Y., MUNICIPAL CODE § 90-62 (2019); 42 R.I. GEN. LAWS ANN. § 42-128.1.8(e) (West. 2019); VT. STAT. ANN. §1759(a) (2019).

Table 1⁸³

Proactive Rental Lead Hazard Inspection Requirements in the United States			
Dust Wipe & Visual Assessment	Risk Assessment	Visual Assessment Only	Lead Paint Test (XRF)
Maryland Rochester, NY Syracuse, NY Cleveland, OH Toledo, OH Lancaster, PA Philadelphia, PA Rhode Island	Washington, D.C. Detroit, MI Cleveland, OH	San Diego, CA Grand Rapids, MI Vermont Burlington, VT New York, NY	Newark, NJ Paterson, NJ Massachusetts New Jersey

A review of PRI programs demonstrates that they do not have a statistically significant impact on the availability of affordable housing. This means that the chief criticism of such programs—that they force jurisdictions to choose between protecting children and preserving affordable homes—appears to be unfounded. In a 2014 study of Rochester, New York, researchers studying landlord surveys and focus groups concluded “results suggest that the lead law has not resulted in significant additional costs to landlords nor disruption of the rental housing market.”⁸⁴ However, because so few cities and states have analyzed the effects of PRI programs on affordable housing, cities and states should prioritize financial assistance to property owners and both preserving and increasing affordable housing as a public health measure.

PRI ordinances must be carefully constructed in order to comply with constitutional requirements under federal and state law, including the Fourth Amendment prohibition against unreasonable search, state authorizing statutes, and the Equal Protection Clause.⁸⁵ Generally, PRI laws do not, on their face,

83. This table is current as of February 2020. At that time, Syracuse, New York, proposed but had yet to pass a proactive rental inspection law requiring visual assessments in rental units. Cleveland requires the owner to obtain either a dust wipe plus visual assessment or a risk assessment. Vermont requires compliance with “essential maintenance practices” that remove deteriorated visible lead-based paint prior to rental of the property. Burlington adopted local legislation requiring compliance with this provision and additional requirements. New Jersey requires the commission to conduct lead paint inspections every five years. Newark and Paterson adopted local legislation requiring a lead paint inspection and additional requirements in rental units.

84. Korfmacher, Ayoob & Morley, *supra* note 6767, at 313.

85. *See, e.g., Baker v. City of Portsmouth*, No. 1:14CV5L2, 2015 WL 5822659 (S.D. Ohio Oct.

constitute an unreasonable search under the Fourth Amendment. This finding is rooted in the right of municipalities to “regulate land use in order to maintain or improve the quality of life within their communities.”⁸⁶ To avoid violating the right to be free from warrantless searches, a PRI ordinance must provide property owners with the opportunity to participate in a precompliance review⁸⁷ or consent to inspection.⁸⁸ This may take the form of property owner consent prior to entry.⁸⁹ If a property owner or occupant refuses to permit entry, a municipality can “resort to administrative warrant mechanisms” to satisfy Fourth Amendment requirements.⁹⁰ This finding is based on the right of municipalities to “regulate land use in order to maintain or improve the quality of life within their communities.”⁹¹ For example, after the city of Detroit enacted a property maintenance code, local landlords challenged the ordinance as a requirement to “surrender [] their right to be free from warrantless searches.”⁹² As the Eastern District of Michigan noted while analyzing the PRI provision in Detroit, “there are no requirements that a landlord waive rights under the Fourth Amendment as a condition of obtaining a certificate of compliance. Certainly, the City requires rental properties to meet the [local housing] Code’s habitability standards, and the landlord must demonstrate compliance through an initial inspection. And there is nothing wrong with that.”⁹³

While a carefully drafted PRI will survive a Fourth Amendment challenge, it may be vulnerable to invalidation under state authorizing statutes and/or the Equal Protection Clause.⁹⁴ For example, a court found a Toledo lead inspection

1, 2015) (rental property owners challenging Portsmouth, Ohio ordinance requiring annual inspections).

86. 15192 Thirteen Mile Rd., Inc. v. Warren, 626 F.Supp. 803, 823 (E.D. Mich. 1985) (stating that such a right is “beyond all dispute”).

87. MS Rentals, LLC v. City of Detroit, 362 F. Supp. 3d 404, 414 (E.D. Mich. 2019).

88. Marcavage v. Borough of Landsdown, 493 F. App’x 301, 305–08 (3d Cir. 2012) (holding ordinance requiring landlords to obtain annual licenses after inspection not facially unconstitutional under Fourth Amendment because inspectors required to receive proper consent or valid search warrant, and refusal to consent not criminalized).

89. *Id.*

90. Godwin v. City of Dunn, No. 5:09-CV-381-BO, 2010 WL 2813513 (E.D.N.C. July 16, 2010); *see also* Dearmore v. City of Garland, 400 F. Supp. 2d 894, 904 (N.D. Tex. 2005) (“The court determines that in order to comply with . . . the protections of the Fourth Amendment, the Ordinance must give the landlord the opportunity to refuse to consent if the property is unoccupied and include a warrant procedure to be followed in the event the landlord refuses.”).

91. 15192 Thirteen Mile Road, 626 F.Supp. at 823 (stating that such a right is “beyond all dispute”).

92. MS Rentals, LLC, 362 F. Supp. 3d at 413.

93. *Id.* at 413 (ruling on a case in which after the city of Detroit enacted a property maintenance code, local landlords challenged the ordinance as a “requirement to ‘surrender[] their right to be free from warrantless searches’”).

94. U.S. CONST. amend. XIV, § 1 (“No State shall . . . deny to any person within its jurisdiction the equal protection of the laws.”).

regulation to be unconstitutional because Ohio state law does not authorize a municipality to enter into an agreement with a health department to “perform municipal services,” such as to administer, implement, and enforce the ordinance.⁹⁵ Even applying a rational-basis standard,⁹⁶ an Ohio court found the Toledo lead inspection ordinance violated the Equal Protection Clause because it “applied only to the owners of residential rental properties having four or less units.”⁹⁷ The court was unmoved by the City’s assertion that it could “combat the lead-paint problem on a step-by-step or piecemeal basis (starting with regulating residential rental properties containing four or less units).”⁹⁸ Ultimately, the court concluded that “limiting the Lead Ordinance’s application to rental properties comprised of four or less units, while leaving the Toledo families who live in pre-1928 rental properties having more than four units, large apartment buildings, or apartment complexes at risk of lead exposure, is not rationally, fairly, or substantially related to a legitimate governmental purpose or interest.”⁹⁹ However, in 2019, the Ohio Court of Appeals overturned the lower court decision, finding that the classifications of properties are rationally related to the ordinance’s goal of preventing lead poisoning.¹⁰⁰ Municipalities should exercise caution when enacting a PRI ordinance to ensure that the law complies with statutes regulating municipal designations of authority and does not single out a particular group of property owners without advancing a legitimate government interest.

By identifying hazards before children are exposed and develop lead poisoning, PRI can save states in direct costs related to case management and inspection after a child is determined to have an elevated blood lead level. A recent study found that if all states adopted primary prevention and eradicated lead paint hazards from older homes occupied by children in low-income families, it would result in “\$3.5 billion in future benefits, or approximately \$1.39 per dollar invested, and protect more than 311,000 children” for the 2018 birth cohort alone.¹⁰¹

95. Mack v. City of Toledo, Case No. CI17-4676, 35–39 (Ohio Civ. App. from Ct. Com. Pl. 2018). Here, the court discusses applicable statutes as “reflect[ing] the [Ohio] General Assembly’s failure to authorize the Health Department to perform municipal services.” *Id.* at 36. Moreover, the court agrees that “a board of health is a creature of statute with limited enumerated powers and cannot act except as enabled by statute.” *Id.* at 39. “The General Assembly or a local municipality with home rule powers may delegate their authority to *pass legislation* to local boards of health, but boards of health have no power to *enact regulations* without such a delegation.” *Id.*

96. The Toledo lead inspection ordinance neither included a suspect class nor a fundamental right. *Id.* at 42–43.

97. *Id.* at 45.

98. *Id.* at 45.

99. *Id.* at 47.

100. Mack v. City of Toledo, 2019-Ohio-5427, at ¶ 107, 2019 WL 7369246.

101. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 2.

2. Point of Sale Inspections

Effective primary policy must also include point of sale lead hazard inspection. At the federal level, the Real Estate Notification and Disclosure Rule requires all sellers of pre-1978 residential real property in the United States to provide prospective buyers with: 1) a brochure on identifying and controlling lead-based paint hazards; 2) any information about known lead-based paint or lead-based paint hazards on the premises; 3) a “Lead Warning Statement” in the body of the contract; and 4) a ten-day period to conduct a paint inspection or risk assessment that may be, and is often, waived by the homebuyer.¹⁰²

However, limiting current disclosure requirements to *known* lead-based paint and lead hazards has created a perverse incentive to avoid lead hazard inspections, lest a lead-based paint that requires disclosure is discovered. As a result, residential property is being transferred without any knowledge of the potential for the property to cause lead poisoning. As the National Center for Healthy Housing noted in its *Find It, Fix It, Fund It* report, “because most homes have not been inspected, there is usually nothing to be disclosed.”¹⁰³ States can amend the real property law to require a combination of lead-based paint inspection and risk assessments to identify the presence of lead-based paint and any lead-contaminated dust, and soil, or water.¹⁰⁴ Mandatory disclosures should take a holistic approach to lead exposure, and include the presence of a lead service line and leaded plumbing and fixtures. The results should be filed with the deed before any sale contract can be executed. On the federal level, this recommendation was echoed in expert comments to EPA’s regulatory reform.¹⁰⁵ Point of sale inspections improve the transfer process by increasing notice of potential lead hazards and avoiding harm to children’s health. To reduce the cost burden on homeowners, states could provide tax relief in the transfer sale tax equivalent to the cost of the onetime inspection. Furthermore, HUD mortgage-assisted properties should be subject to the lead inspection and lead safe certification requirements, so that the federal government no longer propagates lead hazards on the residential housing market.

102. *Real Estate Disclosure about Potential Lead Hazards*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/lead/real-estate-disclosure> (last visited Mar. 11, 2020).

103. NAT’L CTR. FOR HEALTHY HOUS., *FIND IT, FIX IT, FUND IT: A LEAD ELIMINATION ACTION DRIVE, POLICY RECOMMENDATIONS TO CONGRESS AND THE NEW ADMINISTRATION*, § 1.2 (2017), https://nchh.org/resource-library/FFF-Action-Drive-Transition-Documents_Admin-Version.pdf.

104. *Id.*

105. See Evaluation of Existing Regulations, 82 Fed. Reg. 17793 (Apr. 13, 2017); *Regulatory Reform*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/laws-regulations/regulatory-reform> (last accessed Mar. 11, 2020).

B. Comprehensive and Accurate Identification of Hazards

1. Update Lead Hazard Standards to Protect Health

Many jurisdictions have codified or rely on the EPA's scientifically outdated lead hazard standards and clearance levels. Inspections and clearance based on these standards are incapable of identifying the majority of lead hazards that can result in lead poisoning. EPA's 2001 lead hazard standards and clearance levels were only partially updated in 2019. On July 9, 2019, EPA published a revised rule (effective January 6, 2020) that only updated lead hazard standards, leaving clearance standards well above hazard standards: "[T]his final rule revises the [dust-lead hazard standards] from 40 $\mu\text{g}/\text{ft}^2$ and 250 $\mu\text{g}/\text{ft}^2$ to 10 $\mu\text{g}/\text{ft}^2$ and 100 $\mu\text{g}/\text{ft}^2$ on floors and window sills, respectively. EPA is also finalizing its proposal to make no change to the definition of [lead-based paint] because insufficient information exists to support such a change at this time."¹⁰⁶

The 2020 rule was the product of sustained advocacy from multiple groups urging EPA to update its standards. In 2009, advocacy and healthy homes organizations, including the National Center for Healthy Housing, the Alliance for Healthy Homes, and Sierra Club petitioned EPA to lower the lead dust hazard levels.¹⁰⁷ EPA agreed that the hazard standards were outdated but did not engage in rulemaking.¹⁰⁸ In August 2016, on behalf of numerous stakeholders, Earthjustice petitioned the 9th Circuit for a writ of mandamus ordering the EPA to update their lead hazard standards.¹⁰⁹ On December 27, 2017, the 9th Circuit ordered the EPA to finally promulgate rules updating its seventeen-year-old standard based on prevailing science within ninety days.¹¹⁰ According to the court, "indeed EPA itself has acknowledged that '[l]ead poisoning is the number one environmental health threat in the U.S. for children ages 6 and younger' and that the current standards are insufficient. The children exposed to lead poisoning due to the failure of EPA to act are severely prejudiced by EPA's delay."¹¹¹ Yet, after receiving an extension,

106. Lead-Based Paint Poisoning Prevention in Certain Residential Structures, 84 Fed. Reg. 32632 (July 9, 2019) (to be codified 40 C.F.R. Part 745).

107. *Healthy Housing Groups Petition EPA to Strengthen Outdated Standards for Lead-Based Paint and Leaded Dust*, NAT'L CTR. FOR HEALTHY HOUS. (Aug. 10, 2009), <https://nchh.org/2009/08/hh-groups-petition-epa-to-strengthen-outdated-lbp-and-dust-standards/>.

108. Letter from Stephen A. Owens, Assistant Adm'r, U.S. Env'tl. Prot. Agency, to Rebecca Morley, Nat'l Ctr. for Healthy Housing, Patrick MacRoy, All. for Healthy Homes & Tom Neltner, Sierra Club 1, 1 (Oct. 22, 2009), <https://www.epa.gov/sites/production/files/2015-10/documents/epa-response.pdf>.

109. Hannah Chang, *Why Lead Standards Matter*, EARTHJUSTICE (December 27, 2017), <https://earthjustice.org/blog/2016-october/why-lead-standards-matter>.

110. Lisa Friedman, *E.P.A. Wanted Years to Study Lead Paint Rule. It Got 90 Days.*, N.Y. TIMES (Dec. 27, 2017), <https://www.nytimes.com/2017/12/27/us/epa-lead-paint.html>.

111. *In re A Community Voice*, 878 F.3d 779, 787 (9th Cir. 2017).

EPA issued a proposed rule on July 2, 2018 and its final rule on July 9, 2019 that failed to establish protective lead hazard standards.¹¹²

Earthjustice petitioned the Ninth Circuit Court of Appeals to review the EPA's rule and require the EPA to set more health protective standards.¹¹³ In a brief amicus curiae filed by the American Academy of Pediatrics, American Public Health Association, National Association of County and City Health Officials, and the Network for Public Health Law, and Dr. Bruce Lanphear, amici stated that “[w]ithout further amendment, the current rule, which is based on antiquated and unprotective standards, will result in the preventable lead poisoning and permanent brain damage of children throughout the country.”¹¹⁴

However, many states continue to follow or have adopted EPA's outdated 2001 standards in their regulations. States and cities should take steps to surpass the EPA's response and set standards that reflect health-based thresholds for lead hazards and clearance requirements.¹¹⁵ For example, New York City recently enacted legislation lowering the dust hazard levels to 5 µg/ft² on floors, 40 µg/ft² for interior window sills, and 100 µg/ft² for window wells.¹¹⁶ As the Petitioners in the 9th Circuit case urged, clearance standards should be set as low as detectable and dust-lead and dust-lead hazard standards should be set at 5 µg/ft² on floors and 40µg/ft² on window sills. In addition, the Petitioners urged EPA to update the outdated definition of lead-based paint to at least paint containing lead in excess of 0.06 percent, and ideally as low as the Consumer Product Safety Commission definition of 0.009 percent lead content. Soil lead hazard standards should also

112. *Review of the Dust-Lead Hazard Standards and the Definition of Lead-Based Paint*, EPA–HQ–OPPT–2018–0166, July 9, 2019. See also Brief Amici Curiae of the American Academy of Pediatrics et al., *In re A Community Voice, et al. v. U.S. Environmental Protection Agency*, 9th Cir. No 19-71930, Jan. 16, 2020.

113. Petition for Review at 1–2, *In re A Community Voice*, 878 F.3d 779 (2019) (No. 19-____), available at <https://earthjustice.org/sites/default/files/files/Petition%20for%20Review%20Final.pdf>.

114. Brief Amici Curiae of the American Academy of Pediatrics et al., at 7–8, *In re A Community Voice*, 878 F.3d 779 (9th Cir. 2020) (No. 19-71930), available at https://www.apha.org/-/media/files/pdf/advocacy/briefs/200116_epa_lead_hazard_rule_brief.ashx?la=en&hash=123D2F06A1A98ED51255EB212168317585662E69.

115. As addressed by petitioners to EPA regarding the rulemaking, the new rule should have set clearance standards for dust-lead and dust-lead hazard standards at 5 µg/ft² on floors; revised the definition of lead-based paint at least to paint containing lead in excess of 0.06 percent, and potentially as low as 0.009 percent; and revised the soil lead hazard standards to reflect at least the current blood lead reference level set by the CDC. See *Review of the Dust-Lead Hazard Standards and the Definition of Lead-Based Paint*, 83 Fed. Reg. 30889 (July 2, 2018) (to be codified 40 C.F.R. pt. 745). See also Sherry L. Dixon et al., *Exposure of U.S. Children to Residential Dust Lead, 1999–2004: II. The Contribution of Lead-Contaminated Dust to Children's Blood Lead Levels*, 117 ENVTL. HEALTH PERSPS. 468, 468 (2008) (concluding that “[l]owering the floor [lead] standard below the current standard of 40 µg/ft² would protect more children from elevated [lead]”); Bruce P. Lanphear, *Screening Housing to Prevent Lead Toxicity in Children*, 120 PUB. HEALTH REPS. 305, 308 (2005).

116. N.Y.C. ADMIN. CODE § 27-2056.2(8)(a) (enacted by City Local Law 66 of 2019).

reflect at least the current blood lead reference level set by the CDC.¹¹⁷

In addition, EPA has thus far failed to lower lead in drinking water standards to a health-based standard. In EPA's latest proposed updates to the Lead and Copper Rule the action level remains at 15 parts per billion (ppb) despite a non-enforceable Maximum Contaminant Level Goal of 0 ppb.¹¹⁸ Canada recently set a level of 5 ppb as the maximum contaminant level for lead in drinking water.¹¹⁹ The World Health Organization established a maximum level of 10 ppb, noting, however, that this level was provisional and not fully protective.¹²⁰

2. Identify All Sources of Lead in the Environment

To protect children from harm, states and local jurisdictions must address all sources of lead in the environment. Many everyday products contain lead.¹²¹ Sources of exposure outside of lead-based paint hazards, such as lead in solder, pipes, service lines, consumer products, imported products, emissions, non-commercial airplane fuel, ammunition, among others, can contribute significantly to elevated blood lead levels in children. While many states merely include warnings on agency websites to notify consumers of potential lead hazards, California laws outright ban lead in select consumer products. For example, California restricts the use of leaded ammunition, lead in brake pads, and excess amounts of lead in paint and ceramics.¹²²

Neighborhood location directly affects lead exposure risks for residents and underscores the importance of community wide interventions. Emissions and contamination from former lead smelting sites, secondary smelters, battery recycling plants, Superfund sites, and other hazardous waste facilities cause

117. Review of the Dust-Lead Hazard Standards and the Definition of Lead-Based Paint, 83 Fed. Reg. 30889 (July 2, 2018) (to be codified 40 C.F.R. pt. 745).

118. *EPA Proposes Updates to Lead and Copper Rule to Better Protect Children and At-Risk Communities*, U.S. ENVTL. PROT. AGENCY, October 10, 2019, <https://www.epa.gov/newsreleases/epa-proposes-updates-lead-and-copper-rule-better-protect-children-and-risk-2>.

119. Guidelines for Canadian Drinking Water Quality: Guideline Technical Document – Lead, March 8, 2019, available at <https://www.canada.ca/en/health-canada/services/publications/healthy-living/guidelines-canadian-drinking-water-quality-guideline-technical-document-lead.html>.

120. Lead in Drinking-water, Background document for development of WHO *Guidelines for Drinking-water Quality*, available at https://www.who.int/water_sanitation_health/dwq/chemicals/lead.pdf.

121. *Childhood Lead Poisoning Prevention: Sources of Lead*, CTNS. FOR DISEASE CONTROL & PREVENTION, <https://www.cdc.gov/nceh/lead/tips/sources.htm> (last accessed Mar. 11, 2020).

122. CAL. CODE REGS. tit. 14, § 250.1 (2019); DEP'T OF TOXIC SUBSTANCES CONTROL, SENATE BILL (SB) 774 AND CHANGES TO THE TOXICS IN PACKAGING PREVENTION ACT 1, 1–2 (2009), https://dtsc.ca.gov/wp-content/uploads/sites/31/2017/02/TIP_FS_SB-774_Changes.pdf; *Brake Pad Legislation*, DEP'T OF TOXIC SUBSTANCES CONTROL, <https://dtsc.ca.gov/scp/brake-pad-legislation/> (last accessed Mar. 11, 2020).

elevated lead levels and other detrimental health outcomes for local residents.¹²³ Neighborhoods close to these environmental hazards typically have a higher percentage of nonwhite residents compared to the nation as a whole, meaning that these hazards disproportionately affect communities of color.¹²⁴ Other sources of exposure such as truck wheel weights also add a toxic burden throughout the country; the United States Geological Survey estimates wheel weights add 4.4 million pounds of lead to communities every year.¹²⁵

Proximity to certain airfields also affects lead exposure. While the 1990 Clean Air Act amendments banned leaded gasoline in cars, leaded gasoline is often used in piston engine aircrafts.¹²⁶ The EPA estimates that half of lead emissions from such aircraft stay in the vicinity of airports that serve them.¹²⁷ One study found that children living within 0.6 miles of an airport had blood lead levels that were 5.7 percent higher than children living 2.5 miles from the airport.¹²⁸ Local jurisdictions can impose fees on airports serving piston engine aircraft to finance cleanup in nearby neighborhoods, schools, and parks and to incentivize the phasing out of leaded aircraft fuel.¹²⁹

The Flint crisis focused national attention on exposure to lead in water.¹³⁰ Drinking water contamination can occur in multiple ways: corrosion of leaded service lines (“LSL”s), brass plumbing fixtures, and lead solder.¹³¹ To correct lead hazards in drinking water, states and localities should require water utilities to submit plans for the *full* replacement of LSLs across the nation.¹³² Full LSL replacement is a health equity issue. Federal, state and local investment is needed

123. *See generally* EMILY COFFEY ET AL., POISONOUS HOMES: THE FIGHT FOR ENVIRONMENTAL JUSTICE IN FEDERALLY ASSISTED HOUSING (2020), available at https://www.povertylaw.org/wp-content/uploads/2020/06/environmental_justice_report_final-rev2.pdf.

124. EC/R INCORPORATED & EPA CONTRACT, RISK AND TECHNOLOGY REVIEW — FINAL ANALYSIS OF SOCIO-ECONOMIC FACTORS FOR POPULATIONS LIVING NEAR SECONDARY LEAD SMELTING FACILITIES 1, 9 (2011), <https://earthjustice.org/sites/default/files/Leadsmeltersocioeconomicanalysis.pdf>.

125. *Little Lobbyists for Big Change: A Team of Amazing Kids Battle Lead Contamination*, EARTHJUSTICE, <https://earthjustice.org/features/little-lobbyists-for-big-change>.

126. “Leaded fuel used by piston engine aircraft is the nation’s largest source of lead emissions into the air, with approximately 167,000 aircraft emitting about 450 tons a year.” HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 63.

127. Advance Notice of Proposed Rulemaking on Lead Emissions from Piston-Engine Aircraft Using Leaded Aviation Gasoline, 75 Fed. Reg. 22439 (April 28, 2010) (to be codified 40 C.F.R. Part 87).

128. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 64.

129. *Id.* at 82.

130. *See generally* HANNA-ATTISHA, *supra* note 21.

131. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 23.

132. Michigan mandates lead line inventory, better sampling to detect lead in water, phased in decrease in action level, and removal of lead service lines over the next twenty years. *See generally* Graham Sustainability Institute, *What You Need to Know About Michigan’s 2018 Lead and Copper Rule*, available at <http://graham.umich.edu/project/revised-lead-and-copper-rule>.

to ensure that low-income residents and renters are not disproportionately by lead in drinking water due to partial LSL replacement or lack of LSL replacement. In addition, the EPA's Lead and Copper Rule requires "corrosion control" for reducing lead in water.¹³³ However, a Natural Resources Defense Council investigation indicated that "over 18 million people were served by 5,363 community water systems that violated the [EPA's] Lead and Copper Rule."¹³⁴ Nearly ninety percent of reported violations did not see any formal enforcement action from either the state or EPA.¹³⁵ States should heighten enforcement of the Lead and Copper Rule to prevent lead in drinking water as an integral part of a primary prevention system.

C. Using Technology & Data to Identify and Remove Lead Hazards and Prevent Future Harm

Data collection and transparency are crucial to mitigating exposure to lead hazards. A comprehensive system for recording and analyzing test results will allow states to identify hotspots, target preventative measures, and provide proper care and treatment for children with elevated blood lead levels. By engaging in systematic data collection and analysis, states will also be able to more quickly identify and eliminate hazards after a child tests positive for an elevated blood lead level.

1. Data Collection

Comprehensive lead surveillance programs provide information on the extent of elevated blood lead levels in a jurisdiction. The Flint water crisis was uncovered using aggregated electronic medical records to analyze children's blood lead levels, which revealed that EBLL rates increased exponentially in 2014.¹³⁶ States should use available data from sources such as laboratories, hospitals, and the CDC to ensure they have the most comprehensive surveillance system available to identify children and areas of need before the harm proliferates. Providing

133. *Drinking Water Requirements for States and Public Water Systems: Lead and Copper Rule*, U.S. ENVTL. PROT. AGENCY, <https://www.epa.gov/dwreginfo/lead-and-copper-rule> (last accessed Mar. 11, 2020) (40 C.F.R. Part 141 Subpart I).

134. ERIK OLSON & KRISTI PULLEN FEDINICK, NAT. RES. DEF. COUNCIL, WHAT'S IN YOUR WATER? FLINT AND BEYOND: ANALYSIS OF EPA DATA REVEALS WIDESPREAD LEAD CRISIS POTENTIALLY AFFECTING MILLIONS OF AMERICANS 1, 5 (2016), <https://www.nrdc.org/sites/default/files/whats-in-your-water-flint-beyond-report.pdf>.

135. *Id.* at 6.

136. David Wahlberg, *Flint Doctor Used Epic Systems Records to Expose Lead Crisis*, WIS. ST. J. (Jan. 30, 2016), http://host.madison.com/wsj/news/local/health-med-fit/flint-doctor-used-epic-systems-records-to-expose-lead-crisis/article_ef462592-f27b-5ed0-a2ff-33232902ab74.html; see also HANNA-ATTISHA, *supra* note 21.

geographic data allows states to identify specific high-risk communities that require intervention on a community-wide level.

In addition to collection, jurisdictions should make some of this data available to community members to promote transparency about risks of lead poisoning and the location of potential lead hazards. For example, some states – including Connecticut and Massachusetts – publish data annually on screening rates and the prevalence of lead poisoning at the county level. Providing neighborhood-level data would increase the utility of such reports. Often the highest number of elevated blood lead levels in an area can be traced to one census tract or neighborhood.¹³⁷

Jurisdictions can also use data to provide information to citizens on lead-safe housing. Massachusetts and Rhode Island maintain registries of lead-safe homes or homes with lead-safe certificates.¹³⁸ This allows residents to identify safe and healthy housing as part of the home selection process, thereby avoiding exposure to lead hazards.¹³⁹

2. Leveraging Technology to Identify Communities and Children at Risk of Lead Exposure

Jurisdictions can use technology to identify children at risk of exposure to lead hazards. Critically, these techniques may allow states and health providers to intervene before a child suffers irreversible harm. In particular, geographic information systems (GIS) and predictive modeling allow public health departments to identify at-risk children. In predictive modeling, researchers use available data on blood lead level tests and housing inspection reports in conjunction with current census information to create a model that determines lead poisoning risk scores for individual children.¹⁴⁰ Incorporating GIS into childhood lead exposure programs significantly enhances “identifying lead hazards in the environment and determining at risk children.”¹⁴¹

137. See Joshua Schneyer & M.B. Pell, *Special Report: Flawed CDC Report Left Indiana Children Vulnerable to Lead Poisoning*, REUTERS (Sept. 28, 2016), <https://www.reuters.com/article/us-usa-pollution-report-specialreport/special-report-flawed-cdc-report-left-indiana-children-vulnerable-to-lead-poisoning-idUSKCN11Y1BH>.

138. See *Lead Safe Homes*, MASS. DEPT. OF HEALTH & HUMAN SERVS., <https://eohhs.ehs.state.ma.us/leadsafehomes/default.aspx>; *Find Lead Property Violations and Certifications*, R.I. DEPT. OF HEALTH, <https://health.ri.gov/find/environmentallead/propertystatus/>.

139. See Benfer & Gold, *supra* note 53, at S20 (noting that “the ability to use disclosed information to make decisions is severely limited for low-income residents” due to a dearth of affordable lead-safe housing options).

140. Eric Potash et al., *Predictive Modeling for Public Health: Preventing Childhood Lead Poisoning*, KDD '15: PROCEEDINGS OF THE 21ST ACM SIGKDD INTERNATIONAL CONFERENCE ON KNOWLEDGE DISCOVERY AND DATA MINING 2039, 2046 (2015).

141. Cem Akkus & Esra Ozdenerol, *Exploring Childhood Lead Exposure Through GIS: A*

The Chicago Department of Public Health (CDPH) used the predictive modeling results to develop a three-pronged strategy to prevent at-risk children from becoming exposed to lead hazards. First, CDPH used area billboards “to encourage [pregnant women and parents of young children] to request home inspections” to identify sources of lead in the home.¹⁴² Second, CDPH provided risk scores to doctors and health care providers to target patients with acute risks of lead poisoning. Finally, “CDPH recruit[ed] health and social service providers to facilitate lead-based paint hazard inspections by city inspectors.”¹⁴³ Health care providers can also use a patient’s risk score to educate the patient about risk-reducing practices, such as requesting a lead inspection.¹⁴⁴ Finally, to address sources of lead poisoning in the home, CDPH developed “a program of outreach and education” to landlords and housing providers.¹⁴⁵ This included informing landlords of the risk scores of their property and encouraging them to develop and execute a plan to eliminate hazards.¹⁴⁶ The risk score also allowed CPDH to prioritize free inspections for low-income homeowners.¹⁴⁷

A healthcare system’s electronic medical record (EMR) software can also be leveraged to identify patients at-risk of elevated blood lead levels.¹⁴⁸ An EMR tracks all patient information and data, allowing health care providers to easily input and view the information in one portal. At Erie Family Health Centers in Chicago, Illinois, providers receive an EMR alert if a pediatric patient resides in a home that previously housed a child with an elevated blood lead level.¹⁴⁹ The note-based reminder system in the EMR can increase the rates at which providers educate families about lead poisoning and order blood lead level tests for their patients.¹⁵⁰ At Jefferson Family Medicine Associates in Philadelphia, Pennsylvania, implementing this system increased the rate at which providers order blood lead level tests among children between the age of twelve months to

Review of the Recent Literature, 11 INT’L J. ENVTL. RESEARCH & PUB. HEALTH 6314, 6314–15 (2014) (“The use of GIS in environmental risk factor studies on childhood lead exposure became a focus of research activity in the late 1990s. This prompted the CDC to develop a guideline for the use of GIS in childhood lead poisoning studies in 2004.”).

142. Potash et al., *supra* note 140, at 2046.

143. *Id.*; see also MILBANK MEMORIAL FUND, CASE STUDIES: THREE PROJECTS RECEIVE INAUGURAL STATE AND LOCAL INNOVATION PRIZE 1, 3–5 (2018), <https://www.milbank.org/wp-content/uploads/2018/07/MMF-AH-Innovation-Prize-FINAL-1.pdf>.

144. Potash et al., *supra* note 140, at 2046.

145. *Id.*

146. *Id.*

147. *Id.*

148. For information about data sharing agreements for lead poisoning prevention, see DATA ACROSS SECTORS FOR HEALTH, A LEGAL APPROACH TO SHARING HEALTH & EDUCATION DATA 1, 4–5 (2018), http://dashconnect.org/wp-content/uploads/2018/05/DASH-Bright-Spot_Chicago.pdf.

149. MILBANK MEMORIAL FUND, *supra* note 143, at 3.

150. Kathryn McGrath et al., *EMR-Based Intervention Improves Lead Screening at an Urban Family Medicine Practice*, 48 FAM. MED. 801, 803 (2016).

six years from twenty-one percent to forty-nine percent of patients.¹⁵¹ By identifying patients with EBLs, providers can more quickly prescribe interventions to mitigate the harmful effects of lead exposure.

III. SECONDARY PREVENTION STRATEGIES TO IDENTIFY AND IMMEDIATELY ELIMINATE CHRONIC LEAD POISONING

Secondary prevention strategies are designed to identify a problem at its earliest stages,¹⁵² before injury becomes severe. While states and cities adopt and implement primary prevention strategies, and because no state is yet able to prevent all cases of lead poisoning, it is necessary for states and local governments to improve secondary prevention measures. These include universal screening, screening through Medicaid, and updating the definition of lead poisoning, as well as the actions elevated blood lead levels trigger.

A. Universal Screening

Currently, not all children are screened for lead poisoning; available blood lead surveillance data is not representative of lead poisoning rates in the United States or even an entire state or county.¹⁵³ Presently, the CDC recommends that states develop statewide blood lead screening plans based on local data and conditions.¹⁵⁴ As recently as the 1990s, the CDC recommended universal screening for all U.S. children, including those not enrolled in Medicaid. Today, the CDC's guidelines recommend universal screening for communities with at least 27% pre-1950 housing (See Table 2).¹⁵⁵ Because blood lead testing is initiated by the health care provider, states must have clear and widely distributed requirements for screening children. Most states only require blood lead level screenings among high-risk populations or regions, which creates gaps in prevention and treatment

151. *Id.*

152. *See Primary, Secondary and Tertiary Prevention, supra* note 26.

153. *Childhood Lead Poisoning Prevention: CDC National Childhood Blood Lead Surveillance Data*, CTNS. FOR DISEASE CONTROL & PREVENTION, [cdc.gov/nceh/lead/data/national.htm](https://www.cdc.gov/nceh/lead/data/national.htm) (last visited Mar. 11, 2020).

154. CTNS. FOR DISEASE CONTROL & PREVENTION, *SCREENING YOUNG CHILDREN FOR LEAD POISONING: GUIDANCE FOR STATE AND LOCAL PUBLIC HEALTH OFFICIALS* 1, 31 (1997), https://www.cdc.gov/nceh/lead/docs/cdc_13364_1997.pdf.

155. ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, *supra* note 20, at 23. However, the U.S. Preventive Services Task Force (USPSTF) has found that, although elevated lead levels cause harm to children and lead screening tests are accurate, evidence for treating screen-detected individuals to be virtually nonexistent. On this basis, the USPSTF concluded that the evidence was insufficient to assess the balance of benefits and harms of screening for lead levels in children. Michael Silverstein, Heather E. Hsu & Alastair Bell, *Addressing Social Determinants to Improve Population Health: The Balance Between Clinical Care and Public Health*, 322 *JAMA* 2379 (2019).

in other parts of the state.¹⁵⁶ Only a fraction of states currently require universal screening, including all of New England (Vermont, New Hampshire, Maine, Massachusetts, Connecticut, and Rhode Island), New Jersey, New York, Maryland, Delaware, Iowa, Louisiana, and the District of Columbia.¹⁵⁷ States that require universal screening typically prioritize children under the age of three, though some mandate screening for older children in high-risk areas.¹⁵⁸

However, even areas with universal screening requirements can have low compliance rates that reflect lack of enforcement and inadequate incentives.¹⁵⁹ Since Connecticut adopted universal screening in 2008, which went into effect in 2009, screening rates for children 9-35 months steadily increased from just below 50% to 74.1% in 2015. To encourage high screening rates, “Connecticut contracts with regional treatment centers [Connecticut Children’s Medical Center in Hartford and Yale-New Haven Hospital in New Haven], located in healthcare systems, that undertake provider and community education events, free medical consultation services, and other measures aimed at identification and primary prevention.”¹⁶⁰ These regional treatment centers, with a dedicated presence in large healthcare systems, act as liaisons between the state, health care providers, and patients to encourage robust testing. Maryland employs a targeted statewide lead exposure risk analysis model to inform their universal screening mandate.¹⁶¹

To improve rates of testing, states should increase outreach to hospitals, health providers, community health centers, and parents. States should offer blood lead tests at clinics; Women, Infant and Children (WIC) offices; daycares, and schools,

156. GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN, *supra* note 70, at 16.

157. See JENNIFER DICKMAN, CHILDREN AT RISK: GAP IN STATE LEAD SCREENING POLICIES (2017), https://saferchemicals.org/wp-content/uploads/2017/01/saferchemicals.org_children-at-risk-report.pdf. Since the Safer Chemicals guide was published, New Hampshire and Maine began to require universal testing with the passage of Senate Bill 247 in February 2018, and 2019 respectively (jurisdictions requiring universal testing are Maine, Massachusetts, Connecticut, Vermont, Rhode Island, Iowa, New York, Maryland, New Jersey, Louisiana, Delaware, New Hampshire, and Washington, DC). See HEALTH JUSTICE INNOVATIONS, COMPARATIVE ASSESSMENT OF LEAD POISONING SCREENING PRACTICES IN MAIN & NEW ENGLAND 1, 7–17 (2019), <https://mainehousingcoalition.org/wp-content/uploads/2019/08/Lead-Screening-Report-Final-Full-Report.pdf>.

158. States should also ensure that private health insurance companies cover the cost of mandatory lead testing. For example, when Connecticut mandated blood lead level screening for all one and two-year-old children, CONN. GEN. STAT. § 19a-111g, it also updated CONN. GEN. STAT. § 38a-490d, requiring health insurance policies to cover blood lead tests. For an overview of universal screening practices in New England states, see HEALTH JUSTICE INNOVATIONS, *supra* note 157, at 13–17.

159. See *id.* at 15–17.

160. *Id.* at 15.

161. *Maryland Targeting Plan for Areas At Risk for Childhood Lead Poisoning*, MD. DEP’T OF HEALTH AND MENTAL HYGIENE (October 2015), available at <https://phpa.health.maryland.gov/IDEHASharedDocuments/MD%202015%20Lead%20Targeting%20Plan.pdf>.

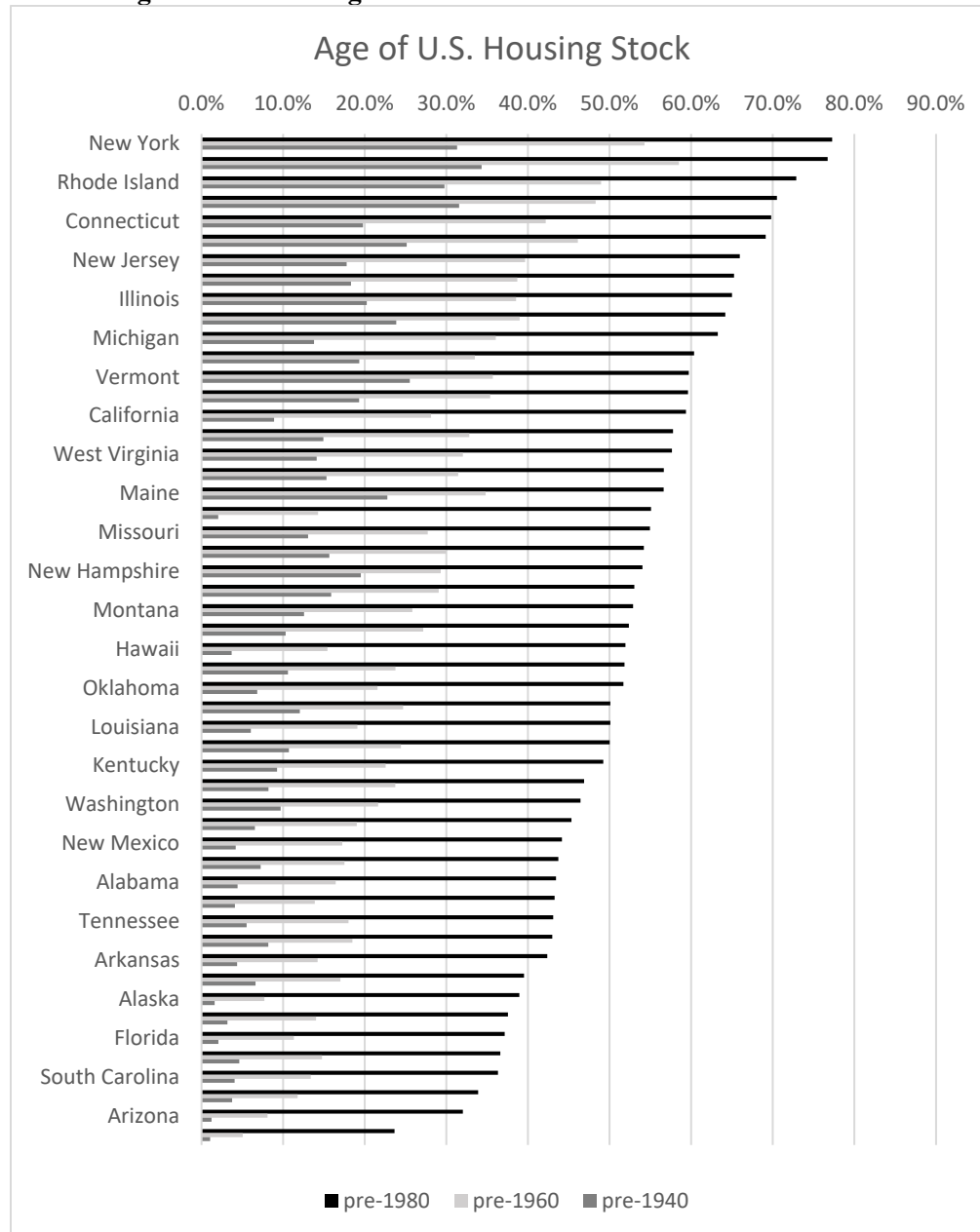
as well as allow for mobile health units that can offer portable test options, especially in at-risk neighborhoods.¹⁶² One such portable device is the LeadCare II POC instrument, which entails a capillary blood draw (finger prick) and provides rapid results, does not require specialized skill for use, and is relatively affordable.¹⁶³ To identify children with lead poisoning at the earliest possible point of exposure, states with high rates of pre-1950 and pre-1978 housing stock should adopt universal screening policies. For these states, the policy becomes a part of routine well child visits, similar to immunizations, and leaves nothing to individual assessment, assumptions about lead poisoning risk, or chance.¹⁶⁴

¹⁶² HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 83–84.

¹⁶³ Jacquelyn Mason et al., *Response to the U.S. FDA LeadCare Testing Systems Recall and CDC Health Alert*, 25 J. PUB. HEALTH MGMT. & PRAC., S91, S95 (2019).

¹⁶⁴ For an overview of state laws and best practices, *see* HEALTH JUSTICE INNOVATIONS, *supra* note 157, at 19.

Table 2. Age of U.S. Housing Stock¹⁶⁵



165. AMERICAN COMMUNITY SURVEY 2018, U.S. CENSUS BUREAU, <https://www.census.gov/acs/www/data/data-tables-and-tools/data-profiles/> (last accessed Mar. 11, 2020).

B. State Medicaid Screening

State Medicaid agencies can leverage existing resources and standards to identify and treat children exposed to lead hazards. The U.S. Department of Health and Human Services requires all Medicaid-eligible children to receive a blood lead test at ages twelve months and twenty-four months. Any child between thirty-six months and seventy-two months with no record of a blood lead test must also be screened.¹⁶⁶ In some states, State Medicaid agencies establish additional screening requirements for at-risk children.¹⁶⁷ Yet, based on 2016 data reported to CMS, nationwide, only about 25% of Medicaid eligible children age two and below received their required screening for EBLLs.¹⁶⁸ States have generally failed in their duty to affirmatively conduct outreach efforts to inform parents of available Early and Periodic Screening, Diagnostic, and Treatment (EPSDT) services and the importance of early detection, as well as in their duty to provide the necessary administrative support (scheduling appointments prior to screening deadlines, arranging transportation services, and providing written materials in multiple languages).¹⁶⁹

In addition, if a child has an elevated blood lead level, Medicaid provides comprehensive coverage for any service that is “medically necessary to correct or ameliorate defects in physical and mental illnesses or conditions . . . whether or not such service is otherwise covered under the state plan.”¹⁷⁰ This includes investigations in the child’s home.¹⁷¹ States also have an obligation to ensure that all Medicaid-eligible children under age twenty-one receive treatment and care for lead poisoning (even from past exposures), and that all Medicaid beneficiaries suffering from the long-term effects of lead poisoning receive appropriate treatment and care (even those over the age 21).¹⁷²

Given their insured population, state Medicaid agencies are well placed to

166. STATE MEDICAID MANUAL § 5123.2(D)(1) (CTRS. FOR MEDICARE & MEDICAID SERVS.).

167. *See, e.g.,* IND. HEALTH COVERAGE PROGRAMS, EARLY AND PERIODIC SCREENING, DIAGNOSTIC, AND TREATMENT (EPSDT)/HEALTHWATCH SERVICES 1, 25 (2019), <https://www.in.gov/medicaid/files/epsdt.pdf>.

168. *Early and Periodic Screening, Diagnostic, and Treatment*, CTRS. FOR MEDICARE & MEDICAID SERVS., <https://www.medicaid.gov/medicaid/benefits/epsdt/index.html> (Annual EPSDT Participation Report FY 2016, CMS Form 416).

169. 42 U.S.C. § 1396a(a)(43)(A); 42 C.F.R. §§ 441.50–441.62.

170. Vikki Wachino, Dir., Ctr. for Medicaid and CHIP Servs., *Coverage of Blood Lead Testing for Children Enrolled in Medicaid and the Children’s Health Insurance Program* 1, 2 (Nov. 30, 2016), <https://www.medicaid.gov/sites/default/files/federal-policy-guidance/downloads/cib113016.pdf>.

171. *Id.*

172. 42 U.S.C. § 1396d(r)(5) (2018).

identify children at risk of lead exposure. Medicaid can collaborate with other state agencies such as the health and housing departments, health care providers, other groups such as WIC clinics, community health clinics, and school-based health centers. Further, Medicaid should invest in data collection and create a database of all Medicaid beneficiaries in at-risk areas (such as those near Superfund sites). And finally, agencies can ensure staff and services are available for treatment and care of children and adults with elevated blood lead levels, as well as invest in case management and early intervention and special education programs.

C. Definition of Lead Poisoning and Action Levels

States should amend their lead poisoning definitions by tying their action levels to the CDC's reference level. The CDC's reference level is currently set at 5 µg/dL; this level is meant to be revised to lower levels at a regular basis.

In 1988, with the passage of the Lead Contamination Control Act, Congress authorized the CDC to create a comprehensive childhood lead poisoning program.¹⁷³ The program was meant to enhance national efforts to address lead poisoning, by (1) developing policies to prevent poisoning; (2) educating the public and health care providers; (3) providing funding to state and local health departments for lead poisoning services (including screening and environmental investigation); and (4) supporting research on the effectiveness of policies.¹⁷⁴ The CDC definition of lead poisoning has evolved over time with advances in the science of lead hazards. In 2012, the CDC revised its guidelines, replacing the 10 µg/dL "blood lead 'level of concern'" with the "reference value" of 5 µg/dL.¹⁷⁵ The justification for the new approach was the CDC's finding that there is no safe level of lead poisoning. Ideally, the reference value will continue to decrease as lead poisoning rates decline throughout the United States. For this reason, the CDC, American Academy of Pediatrics, and the Green & Healthy Homes Initiative have advised states and local governments to engage in primary prevention and, at a minimum, adopt the CDC's reference level as the statewide lead poisoning action level.¹⁷⁶ More than half of U.S. states define EBLL (or lead poisoning) for children

173. ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, *supra* note 20, at 1.

174. *Id.*

175. *Child Lead Poisoning Prevention: Blood Lead Levels in Children*, CTNS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/nceh/lead/acclpp/blood_lead_levels.htm. The new "reference level" standard is tied to the 97.5th percentile of the NHANES blood lead level distribution in children 1-5 years old. The CDC has stated its intention to update this limit every four years. Based on this assertion, the CDC is overdue in updating the reference level to 3.5 µg/dL. *See also* Benfer, *supra* note 21, at 499.

176. The Green & Healthy Homes Initiative warned that "failure to follow the CDC guidelines will potentially enable millions of poisoned children to go undetected and untreated." GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN, *supra* note 70, at 14.

as ≥ 5 $\mu\text{g}/\text{dL}$ or use the CDC reference level.¹⁷⁷ However, while the definition conforms to current CDC standard, only Maine,¹⁷⁸ Maryland,¹⁷⁹ Massachusetts,¹⁸⁰

177. These states include California, District of Columbia, Florida, Idaho, Illinois, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Missouri, Montana, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Virginia, Washington, West Virginia, and Wisconsin. *See* Cal. Health & Safety Code § 105280; D.C. Code § 8-231.01(13); Fla. Stat. Ann. § 381.983; Idaho Admin. Cod. r. 16.02.10.380; Ill. Admin. Code. tit. 77, 845.20; Ky. Rev. Stat. An. § 211.900; Me. Rev. Stat. Ann. tit. 22 §1315 (5C); Md. Code Regs. 10.11.04.02.04; 105 CMR 460.020; Minn. Stat. Ann. § 144.9501(Subd. 9); Mo. Code Regs. Ann. tit. 19, § 20-8.030.1(M); Mont. Admin. R. 37.114.203(ai); N.H. Rev. Stat. Ann. § 130-A:6-b; N.J. Admin. Code 8:51-1.4; N.Y. Pub. Health Law § 1370; N.C. Gen. Stat. § 130A-131.7(5); Ohio Admin. Code 3701-30-01(O); Okla. Admin. Code § 310:512-1-4; Or. Admin. R. 333-017-0000(18); 28 Pa. Code. 27.34; 216 R.I. Code R. § 050-15-3, Section 3.3(A)(44); S.C. Code Ann. § 44-53-1320 (uses standard from Dept Health Env Control); Tex. Health & Safety Code § 88.001; Va. Code Ann. § 32.1-46.1; Wash. Admin. Code 246-101-010; W. Va. Code § 16-35-3; Wis. Stat. Ann. § 254.11(9). In addition, according to interviews with state Public Health officials and guidance posted on state Department of Health websites, Arkansas, Delaware, Hawaii, Louisiana, Michigan, Mississippi, South Dakota, Tennessee, and Utah consider a blood lead level of ≥ 5 $\mu\text{g}/\text{dL}$ to constitute lead poisoning in practice, despite the fact that the respective state statutes do not yet define it as such.

178. Me. Rev. Stat. tit. 22, § 1320-A. (“Except in the case of an owner-occupied, single-family residence, the department shall within 30 days inspect all dwelling units in a dwelling when: . . . Lead poisoning [is] found. A case of lead poisoning has been found in any dwelling unit within the dwelling; . . . [t]he department may, at its discretion, inspect an owner-occupied single-family residence whenever a lead-poisoned child has been identified as residing in or receiving care in that residence.”).

179. MD. CODE REGS. 10.09.23.04. However, it should be noted that this is only for Medicaid recipients. Early Periodic Screening, Diagnostic, and Treatment (EPSDT) program from Medicaid recipients covers medically necessary screening services for environmental lead investigations when there is a BLL ≥ 5 $\mu\text{g}/\text{dL}$).

180. 105 MASS. CODE. REGS. 460.710. (“All inspections or lead determination enforcement procedures shall be carried out according to the following: . . . (b) Dwelling units in which a child with a blood lead level of concern resides. . . . (c) Dwelling units in which a child younger than six years old lives for which an inspection is requested by the occupant.”) It should be noted that Massachusetts defines “Blood Lead Level of Concern” as “a concentration of lead in whole venous blood from 5 to less than 10 micrograms per deciliter in a child less than six years old.” As a result, if a child over six years old has a blood lead level of 5 micrograms per deciliter, the statute does not mandate physical inspection. 105 MASS. CODE. REGS. 460.020.

New Hampshire,¹⁸¹ District of Columbia,¹⁸² North Carolina,¹⁸³ Illinois,¹⁸⁴ New York,¹⁸⁵ and New Jersey,¹⁸⁶ mandate physical inspection of the home for lead hazards when a child's EBL is ≥ 5 $\mu\text{g}/\text{dL}$ or reaches the CDC reference level after one or two tests, depending on the state.

Other states adopt the following approaches: (1) optional investigation at the

181. N.H. REV. STAT. ANN. § 130-A:5. (“The commissioner shall investigate cases of lead poisoning in children reported under RSA 141-A whose blood lead level meets or exceeds 7.5 micrograms per deciliter of whole venous blood . . . Such investigations shall include, but not be limited to: . . . (b) Inspections of dwellings or dwelling units or of any child care facility, and testing environmental samples.”) However, effective July 1, 2021, the blood lead level that triggers investigation will be lowered to 5 micrograms per deciliter of whole venous blood.

182. D.C. Code § 8-231.03(a). (“(a) Whenever a child under age 6 with an elevated blood lead level resides in, or regularly visits a dwelling or unit or child-occupied facility in the District . . . the Mayor shall conduct a risk assessment of the appropriate properties.”) A “risk assessment” is defined as “an on-site investigation to determine and report the existence, nature, severity, and location of conditions conducive to lead poisoning.” D.C. Code § 8-231.01(36). It should be noted, therefore, that if a child over six years has a blood lead level of 5 micrograms per deciliter or greater, the statute does not mandate physical inspection.

183. N.C. GEN. STAT. § 130A-131.9A(a1). (“When the Department learns of an elevated blood lead level, the Department shall, upon informed consent, investigate the residential housing unit where the child or pregnant woman with the elevated blood level resides. When consent to investigate is denied, the child or pregnant woman with the elevated blood lead level cannot be located, or the child's parent or guardian fails to respond, the Department shall document the denial of consent, inability to locate, or failure to respond.”)

184. ILL. ADMIN. CODE tit. 77, § 845.85. (“(1) An EBL inspection to determine the source of lead exposure shall be conducted under any of the following circumstances: (A) If a child or pregnant person who is an occupant or frequent visitor of a regulated facility has an EBL; . . . (2) An EBL inspection of a regulated facility to determine the source of lead poisoning as required by this Section shall be conducted and shall consist of at least the following: . . . (B) A visual assessment of the condition of the building; . . . (C) Environmental sampling.”)

185. The New York State Department of Health has statutory authority to promulgate and enforce regulations for follow up of children and pregnant women who have elevated blood lead levels. N.Y. Pub. Health Law § 1370-a. The New York State Department of Health requires a home visit when a child has an elevated blood lead level. *Childhood Lead Poisoning Prevention*, N.Y. STATE DEP'T OF HEALTH (Jan. 2020), <https://www.health.ny.gov/environmental/lead/>. See also *What Your Child's Blood Lead Test Means*, N.Y. STATE DEP'T OF HEALTH, <https://www.health.ny.gov/publications/2526.pdf>.

186. N.J. Admin. Code § 8:51-2.4(b). (“Whenever a child has a confirmed blood lead level of five $\mu\text{g}/\text{dL}$ or greater, a public health nurse shall perform case management consisting of: (1) A home visit . . . (3) In the case of a child with two confirmed blood lead levels of five to nine $\mu\text{g}/\text{dL}$ or one confirmed blood lead level of 10 to 44 $\mu\text{g}/\text{dL}$, a review of the lead Hazard Assessment Questionnaire . . . with the lead inspector/risk assessor certified by the Department to ensure that the child's environment has been evaluated for non-paint lead hazards and that the environmental evaluation has been performed.”). See also *Childhood Lead*, N.J. DEP'T OF HEALTH (Aug. 28, 2019), <https://www.state.nj.us/health/childhoodlead/testing.shtml>; N.J. STAT. § 26:2-137.3 (2017). New Jersey ties its action level to the CDC's reference level, rather to any specific number. When the CDC further lowers the action level, New Jersey's level will also be lowered without the need for any additional legislative action.

CDC reference value or at ≥ 5 $\mu\text{g}/\text{dL}$;¹⁸⁷ or (2) optional investigation at any level;¹⁸⁸ or (3) case management or monitoring at the CDC reference value and environmental investigations for lead hazards at EBLLs two to five times the CDC reference value.¹⁸⁹ For example, several states still conduct investigations only at blood lead levels greater than 20 $\mu\text{g}/\text{dL}$ or at 15 to 20 $\mu\text{g}/\text{dL}$ in two tests taken several months apart.¹⁹⁰ These requirements are based on the CDC's 1991 recommendations and no longer comply with medical or scientific

187. These states include Idaho, South Carolina, and Wisconsin. *See, e.g.*, IDAHO ADMIN. COD. r. 16.02.10.380 (“Each reported case of lead poisoning *may* be investigated”) (emphasis added); S.C. Code Ann. § 44-53-1390 (“When the department is notified of a lead poisoning case, the department . . . with the consent of the householder or his agent, *may* enter a dwelling, dwelling unit, or childcare facility at reasonable times and in a reasonable manner for the purpose of conducting a lead-based hazard investigation”) (emphasis added); Stat. Ann. § 254.166 (“The department *may*, after being notified that an occupant of a dwelling or premises who is under 6 years of age has blood lead poisoning or lead exposure, present official credentials to the owner or occupant of the dwelling or premises, or to a representative of the owner, and request admission to conduct a lead investigation of the dwelling or premises”) (emphasis added).

188. These states include Alaska, Minnesota, and Rhode Island. *See, e.g.*, Alaska Admin. Code tit. 7, § 27.016 (“A public health agent may conduct an administrative inspection of any establishment and examine the records of any establishment that may involve a threat to public health in the conduct of an epidemiological investigation”); Minn. Stat. Ann. § 144.9504 (“Within the limits of available local, state, and federal appropriations, an assessing agency may also conduct a lead risk assessment for children with any elevated blood lead level”); 216 R.I. Code R. § 050-15-3, Section 3.5.1 (“(A) Initiation of a Lead Inspection. (1) A lead inspection may be initiated by any of the following persons: a. a property agent; b. a tenant; c. a child care provider; d. a buyer under a contract for the purchase and sale of real estate; e. a mortgagee or property and casualty insurer; f. a funding agency; g. a municipality or public housing authority; h. a lead center; or i. the [Health] Department. (B) Purpose of a Lead Inspection. (1) A lead inspection may be initiated for a variety of reasons, including . . . c. To identify lead hazards and recommend treatment options to correct those hazards”).

189. These states include Ohio, Oklahoma, and West Virginia. *See, e.g.*, Ohio Admin. Code, § 3701-30-07 (“(A) For children with a blood lead level of five micrograms per deciliter or greater but less than ten micrograms per deciliter the director shall cause the completion of a comprehensive questionnaire on a form prescribed the director . . . (B) For children with a blood lead level of ten micrograms per deciliter or greater the director shall conduct an on-site investigation of a residential unit, child care facility or school”); Okla. Admin. Code § 310:512-3-4.1 (“(C) For each child who has an elevated blood lead level at or above the reference level, the health care provider shall take those actions that are reasonably and medically necessary and appropriate based upon the child’s blood lead level to reduce, to the extent possible, the child’s blood lead level below the reference level. Such actions may include the following: . . . (5) Referral to the Department for an environmental investigation for a single venous blood lead test result equal to or greater than 20 $\mu\text{g}/\text{dL}$ ”); W. Va. Code § 64-42-5 (“(5.2) The health care provider shall provide all information concerning a child’s blood lead level to the legal parent or guardian and other agencies involved in lead poisoning testing . . . (5.3.b) Children with two (2) consecutive blood lead levels of greater than or equal to fifteen (15) micrograms per deciliter, and children with blood lead levels of greater than or equal to twenty micrograms per deciliter shall be referred to environmental assessment and nurse home visits.”).

190. These states include Connecticut, Iowa, and Vermont. *See, e.g.*, Conn. Gen. Stat. § 19a-111; Iowa Admin. Code r. 641-68.3; 13-140-055 Vt. Code R. § 3.

recommendations.¹⁹¹

Several states do not have any lead poisoning laws or regulations, or have very limited guidance for lead poisoning.¹⁹² Until true primary prevention measures are implemented, it is paramount that states adopt lead poisoning definitions that are consistent with the CDC recommendations. In the absence of robust state laws, cities and municipalities should adopt stronger thresholds.

IV. INCREASED FUNDING AND COMPLIANCE

The effectiveness of any primary or secondary lead poisoning prevention program is dependent upon adequate funding and accountability. To raise revenue, states can draw from federal sources, local partners, as well as tax and fee structures. Robust enforcement of state and federal laws, as well as remedies tied to the property can help states achieve compliance and safeguard children.

A. Raising Revenue

Eliminating exposure to lead hazards requires increasing funding for primary prevention measures. Childhood lead poisoning imposes “significant costs to taxpayers.”¹⁹³ These costs are the result of direct health care expenditures, as well as societal and behavioral costs in special education, crime, and lifetime earning losses caused by lead poisoning.¹⁹⁴ Given these costs, each dollar invested in lead hazard control produces a significant return on investment.¹⁹⁵ A 2017 study released by the Health Impact Project, a collaboration between the Pew Charitable Trusts and the Robert Wood Johnson Foundation found that “removing leaded drinking water service lines from the homes of children born in 2018 would . . .

191. In 1991, the CDC published a guide for Preventing Lead Poisoning in Young Children that recommended inspection and remediation at 20 µg/dL or 15 to 19 µg/dL in two tests taken three to four months apart. CTRS. FOR DISEASE CONTROL & PREVENTION, PREVENTING LEAD POISONING IN YOUNG CHILDREN (1991) <https://wonder.cdc.gov/wonder/prevguid/p0000029/p0000029.asp> (“If the blood lead level is 15-19 µg/dL, the child should be screened every 3-4 months, the family should be given education and nutritional counseling as described in Chapter 4, and a detailed environmental history should be taken to identify any obvious sources or pathways of lead exposure. When the venous blood lead level is in this range in two consecutive tests 3-4 months apart, environmental investigation and abatement should be conducted, if resources permit.”).

192. These states include Kansas, South Dakota, and Wyoming. *See, e.g.*, KAN. ADMIN. REGS. §28-72-1.

193. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 1.

194. CINDY MANN, KINDA SERAFI & ARIELLE TRAUB, LEVERAGING CHIP TO PROTECT LOW-INCOME CHILDREN FROM LEAD (Feb. 2, 2017), <https://www.manatt.com/Insights/White-Papers/2017/Leveraging-CHIP-to-Protect-Low-Income-Children-fro>.

195. Anne Marie Costello, Ctr. for Medicaid and CHIP Svcs., Maryland Approval Letter (June 15, 2017), <https://www.medicaid.gov/CHIP/Downloads/MD/MD-17-0001-LEAD.pdf>; Timothy Hill, Ctr. for Medicaid and CHIP Svcs., Michigan Approval Letter (Nov. 14, 2016), <https://www.medicaid.gov/sites/default/files/CHIP/Downloads/MI/MI-16-0017.pdf>.

yield \$2.7 billion”¹⁹⁶ in future benefits. Further, policies that “eradicate[e] lead paint hazards from older homes of children from low-income families would provide \$3.5 billion in future benefits.”¹⁹⁷ Finally, requiring contractors to comply with the EPA’s rule that requires lead-safe renovation, repair, and painting practices would yield \$4.5 billion in future benefits.¹⁹⁸ When considering lead poisoning levels below the CDC reference value, it is estimated that the costs to society associated with lead poisoning are as high as \$84 billion.¹⁹⁹

In October 2016, the Green and Healthy Homes Initiative released a Strategic Plan to End Childhood Lead Poisoning estimating that: to effectively address lead poisoning nationally, an investment of \$2.5 billion dollars each year for the next five years is necessary.²⁰⁰ The societal benefits of prevention far outweigh the upfront costs associated with lead poisoning among children. In addition to the measures outlined below for funding lead poisoning prevention, lead paint manufacturers must be held responsible for funding abatement of lead hazards.

1. Medicaid & CHIP

Several Medicaid programs can be strategically leveraged to address lead poisoning. For example, states such as Rhode Island and Missouri offer Medicaid-reimbursable managed care plans and case management services for children with elevated blood lead levels.²⁰¹

The Children’s Health Insurance Program (CHIP)²⁰² provides an option for additional funding.²⁰³ The Health Services Initiative (HSI), a “long-standing but

196. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 2.

197. *Id.*

198. *Id.*

199. *New Online Tool Calculates the Cost and Economic Benefits of Preventing Childhood Lead Exposure in the United States*, ALTARUM (May 30, 2019), <https://altarum.org/news/new-online-tool-calculates-cost-and-economic-benefits-preventing-childhood-lead-exposure-united>.

200. GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN, *supra* note 70, at 18 (1.1 million at risk homes, 220,000 homes per year, \$11,300 to fully abate each home); NAT’L CTR. FOR HEALTHY HOUSING, FIND IT, FIX IT, FUND IT, *SUPRA* NOTE 103, at 3.2. Existing sources of federal funding for lead-based projects include HUD’s Lead-Based Paint Hazard Control and Lead Hazard Reduction Demonstration Grants, HUD’s Choice Neighborhoods Grants, HUD’s Community Development Block Grants, DHHS’s Community Services Block Grants, EPA’s Drinking Water State Revolving Loan & Water Infrastructure Finance and Innovation Act Grants, and DOE’s Weatherization Assistance Program Grants. However, additional support from federal, state and local governments, as well as from the private sector are necessary to finally eliminate childhood lead poisoning.

201. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT 1, 34 (2019), https://www.greenandhealthyhomes.org/wp-content/uploads/Lead-Funding-and-Financing-Toolkit-5-29-19_final.pdf.

202. *Id.* at 37 (“The Children’s Health Insurance Plan (CHIP) uses federal and state funds to provide health coverage to over 9 million eligible children through Medicaid and other CHIP-specific programs.”).

203. Kate Honsberger, Liz McCaman & Karen Vanladeghem, *State Strategies to Improve*

relatively underutilized CHIP provision,” offers states enhanced federal matching for programs that help low-income children.²⁰⁴ While CHIP’s federal match rate is already 65-82%, HSI programs receive a minimum 88% of program cost from the federal government.²⁰⁵

As of 2019, at least four states – Maryland, Michigan, Indiana, and Ohio – implement HSI programs that address lead poisoning. Each state’s program provides additional funding for lead hazard abatement.²⁰⁶ In addition, Maryland’s HSI program funds lead hazard home assessments for children with a blood lead level above 5 µg/dL.²⁰⁷ In Ohio, HSI also allows for the establishment of an online lead-safe housing registry.²⁰⁸ In Michigan, the program is primary prevention such that children on Medicaid and CHIP are eligible for free home inspection and abatement.²⁰⁹

2. Health Care Providers, Systems, and Hospitals as Investors in Lead Poisoning Prevention and Community Health

Often, the role of health care providers and hospitals in lead poisoning prevention is limited to patient education and managing elevated blood lead level cases. Providers routinely screen admitted children, provide chelation treatment for the most severe cases of poisoning, and notify local health departments of other cases, with little opportunity for follow-up. Health care providers, systems, and hospitals could make a major contribution to lead poisoning prevention by treating the community as the patient. In contemplating the future of health care, scholars often use the hub-and-spoke analogy. There are two visions for such a system. First, the health care organization could be the hub with various community-based organizations as spokes. Alternatively, health care organizations could be one of the spokes with another entity as the hub.²¹⁰ In both models, scholars imagine

Childhood Lead Screening and Treatment Services under Medicaid and CHIP (April 2018), <https://www.nashp.org/wp-content/uploads/2018/04/Childhood-Lead-Screening.pdf>.

204. MANN, SERAFI & TRAUB, *supra* note 194, at 1.

205. *Id.* at 2.

206. Costello, *supra* note 195; Anne Marie Costello, Ctr. for Medicaid and CHIP Svcs., Ohio Approval Letter (Dec. 5, 2017), <https://www.medicaid.gov/CHIP/Downloads/OH/OH-17-0038.pdf>; Timothy Hill, Ctr. for Medicaid and CHIP Svcs., Michigan Approval Letter (Nov. 14, 2016), <https://www.medicaid.gov/CHIP/Downloads/MI/MI-16-0017.pdf>; Anne Marie Costello, Ctr. for Medicaid and CHIP Svcs., Indiana Approval Letter (Sept. 29, 2017), <https://www.medicaid.gov/CHIP/Downloads/IN/IN-17-0000-0002.pdf>.

207. Costello, Ctr. for Medicaid and CHIP Svcs., Maryland Approval Letter (June 15, 2017), <https://www.medicaid.gov/CHIP/Downloads/MD/MD-17-0001-LEAD.pdf>.

208. Anne Marie Costello, Ctr. for Medicaid and CHIP Svcs., Ohio Approval Letter (Dec. 5, 2017), <https://www.medicaid.gov/CHIP/Downloads/OH/OH-17-0038.pdf>.

209. CTR. FOR MEDICARE & MEDICAID SERVICES, Michigan Health Services Initiative (Nov. 14, 2016), <https://www.cms.gov/newsroom/fact-sheets/michigan-health-services-initiative>.

210. Lauren Taylor, Andrew Hyatt & Megan Sandel, *Defining The Health Care System’s Role*

health care organizations working in concert with community groups, allocating, and receiving resources to address the root cause of health issues. Hospitals and health systems could reduce lead poisoning by engaging in predictive modeling, matching past lead poisoning cases with patient addresses, determining the community health needs in their service areas, and investing in lead hazard identification and reduction.

While health care providers, scholars, and advocates recognize the importance of addressing social determinants of poor health, like housing conditions, investment in programs that target the root cause of diseases is limited. For example, publicly-financed health care services often restrict the use of funds for preventive interventions, such as lead abatement.²¹¹ At the same time, community-based public health initiatives often have fragmented funding sources, making it difficult to sustain interventions.²¹² The lack of coordination between health care providers and public health programs, and disparity in adequate funding, have led to high health costs with little to show for it.²¹³ Increased funding for lead poisoning prevention programs means not only providing additional dollars, but also improving how the money is spent to maximize benefits. This will avoid “an imbalance of high health spending and poor health outcomes.”²¹⁴

Hospitals are well-positioned to prioritize lead poisoning prevention on a community wide level. Under the Affordable Care Act, in order to maintain their tax-exempt status, nonprofit hospitals are required to regularly assess the social, economic, environmental, and health challenges facing their communities. Tax-exempt hospitals must file a Community Health Needs Assessments (CHNA) with the Internal Revenue Service.²¹⁵ To conduct a CHNA, a hospital must define the

In Addressing Social Determinants And Population Health, HEALTH AFFAIRS BLOG (Nov. 17, 2016), <https://www.healthaffairs.org/doi/10.1377/hblog20161117.057601/full/>.

211. Andrew Olson et al., *State Play Book: Pay for Success Financing – How to Use Innovative Financing to Fund Innovation in Medicaid Value-Based Purchasing Programs* (May 2017), <https://www.greenandhealthyhomes.org/publication/state-playbook-pay-for-success-financing-how-to-use-innovative-financing-to-fund-innovation-in-medicaid-value-based-purchasing-programs/>.

212. CHANGE LAB SOLUTIONS, FINANCING PREVENTION: HOW STATES ARE BALANCING DELIVERY SYSTEM & PUBLIC HEALTH ROLES 1, 10 (Apr. 2014), http://www.changelabsolutions.org/sites/default/files/Financing_Prevention-NASHP_FINAL_20140410.pdf.

213. *Id.* (“In 2012, health expenditures accounted for 17.2 percent of the United States’ gross domestic product. Compared to other industrialized nations, the United States spends two-and-a-half times more per person on health care. At the same time, the United States ranks below other industrialized nations in health status, ranking 26th in life expectancy among Organization for Economic Co-operation and Development (OECD) nations in 2011.”).

214. *Id.*

215. TYLER NORRIS & TED HOWARD, DEMOCRACY COLLABORATIVE, CAN HOSPITALS HEAL AMERICA’S COMMUNITIES?: “ALL IN FOR MISSION” IS THE EMERGING MODEL FOR IMPACT 1, 13 (2015), <https://community-wealth.org/sites/clone.community-wealth.org/files/downloads/CanHospitalsHealAmericasCommunities.pdf>; *see also* McGinnis et al.,

community, solicit input from people who “represent the broad interests of its community,” document findings, develop a strategy to address needs, and make a report available to the public.²¹⁶ The healthcare field can also work with state agencies to collect and analyze data that can help identify the most vulnerable neighborhoods in a community.²¹⁷ The CHNA presents an opportunity for hospitals to prioritize lead poisoning as a community health need and to build a strong community coalition, including community health centers, civic and faith-based organizations, community businesses, education and social service agencies, legal aid organizations, community members, and others.²¹⁸ Hospitals and health systems whose footprints of service overlap can also conduct joint CHNA’s. In Philadelphia, for example, major health systems conducted a joint CHNA in 2019 with a community development organization as the facilitator, which resulted in aligned priorities for investment.²¹⁹ Federal funds are available under a Prevention and Public Health Fund to “help reshape the physical and social environments of communities that face multiple long-standing impediments to healthier living.”²²⁰

The Hospital Community Benefit program, which requires nonprofit hospitals to invest in their local communities, can also be used to address the underlying causes of social determinants of poor health, including lead poisoning.²²¹ This is exactly the type of intervention needed to eliminate lead poisoning in the communities most at risk. Hospitals should identify exposure to lead hazards as a health priority in their communities and devote funding to address lead hazards before children are harmed and require medical treatment. For example, Dignity Health in San Francisco, California provided loans to affordable housing

supra note 57, at 83.

216. 79 Fed Reg. 78,962 (Dec. 31, 2014).

217. *Community Health Needs Assessments*, COMMUNITY COMMONS, <https://www.communitycommons.org/collections/Community-Health-Needs-Assessments> (last visited Mar. 10, 2020).

218. SARA ROSENBAUM, GEORGE WASHINGTON UNIV. SCH. OF PUB. HEALTH & HEALTH SVCS., DEP’T OF HEALTH POL’Y, PRINCIPLES TO CONSIDER FOR THE IMPLEMENTATION OF COMMUNITY HEALTH NEEDS ASSESSMENT PROCESS 1, 4 (June 2013), https://nnphi.org/wp-content/uploads/2015/08/PrinciplesToConsiderForTheImplementationOfACHNAProcess_GWU_20130604.pdf.

219. *Southeastern Pennsylvania Community Health Needs Assessment*, CITY OF PHILADELPHIA (July 1, 2019) <https://www.phila.gov/documents/regional-community-health-needs-assessment/>.

220. Miller, Sadegh-Nobari & Lillie-Blanton, *Healthy Starts for All*, *supra* note 55, at S31.

221. See National Center for Healthy Housing, *Hospital Community Benefits*, available at <https://nchh.org/tools-and-data/financing-and-funding/healthcare-financing/hospital-community-benefits/> (“Nonprofit hospital organizations are required by federal tax law to spend some of their surplus on ‘community benefits,’ which are goods and services that address a community need.”); see also Green and Healthy Homes Initiative, *Hospital Community Benefits*, available at https://www.greenandhealthyhomes.org/toolkit_resource/hospital-community-benefits/ (“However, according to the guidelines of the ACA, Community Benefit funds can be used to address the upstream causes of poor health outcomes, or social determinants of health. These include housing conditions, specifically lead-based paint hazards that lead to lead poisoning.”).

developers in California, including a \$1.2 million bridge loan in 2018 for a community revitalization project.²²² While this project did not specifically address lead poisoning prevention, it is an example of a hospital recognizing the effect of housing on health, and directing community benefit funds to the address the underlying cause of negative health outcomes among their patient population. Given that hospitals spend \$340 billion each year on goods and services,²²³ redirecting even a tiny fraction of that to lead poisoning prevention could have an enormous impact on lead poisoning rates in the community. Health care providers can also access federal funding streams, such as community transformation grants, may be used on a local level by “community-based organizations for the implementation, evaluation, and dissemination of evidence-based community” prevention measures.²²⁴

Hospital-based services can also be leveraged to address lead poisoning. For example, medical-legal partnerships (MLPs),²²⁵ wherein legal services are embedded into the health system, allow providers and lawyers to collaborate in order to identify and address the underlying social or environmental causes of a patient’s health issue.²²⁶ MLPs often identify systemic issues affecting numerous patients that can be addressed through community-wide measures.²²⁷ For example, a Chicago MLP identified a pattern of lead poisoning cases in federally assisted housing due to an antiquated federally policy. To address the issue, the providers and attorneys partnered with numerous national nonprofits and scientists, including the authors of this article, to successfully petition the U.S. Department of Housing and Urban Development for rulemaking that resulted in updates to the federal Lead Safe Housing Rule.²²⁸ Similarly, patient navigation programs also can

222. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT, *supra* note 201, at 39.

223. Benfer & Gold, *supra* note 53, at S47.

224. 42 U.S.C. § 300u-13(a) (2018).

225. See NAT’L CTR. FOR MEDICAL–LEGAL PARTNERSHIP, <https://medical-legalpartnership.org> (last visited Mar. 10, 2020).

226. See generally Emily A. Benfer, Abbe R. Gluck & Katherine L. Kraschel, *Medical-Legal Partnership: Lessons from Five Diverse MLPs in New Haven, Connecticut*, 46 J. L. MED. ETHICS 602 (2018).

227. National Center for Medical-Legal Partnership, *Applying the Medical-Legal Partnership Approach Population Health, Pain Points and Payment Reform* 1, 6 (Oct. 2016), <https://medical-legalpartnership.org/wp-content/uploads/2016/10/Applying-the-MLP-Approach-to-Population-Health-October-2016.pdf> (“In an MLP, legal professionals work on-site together with health care providers to address and treat the most complex social determinants, which require legal solutions.”; *id.* at 7 (describing the intersection of medical and legal assistance as applied to issues faced by asthmatic children, seniors with diabetes, and children with sickle-cell anemia). [EE the “id. at 7” part of the parenthetical refers to the same source cited in this footnote – is this the correct way to cite according to Bluebook style?]

228. See Benfer, *supra* note 21; Kate Marple & Erin Dexter, National Center for Medical-Legal Partnership, *Patients-to-Policy: Keeping Children Safe from Lead Poisoning* (Apr. 18, 2018), <https://medical-legalpartnership.org/mlp-resources/keeping-children-safe-from-lead-poisoning/>.

be used to strengthen communities. Navigators work directly with patients to help “navigate” them through the increasingly complex healthcare system.²²⁹ They provide patients with “care continuity, and comprehensiveness,” and address socio-economic and environmental determinants of health in ways that traditional hospital models do not.²³⁰

In Los Angeles, this patient navigator system took on another role: training members of the community most affected by societal problems to become navigators themselves. Through Medi-Cal’s Whole Person Care (WPC) program, Los Angeles County built a Training Institute that employs and trains community health workers (CHWs) from low-income communities—“those with life experiences shared by the target population.”²³¹ This model can be adapted to address lead poisoning in other states and municipalities. Focusing on the elimination of childhood lead poisoning would increase demand for nurses, inspectors, and abatement workers.²³² These jobs could be prioritized for low-income residents of high-risk communities.²³³ Implementing a navigator program, community members could be trained in lead screening, case management, inspections, and abatement. These workers would be able to work closely with fellow community members to educate them of the risks of lead poisoning, the importance of screening, and the proper procedure for inspections, abatements, and re-inspection. Navigators could help community members understand the need for and their rights to inspections and abatement. With their close ties to the community, navigators would provide continuous support and follow-through and remain invested in keeping the community strong and healthy.

3. Regional Financial Institutions

Regional financial institutions are well-positioned to provide funding to lead poisoning prevention. Such entities are situated within the affected community and can provide grants, low-interest loans, or other financing to assist property owners in making their properties lead safe.²³⁴ For example, in Milwaukee, Wisconsin, a

229. Ruta K. Valatis et al., *Implementation and Maintenance of Patient Navigation Programs Linking Primary Care with Community-Based Health and Social Services: A Scoping Literature Review*, 17 BMC HEALTH SERVICES RESEARCH 1 (2017).

230. *Id.* at 2.

231. L.A. County Dep’t of Health Services, WHOLE PERSON CARE – LOS ANGELES 14 (May 18, 2017), [https://www.dhcs.ca.gov/provgovpart/Documents/Whole%20Perons%20Care/WPC%20Updates_Apps%20and%20Memos/LosAngelesWPCApplicationFINAL\(2\).pdf](https://www.dhcs.ca.gov/provgovpart/Documents/Whole%20Perons%20Care/WPC%20Updates_Apps%20and%20Memos/LosAngelesWPCApplicationFINAL(2).pdf).

232. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 47. *See also* NAT’L CTR. FOR HEALTHY HOUSING, FIND IT, FIX IT, FUND IT, *supra* note 103.

233. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 47.

234. KENT GARDNER, CTR. FOR GOVERNMENTAL RESEARCH, RENEWING OUR PLEDGE: A PATH TO ENDING LEAD POISONING OF BUFFALO’S MOST VULNERABLE CITIZENS 1, 44 (2017), <https://cfgb.org/wp-content/uploads/2018/07/buffalo-lead-action-plan-final-report.pdf>.

regional bank has established a Target Area Home Improvement Program and provides matching loan of up to \$6,000 per unit to lead abatement grant recipients in low-income neighborhoods.²³⁵ Similarly, in Nebraska, the Omaha Healthy Kids Alliance is working with banks to provide low-interest loans for lead remediation up to \$10,000.²³⁶

4. *Pay for Success*

Pay for Success programs are a useful tool for investing in innovative lead poisoning prevention strategies — especially for strategies with high upfront costs or implementation challenges.²³⁷ In a Pay for Success model, “private funders provide working capital to scale an evidence-based intervention through an agreement tying their repayment to outcomes produced by the intervention.”²³⁸ States can work with partner-managed care entities to create value-based purchasing (VBP) agreements. Through VBP agreements, outside parties, such as foundations,²³⁹ provide start-up funds to deliver services. After implementation, the managed care entity evaluates the program and makes a value-based payment to the outside investor based on predetermined factors. For example, in late 2017, groups in Cleveland, Ohio began structuring a pay for success transaction to remediate 10,000 homes in ten years. “It is one of the largest PFS transactions in development, with initial figures projecting a \$200 million return on a \$159 million upfront investment.”²⁴⁰

235. *Id.*; DELTA & U.S. ENVTL. PROT. AGENCY, CREATIVE FUNDING STRATEGIES FOR REMEDIATION OF LEAD AND OTHER HEALTHY HOUSING HAZARDS: A GUIDE FOR INCREASING PRIVATE-SECTOR FINANCING, U.S. ENVIRONMENTAL PROTECTION AGENCY 17 (2010), <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.592.9840&rep=rep1&type=pdf>.

236. KENT GARDNER, *supra* note 234, at 44.

237. CTRS. FOR DISEASE CONTROL & PREVENTION, PAY FOR SUCCESS: A HOW-TO GUIDE FOR LOCAL GOVERNMENT FOCUSED ON LEAD-SAFE HOMES 1, 9 (Apr. 2017), https://www.cdc.gov/nceh/lead/docs/pay_for_success_guide.pdf.

238. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT, *supra* note 201, at 39 (Pay for Success financing models may also be known as “social impact bonds”).

239. Pay for Success programs offer valuable opportunities for public-private partnerships. In a 2009 study, researchers commented on the shared goals of foundations and government agencies. For example, in 2006, private foundations spent about \$28 billion on programs in health, education, development, the environment, human services, and relief. The U.S. government spent about \$720 billion in these same six categories. At the same time, both foundations and governments have much to learn from the other. The report stated: “A potentially important benefit of interactions and partnerships between the federal government and foundations is the opportunity they create for sharing emerging innovations that may strengthen philanthropic efforts.” A great deal of good can come from partnerships between public agencies and private organizations. *See* ANN E. PERSON ET AL., MAXIMIZING THE VALUE OF PHILANTHROPIC EFFORTS THROUGH PLANNED PARTNERSHIPS BETWEEN THE U.S. GOVERNMENT AND PRIVATE FOUNDATIONS (May 2009), <https://aspe.hhs.gov/system/files/pdf/75776/report.pdf>.

240. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT, *supra* note 201, at 40.

The potentially long period for return on investment and the disparate cost centers that would be impacted by successful reductions in lead exposure can present unique challenges to Pay for Success as a model for all types of lead interventions. However, these arrangements can fund services “while mitigating the risk of program success for the taxpayer and managed care entities responsible for publicly-financed health care expenditures.”²⁴¹ Managed care entity partners have the flexibility to experiment with different service delivery options and keep programs that are effective, as well as borrow from other states’ models.

Where the home and adjacent environment (airports, hazardous waste facilities, leaded service lines, etc.) are the major sources of exposure, Pay for Success programs that focus on community-based interventions can address a greater number of health issues, including social determinants of health. Whereas traditional health care models focus on hospitals and doctors’ offices, Pay for Success models, which focus on high-risk communities, leverage funding dollars to be used more efficiently for primary prevention. In 2008, Trust for America’s Health estimated that nationwide investment in evidence-based community-level prevention programs could result in savings of \$5.60 for every \$1 spent.²⁴² States can encourage such Pay for Success programs by amending managed-care contracts to allow for VBP agreements, provide economic motives for innovation, and ensure that there is infrastructure and administrative support for such programs.²⁴³

5. Taxes & Fees to Increase Lead Poisoning Prevention Funds

States and cities “can utilize taxpayer dollars and allocate funds from their annual general fund or other operating budgets”²⁴⁴ or impose fees on various entities that can be used for lead hazard remediation.” For example, Illinois’ state budget demarcates funds for the Clear-Win Program. Through the program, the Illinois Department of Public Health “partner[s] with the Illinois Housing Development Authority and the Department of Commerce and Economic Opportunity in hiring local contractors to remove sources of lead exposure from the residences of children with elevated blood lead levels.”²⁴⁵ The program has

241. Olson et al., *supra* note 211.

242. TRUST FOR AMERICA’S HEALTH, PREVENTION FOR A HEALTHIER AMERICA: INVESTMENTS IN DISEASE PREVENTION YIELD SIGNIFICANT SAVINGS STRONGER COMMUNITIES 1 (July 2008), https://www.preventioninstitute.org/sites/default/files/publications/Prevention%20for%20a%20Healthier%20America_0.pdf; CTNS. FOR DISEASE CONTROL & PREVENTION, PAY FOR SUCCESS, *supra* note 237, at 25–26.

243. Olson et al., *supra* note 211.

244. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT, *supra* note 201, at 24.

245. *Illinois Department of Public Health: Moves to Lower Action Level for Lead in Blood*, PRAIRIE STATE WIRE (Aug. 31, 2018), <https://prairiestatewire.com/stories/511550713-illinois-department-of-public-health-moves-to-lower-action-level-for-lead-in-blood>; Benfer & Gold, *supra*

been remarkably effective, reducing the average lead dust level of interior floors by 44%, interior sills by 88%, and exterior troughs by 98% and resulting in a net monetary benefit of \$2,460,378.²⁴⁶

States can also enact various fees or taxes to generate funding for lead poisoning prevention, such as charging paint manufacturers per gallon of paint sold. For example, through the PaintCare Program, states²⁴⁷ have established fees on each container of architectural paint sold in the state.²⁴⁸ PaintCare uses these fees to fund paint stewardship programs in participating jurisdictions, which allow consumers to “take their unwanted, leftover paint” to specified drop-off sites for “reuse, recycling, energy recovery, or safe disposal.”²⁴⁹ In New Jersey, the state funds its Lead Hazard Control Assistance Fund through sales taxes collected on paint or other surface coating materials; a minimum of \$7 million per year, and a maximum of \$14 million per year is set aside from such sales tax revenue.²⁵⁰ Since 2006, Maine has required companies that sell more than 1,800 gallons of paint in a calendar year to pay 25 cents per gallon of paint sold. The fee will be repealed when the Commissioner of Health and Human Services certifies a period of 24 months has elapsed since a child with an elevated blood lead level has been identified in the state.²⁵¹

Fees can also be imposed on manufacturers and entities involved with the production or sale of lead-based products, including petroleum. In California,²⁵² this type of fee generated \$20.6 million in the 2015 fiscal year.²⁵³ Every employer in an industry category identified as having a potential for occupational lead poisoning or lead or lead-containing materials present in their business must

note 53, at S31.

246. *Comprehensive Lead Education and Reduction Through Window Replacement (CLEAR WIN)*, NAT'L CTR. FOR HEALTHY HOUS., <https://nchh.org/research/clear-win/>.

247. *Overview*, PAINTCARE, <http://www.paintcare.org/about/#/overview> (These states include California, Colorado, Connecticut, Washington, DC, Maine, Minnesota, New York, Oregon, Rhode Island, Vermont, and Washington.).

248. *Id.* (The fees range depending on how much paint is purchase. For example, most jurisdictions charge nothing for a half pint or smaller, but over a dollar for larger than one gallon of paint).

249. *Id.*

250. S1348, 210th Leg., (N.J. 2004), (“Legislative Fiscal Estimate”), https://www.njleg.state.nj.us/2002/Bills/S1500/1348_E1.HTM.

251. ME. REV. STAT. ANN. tit. 22 § 1322-F; *Frequently Asked Questions on the Lead Poisoning Prevention FEE*, MAINE DEP'T OF HEALTH & HUMAN SERVS. https://www.maine.gov/dhhs/mecdc/environmental-health/cohp/lead/documents/LPPF_PaintFee_FAQ.pdf (last visited Mar. 12, 2020).

252. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19, at 62.

253. California State Board of Equalization, *California State Board of Equalization Annual Report FY 2013–14: Supporting Our Communities: Funding a Better Quality of Life*, https://digitalcommons.law.ggu.edu/cgi/viewcontent.cgi?article=1288&context=caldocs_agencies (last visited Mar. 12, 2020).

register and pay the fee. Under the program, employers may be exempted from payment if they demonstrate that lead is not present in their places of employment.²⁵⁴ Not only does this approach raise revenue for lead poisoning prevention, but the exemption further incentivizes employers to remediate lead exposure for primary prevention efforts.

Homeowners' insurance and professional licenses connected to residential property are another fee-based system. Massachusetts imposes surcharges of \$25 to \$100 on the annual fees of certain professional licenses, including for real estate brokers, property and casualty insurance agents, mortgage brokers and lenders, small loan agencies, and individuals who perform lead inspections.²⁵⁵ In 2018, Connecticut enacted a law imposing a \$12 surcharge on homeowners' insurance to fund their healthy homes program, thereby increasing funding for lead poisoning prevention that can reduce health and safety hazards in residential dwellings in the state.²⁵⁶ Finally, fees can be assessed as penalties for violations of lead poisoning prevention laws and regulations. New Jersey currently collects \$3 million annually in penalties, enough to sustain its program.²⁵⁷

Various cities also collect fees as part of their rental registration programs, portions of which could also be directed towards lead poisoning prevention activities. Los Angeles, California enacted a housing ordinance that imposes a \$24.51 annual fee upon owners of rental properties built on or before October 1, 1978 with two or more units in order to cover the cost of the city's systematic code inspection program.²⁵⁸ The City of Buffalo's Rental Registration program, implemented in 2005, requires the registration of all non-owner-occupied single- and two-family homes.²⁵⁹ When properly enforced, rental property owners would be required to pay a fee ranging from \$20 to \$50,²⁶⁰ which could then be used to fund lead poisoning prevention programs. Significant fees can be collected from penalties for violations of existing laws. For example, in Buffalo, the annual registration fee for rental properties doubles 30 days after the due date has passed,

254. CAL. HEALTH & SAFETY CODE § 105185–105195; *Occupational Lead Poisoning Prevention Fee – Frequently Asked Questions (FAQs)*, CAL. DEP'T OF TAX & FEE ADMIN. <https://www.cdtfa.ca.gov/taxes-and-fees/occ-lead-pois-prev-prgrm-faq.htm> (last visited Mar. 12, 2020).

255. HEALTH IMPACT PROJECT, 10 POLICIES, *supra* note 19.

256. CONN. PUB. ACT NO. 18-160; CONN. PUB. ACT NO. 18-52.

257. ALL TO END CHILDHOOD LEAD POISONING, TEN EFFECTIVE STRATEGIES FOR PREVENTING CHILDHOOD LEAD POISONING THROUGH CODE ENFORCEMENT 1, 12 (April 25, 2002), <http://portal.hud.gov/hudportal/documents/huddoc?id=codeenforcementstrategies.doc>. [hereinafter TEN EFFECTIVE STRATEGIES]

258. L.A. Municipal Code. § 151.05; *see also* Los Angeles Housing and Community Investment Department, Annual RSO/SCEP [Systematic Code Enforcement Program] Bill, available at <https://heidladev.lacity.org/Annual-RSO-SCEP-Bill>.

259. City of Buffalo Code § 264-3.

260. City of Buffalo Code § 264-21.

and an additional fine in the amount of \$75.00 is imposed 60 days after.²⁶¹

States can also access funds from sources such as state attorney general settlement funds. “Attorney General settlements are a non-traditional source of funding that can be used to fund lead remediation . . . Attorneys General determine allowable uses for the settlement funds, often in coordination with state or federal policy-makers.”²⁶² The communities of Buffalo, Rochester, and Syracuse, in New York State, as well as the state of Rhode Island were able to use Attorneys General settlements to address health and safety concerns in energy efficiency projects (including lead hazard remediation).²⁶³ Similarly, states may also authorize victim compensation funds for individuals who have developed lead poisoning. These funds may be established pursuant to legislation to collect fees from lead manufacturers and other industries responsible for introducing the neurotoxin into children’s environments. Streamlined enforcement provisions, coupled with significant penalties, can enable states to attain compliance from property owners while generating sufficient revenue to maintain its programs.

6. Tax Credits

Alternatively, states can incentivize property owners to engage in primary prevention. Tax credits provide an opportunity for individual property owners to receive funding to offset the cost of lead mitigation. In Massachusetts, owners who pay for the “deleading” of their property can claim a credit up to \$1,500 per dwelling unit for full compliance with the laws, or up to \$500 per dwelling unit for having interim control pending full compliance.²⁶⁴ Property owners seem to be taking advantage of this program; the Massachusetts Department of Revenue estimates that this tax break costs about \$2.5 million annually in forgone tax revenue.²⁶⁵ Rhode Island’s Residential Lead Abatement Income Tax Credit also allows a refundable credit against the state personal income taxes due for residential lead paint removal or reduction.²⁶⁶ This program provides a maximum of \$1,500 per dwelling unit for mitigation and a maximum of \$5,000 for abatement,²⁶⁷ with a limit of three separate dwelling units for which property

261. City of Buffalo Code § 264-13.

262. GREEN & HEALTHY HOMES INITIATIVE, LEAD FUNDING TOOLKIT, *supra* note 201, at 31.

263. *Id.* at 32.

264. 830 MASS. CODE REGS. 62.6.3(6).

265. *Tax Break for Removal of Lead Paint*, MASS. BUDGET & POL’Y CTR. (Aug. 2016), <http://children.massbudget.org/tax-break-removal-lead-paint>.

266. STATE OF RHODE ISLAND — DIVISION OF TAXATION, PERSONAL INCOME TAX, TAX CREDITS/DEDUCTIONS — RESIDENTIAL LEAD ABATEMENT INCOME TAX CREDIT 1, 1, <http://www.tax.ri.gov/regulations/other/CR%2013-08%20Lead%20Abatement.pdf> (last visited March 12, 2020).

267. *Id.* at 4.

owners can claim credits each year.²⁶⁸ Finally, Ohio recently adopted a new program that will allow CHIP funding to be used in more ways to abate lead hazards.²⁶⁹ Beginning with the 2020 taxable year, \$5 million per year will be available for property owners to claim for the next two years in the form of non-refundable credits, with a maximum of \$10,000 per taxpayer.²⁷⁰ Tax credits provide homeowners with an incentive to comply with the laws in place for lead poisoning prevention and conduct lead remediation or repairs that will make their homes safe.

7. Federal Grant and Loan Programs

The U.S. Department of Housing and Urban Development (HUD) provides funding for lead poisoning prevention at the state level. The Lead-Based Paint Hazard Control, open to urban, rural, and suburban jurisdictions, and the Lead Hazard Reduction Program (LHRD), targeted at urban jurisdictions, help cities and states identify and control lead-based paint hazards in eligible rental or owner-occupied properties.²⁷¹ Governments, local nonprofits, and individuals can apply for HUD grants. In 2019, HUD awarded a total amount of \$5,600,000 to Erie County, New York, in its effort to help protect children and families from lead-based paint and home health hazards.²⁷² As part of its LEADSAFE Erie County LHRD Program, qualifying properties will receive free lead-based paint inspection and risk assessment, valued at \$800 per unit, and, if identified as a lead and/or healthy homes hazard, new windows, doors, siding, trim, exterior and interior painting, porch repair, and home safety measures.²⁷³ In order to qualify, the property must (1) be in Erie County, New York; (2) be built before 1978; (3) be a one, two, three, or four unit building; (4) have a child or children under the age of six living in the home or regularly visiting more than six hours per week, OR have a pregnant occupant; and (5) have an occupant that meets the minimum household

268. *Id.*

269. Jason Warner, *Ohio Prioritizes Lead Abatement Initiatives*, GREATER OHIO POL'Y CTR. (Aug. 22, 2019), <https://www.greaterohio.org/blog/2019/8/22/ohio-prioritizes-lead-abatement-initiatives>.

270. *Id.*

271. *Lead-Based Paint & Lead Hazard Reduction Demonstration Grant Programs*, U.S. DEP'T OF HOUSING & URBAN DEV., https://www.hud.gov/program_offices/healthy_homes/lbp/lhc (last visited Mar. 12, 2020).

272. *HUD Awards Record \$319 Million to Protect Families from Lead and Other Home Health Hazards*, U.S. DEP'T OF HOUS. & URBAN DEV. (Sep. 30, 2019), https://www.hud.gov/press/press_releases_media_advisories/HUD_No_19_145.

273. *Lead Hazard Reduction Demonstration Program (LHRD), Erie County*, N.Y. DEP'T OF HEALTH, <http://www2.erie.gov/health/index.php?q=lead-hazard-reduction-demonstration-program-lhrd> (last visited Mar. 12, 2020).

income eligibility.²⁷⁴ Recently, in 2019, Lancaster was awarded a \$9.1 million LHRD grant that will be used to make 710 housing units safe in the city.²⁷⁵

Moreover, HUD 203(k) loans can help property owners refinance their mortgage to pay for the removal of lead hazards.²⁷⁶ This program allows owners to “finance the purchase of a home — or refinance the current mortgage — and include the cost of its repairs through a single mortgage.”²⁷⁷ These loans can be especially beneficial for low- and moderate-income individuals or families since the loan down payment can be as little as 3%.²⁷⁸

B. Accountability

In order for lead poisoning prevention initiatives and requirements to be successful, the law must be strictly enforced to ensure compliance. These actions can take multiple forms, including compliance monitoring, legal action against violators, remedies involving the affected property, and monitoring lead-safe practices. These measures are critical to preventing lead poisoning and providing swift recourse when a lead hazard is identified.

1. Robust Enforcement

Robust enforcement and monitoring of compliance with primary prevention laws is critical to safeguarding the health of citizens. For example, after the state of Rhode Island passed an aggressive lead hazard mitigation law in 2005, it encountered difficulty achieving compliance and reducing blood lead levels among children. The law requires regular inspections and abatement of certain rental units, even when a child does not currently reside in the unit. When property owners complied, children had significantly lower blood lead levels.²⁷⁹ However, when the law was not enforced, it had no effect on blood lead levels in children. In Rhode Island’s four largest cities, only one in five properties covered by the law was in compliance four years after the law’s passage.²⁸⁰

^{274.} *Id.*

^{275.} *City of Lancaster Awarded HUD Grant to Combat Lead Hazards*, City of Lancaster (Sept. 26, 2019) <https://cityoflancasterpa.com/blog/city-of-lancaster-awarded-hud-grant-to-combat-lead-hazards/>.

^{276.} *The Section 203(k) Loan Program: Turning “Fixer-Uppers” into Dream Homes*, U.S. DEP’T OF HOUSING & URBAN DEV. 1, 1 (Feb. 2005), <https://www.hud.gov/sites/documents/2005-09FHA.PDF>.

^{277.} *Id.*

^{278.} *Id.*

^{279.} “The law works when it is followed,” said Michelle Rogers, a senior project analyst in the Brown University School of Public Health. *R.I. Lead Law Effective, Often Ignored*, BROWN UNIV. (July 7, 2014), <https://news.brown.edu/articles/2014/07/lead>.

^{280.} *Id.*

Other states have created causes of action for agencies tasked with enforcement. In 2012, Maryland updated its lead laws to allow the Department of Environment to directly pursue civil injunctive relief rather than having to exhaust administrative avenues.²⁸¹ The law also allows the Department to impose direct monetary penalties for violations of the lead laws: \$20 a day for failure to register a property and \$500 a day for failure to carry out required risk reduction.²⁸² In 2012, the Department issued fifty-eight administrative complaints for a total of more than \$450,000 in penalties.²⁸³ A San Diego, California ordinance authorizes “administrative abatement” that allows the city to assess substantial fines and that has resulted in increased compliance.²⁸⁴ In San Diego, the law requires that owners under city-issued compliance orders obtain their own lead hazard clearances, thus reducing the implementation cost to the municipality.²⁸⁵ Finally, in New Jersey, owners who fail to appeal noncompliance notices are presumed by law to be in violation and, after a second reinspection, the state can impose penalties and request the courts to enter judgment on outstanding penalties, usually by imposing a lien on rental receipts.²⁸⁶

Property maintenance codes provide another method to address lead hazards. States, such as Rhode Island and New York, have adopted the International Property Maintenance Code (IPMC), a model code by the International Code Council, and amended it to add strong lead hazard provisions. For example, Rhode Island’s amendments specifically define lead-based hazards within the IPMC, tie lead requirements to existing Rhode Island laws and other local agency actions, and require owners to actively maintain lead-based surfaces.²⁸⁷ However, strong property maintenance codes are only effective if they are properly enforced. As ChangeLab Solutions notes, this requires (1) effective collaboration between community organizations and code enforcement agencies, (2) cross-agency coordination, and (3) a “cooperative compliance” model of interaction between

281. Amendments to Maryland’s Lead Laws Effective January 1, 2012, <http://mde.maryland.gov/programs/LAND/Documents/LeadNews/LeadNoticeAmendmentsMdLeadLawsEffective2012-01-01.pdf>.

282. James B. Witkin & Megan M. Roberts-Satinsky, *Get the Lead Out: Recent Developments in D.C. and Maryland Lead Paint Laws*, WASHINGTON LAWYER (Mar. 2015), <http://www.linowes-law.com/news-publications-50.html>.

283. *Department of Environment Issues Enforcement Actions Agency Seeks Penalties, Corrective Actions for Alleged Violations of Land, Air and Water Regulations*, MD. DEP’T OF ENV’T. (July 31, 2012), <http://mde.maryland.gov/programs/Pressroom/Pages/Enforcement073112.aspx>.

284. Korfmacher & Hanley, *supra* note 72, at 800.

285. *Id.*

286. TEN EFFECTIVE STRATEGIES, *supra* note 257, at 12.

287. R.I. STATE BLDG. CODE, SBC-6 State Property Maintenance Code (effective July 1, 2013), Provisions 111.3.3, 202, 305.3.1, 305.3.2, 305.3.3, 305.3.4 <http://sos.ri.gov/assets/downloads/documents/SBC6-state-property-maintenance-code.pdf>.

officials and property owners.²⁸⁸ In Rhode Island, LeadSafe Kids provides training for property owners and government officials on Rhode Island's Lead Hazard Mitigation Act.²⁸⁹ Lead regulations are upheld by the Lead Poisoning Prevention Act (under the Rhode Island Department of Health (DOH)) and the Lead Hazard Mitigation Act (under the Housing Resources Commission (HRC)). Rhode Island DOH regulates comprehensive environmental lead inspections while HRC regulates lead mitigation inspections and requires lead-safe certificates for certain rental properties. Together these entities have the ability to carry out comprehensive enforcement to ensure compliance with Rhode Island's updated property maintenance code.

Like property owners, governments, designated parties, agencies, and public-benefit organizations tasked with enforcing lead poisoning laws and regulations must also be held accountable where they fail to comply with legally mandated obligations. In November 2017, attorneys at New Haven Legal Assistance Association (NHLAA) and Connecticut Legal Services filed a lawsuit against the City of New Haven Health Department.²⁹⁰ The complaint alleged that the Department failed to conduct adequate epidemiological investigation, lead abatement supervision, reinspection, and post-abatement management of the home of three-year-old Jacob Guaman after his blood lead level reached 5 µg/dL, as required by local law. Jacob's blood lead level rose to 36 µg/dL and remained elevated for nearly two years without action.²⁹¹ After hearing testimony, the court ordered an independent inspector to identify lead hazards and conduct a post-abatement inspection. The court also ordered the Health Department to abate the property itself (placing a lien on the landlord's property).²⁹² Subsequent lawsuits in the city revealed that the City's Health Department had failed in its duty to protect numerous other families.²⁹³ The City of New Haven responded by attempting to unilaterally increase the blood lead action level that triggered lead hazard inspections from 5 µg/dL to 20 µg/dL or between 15 and 20 µg/dL in two

288. *Up to Code*, *supra* note 50, at 16.

289. *Childhood Lead Action Project*, RHODE ISLAND LEADSAFE KIDS, TRAINING, <http://www.lead safekids.org/en/training>.

290. *Jacob v. City of New Haven*, NNH-CV17-5040434-S (Conn. Super. Ct. 2017), available at <http://civilinquiry.jud.ct.gov/CaseDetail/PublicCaseDetail.aspx?DocketNo=NNHCV175040434S>.

291. *Id.*

292. Mary E. O'Leary, *New Haven Ordered to Have House Cleared of Lead*, NEW HAVEN REGISTER (Dec. 6, 2017), <https://www.nhregister.com/news/article/New-Haven-ordered-to-have-house-cleared-of-lead-12411797.php>; Thomas Breen, *Weakened Lead Law Advances*, NEW HAVEN INDEPENDENT (Nov. 13, 2019), https://www.newhavenindependent.org/index.php/archives/entry/lead_vote/#cmt.

293. Order 435696, 1, *Soliman v. Muhammad et al.*, NHH-CV18-5002790-S, Docket No. 125, (Conn. Super. Ct. 2018) <http://civilinquiry.jud.ct.gov/DocumentInquiry/DocumentInquiry.aspx?DocumentNo=14932955>.

tests three months apart. After NHLAA filed a class action lawsuit against the City for this change, the court ruled that the administration could not modify its lead policy to a less strict standard without amending the underlying ordinance through the proper procedures.²⁹⁴

In November 2017, an investigation by New York City’s Department of Investigation found that the New York City Housing Authority (NYCHA), a public-benefit corporation and federal grantee, had failed to conduct mandatory inspections in public housing apartments for four years,²⁹⁵ and had submitted false certifications of compliance to HUD.²⁹⁶ As a result, between 2012 and 2016, 820 children under the age of 6 who lived in NYC public housing had an elevated blood lead level greater than 5 $\mu\text{g}/\text{dL}$.²⁹⁷ Mayor Bill de Blasio announced the following July that the city would conduct lead inspections in every NYCHA unit “where lead paint may have been used.”²⁹⁸

i. Tenant Rights and Remedies

In addition to robust enforcement of existing regulations, jurisdictions must enact a private right of action for affected tenants exposed to lead hazards as well as hold lead paint manufactures liable for the harms their products caused in the community. Tenants exposed to lead hazards have limited legal recourse. They often must wait on local health departments or attorneys general to order compliance or turn to common law negligence remedies²⁹⁹ and municipal housing

294. Memorandum of Decision, *Nyriel Smith v. City of New Haven*, NHH-CV19-5003875-S, Docket No. 122, (Conn. Super. Ct. 2019), <http://civilinquiry.jud.ct.gov/DocumentInquiry/DocumentInquiry.aspx?DocumentNo=17162514>.

295. J. David Goodman & William Neuman, *Lead Paint Failures Magnified by City Hall’s Failure to Communicate*, N.Y. TIMES (Dec. 4, 2017), https://www.nytimes.com/2017/12/04/nyregion/lead-paint-nyc-de-blasio-olatoye-nycha.html?_r=0.

296. *DOI Investigation Reveals NYCHA Failed to Conduct Mandatory Lead Paint Safety Inspections for Four Years*, N.Y.C. Dep’t of Investigation (Nov. 14, 2017), http://www1.nyc.gov/assets/doi/press-releases/2017/nov/27NYCHALeadPaint11-14-2017_UL.pdf.

297. Luis Ferré-Sadurní, *820 Children Under 6 in Public Housing Tested High for Lead*, N.Y. TIMES (July 1, 2018), <https://www.nytimes.com/2018/07/01/nyregion/nycha-lead-paint-children.html>; Emily A. Benfer, *New York’s Public Housing is the Size of a City. It’s Failing Children*, WASH. POST. (Feb. 11, 2019), https://www.washingtonpost.com/opinions/new-yorks-public-housing-system-is-the-size-of-a-city-its-failing-children/2019/02/11/458f63c2-2bb7-11e9-984d-9b8fba003e81_story.html.

298. J. David Goodman, *Mayor Says All Public Housing Units at Risk for Lead to Be Tested*, N.Y. TIMES (July 9, 2018), https://www.nytimes.com/2018/07/09/nyregion/de-blasio-lead-paint-nycha.html?emc=edit_th_180710&nl=todaysheadlines&nid=853645860710.

299. In 1996, the Connecticut Supreme Court struck down a lower court’s interpretation that Connecticut statutes allowed for strict liability in lead poisoning cases, instead finding that tenants alleging negligence per se needed to prove both that the landlord knew of the lead paint danger and was provided a “reasonable” opportunity to remedy the condition. *See Gore v. People’s Sav. Bank*, 40 Conn. App. 219, 225 (1994). In addition, because children must first be injured in order to have a

code enforcement.³⁰⁰

Illinois law typifies this approach. We have previously observed that, “like *all lead laws*, the ILPPA [Illinois Lead Poisoning Prevention Act] does not create a private right of action or tenants’ rights. It relies on the [Illinois Department of Public Health] to identify a hazard and on the State’s Attorney or Attorney General to execute penalties and enforcement mechanisms at their discretion.”³⁰¹ This withholds power from those affected by lead poisoning and allows for discretion by local health departments and code enforcers. This is especially harmful because the majority of homeowners insurance policies exempt lead poisoning, dramatically reducing a tenant’s likelihood of recouping damages.

States should instead embed methods of enforcement in administrative and civil proceedings. For example, in Philadelphia, a specialized court gives tenants the ability to seek civil remedies for failure to remediate.³⁰² Judges who are familiar with lead poisoning effects and laws issue orders to remediate, rather than solely issuing monetary damages for harm caused by lead poisoning. This approach has resulted in increased compliance rates and the swift remediation of properties.³⁰³

At the same time, states and municipalities must ensure that robust lead laws do not result in negative consequences for the very people they were meant to protect. Adherence to lead poisoning prevention laws can result in additional maintenance; landlords may then be reluctant to rent to tenants who have young children.³⁰⁴ In addition to protections under the Fair Housing Act, state and local laws must include specific procedures to protect families and tenants with young children from familial discrimination.³⁰⁵ For example, in New York State, a law imposes a fine and a cause of action for civil liability against any landlord who discriminates solely on the ground that a person or family has a child.³⁰⁶ In addition, states and municipalities can adopt express language prohibiting retaliatory evictions that occur within a set timeframe of reporting a child with an EBLL or a suspected lead hazard. For example, several jurisdictions have put in place protections for the tenant from being evicted after a positive lead poisoning

cause of action, any case or action will not take on the primary goal of preventing the exposure in the first place.

300. An additional hurdle comes from the disparity in power between some tenants and landlords. Tenants, compared to the government, have a harder time initiating actions on their own. “Many tenants are reluctant to report a problem for fear of being labeled a ‘troublemaker’ or experiencing retaliation from the landlord.” Benfer & Gold, *supra* note 53, at S28.

301. Benfer, *supra* note 24, at 333 (emphasis added).

302. Carla Campbell et al., *Philadelphia’s Lead Court is Making a Difference*, 38 J. HEALTH POL’Y 709, 713 (2013). *See also* Benfer, *supra* note 24, at 341.

303. Benfer, *supra* note 24, at 341.

304. Korfmacher & Hanley, *supra* note 72, at 796.

305. *Id.* at 796.

306. N.Y. REAL PROP. LAW §237-a.

test.³⁰⁷

ii. Liability for the Lead Paint Industry Association and Paint Manufacturers

Organizations and companies responsible for manufacturing, marketing, and selling lead-based paint must be held accountable for the harms caused by their products.³⁰⁸ While lead paint in homes was banned in 1978,³⁰⁹ lead paint manufacturers knew of lead paint's dangers for decades prior.³¹⁰ Although the Lead Paint Industry Association, founded in 1928, was instrumental in minimizing health concerns associated with lead paint exposure "for fear that they might undermine business,"³¹¹ liability theories can be advanced to hold the paint and lead industries accountable.

Some states have adopted provisions that require a public nuisance action to be brought as product liability claims. For example, in Ohio, the adoption of the 2007 Amendment Substitute Senate Bill 117 amended Ohio's Product Liability Act (OPLA) to state that the term "[p]roduct liability claim" also includes *any public nuisance claim* or cause of action at common law in which it is alleged that the design, manufacture, supply, marketing, distribution, promotion, advertising, labeling, or sale of a product unreasonable interferes with a right common to the general public.³¹² This means that the law, by its language, now generally precludes common law public nuisance claims in Ohio by requiring that any such claim be brought as a product liability claim under OPLA.³¹³ It might be possible to bring a claim against lead paint manufacturers under OPLA, but to do so would require avoiding the procedural limitations imposed by OPLA that limit claims on the basis of time.³¹⁴ OPLA typifies the approach many states have taken to

307. See, e.g., MASS. GEN. LAWS, pt. II, tit. I, ch. 185, § 18: Reprisal for reporting violations of law . . . ; Milwaukee Ordinance 18759, (July 26, 2019), <https://milwaukee.legistar.com/LegislationDetail.aspx?ID=3872234&GUID=C17A86CE-7863-4F12-B977-0E15F26CC70F&Options=ID%7CText%7C&Search=181759>.

308. Benfer, *supra* note 24, at 340.

309. Other countries had banned the use of lead-based paints far earlier. In 1909, France, Belgium, and Austria banned white-lead interior paint. See Rebecca Kessler, *Lead-Based Decorative Paints: Where Are They Still Sold — and Why?*, 122 ENVTL. HEALTH PERSP. A96, A98 (2014).

310. Bob Egelko, *California Judge Says Companies Must Remove Pre-1951 Lead Paint in Homes*, SFGATE (Nov. 15, 2017), <http://www.sfgate.com/bayarea/article/California-judge-says-companies-must-remove-12357820.php>; see also *California Counties and Cities Announce Groundbreaking \$305 Million Settlement of Landmark Lead Paint Litigation*, CTY. OF SANTA CLARA, OFF. CTY. COUNSEL (July 17, 2019), <https://www.sccgov.org/sites/cco/leadpaint/Pages/home.aspx>.

311. MARKOWITZ & ROSNER, *supra* note 2, at 29.

312. OHIO REV. CODE ANN. § 2307.71(A)(13)(c) (emphasis added).

313. There do exist exceptions to this statutory rule which could be used in the case of lead paint. The viability of these exceptions will be explored in greater depth in subsequent sections.

314. OHIO REV. CODE ANN. § 2305.10(A) (stating that "an action based on a product liability

temporally limit liability for paint manufacturers, thereby compounding the difficulty of advancing a claim.

However, if state statutes may be abrogated, lead paint manufacturers may instead be liable under public nuisance doctrine. In the landmark case *People v. ConAgra Grocery Products Co.*, ten California cities and counties sued three lead paint manufacturers – ConAgra, Sherwin-Williams, and NL – for creating a public nuisance. This case marked the first time that a court held lead paint manufacturers liable for creating a public nuisance, ordering the manufacturers to pay \$1.15 billion to an abatement fund. As the court stated: “[t]he community has a collective social interest in the safety of children in residential housing. Interior residential lead paint interferes with the community’s ‘public right’ to housing that does not poison children. This interference seriously threatens to cause grave harm to the physical health of the community’s children.”³¹⁵

While an important case, part of the success of *People v. ConAgra* hinged on elements unique to California law. In recent years, municipalities in New Jersey,³¹⁶ Illinois,³¹⁷ Rhode Island,³¹⁸ and Missouri³¹⁹ have brought similar public nuisance claims against lead paint manufacturers. However, unlike California, each of these states has ruled in favor of the lead paint manufacturers, reasoning that lead safety is not a public right, causation cannot be proven without identification of a specific manufacturer in a specific home, or that legislation places the blame on landowners as the real tortfeasors. Nevertheless, paint and lead companies historically

claim and an action for bodily injury or injuring personal property shall be brought within two years after the cause of action accrues”). In states that have adopted similar statutes of limitation and repose, communities may be barred from advancing claims against paint manufacturers that ceased production of lead paint to be used in the home in the 1970s, as the latest such claims could be initiated is around 1990. This is based on the fact that the Lead-Based Paint Poisoning Prevention Act banned the use of lead paint in residential structures beginning in 1978. Pub. L. No. 91-695, 84 Stat. 2078.

315. *People v. ConAgra Grocery Prods. Co.*, 17 Cal. App. 5th 51, 112 (2017).

316. *In re Lead Paint Litigation*, 191 N.J. 405, 434 (2007) (“Even were we to conclude that the distribution of lead-based paint products constituted actionable conduct for purposes of permitting a tort-based recovery, we would nonetheless reject plaintiffs’ complaints. As our explanation of public nuisance has made plain, the remedies available traditionally vary as between public and private plaintiffs.”).

317. *See City of Chicago v. Am. Cyanamid Co.*, 355 Ill. App. 3d 209, 220 (2005) (stating that “plaintiff is attempting to . . . [make] each manufacturer the insurer for all harm attributable to the entire universe of all lead pigments”).

318. *See State v. Lead Indus. Ass’n*, 951 A.2d 428, 448 (R.I. 2008). (“[t]he manufacture and distribution of products rarely, if ever, causes a violation of a public right as that term has been understood in the law of public nuisance. Products generally are purchased and used by individual consumers, and any harm they cause--even if the use of the product is widespread and the manufacturer’s or distributor’s conduct is unreasonable--is not an actionable violation of a public right. The sheer number of violations does not transform the harm from individual injury to communal injury”).

319. *See City of St. Louis v. Benjamin Moore & Co.*, 226 S.W.3d 110, 116 (Miss. 2007).

responsible for the introduction of lead into children's environments should be held accountable for removing the neurotoxin and public nuisance doctrine may be a viable avenue depending on the jurisdiction.

2. Remedies Involving the Property

i. Rent Reduction and Escrow

Rent abatement and reduction provisions in local law protect tenants from having to pay rent when their homes have dangerous conditions. Moreover, by depriving landlords of their source of income, these policies encourage landlords to fix lead hazards in a timely manner. For example, Los Angeles' Rent Escrow Account Program (REAP) allows tenants to receive a rent reduction if the property has cited housing code violations. To incentivize the landlord, the city records a lien on REAP properties, which it will only remove once the owner brings the property in compliance.³²⁰ Similarly, in October 2017, Detroit, Michigan updated its rental regulations to include provisions allowing tenants to escrow rent if the landlord has not passed lead inspections.³²¹ However, escrow accounts should be approached cautiously, as many tenants have experienced difficulty recouping their funds, which are often urgently needed for a new security deposit.

ii. Liens

Some jurisdictions have implemented lien programs for certain code violations that may be replicated to address lead hazards. Waterbury, Connecticut's "Blight Initiative" includes a "Clean and Lien" program. When the Waterbury Development Corporation (WDC) or Police Department receives a complaint, they can mandate that the owner remove blight. If the owner cannot be found or does not appear in court, WDC cleans the property and places a lien on the property for all costs.³²²

Other jurisdictions have enacted lien programs specific to lead hazard abatement. For example, in Philadelphia, if the City Health Department issues an order to correct a code violation, and the owner does not comply, the "Department may, itself or by contract, correct the condition by eliminating the hazard, charge the costs thereof to the owner, and, with the approval of the Law Department,

320. Benfer, *supra* note 24, at 340.

321. Christine MacDonald, *Detroit Council Toughens Rules for Landlords*, DETROIT NEWS (Oct. 31, 2017), <http://www.detroitnews.com/story/news/local/detroit-city/2017/10/31/detroit-council-tightens-landlord-rental-inspection-regulations/107196580/>.

322. *Blight Initiative*, WATERBURY DEV. CORP., <http://www.wdconline.org/content/100/544/default.aspx> (last visited Mar. 13, 2020).

collect the costs by lien or otherwise.”³²³

Underscoring the importance of local will, including such a provision in city ordinances is only valuable if the city exercises the option to protect residents’ health. The City of New Haven has long had a municipal ordinance allowing the Health Department to carry out lead abatement and place a lien on the property.³²⁴ The City, however, did not exercise its powers until ordered to do so in *Guaman v. City of New Haven Health Department* described above, in which the court ordered the Health Department itself to abate the home of Jacob Guaman in lieu of the landlord and place a lien on the property.

3. Enforcement of Lead-Safe Practices

States and municipalities should ensure that additional hazards are not created as a result of improper renovation and demolition practices of properties that contain lead hazards. To prevent lead poisoning while remediating lead hazards, jurisdictions should adopt and enforce the Lead Renovation, Repair, and Painting (RRP) Rule, require lead-safe demolition practices, and mandate strict licensing standards for lead remediation professionals.

i. State Adoption and Enforcement of the Lead Renovation, Repair, and Painting Rule

The RRP Rule, administered by the EPA, mandates specific training, workplace, and recordkeeping requirements on firms and workers that perform projects that disturb lead-based paint in homes, childcare facilities, and preschools built before 1978. The rule applies to activities where more than six square feet per interior project or more than 21 square feet per exterior project are disturbed. RRP is a vital component of the primary prevention of lead poisoning in the house.³²⁵ However, because RRP is a federal rule, it can be challenging for local governments to enforce.³²⁶ Local adoption and enforcement of lead-safe work practices would result in greater compliance with RRP rule standards.³²⁷ States that adopt the RRP rule can better enforce, oversee, and improve upon RRP

323. PHILA. HEALTH CODE & CHARTER, tit. 6, 6-403(4)(b)(1)(a).

324. New Haven Municipal Ordinances Sec. 16-66(e).

325. N.Y. LAWYERS FOR THE PUB. INTEREST, LEAD LOOPHOLES: HOW LAX ENFORCEMENT OF NEW YORK CITY LEAD PAINT POISONING PREVENTION LAW LETS LANDLORDS OFF THE HOOK AND LEAVES CHILDREN AT RISK 1, 16 (2018), https://nylpi.org/wp-content/uploads/2018/09/LeadReport_WhitePaper_092718_LETTER.pdf.

326. Enforcement can be difficult due to the large number of jobs combined with the relatively small staff available to oversee work. James D. Blando, Nickita Antoine & Daniel Lefkowitz, *Lead-Based Paint Awareness, Work Practices, and Compliance During Residential Construction and Renovation*, 75 J. ENVTL. HEALTH 20, 21 (2013).

327. Korfmacher & Hanley, *supra* note 72, at 787.

requirements in order to decrease lead hazards and lead poisoning as a result of renovation and repair projects. Specifically, states can (1) replace the current cleaning verification method with a more effective and scientifically verified dust swipe method for clearance testing³²⁸ and (2) improve training requirements, work practices, and the system maintained for filing complaints, among other measures.³²⁹

In addition, states can include demolition in the activities covered by the RRP Rule. Lead dust and debris from the demolition of pre-1978 properties can cause harm to children who live near demolition sites and can continue to be a potential hazard for years.³³⁰ As RRP only applies to homes, child care facilities, and preschools built before 1978, very few jurisdictions currently have lead-safe demolition standards that apply specifically to pre-1978 properties.³³¹ States and local government adoption and enforcement of standards to prevent the spread of lead dust and other contaminants is a critical component of lead poisoning prevention.³³²

ii. Licensing Standards for Professionals

Professionals who perform lead hazard remediation and abatement must be required to adhere to specific licensing requirements. Licensing requirements typically include training, so that lead “hazard remediation itself does not inadvertently expose residents to harm.”³³³ Individuals who perform lead hazard remediation and abatement tasks without the proper training can aggravate the hazard. To be most effective, these licensing standards should be strictly enforced and revisited periodically “in light of advances in science and medicine.”³³⁴

328. The CDC Advisory Commission on Childhood Lead Poisoning Prevention determined that visual assessments and remediation “should now be considered unacceptable.” ADVISORY COMM. ON CHILDHOOD LEAD POISONING PREVENTION, *supra* note 20. HUD has acknowledged the importance of clearance testing and requires it for all projects done in federally owned housing. A 2018 GAO Report found that visual assessments are ineffective in identifying lead hazards and the 1994 GAO Report found that “[T]hese and other public housing authorities may be overlooking significant hazards in these inspections, which require only visual evidence and do not include testing for lead-based paint hazards.” U.S. GOV’T ACCOUNTABILITY OFFICE, LEAD-BASED PAINT POISONING: CHILDREN IN SECTION 8 TENANT-BASED HOUSING ARE NOT ADEQUATELY PROTECTED 1, 5 (1994).

329. Rhode Island and Massachusetts have adopted requirements that only a licensed renovator may conduct RRP work. *See* 216 R.I. CODE R. § 050-15-3.2.3 and 454 MASS. CODE REGS. § 22.03.

330. GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN, *supra* note 70, at 15; David E. Jacobs et al., *Lead and Other Heavy Metals in Dust Fall from Single-Family Housing Demolition*, 128 PUB. HEALTH REP. 454 (2013).

331. GREEN & HEALTHY HOMES INITIATIVE, STRATEGIC PLAN, *supra* note 70, at 15.

332. Jacobs et al., *supra* note 330.

333. Benfer & Gold, *supra* note 53, at S32.

334. *Id.* at S32–33.

CONCLUSION

There is no question that lead poisoning results in irreparable harm to children. At the same time, the risk of, and harms associated with, lead poisoning disproportionately affect children of color. For over a century, children have been victims of inadequate lead poisoning prevention laws that fail to address lead exposure pathways and eliminate the lead epidemic. Many more generations will follow unless and until federal, state and local governments systematically identify and remove lead from contaminated houses. This will require policy makers to implement both primary prevention strategies, including inspection of housing units prior to occupancy, comprehensive identification of lead hazards, and leveraging technology and data to identify and remove hazards before a child is injured, as well as secondary prevention strategies, such as universal blood lead level screening for all children and updating the definition of lead poisoning to conform to advances in science and medicine. Ultimately, these strategies must be deployed within a health justice framework that focuses on primary prevention and the health of the whole community. It will require prioritizing the health of low-income and traditionally marginalized communities in all policies and engaging those most affected by lead poisoning as leaders in problem solving. Only then can the United States secure a lead-free future for all children and preserve each child's ability to realize his or her fullest potential.