Article/Study Title	Author/Source	Key Takeaways	Link									
, a construction of the second s		<ul> <li>Every still has state has some amount of lead water mains with the Midwest, NY, NJ and</li> </ul>										
Lead Pipes Are Widespread and Used in Every State	NRDC	Texas having the most         All states struggle with the mapping of current lead lines as inventories were not historically kept and each state has its own way of maintaining records (some do not keep records at all)           NRDC estimates that there is a range of 9.7 million to 12.8 million pipes that are, or may be lead, spread across all 50 states           Includes chard for each states population and estimated LSL number (Lead Service Line)	https://www.nrdc.org/resources/lead-pipes-are-widespre	ad-and-used-even	ustate							
States Say They Lack 'Road	indo	Up to local water systems to <b>voluntarity</b> find the lead pipes, design projects to replace them, and then apply for federal funding through the state them, and then apply for federal funding through the state the accessed of the state of the the existence of the state of the california has completed a lead-pipe survey, however, this has not yet accounted for orivate owned land.		ad-and-used-every	-31810							
Map' to Spend Feds' Lead Pipe Funds	Bloomberg law	Some states are still awaiting guidance from the EPA as to how money from federal grants should be spent.	https://news.bloomberglaw.com/environment-and-energ	y/states-say-they-la	ack-road-map-to-s	pend-feds-lead-p	pipe-funds					
		Trenton — like many other water systems — dosan't know where all of its lead service lines are. State governments have only a fraction of the picture.     New lead pipes were banned at the federal level in 1986, and states came into compliance in the three years following.										
		<ul> <li>Water utilities have never been required to thoroughly inventory their lead pipes before a crisis. And only in rare instances are they required to replace them under the EPA's lead and copper rule.</li> <li>Not every American with a lead service line is continuously drinking high levels of lead.</li> </ul>										
Time bomb' lead pipes will be removed. But first water utilities have to find them	NPR	Utilities use treatments, like orthophosphate, to keep water from corroding the lead pipes and draw out the toxic metal. But changes in the water chemistry, like that in Trenton, or construction that shakes up a lead pipe can suddenly cause a problem • Many utilities calim responsibility for the portion of the service line running from a water main to the croperty line or curb stor. They say the customer is responsible for the rest.	https://www.npr.org/sections/health-shots/2022/07/20/11	12049811/lead-ning	e-removal							
		Me puper y me to contract, they say the customers is responsible for the rest. Many municipalities and utilities are still thrying to determine whether and where they have lead pipes, and local leaders say they lack the resources to quickly replace lead lines without steep increases in residents water bills. Grants typically require communities to put up matching dollars—a requirement that could	There are an	120-30 Finead-pipe	<u>o romova</u>							
Lead Pipe Removal Speeds		be a hurdle for low-income cities. The American Water Works Association, a Denver-based nonprofit that provides advocacy and education on water quality issues, estimates lead pipe removal nationwide could cost §60 billion. Even that number could prove to be low, as the prevalence of lead lines is still unknown in many places and replacement costs can vary widely by location. Another issue is the many lead pipes on private property—health hazards that many										
Up as Federal Stimulus Dollars Flow	Pew trusts	homeowners cannot afford to replace. Fixing those pipes can cost several thousand dollars per household.     Studies have found that Black and brown children are far more likely to have elevated	https://www.pewtrusts.org/en/research-and-analysis/blo	gs/stateline/2021/09	9/29/lead-pipe-ren	noval-speeds-up	-as-federal-stimu	ulus-dollars-flow				
		Level of the state of the state of the state and of them call there are all and the state of										
Revealed: US cities refusing to replace toxic lead water		<ul> <li>Studies have found that partial lead service line replacements can unleash "erratic spikes" of lead into dinking water; however, the vast majority of the 11,000+ water utilities in the US engage in this practice</li> <li>a recent study of Washington DC's early lead replacement programs found that when the water provider for the city asked residents to pay for replacement of the portions of pipes on their own property, 68% of homeowners in the weathtree parts of the city took advantage of the program,</li> </ul>										
pipes unless residents pay	the guardian	compared with only 25% for areas with the lowest incomes. The US Environmental Protection Agency (EPA) is now mandating an inventory noting the material makeup of every single service line delivering diriking water by October 2024. Under the new rules: unknown materials are assumed to be lead too.	https://www.theguardian.com/us-news/2022/jul/20/us-ci	ies-force-residents-	-pay-thousands-re	place-lead-pipes	s-risk-drinking-to:	xic-water				
Race is On to Remove Lead Pipes from Under the US	esri	CIS was one of the best tools for that. Note said, because they could quantify the probability of lead pipe using GIS analysis and them mark it on the map.     Updated public-facing online dashboard showing where work has been done and how much is left has helped in communicating the project sprogress to residents.	https://www.esri.com/about/newsroom/blog/mapping-lea	d-pipe-removal/								
		<ul> <li>"Only with validated records that clearly identify and document service lines, can water systems finally make the strategic investments that will make lead in our drinking water a public health concern of the past."</li> </ul>										
As Federal 'War' on Lead Pipes Gains Traction, 120Water Launches Additional Service Line Inventory Management Solutions	cision	<ul> <li>In water systems nationwide, service line recordkeeping is inconsistent at best, which leaves most systems unable to articulate and document the scope of funding and resource needs for service line replacement and without the systems in place to meet LCRR expectations."</li> <li>100vater partners with public water systems to devolop a preliminary inventory by identifying, analyzing, and digitizing existing inventory data, using machine learning technology to predict the probability of leads in service lines of unknown material type.</li> </ul>	https://www.pmewswire.com/news-releases/as-federal	war-on-lead-pipes-4	gains-traction-120	)water-launches-	additional-servic	e-line-inventory-ma	inagement-solution	ons-301296962.h	<u>tml</u>	
		<ul> <li>Lead and copper enter drinking water mainly from corrosion of lead and copper containing plumbing materials.</li> </ul>										
		<ul> <li>Lead was widely used in plumbing materials until Congress banned its use in 1986.</li> </ul>										
		There is no safe level of lead.     Lead exposure in children can cause behavioral issues, IQ decrements and decreased academic nerformance.										
		Lead exposure in adults can result in increased blood pressure, hypertension, symptoms of     depression, immune effects and lead to coronary heart disease and death.										
		- Estimated costs for LSLRs range from \$2500 to more than \$8000 per line. suggesting an estimated cost of eliminating all 6.5 to 10 million LSLs nationwide ranging from 16 to 80 billion dollars.										
		Potential costs may be disproportionately borne by specific low-income localities,										
Lead and Copper Rule Revisions White Paper October 2016	EPA	•To the extent water systems rely on homeowners to pay for replacement of privately owned portions of lines, there are concerns about consumer's ability to pay and the possibility that lower-income homeowners will be unable to replace lines, resulting in disparate levels of protection.	https://www.epa.gov/sites/default/files/2016-10/docume	ts/508_lcr_revision	<u>is_white_paper_fi</u>	nal_10.26.16.pd	f					
Concerned About Lead in Your Drinking Water	EPA	How to identify potential lead sources in your home (water main, goose neck, faucet, solder) How to reduce exposure: only cold drinking water, dean aerator, certified water filter, running tap Visual test for lead piese using magnet and coin and how to locate water meter in step by step	https://www.epa.gov/sites/default/files/2017-08/docume	nts/epa_lead_in_dri	inking_water_final	8.21.17.pdf						
Do You Have Lead Pipes in Your Home? (app/tool)	NPR	Only NSF/ANSI Standard 53 water filters can remove lead from water	https://apps.npr.org/find-lead-pipes-in-your-home/en/#ir	tro								

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Guidance for Developing and Maintaining a Service Line		<ul> <li>Just this August, the EPA posted a long-awaited guidance for water systems to develop and maintain and inventory of lead service lines in each state</li> <li>Locating LSLs is the 1st and critical step in replacement programs</li> <li>Bill dedicated \$15 Billion in LSR kinding through the DWSRF and is provided to states with no match requirement</li> <li>Inventories allow water systems to publicly track their progress on LSLR, engaging community and</li> </ul>										
Inventory 2022	EPA	enhancing transparency •EDF found that each line replaced yields a \$22,000 payback in reduced deaths from cardiovascular	https://www.epa.gov/system/files/documents/2022-08/Inventory%20Guidance_August%202022_508%20compliant.pdf									
	Environmental Defense Fund (EDF)	disease — that's more than \$205 billion over 35 years. -American University research on more than 3400 lead service line replacements conducted in Washington D.C. from 2009-2018 showed unintended consequence of disproportionally impacting low-income and Black households	https://www.edf.org/blog/2020/03/12/everyone-needs-th	eir-lead-pipes-repl	aced-not-just-tho:	se-who-can-affor	d-it#:~:text=In%20	)a%20new%20an	alysis%2C%20we	ə.%24205%20billi	on%20over%2035	%20years.
Vox map of lead exposure risk of every neighborhood in America	vox, Sarah Frostenson and Sarah Kliff	-Reporting standards for lead pipes vary state to state which makes inventories difficult -Country has a hodgepodge of data -Risk scores do not necessarily correspond to individual's risk of exposure -We don't really know where the problem is; we don't know where to target our resources to protect Idds, "Bruce Lanphear, professor at Simon Fraser University in Vancouver who studies lead exposure in children	https://www.vox.com/a/lead-exposure-risk-map									
lead service line replacement	Maureen Cunningham and Olya Egorov in American City&County	-Small towns who attempted to cover full lead line replacement for homeowners were successful because of funding -Eau Claire, WI was successful in replacement projects due to: funding, passing a city ordinance mandating private homeowners replace lead lines communication with the public. -Public outreach and keeping tabs on contractors doing the replacement work helped Eau Claire execute its replacement program smoothy -Small cities' LSLR success relies on: local, grassroots groups encouraging community buy-in, establishing trust in public sector and providing language translation for residents -Partnerships and regionalized approaches to lead removal cut down on stretched municipal resources.	https://www.americansilyandcounty.com/2021/02/25/hov	v-small-cities-are-1	ackling-lead-serv	vice-line-replacen	ient/					
History of Lead Regulation in	NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF MUNICIPAL FACILITES	In The 1986 Safe Dinking Water Act Lead Ban: required the use of "lead-free" pipe, solder, and flux in the installation or repair of any public water system or any plumbing in a residential or non-residential facility providing water for human consumption. The 1980 Lead Contamination Control Act (LCCA) - Congress enacted to reduce lead exposure in drinking water in schools and child care centers public water suppliers to monitor lead in drinking water for hordow the transmitter field coper at unaceptable levels. The 1991 Lead and Copper Rule (LCR): Requires public water suppliers to monitor lead in drinking water and provide treatment for corrosive water if lead/copper at unacceptable levels. The 2011 Reduction of Lead in Dinking Water Act (RLDWA): amended the 1986 lead ban to make a stricter limit for the definition of lead free in ping and fittings.	https://deg.nd.gov/publications/mf/HistoryOfLeadRegula	tionInDrinkingWat	erSupplies.pdf							
	Leonard N. Fleming The Detroit News	In 2019, 244 Flint children between the ages 4 and 8 were tested for lead in their bloodstream and showed that one in four received a clinician's diagnosis of devated blood lead levels research showed a substantial public in negative health outcomes among Flint children following the water crisis 44% of children with lead showed hyperactivity, 39% had emotional agitation, 29% had comprehension issues/learning delays, while 39% of children had skin rashes and 11% experienced hair loss	https://www.detroitnews.com/story/news/local/michigan/	2022/01/26/quarte	r-flint-kids-have-e	elevated-lead-lev	els-blood-cornell-s	study-finds/922674	<u>45002/</u>			
Watered Down Justice	NRDC	-Enacted in 1974, the Safe Drinking Water Act (SDWA) was supposed to ensure access to safe drinking water across the country -Threats to our drinking water systems are everywhere: agricultural practices, chemical releases, andiquated and crumbing infrastructure that allows contaminants to leach into and inflitrate tap water, and inadequate contaminant removal. -race, ethnicity, or language spoken had the strongest relationship to slow and inadequate enforcementi of the SDWA of any sociodemographic characteristic analyzed -Between June 1, 2016 and May 31, 2019 there were 170,959 violations of the SDWA in 24,133 community water systems across the U.S. Nearly 40 percent of the U.S. population blained their water from drinking water systems thar were in violation of the law. -431 counties across the country with the highest rate of drinking water violations also had the highest racial, ethnic, and language vulnerability.		stice-report.pdf								
Getting the Lead Out of Drinking Water	Robinson Engineering	-Illinois now requires replacement of lead service lines (\$8,500-\$12,000 each) -Details replacement from an engineering perspective -Details required documentation and permits to carry out LSLR in Illinois -Surveys of rivite homes should be incentived, request photos and detail visual check steps -Discusses funding options for Illinois municipalities	https://www.reltd.com/_files/ugd/903a54_5bbcfb3c9a19-	4bd68cb0fc248ecf	<u>9319.pdf</u>							
Bipartisan Infrastructure Law: State Revolving Funds Implementation Memorandum March 2022	EPA	-EPA strongly encourages states to devote funding and technical assistance to help local water systems develop lead service line inventories and undertake replacement planning -Under the Lead and Copper Rule Revisions, all water systems must have initial inventories by Oct 2024, but EPA urges states to employ technical assistance set-aside funds to help water systems develop inventories more quickly	https://www.epa.gov/system/files/documents/2022-03/bi	I-srf-memo-fact-sh	eet-final.pdf							
FACT SHEET: The Biden- Harris Lead Pipe and Paint Action Plan	The White House	President and Vice President made replacing lead pipes a centerpiece of the Bipartisan Infrastructure Law     EPA allocating \$3 billion in Bipartisan Infrastructure Law funding to states, Tribes, and Territories for lead service line replacement in 2022     EPA will also partner with states to provide technical assistance to help disadvantaged communities overcome barriers to funding through the SRFs.     There are more than 148.000 public water systems in the U.S. The EPA will establish Technical Assistance Hubs in select regions with a large concentration of lead service lines     CDC Childhood Lead Poisoning Prevention Program, includes 62 funded jurisdictions across the U.S. The program conducts surveillance of blood lead levels, provides education and outreach to communities	https://www.whitehouse.gov/briefing-room/statements-re	eleases/2021/12/11	6/fact-sheet-the-b	oiden-harris-lead-	oipe-and-paint-ac	tion-plan/				
In Jackson, Miss., a water		<ul> <li>Jackson's high percentage of low-income residents—in one of the poorest states in the country—limits steady and predictable revenues for public services, including diriking water and waitswate</li> <li>Ackson warned citizens of tead teves is water in 2016, but ofty could not afford to replace pipes and moved for corrosion control, leaving homeowners to bear responsibility for lead pipes and health risks.</li> </ul>										
crisis has revealed the racial costs of legacy infrastructure	Brookings	<ul> <li>In the case of Jackson, legacy infrastructure goes hand-in-hand with a legacy of racism.</li> <li>The costs of legacy infrastructure parallel long-standing economic and racial disparities in the region.</li> </ul>	https://www.brookings.edu/blog/the-avenue/2021/03/26/	in-jackson-miss-a-	water-crisis-has-	revealed-the-raci	al-costs-of-legacy	-infrastructure/				