



LEAD-SAFE RENOVATION, REPAIR, AND PAINTING ACTIVITIES IN NEW YORK STATE



Analysis of the Proposal
for State Management of
the RRP Rule

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Community Foundation
for Greater Buffalo

EXECUTIVE SUMMARY

Lead is a toxic environmental health hazard that causes decreased intelligence, learning disabilities, memory loss, attention deficits, hyperactivity, behavioral disorders, and other physical and mental health problems. There is no level of lead exposure that is safe, especially for children. In 2016, New York had 17,273 cases of elevated blood lead levels of 5 micrograms per deciliter or higher in children under age six. Yet, lead poisoning is preventable with the right precautions. Every child should have the opportunity to live in a safe, healthy home.

This report finds that a key source of lead poisoning is renovation, repair, and painting work in homes that contain lead-based paint. These activities exacerbate lead dust levels and leave harmful dust for many years. Research attributes at least 14-40% of confirmed lead poisoning cases to exposure during a recent home renovation.

Pursuant to the Toxic Substances Control Act, the U.S. Environmental Protection Agency (EPA) promulgated regulations mandating that renovations be conducted in a lead-safe manner, known as the Renovation, Repair, and Painting (RRP) Rule. Compliance with the RRP Rule is required for all contractors and landlords working in housing and childcare facilities built before 1978. However, the EPA's enforcement of this program is sparse. Currently, enforcement in New York is managed out of the Newark, New Jersey office by 3.5 Region 2 inspectors. They are tasked with overseeing a vast geographic area that includes New Jersey, Puerto Rico, and the Virgin Islands as well as New York. This includes a staggering 6,444,783 homes in New York State alone. The EPA completed just seven enforcement actions in New York in 2019.

The upside is that states can obtain delegation from the federal government to manage their own lead-safe renovation programs. Fourteen states – such as Alabama and Massachusetts – and are currently authorized to administer and enforce the RRP Rule. These states have tailored their RRP programs to meet the implementation and enforcement needs of their state. With the oldest housing stock and the largest number of lead poisoned children in the nation, New York has an especially serious lead poisoning problem, and thus a compelling need to seek authorization for this program. This would not only give New York the authority to better enforce the existing RRP requirements, but indeed, enhance them to more broadly protect citizens from lead exposure. Economic research predicts that high compliance would protect at least 79,672 New York children from lead exposure each year.

State management of the RRP Rule is entirely possible with a self-sustaining budget. The Environmental Protection Agency encourages states to adopt the program and annually grants millions of dollars to the states who are implementing this program. States can generate additional revenue from fees and fines and set charges at a level that provides sufficient income.

The following report provides data, research, and case studies supporting the proposal for New York State to adopt the RRP Rule, including:

- Background information on lead poisoning prevention and the RRP Rule
- An explanation of the causes and extent of New York's lead problem
- Case studies of state administration of the RRP Rule
- Funding and revenue opportunities for state-run RRP programs
- Recommendations with analysis and complementary proposals

Lead poisoning prevention is an area of hope and opportunity: thousands of individuals could be better positioned for success – physically, mentally, and economically – if the right action is pursued. There is scientific, qualitative, and economic support for the RRP rule, and New York State enforcement could prevent thousands of lead poisoning cases and generate long-term benefits, even without much net cost to

the state budget. Ultimately, New York’s children deserve to be safe in their own homes, and it is essential for the state to step up and create a future where its citizens are healthier, more productive members of society by eliminating renovation-induced lead poisoning.

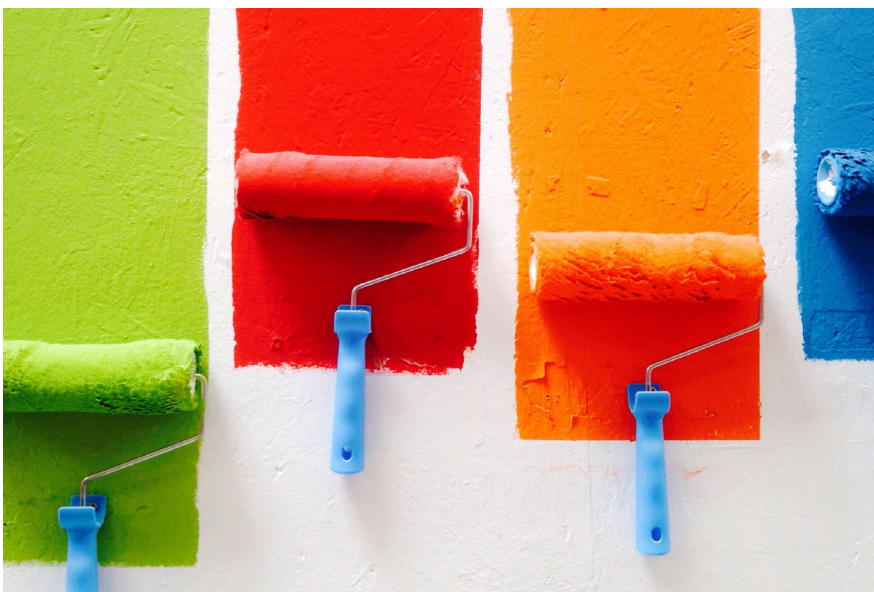
METHODOLOGY

This report aims to consolidate and summarize existing research and knowledge around poisoning by lead-based paint, the RRP Rule and lead-safe renovation practices, and state-enforced RRP programs. Much of the information, especially with regards to management and enforcement of state programs, was learned through conversations with officials and reputable stakeholders. Of the fourteen states who manage their own RRP program, one or more government officials from nine were interviewed for this report. The states given priority were strategically chosen to align most closely with New York or were known to have interesting aspects of their program that could be learned from or replicated in New York State.

The ultimate purpose of this report is to determine whether New York State should pursue authorization to administer the RRP Rule as a strategy to prevent childhood lead poisoning. It first delves into the necessity of the rule by looking at the context for lead poisoning in New York, the scientific evidence behind the RRP rule, and the current level of enforcement and compliance. Then the alternative, state management of the RRP program, is analyzed through examination of practices and outcomes from several other state programs. Lastly, this report proposes that New York state take over administration of the RRP Rule and estimates the financial and social benefits of doing so.

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New York’s children deserve to be safe in their own homes.

INTRODUCTION

Lead and Lead Poisoning Prevention

Lead is a naturally occurring substance that has been used in a variety of work and consumer products, including paint, gasoline, toys, and some food products and containers. Until 1978, when the U.S. Consumer Products Safety Commission banned its sale, many homes and facilities were constructed and painted using lead-based paint.^a As paint ages and peels, it creates dust, which is exacerbated by disturbance (such as through renovation and repair work). Experts now consider lead dust to be the primary exposure pathway of childhood lead poisoning. [51, 53, 81].

Lead dust is invisible to the naked eye and highly toxic even in very small quantities. EPA regulations currently define a lead dust hazard as 10 micrograms (millionths of a gram) per square foot of floor area ($\mu\text{g}/\text{ft}^2$) -- an amount less than a single particle of sugar. Lead dust can be inhaled or swallowed when present on contaminated surfaces, such as toys, hands, and food. A structure built with lead-based paint becomes most dangerous when the paint is peeling, aging, or damaged, especially when the needed renovation work ultimately disturbs lead-based paint and creates a major source of lead dust [81].

Children under the age of six are most vulnerable to the harms of lead because their bodies and brains are still developing. Even very small amounts of lead ($5\mu\text{g}$ or less) can poison children and cause irreversible damage. The harms of lead exposure in children include nervous system and kidney damage, mental disorders, and learning disabilities. Pregnant women are similarly vulnerable when exposed to lead, since lead can cause the developing fetus to experience brain damage, low birth weight, prematurity, or miscarriage. All adults can suffer high blood pressure, fertility problems, sexual disorders, digestive issues, nerve disorders, memory/concentration problems, and muscle/joint pain from lead exposure [81]. Malnourished children and adults are especially vulnerable to lead poisoning since lead displaces a series of other metals essential to bodily function.

There are some options for treatment following lead exposure, but they are not necessarily effective and may have risky side effects. Moreover, physical and mental harms associated with lead poisoning cannot be reversed even if some lead can be removed from the blood. Therefore, prevention from lead exposure of the utmost importance [51, 81].

Renovation, Repair and Painting (RRP) Rule

The United States Environmental Protection Agency (EPA) regulates technical and operational rules to prevent environmental hazards. The EPA has established important regulations for lead-safe work practices

The harms of lead exposure in children include nervous system and kidney damage, mental disorders, and learning disabilities.

^aLead-based paint is defined by the EPA as any paint or surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or more than 0.5% by weight [81].

to maximize the health and safety of workers and residents under the Toxic Substances Control Act (TSCA) of 1976 [45, 81, 82, 85].

In order to perform lead abatement - defined as the permanent removal or encapsulation of lead - workers must complete training requirements to become Certified Lead Abatement Workers or Certified Lead Abatement Supervisors [81]. The EPA has also established rules to contain lead dust during renovation, repair, and painting activities, which are much more common than permanent abatement. The Lead Renovation, Repair and Painting Rule, known as the RRP Rule, became fully effective on April 22, 2010 and includes training and accreditation requirements, precautionary setup practices, prohibited practices, dust reduction and control techniques, cleaning practices and the Cleaning Verification (CV) procedure, and recordkeeping requirements. These work practices are intended to reduce exposure to lead dust created in home renovation, repair, and painting activities in order to promote primary lead poisoning prevention [41, 81]. Specifically, the RRP Rule addresses work that will be done in target housing (residences built in 1977 or earlier) or child-occupied facilities.^b

Firms performing work in lead-affected target housing or child-occupied facilities must acquire EPA Firm Certification and ensure that workers are trained in lead-safe work practices. At least one person for each job site must be trained to be an EPA Certified Renovator and is responsible for oversight of lead-safe work practices. Firms and renovators who are non-compliant with the RRP Rule may have their certification revoked and may be subject to fines of up to \$37,500 for each violation [81].

Section 404(a) of the Toxic Substances Control Act allows the EPA to grant authorization to states and jurisdictions to administer and enforce the standards laid out by the RRP Rule. States seeking authorization must establish a program that is “at least as protective of human health and the environment as the Federal program” and “provides adequate enforcement.” States and jurisdictions are permitted to design their programs to be more stringent than the federal program, though many do not [79]. Fourteen states and one tribe are currently authorized to manage the RRP program in their jurisdiction.

LEAD AND RRP IN NEW YORK STATE

New York state is not currently authorized to administer the RRP program, so enforcement remains under the purview of the EPA. However, New York State has high potential gains from state management of the RRP Rule and should seek authorization. New York State has high numbers of homes with probable lead-based paint hazards, where thousands of children affected by elevated blood lead levels reside. Although the EPA established empirically supported lead-

RRP work practices are intended to reduce exposure to lead dust created in home renovation, repair, and painting activities in order to promote primary lead poisoning prevention.

^bThe EPA defines target housing as any residential structure built before 1978, except zero-bedroom residences and housing intended for persons with disabilities or elderly individuals (unless any child under age 6 resides or is expected to reside there). Child-occupied facilities are any building or portion of a building that was built before 1978 and is visited regularly by the same child under age 6. Regular visitation entails visits on at least two days of any week for at least 3 hours, with combined weekly visits of at least 6 hours and combined annual visits of at least 60 hours. This definition of child-occupied facilities is intended to include schools, childcare facilities, and daycare centers [75].

safe work practices for renovations in lead-affected homes and child-occupied facilities and mandated them through the RRP Rule nearly a decade ago, federal enforcement and compliance with the RRP Rule has been a challenge. If New York were to become authorized to manage the RRP program, it could mobilize existing partnerships to ramp up outreach and enforcement and achieve better compliance with lead-safe work practices.

Oldest Housing Stock in the Nation

The U.S. Consumer Products Safety Commission banned the use of lead-based paint for consumer residential use in 1978, so any home built prior to then could contain lead-based paint [81]. Lead-based paint was most widely used prior to 1940, still very commonly used from 1940 to 1959, and somewhat less widely used from 1960 to 1978; thus, the older a home is, the more likely it is to contain lead-based paint. Moreover, lead-based paint produced in the earlier decades of the 20th century contained higher concentrations of lead [57]. Lead-based paint also becomes more of a hazard over time as the paint ages and starts to deteriorate (peel, chip, crack, etc.) [85]. Therefore, communities with older housing are more at risk for lead exposure via lead-based paint. Deteriorating lead paint becomes especially hazardous because it demands maintenance: renovations, repairs, and painting disturb lead-based paint and generate lead dust that settles in the house and poisons anyone who breathes it.

New York State has the oldest stock in the nation, with the median home built in 1960 [89]. According to the 2017 American Community Survey, 6,444,783 homes in New York State were built in 1979 or earlier.^c This represents about 78% of New York State's total housing stock, indicating that the vast majority of homes in New York potentially contain some lead-based paint.^d Moreover, nearly 1/3 of homes in New York State were built before 1940, when highly concentrated lead-based paint was widely used for residential purposes [71].

The housing stock in Buffalo, New York is even older, with the oldest housing stock of any major city in America [70]. Nearly 2/3 of homes in Buffalo were built in 1939 or earlier and more than 92% were built

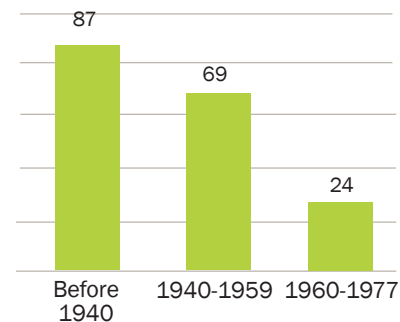
TABLE 1 New York housing built before 1980

DATE RANGE BUILT	NUMBER OF HOMES	PERCENT OF TOAL HOUSING STOCK
1970-1979	823,748	10.0%
1960-1969	1,034,330	12.5%
1950-1959	1,224,735	14.8%
1940-1949	697,185	8.4%
1939 and earlier	2,664,785	32.3%

Older homes are more likely to contain lead-based paint.

FIGURE 1

Percent of homes built with lead-based paint by the year the home was built.



This graph is a modified version of one from <https://www.epa.gov/lead/przotect-your-family-exposures-lead#sl-home>.

^cAlthough lead-based paint was banned in 1978, census data only reports in 10-year intervals. So, housing built in 1979 or earlier is the closest estimate for housing built in 1977 or earlier.

^dBy comparison, only 54.8% of the housing stock in the nation was built in 1979 or earlier [71].

before 1980 [71]. Schenectady, New York and Rochester, New York have similarly old housing stock, with the median homes built in 1937 and 1938, respectively [33].

High Rates of Lead Exposure

Once an individual has been exposed to and inhales or ingests lead, they are usually found to have an elevated blood lead level (EBLL), which means there is a measurably high concentration of lead in their blood. As research has linked increasingly low levels of lead to negative ramifications, public health officials have been lowering the benchmark for medical and environmental intervention. Currently, the Centers for Disease Control and Prevention's action level for blood lead levels is 5 µg/dL (micrograms per deciliter), but the CDC cautions that no level of lead exposure is "safe" [31].

From 2014 to 2016, New York State recorded 6,348 cases of elevated blood lead levels of 10 µg/dL or higher (more severe cases) in children under 6 years old. Of these, 1,217 cases were in Western New York, with 893 in Erie County alone [56]. In 2016, 6.0% of New York children under age 6 (excluding New York City) tested for lead had a confirmed blood lead level of 5 µg/dL or higher (12,135 children out of 215,658 tested) [30]. New York (including New York City) confirmed 17,273 cases of elevated blood lead levels of 5 µg/dL or higher in 2016. New York's population of lead poisoned kids accounted for almost 20% of the children nationwide identified with elevated blood lead levels of that degree. It is important to note that there may be any number of additional children exposed to low levels of lead that go undiagnosed because lead does not have any distinguishing symptoms and only about 15% of children in New York under age 6 receive testing each year [30].^e

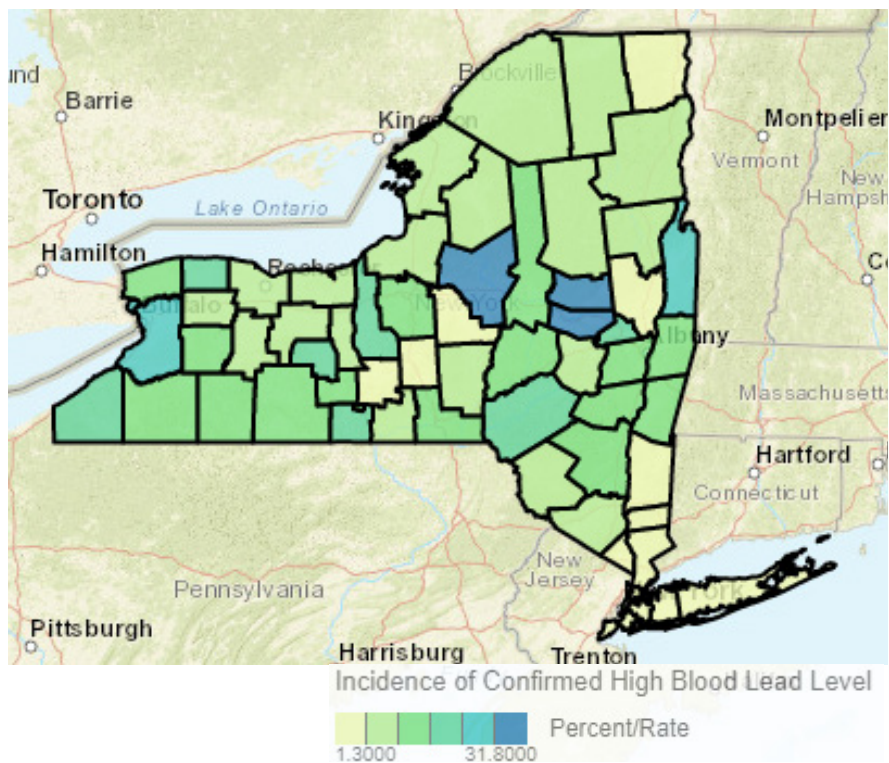
Multiple studies conducted prior to implementation of the RRP Rule present the harmful effects of lead dust produced from specifically renovation, repair, and painting activities in homes with lead-based paint.^f One important study of children in New York in 2006-2007 found that 14% (139 of 972 studied) of the children with extremely high EBLLs (20 µg/dL and above) were related to renovation, repair and painting activities. All the homes linked to RRP-related lead exposure were built before 1978 except one. Children with lower EBLLs (less than 20 µg/dL) were estimated to have been primarily exposed to lead through RRP activities in nearly 40% of cases [39]. This indicates that renovation, repair and painting activities are one of the primary sources of lead exposure in young children. If these rates of exposure from RRP are extrapolated to the entire New York State population of lead-exposed children, approximately 9,327 children become lead poisoned as a result of renovation, repair, and painting activities each year. Of those, 2,418 children would experience severely high EBLLs of 20 µg/dL or greater [30, 39].^g Moreover, as homes age and the lead-based paint decays, concentration of lead

From 2014 to 2016, New York State recorded 6,348 cases of elevated blood lead levels of 10 µg/dL or higher in children under 6 years old.

^eThis only applies to upstate New York and does not include New York City, which tests nearly 50% of all children under age 6. In 2016, New York (excluding New York City) had 215,658 children under age 6 tested for lead, compared to a total population under age 6 of about 1,400,567.

^fA study from the American Journal of Public Health in 1985 found that a home resurfacing or refinishing activity of any kind in the last 6 months was associated with a 20% increase in children's blood lead levels, and in homes with high lead paint (>3% lead by wet chemistry), refinishing or resurfacing activities were associated with a 69% increase in the blood lead levels of the children. Another study conducted in 2013 on a cohort of children from the 1990s finds that a recent home renovation activity predicted a 12% higher blood lead level at age two compared to children who did not experience a recent home renovation activity [63, 65].

^gThis number represents 40% plus 14% of the total 17,273 cases of elevated blood lead levels of 5 µg/dL or greater that New York State confirmed in 2016.

**FIGURE 2**

High blood lead levels (10ug/dL or higher) per 1,000 children tested under 6 years by county, 2012-2014 [56]

dust in the air increases and renovation activities also become more likely, which further worsens the concentration of lead dust. So, it is not unlikely that the risk of lead exposure by renovation, repair, and painting activities is increasing as existing housing stock ages.^h

Renovation, repair, and painting work in lead-affected housing is hazardous for contractors and workers too, since occupational standards for lead exposure remain distressingly low. As a result, nearly 10,000 adults in the United States have blood lead levels of 25 µg/dL or greater that can be attributed to occupational lead exposure [26, 48]. Adults employed in construction, in addition to manufacturing, industry services, and mining, are exponentially more likely to be diagnosed with an elevated blood lead level than other workers, and the lead-safe work practices laid out by the RRP Rule can help protect construction workers from lead exposure [26]. New York has 528,962 workers employed in construction, and many of these workers are likely exposed to some level of occupational lead dust on a daily basis. Unfortunately, however, current public health infrastructure does not require environmental changes or medical action until a very high blood lead level is found, so there is no way to know just how many of these workers are suffering from low- to moderate-level lead poisoning.ⁱ

Workers exposed to lead on the job also risk exposing their families. Many construction workers wear or bring their work clothes home

^hTwo studies looking specifically at lead poisoning due to renovation for children in New York state were conducted by some of the same researchers. The first looked at children in 1993-1994 and found 6.9% of the children with elevated blood lead levels of 20 µg/dL to have lead exposure attributable directly to renovations [37]. The follow-up study of children in 2006-2007 may suggest that the proportion of lead exposure due to renovation is increasing. This is likely due to both aging homes and removal of lead from other sources, such as gasoline and children's toys.

ⁱNo Significant action is taken until the worker's blood lead level exceeds 40 µg/dL and the worker is not removed from the source of the lead exposure until their blood lead level exceeds 50 µg/dL [58, 90].

or drive their personal vehicle to and from the work site. The EPA's training course for RRP shows a saddening video of a contractor who accidentally lead poisoned his children by bringing work clothes with lead dust into the home. A study of children under 6 years old found that those living in homes with a parent employed as a construction worker were six times more likely than other children to have a blood lead level of 10 µg/dL or higher [88]. This means that thousands of children in New York State are at greater risk of lead poisoning due to parental occupation. The RRP program requires training on the harms of lead and methods to protect oneself and one's family from lead exposure [81].

Promise of the RRP Rule

The RRP rule establishes pre-renovation education, training, certification, and work practice requirements for renovation contractors, landlords, and firms working in housing or child-occupied facilities built before 1978. Firms conducting work in such buildings must have RRP certification with the EPA, workers trained in lead-safe work practices, and at least one RRP Certified Renovator employed at each job site. The firm is also responsible for provision of pre-renovation educational materials, including the disclosure and distribution of lead hazard information, to applicable occupants of pre-1978 buildings [85].

The most important part of the RRP rule, however, are the standards for lead-safe work practices intended to minimize occupants' and workers' exposure to lead hazards. The RRP Rule's lead-safe work practices are required for any renovation, repair and/or painting work that disturbs more than 6 ft² of paint in pre-1978 housing or child-occupied facilities. Lead-safe work practices include: containment of the work area to prevent dust and debris from escaping, prohibition of certain practices including use of power tools without a HEPA filter and open-flame burning, and thorough cleaning practices [85].

The EPA studied the work practices laid out in the RRP Rule to minimize lead dust exposure and maximize efficiency [74]. Each of the components of the rule were scientifically and economically examined in detail. For example, power sanding (a common paint removal method that is prohibited in RRP-applicable buildings) has been shown to generate airborne lead exposure far in excess of the Occupational Safety and Health Administration's (OSHA) permissible exposure limit for workers, even if the paint has very low concentrations of lead [78, 81, 90].

Assuming a 75% compliance rate, the EPA estimated that the original "final" RRP rule would protect 1.4 million children age five and under and 5.4 million individuals age six and over from lead exposure each year [74].^j The revised RRP rule later removed "opt-out" provisions for pre-1978 housing without residents under age 6 years, which

^jIn 2008, the first ("final") version of the RRP rule was promulgated. This version allowed some exemptions for facilities required to use lead-safe work practices under the RRP Rule, known as the opt-out provision. Contractors could opt-out of using lead-safe work practices in owner-occupied homes if owner signs a statement consenting for the renovation to occur and affirming that no child under age 6 lives there. After multiple legal challenges, EPA removed the opt-out provision in 2010 and added an additional requirement for compliance recordkeeping disclosure to building occupants or the operator of the child-occupied facility. The opt-out provision was eliminated because it did not protect children and pregnant women who moved into recently renovated homes or apartments, and because older children, adults, and pets also benefit from use of lead-safe work practices [46].

was predicted to protect an additional 5.2 million individuals from lead exposure [75]. Key to these estimates, however, is “rigorous” enforcement of the rule and a resulting high level of compliance [42].

If the RRP rule protected children in New York State at the same rate as was predicted for the country more generally, approximately 79,672 children under age 6 would be protected each year [71, 74].^{kl} In reality, New York has much older housing stock than most of the rest of the country and some homes were exempted under the original analysis, so the numbers of children protected by the RRP Rule are likely much higher. Closer analysis by the Altarum Institute suggests that about 483,600 New York homes undergoing renovation would fall under the RRP Rule each year, protecting about 139,370 New York children under age six from lead exposure each year if the work is compliant with the RRP Rule [18, 27].^m

Ultimately, EPA analysts concluded that they are “confident that, when taken as a whole, the rule generates substantial benefits” [74].

Limited EPA Federal Enforcement

The health and safety benefits of the RRP Rule are only realized if it is enforced and complied with. In September 2019, the EPA Office of the Inspector General found that the EPA “does not have an effective strategy to implement and enforce the lead-based paint rule.” The federal RRP program lacks clear strategies, targeted resources, and collaboration efforts. Additionally, without benchmarks or internal controls, EPA is not being held accountable for lead poisoning prevention due to renovation, repair, and painting activities [69].

The EPA currently has 3.5 full-time equivalent inspectors for New Jersey and New York. In both 2018 and 2019, the EPA completed seven RRP enforcement actions in New York State, with nearly all ending in fines less than \$10,000 [2, 24]. In RRP Certified Renovator training courses, the EPA threatens students that non-compliance will be met with fines up to \$37,500 for each violation, but rarely takes actions big enough to make the news [81]. An enforcement officer in the regional EPA office said that the agency receives about 300 tips, complaints, and referrals from New York State each year, and that their staff typically conducts many more inspections than completed enforcement actions due to lack of resources to undertake the highly involved enforcement route [2, 24]. Local health officials report that they regularly call the EPA hotline for violations but rarely see recourse or corrective action take place at all [16].

Without consistent enforcement or high profile “scare tactic” enforcement, the RRP rule may not be well complied with, especially in a large state like New York.ⁿ Some contractors and landlords may be unaware of the RRP program due to lack of outreach, and many may simply disregard the rule because they expect they will not be penalized for avoiding the requirements. The Erie County Department

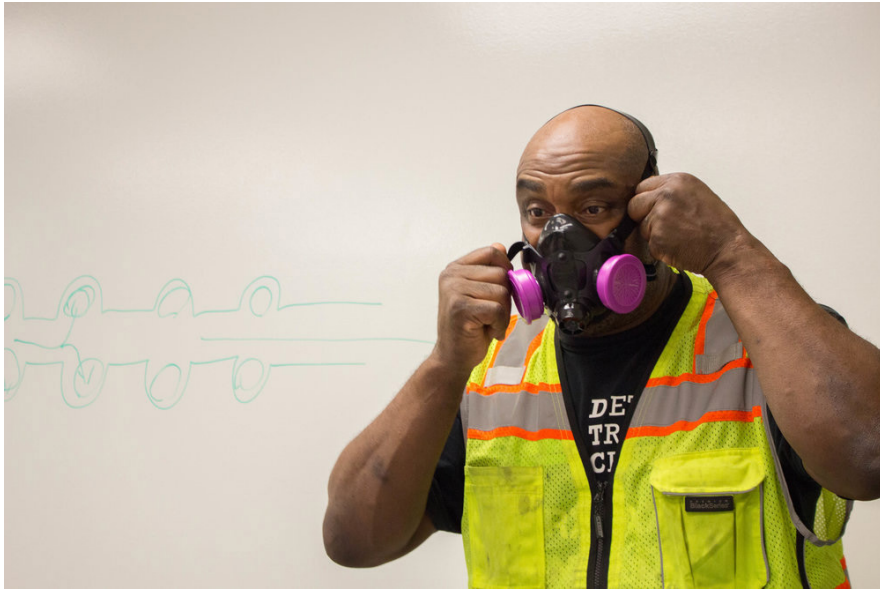
139,370 New York children under age six would be protected from lead exposure each year if renovation work is compliant with the RRP Rule.

^kThe number of children EPA predicted the RRP Rule to protect was about 5.8% of the population under age 6. Since the census only measures age in groups (0-4 years, 5-9 years), the number of kids ages 5-9 was divided by 5 to estimate the number of kids aged 5. The estimate for 79,672 kids in New York state to be protected represents 5.8% of the estimated total number of kids ages 0-5 years.

^lThis estimate is based on the original “final” rule, which still contained opt-out provisions for children under age 6. Although no renovations could opt-out if there was a child under age 6 in residence or visiting regularly, some additional children are protected by removal of the opt-out provision – for example, a family moving into a recently renovated home would be better protected if there were lower indoor lead dust levels because the renovators had used lead-safe work practices.

^m This analysis is still based on the original “final” rule but it accounts for the number of pre-1978 homes in New York state.

ⁿNew York’s enforcement is managed by the EPA’s Region 2 office. It is located in New Jersey and manages New York, New Jersey, Puerto Rico, and the Virgin Islands.



of Health (just one of 62 counties in New York State!) issued approximately 1300 notices for lead paint hazards in 2018, in addition to 53 “stop work orders” in just six months, temporarily halting instances where work was being done without precautions and lead-safe work practices [16, 29]. Most localities do not have this authority, and the RRP Rule goes completely unenforced [16].

One way of approximating compliance with the RRP Rule is by examining the number of RRP certified firms. When the RRP Rule was initially implemented in 2010, 7,865 firms in New York State became initially certified. However, only 3,416 firms applied for certification in 2015 when the 2010 group would have been due for recertification. This may indicate low compliance as a result of weak enforcement in the state.

Proposal: New York State Enforcement of the RRP Rule

New York is responsible for preventing lead poisoning within its jurisdiction, so the state should seek authorization to manage the RRP program and enforce it to a greater degree than is currently being done by the EPA, as fourteen other states have done.

STATE ADMINISTRATION OF THE RRP RULE

Although the RRP Rule is a federal program, under Section 404(a) of the Toxic Substances Control Act the EPA may authorize jurisdictions (including states, tribes, and territories) to administer and enforce their own RRP programs [50, 79, 84]. According to multiple EPA officials and the Code of Federal Regulations, the Agency supports and encourages states seeking authorization [1, 2].

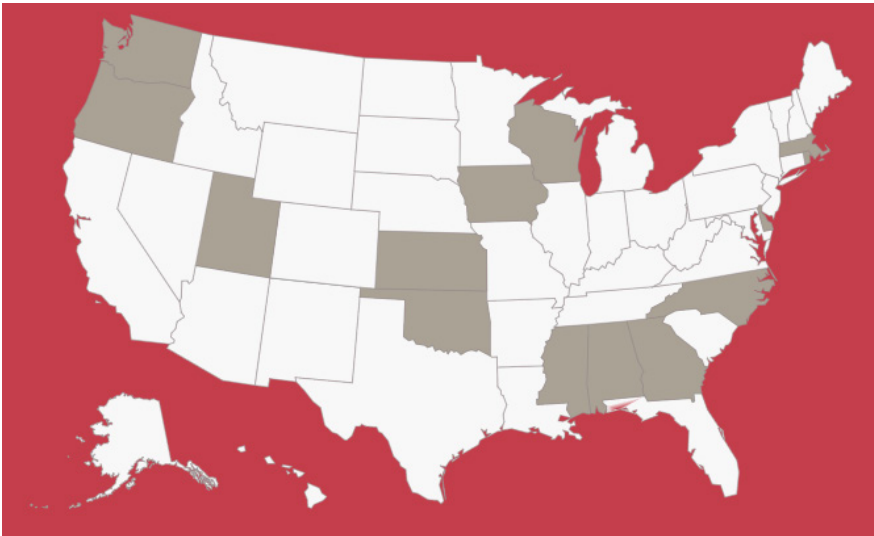
Source: Detroit Training Center

TABLE 2

YEAR	# FIRMS CERTIFIED
2010	7,865
2011	2,083
2012	1,120
2013	1,026
2014	890
2015	3,416
2016	1,837
2017	1,331
2018	1,125
2019	1,398

Source: EPA Office of Pollution Prevention and Toxics

Today, fourteen states and one tribe administer their own RRP program in lieu of the federal program. These states include Alabama, Delaware, Georgia, Iowa, Kansas, Massachusetts, Mississippi, North Carolina, Oklahoma, Oregon, Rhode Island, Utah, Washington, Wisconsin, and the Bois Forte Tribe [85]. The original version of the RRP Rule went into effect on April 22, 2010 and many of the states that manage their own RRP program became authorized to do so on or before that date [47]. According to the National Center for Healthy Housing, this includes Wisconsin, North Carolina, Iowa, Mississippi, Kansas, Rhode Island, and Utah. Oregon, Massachusetts, and Alabama became authorized later that same year, and Washington and Georgia became authorized the following year, in 2011. Since then, only Oklahoma (2013) and Delaware (2014), have become newly authorized, though Minnesota plans to seek authorization in 2020 and other jurisdictions have considered seeking authorization [14, 50].



State and Tribal RRP program requirements include:

- Procedures and requirements for the accreditation of renovation and dust sampling technician training programs
- Procedures and requirements for the training of renovators and dust sampling technicians
- Procedures and requirements for the certification of individuals and/or firms
- Requirements that all renovations be conducted by appropriately certified contractors and properly trained individuals
- Work practice standards for the conduct of renovations [79].



FIGURE 3

“Renovate Right” guide for contractors to distribute to renovation clients in RRP-applicable facilities.

FIGURE 4

States authorized for RRP.

State lead-based paint renovation programs must also include pre-renovation notification standards that require the distribution of lead hazard information to owners and occupants of target housing and applicable parents associated with child-occupied facilities [79].

TABLE 3 State RRP Programs

STATE	AUTHORIZATION DATE	ASPECTS OF INTEREST	CASE STUDY?
Alabama	11/16/2010		No
Delaware	1/1/2014	Most recent state to adopt RRP	Yes
Georgia	7/5/2011		No
Iowa	1/19/2010	Program in Bureau of Environmental Health Services	Yes
Kansas	4/19/2010	RRP program has some additional requirements/restrictions	Yes
Massachusetts	7/9/2010	Labor-oriented program, housed in the Department of Labor Standards	Yes
Minnesota	*	Plans to seek RRP authorization in 2020	Yes
Mississippi	4/12/2010	Includes a 7-day “start work notification” requirement	No
North Carolina	1/1/2010		No
Oklahoma	9/2013	Second most recent state to adopt RRP	Yes
Oregon	5/3/2010	Labor-oriented RRP program dually housed in the Construction Contractors Board and Oregon Health Authority	Yes
Rhode Island	4/20/2010	Established a lead-safe renovation program before RRP went into effect; program is somewhat more stringent than EPA	Yes
Utah	4/20/2010		No
Washington	3/16/2011		No
Wisconsin	10/20/2009	First state to adopt RRP; state has extremely low housing stock and rust belt cities like Milwaukee	Yes

* Minnesota has not yet been authorized.

**Note that the Bois Forte Band is excluded from this chart for lack of information.

States can seek authorization through one of two routes: via application to the EPA Regional Administrator or the Program Certification method.^o The only difference is that the Program Certification includes a certification that the laws of the state are “at least as protective” as the federal rule, including “adequate” enforcement of compliance in addition to the regular application materials. Once this has been submitted, the state’s program is conditionally authorized until EPA approves its program [79].

To explore the possibility of New York’s RRP program, the RRP programs of several other states were examined in depth. The states were chosen strategically for various reasons, including when they adopted RRP, department managing the program, or program differences from EPA.

^oThe process is somewhat different for tribes and territories. The Program Certification method is only available to states.

FIGURE 5 State RRP Program authorization process

MODELS FOR STATE ADMINISTRATION OF RRP

AUTHORIZATION

The application for authorization to manage and enforce a state's own RRP program begins with a public notice of intent and the opportunity for a public hearing. Then, the state must submit an application that includes: (1) a cover sheet, (2) a summary of the state program, (3) a transmittal letter from the Governor requesting program approval, (4) the Attorney General's statement that the state's laws and regulations provide the adequate legal authority, and (5) the RRP program description and supporting documentation.^p Optionally, the state's Governor or Attorney General may submit a certification along with the application, assuring that the state's program meets the authorization criteria, which would allow for immediate program authorization unless EPA later disapproves the application or withdraws authorization. Then the state submits three copies of the entire application package to their regional EPA office, and the EPA publishes a Federal Register notice, allows for another period of public comment, and holds a public hearing if requested. Ultimately, the EPA Regional office will have 180 days to approve or disapprove of applications. In the case of the Program Certification method, that same amount of time is allotted to choose to accept or disapprove [79].

Minnesota has not yet become authorized, but state officials pursued rulemaking authority a few years ago (2009 and 2015) and will be seeking program authorization in 2020. The first time around, Minnesota began by issuing a public notice and allowed time to hear from stakeholders. However, they only had an 18-month period with which to respond to the public, and rulemaking staff were not able to finish publishing a final RRP regulation in time. The initial proposal intended to combine abatement and RRP elements in attempts to make lead-safe work practices more uniform, given the similarities. However, it required too many changes to the RRP blueprint laid out by EPA and presented unforeseen challenges [14].^q

In 2015, Minnesota got a new rulemaking authorization without a time limit. The state has gotten comments from the public and developed a final draft rule. Now, Minnesota is developing a completely new RRP program that is consistent with the federal model program. Instead of combining abatement and RRP, Minnesota has re-written the

^pThis includes: (a) enforcement and compliance program description with analysis comparing the state's proposed program to the federal program to demonstrate that the program is at least as protective as the federal program and (b) copies of all applicable state statutes and regulations.

^qA state official from Minnesota described these difficulties as "conflicting statutory language based on the approach that we took with combining the lead abatement work practices with RRP work practices."

RRP regulation so that it straightforward and emphasizes lead-safe work practices above all. At this point, Minnesota is conducting the final review of the authorization application and will publish the final version for a second round of public comment soon. In early 2020, the governor and the legislature are on board to submit their application via the Program Certification method [14].

Minnesota chose to take the Program Certification route because they will be able to put their program in place immediately, as soon as their application is submitted. Otherwise, they would have to wait an additional six months while the EPA approves the program. Ultimately, a public health official from Minnesota said, “the real message is that this affects kids and lead isn’t going away.” “Flint shows what happens when people become complacent,” he said, emphasizing the immediacy of the issue [14].

FEDERAL TO STATE TRANSITION

In March 2014, Delaware became the most recent state to fully implement RRP. Officials timed the transition strategically so that a large number of EPA certifications were due to expire soon (since EPA initially implemented RRP in April 2010 and certifications were issued for five years). Since Delaware’s regulation mirrored the regulations laid out by EPA, writing the regulations proved not to be too onerous of a task. The only major difference is that Delaware requires recertification every two years instead of five [6].

Delaware began the transition process by mailing letters to EPA certified firms and renovators, notifying them that a change was coming, and that they would have to recertify with the state of Delaware. They also updated the website to reflect the changes so that more information would be available to the public. Then, they set up a standardized training curriculum and accredited training providers. Setting up accredited training providers was challenging because Delaware wanted to establish a curriculum that would emphasize hands-on learning of lead-safe work practices. Ultimately, they set up five training providers (which is enough for a small state) who had not been previously accredited by EPA [6].

For firm and renovator certification, Delaware allowed a “grandfather in” period so firms and renovators certified by EPA as of March 2014 were certified in Delaware until their certification expired. Then, they would have to renew in Delaware. State officials worked closely with the EPA to identify which firms had been previously certified in order to notify them of the changes. Delaware also allows training to be administered by EPA-accredited training providers and accredited training providers in other states, as long as the course includes a hands-on component and the renovator applies afterward for a certification in Delaware; this reciprocity is unusual among RRP states but may be necessary, at least for a time, in states that are phasing in a state RRP program years after the federal implementation [6].[†]

LEAD ABATEMENT

The first lead regulation developed under the Toxic Substances Control Act dealt with “lead based paint activities,” which at the time included lead abatement, inspection, and risk assessment but not renovation, repair and painting or dust sampling. As a result, there is sometimes language confusion because a state may be authorized to administer its own “lead-based paint activities” program, but this generally only refers to abatement unless the state also has an authorized RRP program.

[†]Individuals seeking to become Certified Renovators in Delaware are required to participate in a training course and then apply for certification (which is somewhat analogous to taking driver’s ed and then applying for your license). Firms must also apply for certification. In contrast, the EPA and most states only require firm certification, and renovators become certified once they pass the training course (without the extra step of an application to the state).

TABLE 4 Department that houses the state's RRP program

During the transition period, Delaware encountered many contractors who did not know about the RRP Rule. They found that larger firms are more likely to be compliant than smaller ones, and documents to help with compliance recordkeeping have greatly improved the outcomes of the state's enforcement efforts [6].

LABOR-ORIENTATION

Massachusetts and Oregon are the only two states that run their lead and RRP programs through a labor-oriented department, but both seem to have high functioning programs that would be excellent models for New York State, especially if New York plans to house its RRP program in the Department of Labor.

The job of the Massachusetts' Department of Labor Standards, according to an official in Safety & Health Programs, is to develop the workforce and keep Massachusetts workers safe. Since RRP is primarily focused on the health and safety of workers and the Department of Labor Standards already had programs in deleading (abatement) and asbestos, it was a logical choice to house Massachusetts' RRP program. The Department of Labor Standards also works closely with the Childhood Lead Poisoning Prevention Program in the Massachusetts Department of Public Health. Through this model, Massachusetts has a relatively high capacity for enforcement; in 2018, the Department of Labor Standards conducted 692 inspections and identified 415 hazards [4].

Oregon's lead/RRP programs are jointly administered by the Oregon Health Authority (OHA) and the Construction Contractors Board (CCB). Oregon Health Authority approves the providers of the certification training and certifies landlords, property managers, school districts, and most non-contractors [7]. The Construction Contractors Board specifically licenses contractors and has linked the RRP renovator license to the annual contractor's business license. This makes the state uniquely positioned to maintain close contact with contractors and conduct frequent building inspections [8].

Oregon's model has a high capacity for enforcement because the Construction Contractors Board checks for compliance with the RRP program while doing other inspections, including checking of building codes and electrical and plumbing licenses.⁵ Thus, Oregon has 13 field investigators who have simply added RRP as one extra step that they check while conducting inspections they already would have done otherwise. So, the state did not have to make any significant staffing changes to enforce RRP and most of the lead violations cited by CCB are from proactive, random checks [8].

⁵The state of Oregon seems to have been effective at enforcing RRP and promoting compliance. One way to look at compliance is comparing the number of certified firms over time, which works particularly well in a state with annual recertification like Oregon. According to the Construction Contractors' Board's licensing data, the state of Oregon had only 4,214 RRP certified firms in 2015, which increased by over 1,000 certified firms in under four years. There were 5,282 certified firms in October 2018 and 5,480 by May 2019. As the number of certified firms rises, it is likely that more firms are complying with the rule [9, 10].

STATE	DEPARTMENT
Alabama	Department of Public Health
Delaware	Division of Public Health
Georgia	Department of Natural Resources, Environmental Protection Division
Iowa	Department of Public Health, Bureau of Environmental Health Services
Kansas	Department of Health and Environment
Massachusetts	Department of Labor standards
Minnesota*	Department of Health
Mississippi	Department of Environmental Quality
North Carolina	Department of Health and Human Services, Division of Public Health, Health Hazards Control Unit
Oklahoma	Department of Environmental Quality
Oregon	Oregon Health Authority & Construction Contractors Board
Rhode Island	Department of Health
Utah	Department of Environmental Quality
Washington	Department of Commerce
Wisconsin	Department of Health Services

BEST PRACTICES

Some states (including Delaware, Wisconsin, Oregon, Oklahoma, and Alabama) have chosen to adopt RRP almost exactly as it was laid out by EPA, and others (including Kansas, Rhode Island, Massachusetts, and Mississippi) have added additional requirements [4, 11]. Many state officials cite uniformity with EPA as an advantage, since it makes the regulation development and authorization processes easier if the language and requirements match those laid out by EPA [6]. However, many stakeholders have also pointed out shortcomings with RRP that can be amended by states taking on the rule.

Some important differences that states have adopted, and New York should consider including:

- **Training:** EPA's training could be adapted for cultural competency, students of different literacy abilities, and non-native English speakers. Currently, EPA only accredits training providers and provides materials in English and Spanish. Stakeholders who teach, practice, and enforce RRP rules also emphasize the importance of a hands-on component in both the initial and refresher courses and warn against online-based teaching approaches. Online training risks more fraudulent behavior, limits ability for questions and engagement, and has no mechanism for checking proper work practices [6, 16, 25, 34, 43].
- **Start Work Notification:** Without a start work notification, it can be difficult to know when RRP jobs are occurring. Renovation, repair and painting jobs are often quick and may be completed within just a few days - so there may not be enough time to follow up on complaints [11, 23]. Rhode Island requires a 7-day pre-renovation notification, and Mississippi requires six days. States with a start work notification requirement tend to take a more proactive, rather than reactive, approach to enforcement and attribute high levels of compliance to the frequent random inspections and audits [12, 23, 34, 66].
- **Test kits:** The EPA's recommended test kits are not very effective since many are dried up, broken, or simply not correctly administered. They could present a false negative for lead-based paint, so some states do not allow them for testing of lead paint.^t In Kansas, only certified lead inspectors or risk assessors are permitted to test for lead, and they use other methods including X-Ray Fluorescence (XRF), paint chip samples, and dust sampling [13]. Since the swabs are frequently wrong, contractors and landlords should assume that there is lead in pre-1978 housing unless they get a certified inspection [11].
- **Certified Renovator on Site:** States can require each work site to have a certified renovator on site for the duration of the project to ensure that a trained individual supervises all of the work practices.^u

^tEPA understood the high failure rate of the test kits and assumed that ones with improved accuracy would be developed within a few years of RRP implementation. However, no such product has yet to emerge [66]. Given that this is the case, test kits are not enough to verify that a facility does not have lead-based paint and should not be permitted to exempt pre-1978 facilities from the RRP Rule.

^uThe EPA only requires the Certified Renovator to be on scene during the setup and cleanup, as long as they have trained the other workers in lead-safe work practices.

Rhode Island and Massachusetts require that the certified renovator remain on the work site at all times for the duration of the RRP activity [12, 34, 49]. States could also require each worker on RRP worksites to be RRP certified renovators [34].

- **Personal protective equipment:** Firms working in pre-1978 homes are not explicitly required to provide their employees with personal protective equipment, including disposable coveralls, disposable foot covers, eye protection, leather or canvas work gloves, N-100 respirators, disposable waste bags, duct tape, and hand washing facilities with soap. All of these are highly recommended by the EPA in RRP training courses [81]. The Occupational Safety and Health Administration (OSHA) requires certain personal hygiene practices at worksites with lead levels above the permissible exposure limit (PEL) but only says that persons doing cleanup after work in a pre-1978 facility “should” be provided with suitable respiratory protection and personal protective clothing to prevent contact with lead [73]. Beyond the individuals at the worksite, their families are at increased risk of lead exposure from “take home” lead dust. Provision of personal protective equipment can help mitigate this risk [62].
- **Dry scraping/sanding:** Dry scraping low concentrations of lead paint has been shown to generate airborne lead exposure that is more than seven times in excess of the OSHA permissible exposure limit [90].^v Iowa prohibits dry scraping or dry sanding of paint except in conjunction with the use of a heat gun or around electrical outlets [34]. Dry scraping and sanding by hand is prohibited under the HUD Rule for pre-1978 properties that receive Federal housing assistance [72, 81].
- **Heat guns:** Many heat guns owned by contractors do not have a temperature gauge, so it is difficult to know if/when they are exceeding the maximum permitted temperature of 1100 degrees. It may be safer to prohibit heat guns altogether, which is what Kansas does [13].
- **Power washing & unconfined water blasting:** Power washing and water blasting of lead paint contribute to lead pollution in soil and water, which can be just as dangerous as lead dust in homes. Wisconsin prohibits power washing, which their officials saw as an unintentional omission by the EPA [10]. Iowa also prohibits “unconfined water blasting” of paint [34]. The U.S. Department of Housing and Urban Development strongly advises against the use of uncontained hydroblasting because this method can spread debris, paint chips, and dust beyond the work area. Proper containment measures can be effective at preventing spread of lead-tainted water or dust [72]
- **Paint stripping:** The Department of Housing and Urban Development (HUD) prohibits paint stripping “in a poorly ventilated space using a

^vDry scraping a painted surface containing 1 mc/cm² of lead (the minimum concentration to be considered lead-based paint) would result in an airborne lead exposure level of 371 ug/m³. The OSHA permissible exposure limit for construction workers is 50ug/m² over an 8-hour workday.

SHOULD NEW YORK TAKE ON ABATEMENT AS WELL?

All states who currently manage their own RRP program also manage their own lead-based paint activities (abatement) programs. New York could seek authorization for either abatement or RRP - or both.

Many stakeholders suggest that if New York state is going to go to the trouble of setting up a lead program, it should take on all of the lead regulations currently laid out by TSCA. This would also make compliance with regulation easier for those who regularly work with lead, since certification and enforcement for all lead-based paint activities (including RRP) would come from the same place.

However, research on the effectiveness of abatement is disputed. Moreover, abatement is usually conducted in response to lead exposure, whereas RRP is used proactively to prevent lead poisoning. Therefore, RRP should be prioritized if there is a trade-off between becoming authorized for abatement and RRP.

volatile paint stripper” in federally-assisted housing. However, this work practice is not specifically prohibited by the EPA. HUD notes that methylene chloride is a particularly dangerous paint stripper but that all paint strippers need to be used cautiously [34, 72]. Research is beginning to emerge that implicates chemical paint strippers, especially methylene chloride, in dozens of fatalities, so New York should match HUD’s guidelines for paint stripping or perhaps ban chemical paint strippers altogether [69].

- **Dust clearance testing:** The current EPA definition of a lead dust hazard for lead dust on a floor – $10 \mu\text{g}/\text{ft}^2$ – represents a vanishingly small amount that can nonetheless be toxic to children. Neither a visual inspection nor the EPA-approved method of a Cleaning Verification (CV) is scientifically validated for determining if a residence is safe for occupancy since human eyesight cannot detect such minute quantities of lead particles. HUD has researched proper administration of dust clearance testing and requires it for all federally-assisted housing, but it is not currently required for EPA’s target housing and child-occupied facilities under the RRP Rule [34, 44, 72]. Dust clearance testing after work ensures that cleaning has been adequate by determining the amount of lead particulate left on surfaces and comparing it to a threshold [44, 72]. Full dust testing following a renovation event to clear the area as safe is strongly recommended by experts, including Dr. David Jacobs, Director of the National Center for Healthy Housing [18]. Rhode Island requires a Certified Lead Inspector or Technician to conduct a clearance inspection following completion of RRP work, and New York City’s local laws require third party clearance testing for similar work in any residential rental dwelling occupied by a family with children under age six [67]. Clearance inspections include dust wipe samples analyzed by an approved laboratory and are estimated to cost about \$190 per event [12, 18]. Moreover, because laboratory test results of clearance tests qualify as records that must be disclosed as part of residential property leases or sale under federal law, requiring such clearance tests acts to enhance the knowledge of prospective tenants or homeowners as to the potential risks of their home [68].
- **Demolition:** The EPA’s RRP laws exempt full demolition projects, but demolition projects continue to harm citizens. Demolition activities of buildings with lead-based paint generate dust that contains lead, which has been found to travel more than 400 feet from the initial site [59].^w So, demolition activity can contribute to interior residential dust, and nearby exposure to multiple demolitions has been shown to be a statistically significant predictor of higher blood lead levels in children younger than six [64]. In 2017, Oregon state legislators passed S.B. 871, which allows cities to develop demolition programs to reduce lead dust dispersal through RRP-like work practices, and since then Portland (which is where most of the older homes are

^wThe state of Oregon has established a review of best practices for demolition activities involving facilities with lead-based paint that may be useful for reference and can be accessed at <https://www.oregon.gov/oha/PH/HEALTHYENVIRONMENTS/HEALTHYNEIGHBORHOODS/LEADPOISONING/Documents/Best-Practices-Demolition-of-Residences.pdf> [59].

in Oregon) has established a demolition program through a city ordinance [9, 32, 59]. The City of Baltimore has also developed responsible demolition protocols, which include suppression, partial deconstruction, physical barriers, and more to limit exposure to lead via demolition [28]. New York’s lead poisoning prevention efforts must include lead-safe demolition requirements.

- **System for Monitoring & Filing Complaints:** An organized way of collecting and acting on complaints is essential for a viable program. All agencies currently enforcing RRP rely heavily on a system of tips and complaints for managing inspections and enforcement actions. Citizens need to have a place to report violations and need to know that their concerns will be followed up on in a timely manner.

Funding and Revenue

EPA provides grant funding to all states who administer one or more portions of the Toxic Substances Control Act’s lead rules. It is important to note that most states administer a lead-based paint activities (abatement) program, which is the first lead-based paint rule developed to comply with TSCA.^x New York is not one of these states. Since development of lead-based paint activities (abatement) standards, EPA has developed the Lead Disclosure Rule and the RRP Rule.^y All the states that manage and enforce their own RRP program added it to an existing lead-based paint activities (abatement) program, so many of their lead program budgets are combined to fund all of the lead-based paint regulations the state enforces.^z

Many states’ lead programs are revenue neutral or revenue positive. Besides EPA grants, most states generate the remainder of their funding for the lead/RRP program through accreditation and certification fees and fines and do not rely on funding from the state budget. States can set their own rates and certification cycles. The EPA accredits training providers on a 4-year cycle for a fee of \$560 and firms on a 5-year cycle for \$300 [31]. New York’s proposed lead program could be supported by fees and fines set so that it has sufficient regular funding to manage a high-quality program.

“We want states to get authorized and we want to help them”

– EPA official

^xThere are 39 states, two territories (Washington, D.C. and Puerto Rico), and four tribes with authorized lead-based paint activities (abatement) programs.

^yIf a state takes on RRP, it does not necessarily have to be administered with abatement – though it has yet to be done. RRP and 406(b) (Lead Disclosure) tend to be authorized together unless a state (like Michigan and Colorado have done) becomes authorized to administer just 406(b) Lead Disclosure (but vice versa is not an option).

^zThis disclaimer is included because most of the states interviewed for this report had one budget for lead and were not able to give a budget breakdown for the RRP rule specifically. These states are used simply as examples for lead/RRP programs to show what might be possible if New York decided to take on the RRP Rule (and possibly all of the lead programs in TSCA, including abatement and Lead Disclosure).

TABLE 5 Lead program funding and revenue in RRP states

STATE & # OF PRE-1980 ^{aa} HOUSING UNITS	FUNDING & REVENUE
Delaware [6] 191,538 units	<ul style="list-style-type: none"> • EPA covers all funding • No funding from the state budget • Generates about \$38,000 in revenue each year from certification fees, which contribute to the Delaware general fund
Iowa [5] 917,430	<ul style="list-style-type: none"> • Funded about 50/50 by EPA grants and certification fees • Does not receive any funding from the state of Iowa budget • Fines from violations contribute to the state general fund, generating around \$2,000 each, with around 10 significant violations each year

^{aa}The cutoff year is 1980 because the Census Bureau keeps track of housing by the decade in which it was built.

STATE & # OF PRE-1980 HOUSING UNITS	FUNDING & REVENUE
<p>Kansas [13] 770,181</p>	<ul style="list-style-type: none"> • Funded by two EPA grants, for Programs and Enforcement • Grants require an 80%/20% funding split between grants (80%) and other funding sources (20%) • The program generates revenue from fees and civil penalties, which make up 20% of the program’s budget (however, the program could potentially receive funding from the state budget if revenue was not enough to proportionally match the grant; thus far, the program has been self-sufficient and has not received state budget funding)
<p>Massachusetts [4] 2,068,459</p>	<ul style="list-style-type: none"> • Receives two lead grants from the EPA, each covering a two-year period • Program grant for \$550,000 covers administrative support and some enforcement actions • Enforcement grant amounts to \$220,000 • Licensing fees and fines from enforcement actions contribute to the state general fund, so the lead program receives regular funding appropriations by the legislature • Program revenue is positive, so the program could be self-sustaining
<p>Oklahoma [11] 933,659</p>	<ul style="list-style-type: none"> • Completely funded by EPA grants and certification fees • Does not receive any funding from the state budget • Two grants from EPA, including a general lead-based paint grant and the TSCA enforcement grant • Certification fees contribute to the program, but the revenue amount varies considerably each year • Charges \$300 for a 5-year firm certification – the number of firms certifying each year ranges from 40-309
<p>Oregon [9, 51] 938,438</p>	<ul style="list-style-type: none"> • Oregon Health Authority’s lead program budget is about 82% funded by EPA grants and 18% funded by income from fees and civil penalties • Construction Contractors Board’s lead activities are funded entirely by fees and penalties generated from contractor licensing • Neither department receives funding from the state of Oregon budget • Civil penalties from violations contribute to a special Public Health Account for which the money can only contribute towards lead poisoning prevention efforts, including “consumer and industry outreach, public education, blood lead screening and other activities”
<p>Rhode Island [12] 345,887</p>	<ul style="list-style-type: none"> • EPA grants cover most of the RRP program • Some state funding and Medicaid funding are also used to cover salary, fringe, and operating costs • In 2010, Rhode Island received \$75,000 in EPA grants to implement the RRP rule and has had renewal of close to that amount each year since • In 2018, all lead licenses generated \$49,095 in revenue, which contributes to the state general fund • Fines and penalties contribute to the state general fund
<p>Wisconsin [10] 1,626,988</p>	<ul style="list-style-type: none"> • Dually funded (about 50/50) by EPA grants and program fees • Does not receive any funding from the state of Wisconsin budget • Revenue from fees varies considerably depending on the number of certifications issued that year • Program has gained an additional \$150,000-550,000+ in revenue each year since adopting RRP • Civil penalties contribute to a fund that supports school libraries in order to prevent any conflict of interest by the regulating agency

ANALYSIS AND RECOMMENDATIONS

New York State should seek authorization for the RRP Rule and implement robust enforcement measures through inspections and complementary checkpoints. This would protect thousands of individuals from lead exposure, granting them improved health and economic opportunity.

Benefits and Costs of State Enforcement of RRP

Rigorous enforcement of and improved compliance with the RRP rule is predicted to protect about 139,370 children under age six from lead exposure each year in New York State [18]. Each one of these children will experience better physical and mental health and be less likely to have behavior problems, difficulty with school, and contact with the criminal justice system.

The program can be implemented to effectively enforce the rule while maintaining revenue neutral status, as many states have revenue neutral or revenue positive lead/RRP programs. The EPA administers two grants to help with state management and enforcement of the RRP Rule, and New York would be eligible for funding if it sought authorization for one or more lead programs [3]. States that submit a proposal to become authorized for part of TSCA (including the RRP Rule) and are making sufficient progress toward authorization may receive a \$50,000 program implementation grant. Once they become authorized for RRP, states receive a base funding allotment of \$75,000 each year. The primary lead grant, administered through the Office of Chemical Safety and Pollution Prevention (OCSP), is a formula grant that can be used for development, implementation, and enforcement of RRP programs. A formula accounts for the number of lead programs administered by the state (since the grant covers RRP as well as lead-based paint activities/abatement and pre-renovation education), the magnitude and severity of a state's lead problem, the estimated workload of the state, and the state's workplan outputs. The average award to states and tribes under this grant is \$200,000 [3, 80, 87]. The other grant is a project grant administered by the Office of Enforcement and Compliance Assurance (OECA) and is specifically set aside for inspection and compliance monitoring activities. States are eligible for \$15,000-23,000 per authorized lead-based paint program in FY19. For FY20, this project grant is predicted to award \$3,276,000 to states implementing lead, PCB, and asbestos programs [87]. New York has very high numbers of pre-1978 housing units, children under age five, and low-income housing units with lead-based paint, so these would be accounted for in the formula [80]. Many of the other states who manage lead-based paint activities and RRP programs are funded almost entirely by the EPA, and all states generate revenue that can be allocated towards the lead program or state funds more generally through certification fees and fines.

Many of the other states who manage lead-based paint activities and RRP programs are funded almost entirely by the EPA, and all states generate revenue that can be allocated towards the lead program or state funds more generally through certification fees and fines.

The EPA currently charges \$300 every 5 years for a firm to become RRP certified [85]. According to the list of currently certified firms on the EPA’s website, New York has 7,726 RRP certified firms to date.^{bb} Depending on the amount charged for certification and the timing of the certification cycle, this could translate into many different revenue amounts. If New York kept the certification cycle and rate the same as EPA’s, the \$463,560 EPA is annually generating from New York firms would stay in the state. Then, once enforcement is strengthened and compliance improves, the number of certifications is likely to rise. States with rigorous enforcement infrastructure, like Oregon, have seen the number of certifications rising. States also collect fees when accrediting training providers (for example, the EPA charges \$560 for a 4-year training accreditation) and may collect fines for violations [37]. For some states, the revenue generated from fines is allocated towards specific lead or non-lead purposes (such as lead outreach in Oregon and school libraries in Wisconsin), and in other states fines contribute to the state general fund. Some states charge individual renovators for certification in addition to or in place of firm certification fees [50].

TABLE 6 Hypothetical revenue generated from firm certifications in New York

		CERTIFICATION FEE							
		\$50	\$100	\$150	\$200	\$250	\$300	\$350	\$400
NUMBER OF YEARS IN CERTIFICATION CYCLE	1	\$386,300	\$772,600	\$1,158,900	\$1,545,200	\$1,931,500	\$2,317,800	\$2,704,100	\$3,090,400
	2	\$193,150	\$386,300	\$579,450	\$772,600	\$965,750	\$1,158,900	\$1,352,050	\$1,545,200
	3	\$128,767	\$257,533	\$386,300	\$515,067	\$643,833	\$772,600	\$901,367	\$1,030,133
	4	\$96,575	\$193,150	\$289,725	\$386,300	\$482,875	\$579,450	\$676,025	\$772,600
	5	\$77,260	\$154,520	\$231,780	\$309,040	\$386,300	\$463,560	\$540,820	\$618,080

*This estimate assumes that New York has 7,726 Certified Firms (January 2020). Other states with RRP programs charge between \$25 for 5 years (Washington) and \$350 each year (Mississippi) for a firm certification.

The costs of the RRP Rule borne by non-governmental individuals and entities include training costs and work practice compliance costs. Initial training to become an RRP Certified Renovator in New York State usually costs between \$110 and \$300. The refresher course usually costs between \$100 and \$225 [16]. Firms and workers also bear the opportunity cost of time spent in the course that would otherwise have been spent working and earning money. Compliance with lead-safe work practices in New York state is estimated to cost \$348 per event based on the cost of materials and the labor hours used to carry out lead-safe work practices. This estimate includes \$190 for dust clearance testing, which is highly recommended by experts [18]. New York has 6,489,000 pre-1978 housing units and just under 500,000

^{bb}As of January 2020.

of them are expected to undergo renovations, repairs, and painting activities applicable under the RRP Rule each year. So, in total, the non-governmental costs of compliance with the RRP Rule each year in New York State are approximately \$181.1 million [27, 80].

However, the benefits of a strong RRP program are substantial. Compliance with lead-safe work practices prevents lead dust exposure for workers and residents, which results in fewer adverse health effects. Minimized exposure to lead dust allows individuals to develop higher levels of intelligence (as measured by the intelligence quotient, IQ) and better economic outcomes through further education, better career prospects, and improved lifetime health.

Individuals with a lifetime blood lead level of 1-10 micrograms per deciliter are predicted to see an IQ reduction of 0.88 points for each additional microgram per deciliter of lead in their blood. At higher concentrations of lead, the IQ reductions are even steeper. The vast majority of children exposed to lead during renovation activities are expected to have blood lead levels of less than 10 µg/dL, but prevented exposure at low levels is predicted to generate huge gains across the population as a whole [74]. Each RRP event with lead-safe work practices is expected to prevent a 1 µg/dL increase in child blood lead levels on average, which results in higher average IQ of the cohort and the economic benefits that accompany this improvement. For the 2019 birth cohort alone, these economic benefits would total about \$585.4 million over their lifetimes. Compared to the costs of testing and compliance with lead-safe work practices, the net benefits are more than \$404 million [18, 27].

Ultimately, all stakeholders cited in this report believe that states are better equipped to manage effective RRP programs. Many stakeholders, especially those in other state governments, cited additional advantages of state-run RRP programs. Some believe that having the regulating body (which in this case would be New York State) closer to home is beneficial and contributes to better relationships between the regulator and the regulated community. Others recognized that state-run programs retain all of the revenue generated from fees and fines, so states have more control over allocating their funding. RRP states are also able to capitalize on available federal funding to manage state-specific programs.

Program Management Considerations

The RRP Program in New York State could be managed by the Department of Labor or Health or both. The other states with RRP authorization house their programs in a variety of departments, proving that the program can be effective through multiple types of agencies (see Table 4). The Department of Labor is a compelling choice, since labor-oriented programs build strong relationships with contractors and achieve better compliance. The lead program would

Minimized exposure to lead dust allows individuals to develop higher levels of intelligence (IQ) and better economic outcomes through further education, better career prospects, and improved lifetime health.

also logically function well alongside the Asbestos Control Bureau in the Department of Labor’s Division of Safety and Health. The Asbestos Control Bureau oversees asbestos abatement, including the licensing of contractors and certification of asbestos workers, and the New York State Department of Health oversees all asbestos-related accreditation and training [15, 54]. The Asbestos Control Bureau also includes four district offices (in Albany, Buffalo, New York City, and Syracuse) to manage inspections and enforcement across the state. New York’s lead/RRP program would have similar requirements to asbestos (training, certification, inspections, etc.) and the Asbestos Control Bureau’s inspectors (with additional staffing and funding, of course) could be trained to implement and enforce lead regulations as well. Local housing and public health officials already work closely with Department of Labor officials on asbestos issues and the partnerships could be extended to combat lead issues as well [15, 17]. Additionally, RRP programs in labor-oriented departments send a clear message: lead-safe work practices first and foremost benefit the workers who are exposed to lead through their occupation.

TABLE 7 Program management considerations for RRP in New York

DEPARTMENT OF HEALTH		DEPARTMENT OF LABOR	
Pros	Cons	Pros	Cons
Works closely with local health departments	Less connected to contractors	Houses the Asbestos Control Bureau and manages certifications, inspections, and enforcement for asbestos	Does not currently do lead work
Local health departments are already conducting thousands of inspections each year	Potentially burdensome to local health departments	Manages the Mold Program	Although the rule protects workers, it is primarily designed to protect children because they are more vulnerable and cannot consent to lead exposure
Manages accreditation of asbestos training providers		Has nine district offices around the state	
Primary prevention is a public health necessity		Closer relationship with contractors	

New York could set up its RRP program to closely resemble the EPA’s, or it could develop more stringent rules. Nearly all RRP states have set up their own accreditation and training cycle, and most of them are shorter than EPA’s in order to have a more stable source of revenue from certification fees. Washington State charges as low as \$25 for a 5-year firm certification, and Mississippi charges as much as \$350 for an annual firm certification. Based on qualitative research, the Health Justice Advocacy Clinic at Columbia Law School and other RRP states also recommend some additional requirements to maximize effectiveness of the RRP rule, including expanding prohibited practices

to include dry scraping/sanding, heat guns at any temperature, ineffective test kits, power washing, and unconfined water blasting. New York should also consider adopting dust clearance testing requirements, a Start Work Notification requirement, and demolition standards, as recommended by experts and other states [18, 34].

Rigorous enforcement of the RRP Rule is essential. Besides paperwork audits and inspections when possible, the EPA Region 9 office penalizes any firm that bids to do work on a pre-1978 facility and is not RRP certified and has found this enforcement mechanism to be highly effective [27]. This is one aspect of the RRP Rule that is rarely enforced, but firms cannot perform, “offer” or “claim to perform” work on pre-1978 housing and child-occupied facilities without RRP certification [86].

Complementary Lead Rules

In order to have a successful lead poisoning prevention program, New York State would need to implement a rigorous enforcement process with multiple checkpoints. The most effective way to do this is with regular inspections. If there are any inspections that are already occurring, adding a check for RRP compliance can be very effective. Importantly, inspections alone will not make homes safer. In fact, inspections may increase rates of renovation and remediation, which could cause further harm if not conducted in a lead-safe manner. Additional means of enforcement will also be necessary. Many states with existing RRP programs (whether they have the complementary requirements or not) recommend a requirement for RRP certification in the building code and for all building permits; many also recommend RRP certification as a requirement for all licensed contractors. States also cited awareness and outreach as a challenge, so vigorous efforts to inform the public and do-it-yourselfers of the RRP Rule and lead-safe work practices will be essential.

LOCAL CHECKPOINTS

New York State does not issue contractor licenses at the state level. However, several counties and municipalities issue contractor licenses and the state should incentivize them to require RRP certification with those licenses by tying funding to this requirement [41].^{cc} This is especially important for municipalities with very old housing stock, where most of the contractors will be working in pre-1978 homes regularly.

The building permitting process can also be used as a checkpoint for RRP certification by adding RRP compliance to the Uniform Building Code. The cities of Buffalo and Rochester require proof of RRP certification to apply for a building permit but New York State’s Uniform Building Code only has a statement affirming the EPA’s lead-based paint RRP regulations and does not give municipalities specific ability to enforce the rule [17, 19].^{dd} The state should grant code enforcement

^{cc}Home improvement contractors must have a license to work in New York City, Buffalo, Suffolk County, Nassau County, Westchester County, Putnam County, and Rockland County. City of Buffalo now requires all licensed contractors to obtain RRP Certification [17].

^{dd}It reads: “In addition to requirements of this code, 40 CFR 745 (titled “Lead-based Paint Poisoning Prevention in Certain Residential Structures”), a regulation issued and enforced by the Federal Environmental Protection Agency, applies to certain activities in buildings that may contain lead-based paint, including renovations performed for compensation in “target housing” and “child-occupied facilities,” “abatement” of lead-based paint hazards and other “lead-based paint activities” (as those terms are defined in 40 CFR Part 745).” [55].

officials the ability to deny building permits if proof of RRP certifications for the firm and renovator(s) are not provided for pre-1978 properties [41]. Minnesota and Wisconsin have taken this action to help ensure RRP compliance. Minnesota’s rule specifically mandates that municipalities issuing permits to renovators verify RRP certification.^{ee}

If renovators do not comply with RRP, they are engaging in actions that are a public health hazard. Some counties, including Erie County, have the authority in their Sanitary Code to issue “stop work orders” to prevent additional environmental damage from happening when officials witness a blatant violation of lead-safe work practices. New York State should codify this mandate in the State Sanitary Code so that all county health departments can immediately stop egregious violations of the RRP Rule [16, 17].^{ff} However, stop work orders only pause one instance of RRP violations and carry no penalty that would discourage future transgressions.

OUTREACH AND EDUCATING THE PUBLIC

A study on RRP work related to elevated blood lead levels in children in New York during 2006-2007 found that 66% of the harmful renovation work was done by owner-occupants or tenants – to whom the RRP Rule does not apply [39]. However, New York State should make it a public health priority to offer educational materials about the importance of lead-safe work practices and what the requirements and recommendations are. Erie County Department of Health offers free lead-safe work practices classes for homeowners, and initiatives like this should be expanded across all counties in New York [16]. The state should also pursue an ambitious public information campaign to spread awareness of renovation-induced lead poisoning. Landlords and homeowners should be informed about the RRP Rule so that they understand the importance of using lead-safe work practices, hiring RRP certified firms, and recognizing unsafe work practices.

^{ee}Minnesota’s regulation reads:

“When issuing permits in compliance with the State Building Code to a residential building contractor, residential remodeler, manufactured home installer, or residential roofer licensed under section 326B.805, municipalities must verify lead certification qualifications of the licensee required under subdivision 14 for renovations performed on residential property constructed prior to 1978. Municipalities may charge a surcharge for verification of this certification under section 326B.815, subdivision 2. The state or any political subdivision must not impose a fee for the same or similar certification as required under Code of Federal Regulations, title 40, section 745.89.” [36].

^{ff}The revised Erie County Department of Health Sanitary Code gives County Department of Health officials the ability to stop all work done without proper lead-safe work protocol. From April to October 2019, 53 stop work orders were issued [29].

RECOMMENDATION

Ultimately, New York State should adopt the RRP Rule in order to have more robust enforcement and better compliance with this important lead poisoning prevention program. To that end, advocates, legislators, public servants, the governor, and the Attorney General need to come together to develop an implementation plan and seek authorization. However New York decides to run its program, the most important step is getting enforcement authority so that lead poisoning due to renovation activities can be prevented. Importantly, an effective strategy for New York State would include clear goals of the program (with benchmarks and tracking mechanisms), internal controls for accountability, strategic coordination between parties, and innovative ways of improving compliance. These are the key lacking areas for which the EPA has been criticized by the Inspector General [77].

Lack of RRP enforcement in New York State presents a tremendous opportunity to further prevent lead poisoning and achieve a future where New Yorkers are healthier, more capable, and safe in their own homes.

INTERVIEWS

- [1] Interview with official from the Office of Pollution Prevention and Toxics at the Environmental Protection Agency headquarters. June 24, 2019.
- [2] Interview with official from the Lead Paint and Pesticides Compliance Section at the Environmental Protection Agency Region 2 Office. July 1, 2019.
- [3] Personal correspondence via phone call with official from the Grants Management Branch at the Environmental Protection Agency Region 2 Office. July 17, 2019.
- [4] Interview and personal correspondence via email with official from the Massachusetts Department of Labor Standards. June 13, 2019.
- [5] Interviews with two officials from the Iowa Department of Public Health. June 13, 2019 and June 19, 2019.
- [6] Interviews with two officials from the Delaware Department of Health and Social Services, Division of Public Health. June 17, 2019 and June 26, 2019.
- [7] Interview with official from Oregon Health Authority's Public Health Division. June 18, 2019.
- [8] Interview with official from Oregon Construction Contractors Board. June 24, 2019.
- [9] Interview and personal correspondence via email with official from Oregon's Childhood Lead Poisoning Prevention Program. June 26, 2019.
- [10] Interview with official from the Wisconsin Department of Health Services, Division of Public Health. July 1, 2019.
- [11] Interview with official from the Oklahoma Department of Environmental Quality. June 27, 2019.
- [12] Personal correspondence via email with an official from the Rhode Island Department of Health.
- [13] Interview and personal correspondence via email and phone call with two officials from the Kansas Department of Health and the Environment. July 3, 2019.
- [14] Interview with official from the Minnesota Department of Public Health. July 3, 2019.
- [15] Personal correspondence via phone call with official from the New York State Department of Labor's Buffalo office. July 10, 2019.
- [16] Interview and personal correspondence via email with four officials from the Erie County Department of Health. July 2, 2019.
- [17] Interview with official from the Buffalo Department of Permits and Inspection. July 17, 2019.
- [18] Interview and personal correspondence with senior analyst at Altarum. July 11, 2019 and January 16, 2020.
- [19] Personal correspondence via phone call with Associate Professor at the University of Rochester Medical Center.

- [20] Personal correspondence via phone call and email with official from the Division of Safety and Health in the New York State Department of Labor.
- [22] Personal correspondence via phone call with member of the New York State Advisory Council on Lead Poisoning Prevention and lead poisoning prevention advocate.
- [23] Interview with official from the Mississippi Department of Environmental Quality. January 8, 2020.
- [24] Personal correspondence via phone call with EPA Region 2 Lead Program Manager. January 17, 2020.
- [25] Personal correspondence via phone call with individual who teaches RRP training courses, serves as a consultant on RRP and lead issues, and advocates for RRP and lead poisoning prevention.

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