

Heal the Bay

Ash to Action Update: Heal the Bay's Post-Fire Ocean Water Quality Data

THIS ANALYSIS COVERS DATA COLLECTED BY HEAL THE BAY IN **JANUARY 2025** AND DOES NOT REPRESENT THE CURRENT WATER QUALITY IN THE SANTA MONICA BAY

PUBLISHED MARCH 27, 2025 - Following the devastating urban megafires that swept through Los Angeles communities in early January, Heal the Bay scientists have been actively working to safeguard and restore coastal waters. While the fires were still burning, researchers from the California Cooperative Oceanic Fisheries Investigations reported observation of ash coating the ocean surface up to 100 miles offshore, indicating the potential for widespread impacts. Soon after fire tore through neighborhoods, burning electric cars, solar panels, and the plastic that makes up nearly everything in our homes these days, the first rains in nearly a year washed over it all, potentially washing it all out to sea. And even today, the ocean continues to receive additional fire related contaminants from the waves lapping against twisted metal, concrete and glass that once made-up beachfront homes along Pacific Coast Highway. The potential scope of contamination has been horrifying for all who love, recreate in, and admire the incredible marine life in our gorgeous Santa Monica Bay.

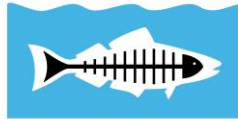
As char and debris started washing up on beaches from Santa Monica to Redondo, concerns from the community got louder. The unprecedented nature of this climate disaster has meant that answers to important public health questions have gone unanswered...until now.

In this blog, we share details about our ocean water quality sampling and testing results, and we'll start to answer some of the big questions we're hearing from our community:

1. [What's in the water? And why is it taking so long to get data?](#)
2. [What is the risk to marine life?](#)
3. [Is it safe to go swimming or surfing?](#)
4. [Is it safe to take my family to the beach?](#)
5. [What's being done to remediate the contamination along our coast?](#)
6. [What can the public do to help?](#)

WHAT'S IN THE WATER?

Heal the Bay staff went into the field on January 24 and 25 (before the "first flush" rain event) and again on January 28 (after the rain) to test water quality inside and outside of the Palisades Fire burn zone (Figure 1). The sampling before the rain will show the impact of ash that settled into the water and contamination that may have come from burned homes in the tidal zone along Pacific Coast Highway (PCH). After the rains, we expect to see contamination that flowed through the storm drain system from throughout the Palisades Fire burn area.



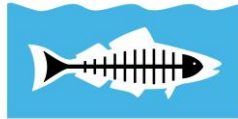
Heal the Bay



Figure 1. Heal the Bay scientist, Naomi Meurice, taking a water sample. Samples were taken at or near the break in knee to chest high water.

Photo credits: LA County Fire Department Photo Unit

We sampled 10 sites throughout Santa Monica Bay, from Paradise Cove to Malaga Cove (Figure 2), testing for Polycyclic Aromatic Hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs), Per- and polyfluoroalkyl substances (PFAS), benzene, heavy metals, fecal indicator bacteria, and turbidity. Samples were taken from the shore, at or around the break, in knee to chest high water. Processing these samples takes a long time due to several factors, including the complexity of sample preparation, the need for precise instrumentation, and the rigorous quality control required, so it took several weeks to receive the data results back from [Physis Lab](#). Then additional time was needed for the Heal the Bay's Science and Policy Team to analyze and assess the data. **Since it is now March, these data do not tell us the current conditions in the Santa Monica Bay, but they do provide valuable insight on what contaminants entered the ocean after the fire, the impacts of the Palisades Fire on marine life, and the potential impacts on human health.**



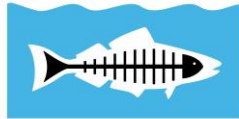
Heal the Bay



Figure 2. Map of Santa Monica Bay with sites sampled by Heal the Bay. Paradise Cove (PC) and Malaga Cove (MC) serve as control sites. Las Flores Canyon (FC), Big Rock (BR), Topanga Beach at Topanga Creek Outlet (TC), and Will Rogers at Temescal Canyon (WRT) fall within the burned area, which is shown in pink. Additional locations (Surfrider Beach [SB], Will Rogers at Santa Monica Canyon [WRSM], Santa Monica Pier [SMP] and Dockweiler State Beach [DSB]) were also sampled to see the effects of ocean currents and the transport of contaminants.

To understand the human health impacts from recreational contact in the ocean (swimming, surfing, playing in the waves), we tried to identify applicable water quality standards – but outside of bacteria they are not readily available. We looked at the [California Ocean Plan](#), which establishes human health limits for various non-carcinogenic and carcinogenic chemicals to protect human health from prolonged exposure. Unfortunately, the human health limits in the CA Ocean Plan are based on the consumption of fish that have absorbed pollutants, not on recreational exposure. **Exceeding these limits does not necessarily cause immediate harm, but rather increases health risks over time with consumption of organisms that have absorbed pollutants within their tissue.** The CA Ocean Plan does not include all of the pollutants that may be present after an urban megafire, so Heal the Bay also compared our test results to [National Water Quality Criteria for Human Health](#) and [CA drinking water standards](#). And just before publishing this blog, we were made aware of an [EPA Tool](#) that can help determine risk-based limits for recreational contact with contaminants.

In total, Heal the Bay tested for 116 pollutants, most of which were either not detected or detected but below the health limits to which we compared results (Table 1). However, a few pollutants (PCBs, PAHs,



Heal the Bay

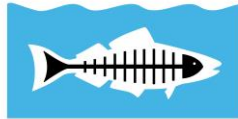
and some heavy metals) exceeded limits in the CA Ocean Plan for human or marine health, sometimes elevated to 10x the health limit. **Beryllium and PAHs** stand out, with results at or above CA Ocean Plan health limits at multiple sampling sites, both before and after the rain event. **Again, these standards are for the consumption of fish, not recreational contact. We were able to determine that, based on the risk-based threshold for recreational contact (14.6 µg/L), there is no apparent health risk associated with beryllium concentrations in ocean water in our January testing.** We are working with public health experts to determine the risk-based threshold for recreational contact for PAHs which is more complicated given that we tested for 25 different PAHs. We hope to have better information on the risk-threshold for PAHs in the next two weeks.

IN THE BURN AREA: The highest levels of pollution were observed at **Topanga Beach**, the coastal access point for Topanga Creek - a large freshwater drainage transporting fire debris from the burn zone; **Big Rock**, where the remains of burned structures stand directly along the coast and within the tidal zone; and **Will Rogers State Beach at Temescal Canyon**, another burn zone drainage closer to high-density residential areas. NOTE: Our sampling was conducted before EPA hazardous waste staging operations began at Topanga Creek and Will Rogers State Beach, therefore our results do not reflect impacts from those operations.

SOUTH OF THE BURN AREA: A few heavy metals spiked further south at Santa Monica Pier and Dockweiler State Beach, indicating the potential for some migration of pollution south of the burn zone.

CONTROL SITES: Contamination in ocean waters was limited north of the burn zone at Paradise Cove and Surfrider Beach, and minimal at Malaga Cove at the south end of Santa Monica Bay, offering control site conditions.

Many groups, including researchers (Proteocean Lab at USC), municipalities (LA County Department of Public Health), and agencies (LA Regional Water Quality Control Board), continue to collect water quality samples in Santa Monica Bay. Heal the Bay will share and report on any available results, comparing new data to these initial findings. To see all of the data that Heal the Bay has compiled, check out our [Data Spreadsheet](#).



Heal the Bay

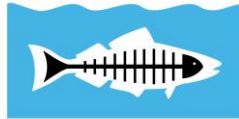
Pollutant Category	Pollutant	Units	Marine Health		Source	Human Health		Effect
			Maximum Limit	Average Limit		Average Limit	Source	
PCB	PCB	ng/L	-	0.03	National Water Quality Criteria: Aquatic Life	0.019	California Ocean Plan - Human Health	For marine life, bioaccumulation leads to reproductive issues, immune suppression, growth and developmental impacts, eggshell thinning, etc. For human health, PCBs in seafood can pose risks to human consumers, including increased cancer risk, developmental disorders, and endocrine disruption.
PAH	Phenanthrene	ng/L	4600	-	Hawaii Surface Water Action Level - Marine Habitats	8.8	California Ocean Plan - Human Health	Some PAHs are carcinogenic; others are noncarcinogenic but can still bioaccumulate, and disrupt reproduction and immune function.
	Anthracene	ng/L	730	-	Hawaii Surface Water Action Level - Marine Habitats			
	Fluoranthene	ng/L	7100	-	Hawaii Surface Water Action Level - Marine Habitats			
	Fluorene	ng/L	3900	-	Hawaii Surface Water Action Level - Marine Habitats			
	Pyrene	ng/L	10000	-	Hawaii Surface Water Action Level - Marine Habitats			
Heavy Metals	Beryllium	ug/L	0.038	-	Hawaii Surface Water Action Level - Marine Habitats	0.033	California Ocean Plan - Human Health	Even at low concentrations, heavy metals can disrupt vital biological processes, damage cells, and impair reproductive and immune functions for marine animals. Metals accumulated in seafood can pose similar risks to human consumers.
	Chromium	ug/L	8	2	California Ocean Plan - Marine Aquatic Life	190000	California Ocean Plan - Human Health	
	Copper	ug/L	12	13	California Ocean Plan - Marine Aquatic Life	1300	National Water Quality Criteria - Consumption of Organisms	
	Lead	ug/L	8	2	California Ocean Plan - Marine Aquatic Life	15	California Regulations Related to Drinking Water - Action Level	
	Nickel	ug/L	20	5	California Ocean Plan - Marine Aquatic Life	100	California Regulations Related to Drinking Water - Maximum Level	

Table 1. Marine and Human health limits for pollutants of concern present in the Santa Monica Bay after the Palisades Fire. Polychlorinated Biphenyls (PCBs) measured in nanograms per liter (ng/L); Polycyclic Aromatic Hydrocarbons (PAHs) (ng/L) and Heavy Metals measured in micrograms per liter ($\mu\text{g} / \text{L}$). [See the table here.](#)

ASSESSING RISK TO MARINE LIFE

For the Palisades Fire, heavy metals are the main concern for marine health. Even at low concentrations, heavy metals can disrupt vital biological processes, damage cells, and impair reproductive and immune functions for marine life. Metals can also be transferred and magnified through the food chain (a process called “bioaccumulation”). This impacts the entire food web, which inevitably impacts humans.

In general, metal concentrations peaked at **Big Rock** during dry weather, indicating that the burned structures located within the high tide line are likely a major source of heavy metal pollution at this site (Figure 5). Heavy metals concentrations at Big Rock decreased in wet weather, though remained above marine health limits, indicating that the rain event on January 26 may have actually provided some dilution. Beryllium, copper, chromium, nickel, and lead were detected above maximum marine health limits (immediate impacts) at multiple locations (Figures 6–10). Silver, arsenic and zinc were also detected above average marine health limits (long-term impacts). There are also elevated levels of aluminum, iron, and manganese, though no marine health limits exist for these metals.



Heal the Bay



Figure 5. Big Rock Beach sampling site after the Palisades Fire, with burned structures located within the high tide.

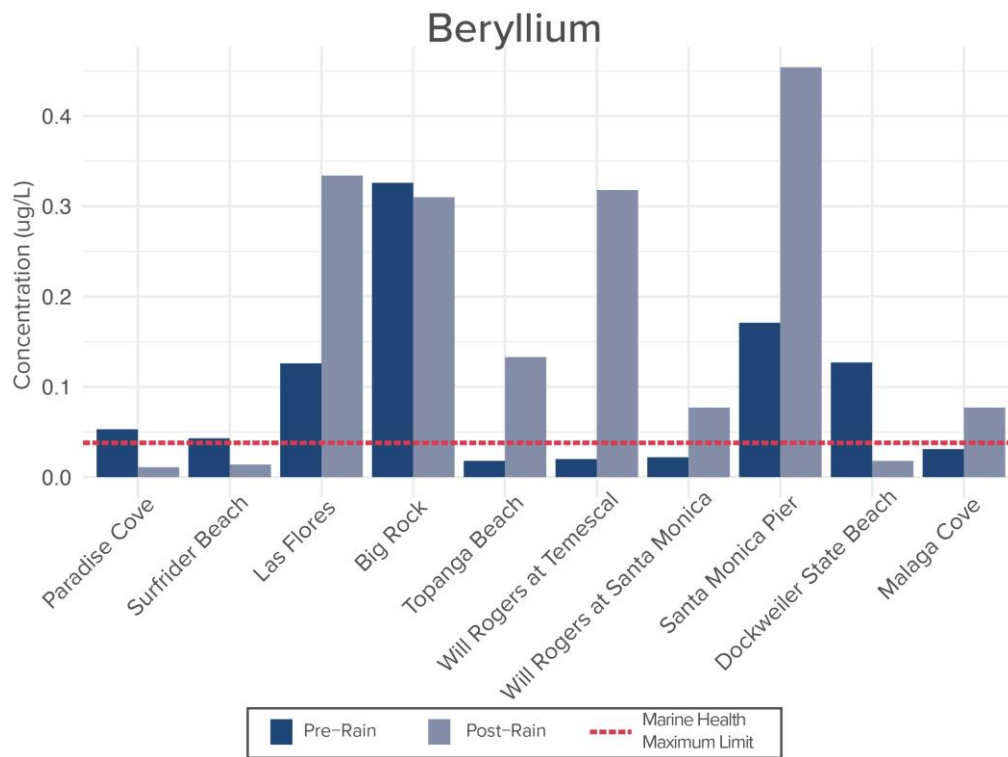


Figure 6. Concentration of Beryllium ($\mu\text{g/L}$) at sites within Santa Monica Bay in late January 2025. Dark blue represents Pre-Rain samples (January 24–25), and light blue represents Post-Rain samples (January 28). The red dotted line (- - -) indicates the Hawai'i Surface Water Action Level for Marine Habitats Maximum Limit, which is $0.038 \mu\text{g/L}$ for beryllium.

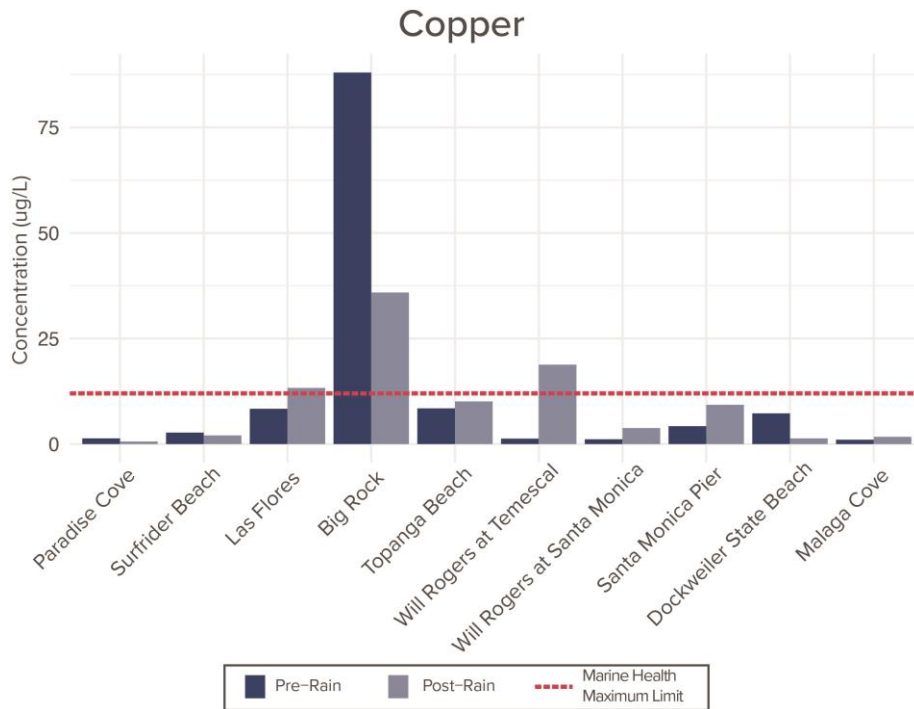


Figure 7. Concentration of Copper ($\mu\text{g/L}$) at sites within Santa Monica Bay in late January 2025. Dark blue represents Pre-Rain samples (January 24–25), and light blue represents Post-Rain samples (January 28). The red dotted line (- - -) indicates the California Ocean Plan for Marine Aquatic Life Maximum Limit, which is $12 \mu\text{g/L}$ for copper.

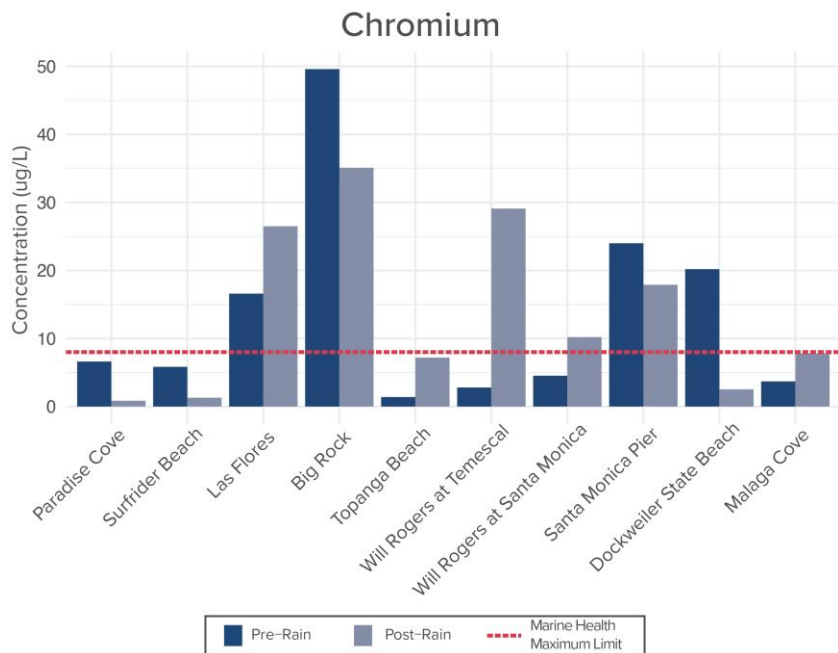




Figure 8. Concentration of Chromium ($\mu\text{g/L}$) at sites within Santa Monica Bay in late January 2025. Dark blue represents Pre-Rain samples (January 24–25), and light blue represents Post-Rain samples (January 28). The red dotted line (- - -) indicates the California Ocean Plan for Marine Aquatic Life Maximum Limit which is 8 $\mu\text{g/L}$ for chromium.

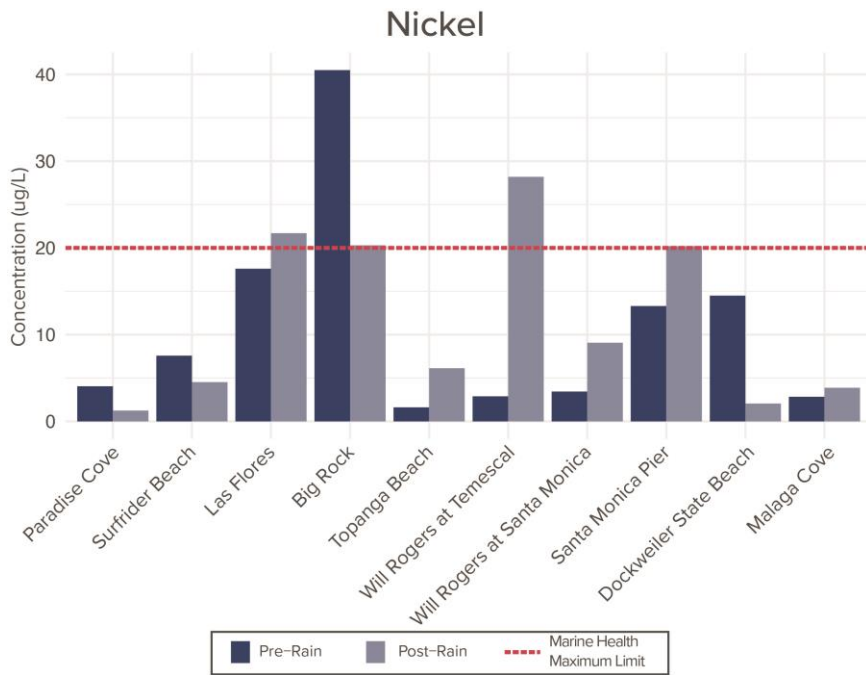


Figure 9. Concentration of Nickel ($\mu\text{g/L}$) at sites within Santa Monica Bay in late January 2025. Dark blue represents Pre-Rain samples (January 24–25), and light blue represents Post-Rain samples (January 28). The red dotted line (- - -) indicates the California Ocean Plan for Marine Aquatic Life Maximum Limit, which is 20 $\mu\text{g/L}$ for nickel.

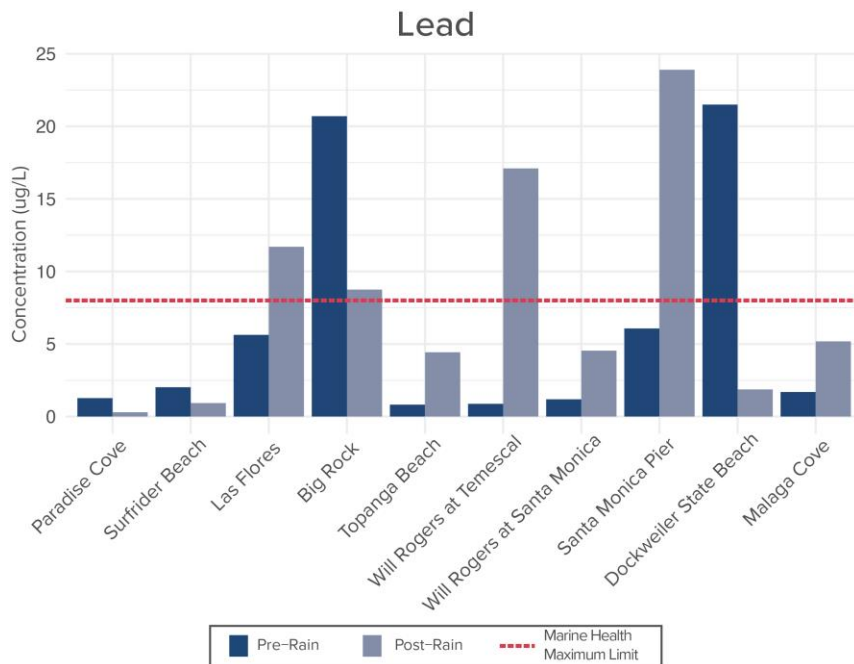


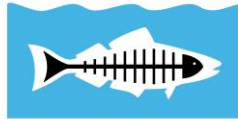
Figure 10. Concentration of Lead ($\mu\text{g/L}$) at sites within Santa Monica Bay in late January 2025. Dark blue represents Pre-Rain samples (January 24–25), and light blue represents Post-Rain samples (January 28). The red dotted line (---) indicates the California Ocean Plan for Marine Aquatic Life Maximum Limit, which is $0.8 \mu\text{g/L}$ for lead.

IS IT SAFE TO GO SWIMMING OR SURFING?

This is one of the most challenging questions to answer for a number of reasons:

1. Since laboratory analyses take several days to several weeks, we aren't getting testing results in a timely manner. This means that by the time we receive the data, it is already out of date. Furthermore, we don't have enough samples over time to draw conclusions about trends.
2. We don't have background or baseline data for many of the pollutants for which we are testing because we don't test for them regularly.
3. Human health standards for recreational contact don't exist for most of the contaminants in our data set.
4. Water quality varies significantly along the coast and doesn't match assumptions about water quality trends (i.e. that water quality will improve as you move south along the coast away from the fire-impacted area).
5. We don't have data from beaches between Dockweiler and Malaga Cove so it is challenging to assess the water quality in the South Bay.

Risk tolerance is a personal decision, so here is some information that can help you decide if, when, and where you may want to enter the ocean.



Heal the Bay

- Contaminants tested seem to be below human health limits for recreational contact. Risk thresholds are still being assessed by the Los Angeles Regional Water Quality Control Board, including those for PAHs.
- The contaminant that may be above human health limits, PAHs, are unlikely to cause you to get sick from swimming or surfing a few times, but frequent or prolonged exposure may contribute to an increased risk for future chronic health issues.
- Ocean water at Paradise Cove, Surfrider Beach and Malaga Cove appear to be the least impacted by fire-related contaminants.
- Elevated pollutant levels and physical hazards, such as sharp metal and broken glass, have been observed in the fire-impacted area between Las Flores and Santa Monica State Beach at Montana Ave.
- We have limited data from beaches in the South Bay which makes it difficult to fully understand the impacts of the fire in that area, but it is unlikely that it is of poorer quality than beaches closer to the burned area.

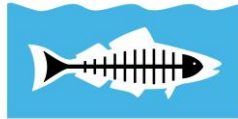
We have also begun to analyze test results from the Department of Public Health's February 18 sampling data which was collected after this season's most intense rainstorm to date, which occurred on February 13. We will post more about the [February 18 data](#) when our analysis is complete – stay tuned.

What's next? We expect to receive additional water quality data from our partners at USC who have been sampling ocean water weekly since early February. Analysis of this data should help us identify trends and provide better information on when and/or where folks can safely swim and surf. We also hope to have better information on risk thresholds for PAHs, and will provide an update as soon as that information becomes available.

IS IT SAFE TO TAKE MY FAMILY TO THE BEACH?

Contamination in the dry sand area would likely have come from ash deposition during the active fires in early January. Since that time, several rain storms have likely pushed that contamination deeper into the sand, reducing concentrations at the surface, but other concerns like sharp debris and even glass can still be found within and south of the burn area.

Heal the Bay has recently received preliminary [sand and sediment data](#) from the Regional Water Quality Control Board, and we are currently analyzing it (keep an eye out for a future post). The data includes results for heavy metals and based on this data, the dry sand on beaches south of Santa Monica State Beach at Montana Ave are least impacted. We are still waiting for results for PAHs and PCBs and will provide a full blog on sand data soon.



Heal the Bay

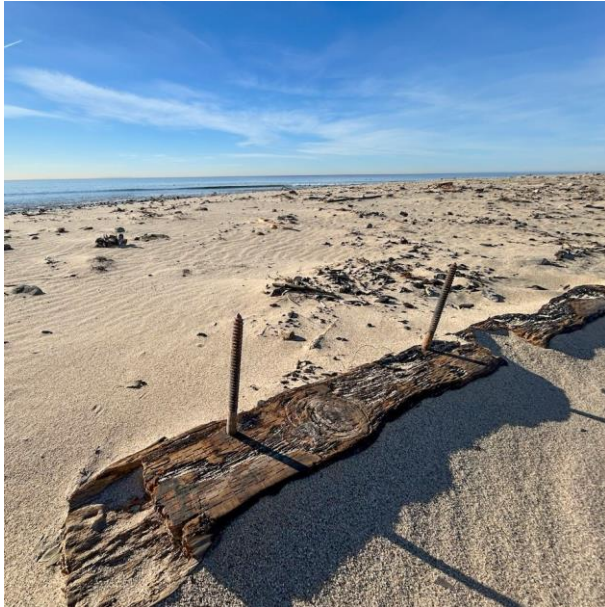


Figure 11: Fire debris observed along the Santa Monica Bay coastline posing physical risk to beachgoers. Image courtesy of [Los Angeles County Department of Beaches & Harbors](#).

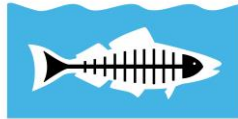
Here are some tips for a safer day at the beach:

- Don't touch trash or debris with your bare hands.
 - Keep children and pets away from debris, especially within the high tide area (wet sand) where trash and debris may expose you to additional contaminants.
 - Consider closed toed shoes since sharp debris such as nails and glass have been observed near the water.
- Until we have complete data on the quality of the sand, skip the sand castles or other activities where you are digging into the sand.

WHAT'S BEING DONE TO REMEDIATE THE CONTAMINATION ALONG OUR COAST?

The first step to a cleaner, safer coast is to stop the pollution from entering the ocean. Concurrently, we need to characterize the extent of contamination, and then determine a remediation plan. The greatest threats to the ocean and marine life are currently coming from the burned parcels along the Pacific Coast Highway (PCH) within the tidal zone, and from stormwater carrying debris from the fire-impacted areas to the coast. The most important thing that can be done to help our coast is to expedite the debris removal process, especially from the properties along PCH, which Heal the Bay is tracking. Our understanding is that Right of Entry (ROE) forms, which allow the US Army Corps of Engineers (USACE) access to do debris removal, have now been processed for approximately many of the homes on PCH and the USACE plans to remove debris from all parcels that "opted in" to the debris removal program by June 1, 2025. It appears that at least 45 homeowners have opted out, so we don't have a timeline on debris removal for those properties. Heal the Bay has been meeting with LA County Public Works (in charge of processing ROE forms), the US Army Corp of Engineers (leading the Phase 2 debris removal efforts), and local elected leaders to advocate for more urgency and transparency around the debris removal process. **NOTE:** the last day to "opt in" or "opt out" of the County of LA / USACE Phase 2 debris removal program is March 31st. If you know someone who lost their home, encourage them to submit their form by the deadline! The faster we remove debris, the faster our oceans can heal!

LA County Department of Beaches and Harbors is currently removing additional, larger debris from local beaches, prioritizing Topanga Creek and Will Rogers, where most of the fire debris is washing onto the beach with the stormwater. LA County Department of Public Works tested the debris and sediment at



Heal the Bay

these locations to determine if special handling was required. The data are available on the [LA County Department of Beaches and Harbors website](#), which also states that the initial sampling did not indicate the presence of hazardous materials.

Regarding characterization of the contamination, the Southern California Coastal Water Research Project is leading a taskforce that consists of the government agencies, universities, and NGOs that have conducted water quality testing throughout LA County. Heal the Bay is participating in this taskforce, and working in parallel to help share data collected by public agencies and university partners in future Ash to Action updates. We've previously shared water quality data from the LA County Department of Public Health, and now direct folks to additional water quality and sand/sediment data on the [Regional Water Board website](#), where we hope to see new data as it become available.

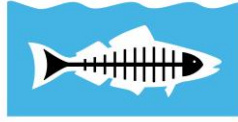
This update provides important information on the types of contaminants that entered our coastal waters immediately after the fire. We believe the data collected by the Regional Water Board on February 18, after the intense February 13 storm event, will also provide critical and more recent information on the contaminants along the coast. Once we have a better picture of what is going on, we will develop recommendations and advocate for how our region should address the contamination along our coast. Everything will be shared here on our blog.

While it is painful to see the char and fire debris along our shores, it is imperative that we are thoughtful and strategic in how we take action to help our coast. With the right data, we can make wise choices and avoid unintended consequences.

WHAT CAN THE PUBLIC DO TO HELP?

Here are three things the public can do:

1. Keep the pressure on our elected officials and government agencies. Let your City Councilmember or County Supervisor know this is something you care about, and that you want the relevant agencies (LA County Department of Public Health, LA County Public Works, LA County Beaches and Harbors, Cities of Malibu, Los Angeles, and Santa Monica) to prioritize the protection and restoration of our coastal waters. Ask for more transparency with public health data including ocean water quality testing and sand/sediment sampling. Specifically, you could ask the LA County Department of Health to:
 - Conduct water quality sampling in the South Bay.
 - Provide a narrative explanation of the water and sediment data, explaining impacts on human health.
2. Join one of Heal the Bay's [upcoming events](#) to be part of a meaningful effort to protect and restore our local environment through beach cleanups, community science, or engaging with the local marine life at the Heal the Bay Aquarium. We'll provide all necessary personal protective equipment (PPE) and comprehensive safety instructions to ensure a safe and impactful experience.



Heal the Bay

3. Support the organizations that are doing good work. Groups like Heal the Bay rely on the generosity of our community to be able to do water quality testing, advocate for policies to protect public health, and educate the public on the issues impacting our coastal waters. If you find this work helpful, please consider a donation so we can keep providing crucial analysis of the impacts of the fire on the Santa Monica Bay. [DONATE HERE](#).

Citations:

Ansari, T., Marr, I., and Tariq, N. (2003). *Heavy Metals in Marine Pollution Perspective—A Mini Review*. *Journal of Applied Sciences*, 4(1), 1–20. <https://doi.org/10.3923/jas.2004.1.20>

Hawai'i Department of Health. (2024). *Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater Volume 2: Background Documentation for the Development of Tier 1 Environmental Action Levels Appendix 1: Detailed Lookup Tables Hawai'i Edition*. Retrieved March 18, 2025, from <https://health.hawaii.gov/heer/guidance/ehe-and-eals/>

Kobra Z., Majid M., Masoumeh H., Kiadokht R., and Fatemeh A. (2024). *Association between exposure to water sources contaminated with polycyclic aromatic hydrocarbons and cancer risk: A systematic review*. *Science of The Total Environment*. Volume 924, 171261. <https://doi.org/10.1016/j.scitotenv.2024.171261>.

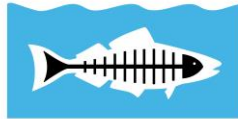
Kumar, A., Kumar, V., Chawla, M., Thakur, M., Bakshi, P., Jasrotia, R., Radziemska, M. and Kumar, R. (2025). *Advancements in Understanding Beryllium Contamination: Novel Insights Into Environmental Risk Assessment*. *Land Degrad Dev*, 36: 350-362. <https://doi.org/10.1002/ldr.5386>

Madiha Z., Rashid A., Ayesha A., Yasir S., Liaqat A., Mahpara F., Khalid A.K. and Shuangfei L. (2022). *Health and environmental effects of heavy metals*. *Journal of King Saud University – Science*. Volume 34, Issue 1. <https://doi.org/10.1016/j.jksus.2021.101653>

National Recommended Water Quality Criteria - Aquatic Life Criteria Table | US EPA. (2024, October). US EPA. Retrieved March 18, 2025, from <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>

National Recommended Water Quality Criteria - Human Health Criteria Table | US EPA. (2024, December 19). US EPA. Retrieved March 18, 2025, from <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table>

Sayed, F. A., Eid, M.H., El-Sherbeeney, A.M., Abdel-Gawad, G. I., Mohamed, E.A., and Abukhadra, M.R. (2025). *Environmental and health risk assessment of polycyclic aromatic hydrocarbons and toxic elements in the red sea using Monte Carlo simulation*. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-024-71547-4>



Heal the Bay

State Board's Division of Drinking Water. (2017). California regulations related to drinking water. In *California Regulations Related to Drinking Water*. Retrieved March 18, 2025, from https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/lawbook/dwregulations-2017-04-10.pdf

STATE WATER RESOURCES CONTROL BOARD, CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY, Esquivel, E. J., D'Adamo, D., Doduc, T. M., Maguire, S., Firestone, L., Sobeck, E., Bishop, J., California Coastal Commission, California Coastal Art & Poetry Contest, California Ocean Plan, and Labinger, Z. (2019). WATER QUALITY CONTROL PLAN OCEAN WATERS OF CALIFORNIA. In *California Ocean Plan*. Retrieved March 18, 2025, from https://www.waterboards.ca.gov/water_issues/programs/ocean/docs/oceanplan2019.pdf

Taylor, T.P., Ding, M., Ehler, D.S., Foreman, T.M., Kaszuba, J.P., and Sauer, N.N. (2003). *Beryllium in the Environment: A Review*. *Journal of Environmental Science and Health, Part A*, 38(2), 439–469. <https://doi.org/10.1081/ESE-120016906>

Zhou, J., and Maskaoui, K. (2002). *Distribution of polycyclic aromatic hydrocarbons in water and surface sediments from Daya Bay, China*. *Environmental Pollution*, 121(2), 269–281. [https://doi.org/10.1016/s0269-7491\(02\)00215-4](https://doi.org/10.1016/s0269-7491(02)00215-4)