

Action Civics Project: Water Quality in Chelmsford

What affects it and why it's important

Issue Identification

- In 2023, the Chelmsford DPW reported unsafe quantities of PFAS6 and other contaminants in the town's drinking water, and in 2024 PFAS6 was reported at the higher end of the acceptable spectrum in Chelmsford's drinking water
- PFAS have been linked with increased rates of cancer and other serious illnesses, imbalance of beneficial and harmful bacteria in the gut microbiome, and low fertility rates
- PFAS take very long periods of time to decompose as they are not naturally occurring and are also very mobile in water, meaning they can be rapidly dispersed across large areas



Root Causes

- PFAS are found in a variety of commonly used items such as weather-treated fabrics and other materials as well as firefighting foam and even takeout containers
 - They are also often found in biosolids such as lawn fertilizers and personal care products such as cosmetics or dental floss
- Chlorine is typically added to water at treatment facilities to help kill harmful pathogens but it is also introduced to water in runoff from natural deposits
 - Levels may also spike due to high swimmer load, runoff from household cleaners, and algae blooms
- Sodium is naturally occurring but is also commonly used in water softening agents and de-icers
 - Also commonly found in wastewater treatment plants, sewage, and industrial waste



Interested Parties

- Chelmsford Water District: Manages water use and quality in Chelmsford under the zip code 01824, including monitoring harmful contaminants in drinking water
 - Separate water supply from the North Chelmsford Water District and Lowell Regional Water Utility despite the three parties often working together
 - In position to help make a change as they control Chelmsford's water and its quality. They have the ability to put in place new restrictions or filtration practices to make Chelmsford's water safer
- North Chelmsford Water District: Manages water use and quality in North Chelmsford under the zip code 01863
 - Did not receive any water from the Chelmsford Water District or Lowell Regional Water Utility in 2024, despite working in conjunction with the two other parties
 - In position to make a change as they control North Chelmsford's water and its quality. They have the ability to put in place new restrictions or filtration practices to make North Chelmsford's water safer
- Civilians of Chelmsford: Civilians in Chelmsford and North Chelmsford are at direct risk of a variety of health complications due to current and past contaminants in Chelmsford's water



Proposed Solution	Explanation	Potential Benefits	Potential Negatives
Take Everyday Actions	Water contamination can be greatly reduced if effort is made to properly dispose of harmful chemicals such as motor oil and pesticides, limit the use of garden and lawn fertilizers, and properly dispose of medications.	Many if not most of contaminants found in water originate from things as common as lawn fertilizer and improperly disposed of paint so this option offers an easy way for not only the DPW but also civilians to make an effort to reduce waste in water.	Many people are not educated on how to properly dispose of common water contaminants. Along with this, there are already PFAS and other chemicals present in the water which take hundreds of years to decompose, so while everyday action would prevent future contamination, it would not filter current contamination.
Organize Environmental Cleanups	Physical waste such as plastic bottles in water can be physically removed by hand, eradicating threat of contamination of water in the area.	As it would most likely be volunteer work it is a very inexpensive option and also offer volunteer hours to students to help build resumes. It could also be used to fulfil community service hours for those with criminal charges.	As it would be mostly volunteer-based there is risk of low turnout. In addition, while physically removing waste is beneficial, that does not mean that there aren't still contaminants in the water that need to be filtered more finely.
Push Companies to Work to Phase Out PFAS Chemicals in Favor of Safe Alternatives	Companies using PFAS are the root source of water contaminants so their action could halt future contamination completely.	It would directly cease further PFAS production by a drastic amount if not completely depending on how cooperative companies are.	Many companies would likely be highly resistant to any type of change in production because it could mean decreased output and could be expensive.

Action Plan: Take Everyday Actions

The most beneficial and easiest enacted solution for this problem is in taking everyday actions to properly reduce and dispose of waste.

- Easy and accessible for the everyday civilian, requiring minimal payment and effort
- Requires little to no government action or funding. Local government could put some funding into educating the public on proper waste disposal but awareness could be made of water contamination and waste disposal through something as simple as lawn signs
- Would require the Chelmsford Water District and North Chelmsford Water District in order to enforce proper disposal of waste that could contaminate water
- Would not require ballot initiative as it does not drastically change the lives of civilians



Steps for Action Plan

1. FOR LOCAL GOVERNMENT/DPW: Put out information on how to properly dispose of common hazardous wastes such as synthetic fertilizers and latex-based house paint
2. FOR CIVILIANS: Work to properly dispose of waste and possibly put up signs or post on social media promoting proper disposal of household waste

And it's as simple as that! A small change can make a big difference.



Reflection

- As a result of my efforts on this project, I learned that despite there being an emphasis on water quality and great efforts being made to improve it in Chelmsford's public policy, a majority of the town's water quality issues likely resulted from civilians and therefore civilians have the most power in making a change
- Additionally, I learned that the average civilian, myself included, are personally capable of creating huge amounts of water contaminants that can then hurt other people, therefore individually, people should be more aware of how their small actions can leave lasting negative impacts
- Finally, I learned that pollutants directly impact humans and not just animals living in the wild, to the extent that they can lead to predicaments such as cancer and low fertility



Works Cited

North Chelmsford Water District, <https://northchelmsfordwater.com/>. Accessed 22 May 2025.

Russell Mill Swim And Tennis Club: Home, <https://russellmill.com/>. Accessed 28 May 2025.

Chelmsford Water District. “Consumer Confidence Reports.” *Chelmsford Water District*, 2023, <https://www.chelmsfordwater.com/operations/water-quality/pages/consumer-confidence-reports>. Accessed 19 05 2025.

Chelmsford Water District. “Riverneck Water Treatment Plant.” *Chelmsford Water District*, 2025, <https://www.chelmsfordwater.com/treatment-plants/pages/riverneck-water-treatment-plant>. Accessed 30 5 2025.

“Crooked Spring Water Treatment Plant | Chelmsford Water District.” *Chelmsford Water District* |, <https://www.chelmsfordwater.com/treatment-plants/pages/crooked-spring-water-treatment-plant>. Accessed 30 May 2025.

Cyber Environmental. “Corrosion Threat of De-Icing Salts and Road Salts.” *Cypher Environmental*, 1 June 2023, <https://cypherenvironmental.com/2023/06/01/corrosion-threat-of-de-icing-salts-and-road-salts/>. Accessed 28 May 2025.

“Deer Island Wastewater Treatment Plant.” *MWRA*, <https://www.mwra.com/your-sewer-system/sewer-treatment-facilities/deer-island-wastewater-treatment-plant>. Accessed 4 June 2025.

Works Cited Continued

“Drinking Water | US EPA.” *Environmental Protection Agency*, 8 July 2024, <https://www.epa.gov/report-environment/drinking-water>. Accessed 23 May 2025.

“Fire Extinguisher Safety.” *Poison Control*, <https://www.poison.org/articles/fire-extinguisher-safety-184>. Accessed 28 May 2025.

Honeycutt, Holly. “How to Store and Dispose of Paint Properly.” *Lowe's*, <https://www.lowes.com/n/how-to/store-dispose-paint-properly>. Accessed 4 June 2025.

Household Hazardous Products Collection Center. “Why Fertilizer is a Hazardous Household Product.” *Household Hazardous Products Collection Center*, 13 October 2021, <https://www.nedt.org/why-fertilizer-is-a-hazardous-household-product/>. Accessed 4 June 2025.

“How Can You Help Protect Source Water? | US EPA.” *Environmental Protection Agency*, 10 February 2025, <https://www.epa.gov/sourcewaterprotection/how-can-you-help-protect-source-water>. Accessed 23 May 2025.

Massachusetts Sierra Club. “Reports Show Widespread PFAS Contamination of Ground and Surface Water in Massachusetts.” *Massachusetts Sierra Club*, 18 October 2021, <https://www.sierraclub.org/massachusetts/blog/2021/10/reports-show-widespread-pfas-contamination-ground-and-surface-water>. Accessed 5 June 2025.

Works Cited Continued

“Our Current Understanding of the Human Health and Environmental Risks of PFAS | US EPA.” *Environmental Protection Agency*, 26 November 2024, <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>. Accessed 19 May 2025.

“PFAS – the 'Forever Chemicals.'” *CHEM Trust*, <https://chemtrust.org/pfas/>. Accessed 21 May 2025.

Simon, Matt. “This New York town doesn't want to be a climate experiment.” *Grist Magazine*, 6 December 2024, <https://grist.org/health/biochar-sewage-new-york-upstate-moreau-climate-experiment/>. Accessed 4 June 2025.

Town of Chelmsford Massachusetts. “Community Involvement to Keep Stormwater Clean.” *Town of Chelmsford Massachusetts*, 2025, <https://www.chelmsfordma.gov/515/Community-Involvement-Keep-Stormwater-CI>. Accessed 5 June 2025.

“Transfer Station / Recycling Center.” *Winchester, MA*, <https://www.winchester.us/196/Transfer-Station-Recycling-Center>. Accessed 4 June 2025.