Working with Clean Water Action: Lead Service Line Replacement in Priority Communities

Introduction

This semester I had the pleasure of working with Clean Water Action (CWA), a national organization that, as described on their page, "helps communities campaign successfully for safer water, clearer air, and protection from toxic pollution" with a specific focus on Environmental Justice (EJ) populations. Although CWA works on a diverse set of environmental issues, my task this semester was focused on the presence of lead service lines (LSLs) in Massachusetts and locating which communities might have the most need for LSL replacement based on specific criteria that I would be researching.

The Issue

One phrase I learned from the CWA team was that there is "no safe level of lead exposure" that a person can have. My time working with them enlightened me to the fact that lead can have long standing health issues from even the slightest exposure, a risk that is especially present toward young children who are still developing. Measures have been taken in the legislative world against lead paint, and lead in consumer products, yet it seems as though lead issues in water are still fighting for notice, as existing lead laws do not encompass regulations for lead in water. One change that has been made is the banning of LSLs in 1986, but this law did not encompass the LSLs that were already in place. Because of this, there are many places in Massachusetts that still receive their water from these lines.

Another issue is that there is currently no comprehensive inventory of existing LSLs; this lack of information makes it difficult to ascertain where replacement needs to occur, or which communities are most at risk of lead poisoning. Currently, the Environmental Protection Agency and the Massachusetts Department of Environmental Protection are working on making a public LSL inventory by 2024. For now, based on the information obtained through the limited inventory that does exist, canvassing methods, and individual research, CWA estimates that there are 200,000 LSLs still in use in Massachusetts.

Research and Methodology

From the issues listed, there is a clear goal in mind: initiate LSL replacement to ensure the safety of Massachusetts citizens. CWA plans to do this through grant applications from multiple organizations, such as the Massachusetts Water Resources Authority and local Massachusetts foundations. Due to the lack of inventory, I helped CWA determine what communities to prioritize based on a few different parameters. While the goal is ultimately to eradicate all LSLs, we narrowed the focus to EJ communities

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that could benefit from the advocacy of a larger organization. In order to do this, I created a spreadsheet of each county in Massachusetts and each city in each county, creating columns to note their demographic data, environmental justice designation, housing stock, and "high risk" designation.

The demographic data I collected consisted of the racial make-up, median household income, and language distribution of each city. The data was recorded from the US Census Bureau. These parameters were chosen so that, when determining communities for CWA to focus on, priority could be given to those areas that are primarily communities of color and/or low income communities compared to the Massachusetts average. The language data was taken for the prospect of outreach in these cities; as LSL replacement isn't a quick endeavor, CWA plans to educate priority communities on the dangers of lead exposure and how to minimize the risk while it is still active. By learning the majority languages that a community speaks, they will be able to reach every community member.

City/ Town	Racial demographics	Income demographics	Language demographics
Billerica	White: 79.6% Black: 6.2% Asian: 7.3% Native Pacific Islander: 0.1% Hispanic: 4.3% Multiracial: 2.8%	\$123,630	Portuguese: 2.4% Gujarati: 2.1% Spanish: 1.9%
Chelmsford	White: 82.0% Black: 1.3% American Indian: 0.1% Asian: 9.2% Hispanic: 4.2% Multiracial: 4.4%	\$53,430	Spanish: 3% Telugu: 1.8% Portuguese: 1.5% Gujarati: 1.4% Hindi: 1.3% Khmer/Khmai: 1.2% Tamil: 1.2% Chinese: 1.1%
Dracut	White: 83.3% Black: 2.8% Asian: 3.9% Hispanic: 7.2% Multiracial: 5.1%	\$95,229	Portuguese: 1.7% Spanish: 1.5%

I next noted the environmental justice designation of each city, a label that comes from the official Massachusetts government website. The designation of an environmental justice community is based on three categories: household income, minority population, and language isolation. Essentially, the broader topics of the demographic data I collected previously. The Massachusetts government labels each city with either an "M" if they are a majority community of color, an "I" if the annual median household income is 65% or less than that of the statewide household income, an "E" if 25% or more of households

¹ Example of a set of demographic data from Billerica, Chelmsford, and Dracut. Information obtained from <u>https://www.census.gov/</u> and <u>https://mass-eoeea.maps.arcgis.com/apps/webappviewer/index.html?id=dffdbf9c109647fc9601f7524c1fd9f4</u>

identify as speaking English less than "very well," or a combination of any of the three. While the data from the census bureau allows us to view the specific makeup of a community, and therefore the best ways to reach these areas, this provides a quick visual designation of each community's needs.

Municipality	EJ criteria	Number of EJ block groups	Total number of block groups	Percent of EJ block groups	Population in EJ block groups	Total population	Percent of population in EJ BGs
Acton	Μ	3	16	18.8	5621	24021	23.4
Acushnet	I	1	6	16.7	1166	10559	11.0
Adams	I	6	8	75.0	6761	8166	82.8
Agawam	I	2	17	11.8	2484	28692	8.7
Amesbury	I	2	14	14.3	2701	17366	15.6
Amherst	MI	19	22	86.4	35670	39263	90.8
Andover	М	1	22	4.5	2013	36569	5.5

2020 Environmental Justice Populations

Updated Nov. 2022

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Following this data, I also researched housing stock information. My task was to search for the percentage of houses constructed before 1978, as these houses would be more at risk of being serviced by LSLs due to their construction before the lead ban was established. This data, however, was harder to come by. Getting specific information on when a majority of houses in a city were constructed was not a readily available statistic, and separating the information by such a specific year was even more difficult to narrow down, most likely in part due to the lack of LSL inventory. However, I eventually was able to find a Massachusetts housing website that specifically compiled difficult to obtain housing information using various sources such as the census bureau, building permits, Zillow, and similar sites.

City/ Town	Percentage of houses constructed prior to 1978	Total Housing Units	Housing Units Constructed Prior to 1978
Lowell	81%	44,129	35,744

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Here, I was able to get information on houses built prior to 1978 by combining percentages from different data ranges and gathering a numerical value by taking said percentage from the amount of houses in that

² An excerpt from the official Massachusetts environmental justice map, taken from <u>https://www.mass.gov/info-details/environmental-justice-populations-in-massachusetts</u>.

³ Example of housing information from Lowell, Massachusetts. Data taken from <u>http://www.housing.ma/</u>.

area. This information would allow CWA to see just how many households might be at the highest risk of lead poisoning, another factor to potentially prioritize a community.

The last category I noted was the designation by the Massachusetts Department of Public Health of a "high risk community" in reference to lead exposure. This labeling is based on lead poisoning statistics from lead screening, the age of housing, and income levels. In 2021, 16 communities were officially labeled "high risk."

2021 High-Risk Communities ¹				
 New Bedford Holyoke Springfield Fall River Lynn Lowell 	 Brockton Lawrence Worcester Everett Malden Chicopee 	 Westfield Pittsfield Boston Haverhill 		

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From this data, myself and CWA are able to target the counties, and the cities within these counties, that are not only at the highest risk, but may need more advocacy from an organization such as Clean Water Action to get them the help that they both need and deserve.

Results

The ultimate goal for my research during the duration I partnered with CWA was to provide information so that they may submit a grant proposal to initiate LSL replacement in a chosen area. Following my research, CWA narrowed their focus down to Merrimack Valley, which spans through Essex and Middlesex counties. As an example, Merrimack Valley contains the cities of Lowell, Lawrence, and Haverhill: three cities that are each labeled a minority community, having below average household income, are language isolated, and are all listed by MassDEP as high risk communities. As outlined in the grant proposal, and taken from the information I was able to provide, there are a total of 75,870 housing units that were constructed prior to 1978 in these cities alone. Based on this number, CWA estimates that "if each unit contained a lead service line and served four residents, 300,000 people would benefit in one single generation." This is certainly a low estimate, as it can be assumed that more than four residents often reside in one household.

Focusing on Merrimack Valley will allow CWA to minimize the harms stemming from lead exposure where they might pose the greatest risk. The research done will hopefully allow CWA to draft

⁴ Massachusetts Department of Public Health official list of communities that are at "high risk" of lead exposure. Taken from <u>https://www.mass.gov/doc/2021-annual-childhood-lead-poisoning-surveillance-report-0/download</u>.

more grant proposals and initiate more LSL replacement across Massachusetts now that the process has begun.

Conclusion

The research I did allowed me to expand my knowledge on the wide scope of environmental issues that need to be tackled, and how a big way to make change is through advocacy. While wanting to eradicate a problem entirely is a worthwhile goal to maintain, this process showed me that starting somewhere, and starting with those who may need it the most, is an important endeavor to embark on. There will always be more work to be done, whether that includes expanding lead in water issues into legislature, or solidifying laws against toxics in general, or anything under the wide scope of environmentalism that threatens the planet and the people who live on it, and it is therefore necessary for organizations like Clean Water Action to step in and fight to make change. It meant a lot to work with an organization that prioritizes communities in need, and while I was able to provide an initial stepping stone for change, I hope my resources and the research I have left will allow others to take up the mantle as well and keep our communities happy and healthy.