

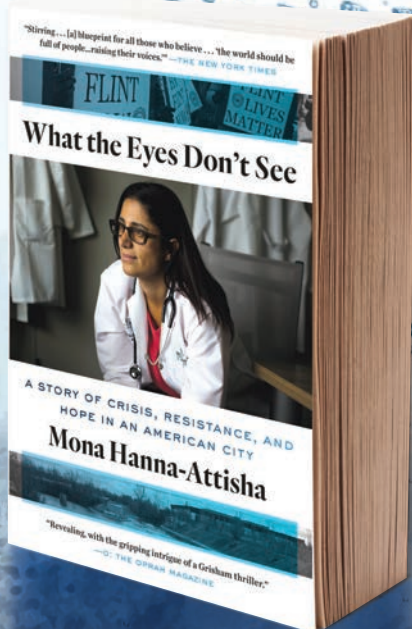
Presented by
**MICHIGAN
HUMANITIES**

GREAT MICHIGAN READ



What the Eyes Don't See

Mona Hanna-Attisha



A Story of Crisis, Resistance, and Hope
in an American City

WHAT IS THE GREAT MICHIGAN READ?

Great Michigan Read: One title, one state, and thousands engaged in literary discussion

WHAT IS THE GREAT MICHIGAN READ?

Since 2007, the Great Michigan Read—Michigan Humanities' signature program—has bridged communities across the state with Michigan-based fiction and non-fiction titles that spark dialogue among diverse perspectives, encourage a deeper understanding of the humanities, and connect thousands of readers with authors and engaging educational programming. The 2019–20 title—selected by six regional selection committees representing all corners of Michigan—is *What the Eyes Don't See*, by Mona Hanna-Attisha.

The 2019–20 Great Michigan Read begins in fall 2019 and concludes in fall 2020.

WHY *WHAT THE EYES DON'T SEE*?

What the Eyes Don't See is Dr. Mona's account of her discovery that Flint's children were being poisoned by lead leaching into the city's drinking water. Dr. Mona's willingness to fight for children and tirelessly advocate for change in and beyond Michigan is powerfully evident as she follows the science and her young patients' experiences to uncover one of the state's worst public health catastrophes.

Through Great Michigan Read events and conversations that will address water quality and access, environmental injustice, and intersections of the humanities and science, it is Michigan Humanities' hope that *What the Eyes Don't See* will increase opportunities for civil discourse across our state.

HOW CAN I PARTICIPATE?

Pick up a copy of *What the Eyes Don't See* and supporting materials at a participating location near you. Read the book, share and discuss it with your friends, and take part in Great Michigan Read events in your community.

Register your library, high school, college or university, book club, or other organization as an official Great Michigan Read partner to receive complimentary copies of the book, educational and promotional materials, and program and funding opportunities.

For more details, including upcoming event dates, additional resources, and online registration, visit michiganhumanities.org.



“There is so much Michigan love in this story—from my first days in the state as a Yooper, to growing up in Metro Detroit, to my education and training in Ann Arbor, East Lansing, and Detroit, and most important, my work with kids in Flint.” DR. MONA

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#GreatMichiganRead
#MIHumanities



A SPECIAL THANKS | Michigan Humanities is grateful to the following individuals, groups, and organizations for their collaboration during the development of the 2019-20 Great Michigan Read: the regional selection committee members and committee chairs, including Trisha Baker, Seán Henne, Wendy Irish, Jessica Luther, Eric Magness-Eubank, Sue Patterson, Linda Pride, Cathy Russ, Neil Shepard, and Terri Tomaszek; Mona Hanna-Attisha and Penguin Random House; Library of Michigan; Bill Castanier; Flint Public Library; Jennifer Rosseter (Image Creative Group); teachers Gregory Dykhouse, Jessyca Mathews, Peter Middleton, and Lacey O'Donnell; the Michigan Humanities Board of Directors and staff team; Arab American National Museum; Natural Resources Defense Council; *The Detroit News*; Midwest Collaborative for Library Services; and the statewide network of GMR partners and program resources.

WHAT THE EYES DON'T SEE AND AUTHOR MONA HANNA-ATTISHA

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MONA HANNA-ATTISHA, MD, MPH, FAAP, is a physician, scientist, and activist who has been called to testify twice before the United States Congress, awarded the Freedom of Expression Courage Award by PEN America, and named one of *Time* magazine's 100 Most Influential People in the World. An associate professor of pediatrics and human development at Michigan State University, she is also the founder and director of the Michigan State University and Hurley Children's Hospital Pediatric Public Health Initiative, a model program to mitigate the impact of the Flint water crisis so that all Flint children grow up healthy and strong.

"Some thirty-plus years later, I'm wearing the white coat. I'm smiling at the beautiful brown girl in front of me and firmly holding her hand. She's going to be fine, I tell her. She was mixed up in an accident. A lot of kids were. The accident wasn't her fault. And it is my job to make sure she is okay."

— *What the Eyes Don't See*

Accolades

2019-2020 GREAT MICHIGAN READ SELECTION

2019 READING ACROSS RHODE ISLAND SELECTION

2019 ONE MARYLAND ONE BOOK SELECTION

2019 LA TIMES BOOK PRIZE FINALIST

2019 MICHIGAN NOTABLE BOOK

2018 NEW YORK TIMES 100 NOTABLE BOOKS

2018 GREAT LAKES GREAT READS NON-FICTION AWARD

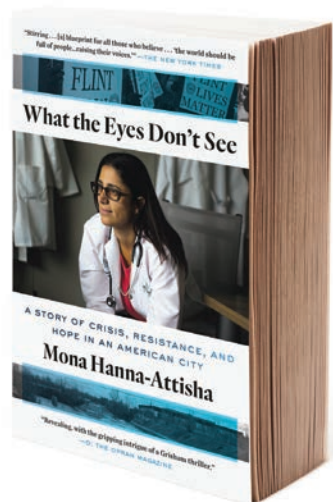
2017-2018 GENE E. & ADELE R. MALLOT BOOK PRIZE FOR RECORDING COMMUNITY ACTIVISM

WASHINGTON POST BESTSELLER

AN IBOOKS AND AMAZON BEST BOOK OF THE MONTH

OPRAH MAGAZINE'S TOP BOOKS OF THE SUMMER

From monahannaattisha.com





Q&A

WITH DR. MONA

How do you see science and the humanities intersecting in your daily work?

So much of my daily work is at the intersection of science and humanities. A patient who comes to see me in the clinic is a product of their culture, environment, history, language, and more. To embrace the humanities in medicine is to recognize that all of these other factors play a role in the ability for children to thrive and be healthy. Being a good doctor and scientist doesn't just mean knowing the pathophysiology of how the body works; it also means being well-rounded and well-read to understand the complexities of the human condition that go beyond the often myopic perspective of a clinician. This intersection allows us to advance science to better advance the human good.

Why is it important for Michiganders to read *What the Eyes Don't See*?

What the Eyes Don't See is a great Michigan read. From the Upper Peninsula to Traverse City to Gaylord to Metro Detroit and obviously Flint, the book traverses the entire state of Michigan with an eye toward Michigan history. From the progressive leadership of Governor Frank Murphy to the hate-filled broadcasts of Father Coughlin, *What the Eyes Don't See* helps us understand the

complexity of Michigan's past to better solve the problems of today. And the most important reason that Michiganders need to read this book is to better understand the Flint water crisis, Michigan's most emblematic environmental and public health disaster. Learning the lessons of Flint will hopefully embolden all Michiganders to work together to create a state where all our children can thrive.

What challenges did you encounter while writing *What the Eyes Don't See*?

Not enough time to write. Not wanting to stop writing—I could have kept writing and editing and researching forever. The challenge of ending the book when the crisis is ongoing—no clear “the end.” The challenge of weaving the family/personal with the Flint story.

FOR MORE INFORMATION ABOUT DR. MONA PLEASE VISIT:

monahannaattisha.com

AN EXCERPT

FROM *WHAT THE EYES DON'T SEE*



Like so many Michiganders, my story is an immigrant story. It was critical to share this part of the story in this memoir because it informs how I see the world and the work that I am privileged to do.” *Dr. Mona*

Excerpts from “How I Got My Name,” the prologue of *What the Eyes Don’t See*:



My grandfather Haji came up with my name. Haji was idolized for his charm, intelligence, and humanity. He was a businessman who lived in Baghdad and had a large, soulful view of the world, an iconoclastic wisdom. People in our family always wanted him to name their babies, probably for that reason.

He named me Mona because he thought it would be an easy name for both English and Arabic speakers to pronounce. My family was still living in England at the time but was planning to return to Iraq when

my dad’s studies at the University of Sheffield ended. He was getting a doctorate in metallurgy, which is what you study if you are going to

work on nuclear power plants—or nuclear weapons. But my dad was a progressive, a pacifist, and didn’t want his work to go toward making weapons for the repressive Ba’athist regime that dominated Iraq. He was interested in working with metals like zinc and aluminum and in creating new alloys. He has an engineer’s passion for making things work better—sometimes stronger, sometimes lighter, sometimes more durable.

In Arabic, my name is traditionally spelled and pronounced *Muna*. But Haji believed that, for me, the anglophone version, with a long o, was better. Haji was magical enough that maybe he foresaw that a Western name would work to my advantage. Either way, Mona means “hope, wish, or desire.”





DISCUSSION QUESTIONS

WHAT? HOW?

What stories are embedded in your name?

How have you interpreted the title of *What the Eyes Don't See* before, during, and after reading it?

Haji's lessons play a role throughout *What the Eyes Don't See*, including the story of how he taught Dr. Mona to “always do the right thing, even when it’s hard.” When was a time you did what others thought was impossible?

This is the story of the most important and emblematic environmental and public health disaster of this young century. More bluntly, it is the story of a government poisoning its own citizens, and then lying about it. It is a story about what happens when the very people responsible for keeping us safe care more about money and power than they care about us, or our children.

The crisis manifested itself in water—and in the bodies of the most vulnerable among us, children who drank that water and ate meals cooked with that water, and babies who guzzled bottles of formula mixed with that water. The government tried hard to convince parents the water was fine—safe—when it wasn't. But this is also a story about the deeper crises we're facing right now in our country: a breakdown in democracy; the disintegration of critical infrastructure due to inequality and austerity; environmental injustice that

disproportionately affects the poor and black; the abandonment of civic responsibility and our deep obligations as human beings to care and provide for one another. Along with that—which is a lot already—it's about a bizarre disavowal of honesty, transparency, good government, and respect for scientific truth.

Those are demoralizing realities to face. But there is another story, another side of Flint. Because it is also a story about how we came together and fought back, and how each of us, no matter who we are—parent, activist, a schoolteacher, a pediatrician—has with us a piece of the answer. We each have the power to fix things. We can open one another's eyes to problems. We can work together to create a better, safer world. A place where all children can develop without obstacles and barriers, without poisoned water or callousness toward their dreams. ”

NEWS FROM IRAQ *Via radio and correspondence with relatives and friends, Dr. Mona's family monitored the developments of Saddam Hussein's violent reign.*



KEY QUESTIONS AND RESOURCES



But there really are two Americas, aren't there? The America I was lucky to grow up in, and the other America—the one I see in my clinic every day. In that other America, I have seen things I'd wish I'd never seen. The things you run from, not toward. Things that would never be part of any dream. And for too many people, this nightmare is taking place right outside their front door. *What the Eyes Don't See*

What the Eyes Don't See connects readers to events and ideas rooted in the humanities, sciences, and arts. Throughout Dr. Mona's narrative, those areas intersect in complex ways, and among many others, the key questions below emerge.

What questions did you have as you read and considered your own Michigan community?

history

How do laws and policies enacted decades ago still shape the present day and future?

How does your family's history remain alive in your own life?



power

What individual and collective power do we hold as advocates, allies, and activists?

What ethical and civic responsibilities do leaders have to their communities?



COMPLEMENTARY READING AND VIEWING

From Michigan history to urban development and environmental injustice, this list provides a sampling of supplementary resources related to the content and themes of *What the Eyes Don't See*.

Find an extensive list at monahannaattisha.com and additional Great Michigan Read resources at michiganhumanities.org.



NON-FICTION

Arc of Justice: A Saga of Race, Civil Rights, and Murder in the Jazz Age, by Kevin Boyle

Poison on Tap: How Government Failed Flint, and the Heroes Who Fought Back, by Bridge Magazine staff

The Poisoned City: Flint's Water and the American Urban Tragedy, by Anna Clark

Evicted: Poverty and Profit in the American City, by Matthew Desmond

Demolition Means Progress: Flint, Michigan, and the Fate of the American Metropolis, by Andrew R. Highsmith

Flint Fights Back: Environmental Justice and Democracy in the Flint Water Crisis, by Benjamin J. Pauli

Voices from the Rust Belt, edited by Anne Trubek

Teardown: Memoir of a Vanishing City, by Gordon Young



access

When does access to one resource affect access to another?

How is structural racism inherently connected to access?

voice

Whose voices are heard and empowered? Whose are dismissed and omitted?

What roles do journalists, artists, and the media play in representation and inclusion?



insight

How does awareness of a larger context provide critical insight?

How does scientific data move from insight to impact?

representation

How does a lack of political representation contribute to environmental injustice?

How can trust and democracy be rebuilt after a failure of government?



POETRY

"A Worker's Speech to a Doctor," by Bertolt Brecht

"I Told the Water," by Tarfia Faizullah

"There are Birds Here," by Jamaal May

Poems from 2016
#JusticeForFlint event
(tiny.cc/GMRpoetry)

Poems from 2017 Beyond Streaming: Sound Mural for Flint installation
(tiny.cc/GMRpoetry2)



FILM & TV

Flint: An American Nightmare

From Flint: Voices of a Poisoned City

"Poisoned Water," NOVA
Roger & Me

Water & Power: A California Heist

What Lies Upstream

GMR Action Grants

Considering ways that your organization can enrich a local Great Michigan Read (GMR) conversation with guest speakers, complementary resources, and more? Michigan Humanities provides funding of up to \$750 to support GMR partners' community programming.

Visit michiganhumanities.org for additional Action Grant details and deadlines.

CHRONOLOGY OF FLINT WATER CRISIS

Stay Informed About Flint

The events that led to and continue to impact the Flint water crisis are too numerous to comprehensively list here, but this timeline represents 38 key moments from 2010 through June, 2019. Visit michiganhumanities.org for links to online chronologies.

2010

City of Flint, City of Lapeer, and Genesee, Sanilac, and Lapeer Counties form Karegnondi Water Authority (KWA) to consider a new pipeline as a cost-saving alternate method for delivering water to communities from Lake Huron. At this point, Flint has been receiving water from Detroit Water and Sewerage Department (DWSD) since 1967.

2013

March 25: While under emergency management and limited in their power, Flint City Council is convened by Flint's EM. City Council votes (7-1) to endorse joining the KWA. Construction of the pipeline has not yet begun, so communities planning for KWA transition continue using DWSD's service.

April: State Treasurer Andy Dillon approves the plan to change water providers from DWSD to KWA, granting Flint EM Edward Kurtz permission to notify DWSD.

Kurtz signs agreement with KWA.

DWSD notifies Kurtz that their water contract with Flint will be terminated in one year.

June: KWA breaks ground with an expected completion date of late 2016.

Kurtz signs contract to prepare operations at the Flint Water Treatment Plant for treating Flint River water, the city's primary water supply during the DWSD to KWA transition period.

2014

March: Flint EM Darnell Earley communicates with DWSD about the plan to disconnect and change water sources to the Flint River.

April 25: The City of Flint switches the water source and begins using the Flint River as the temporary primary water supply for 100,000 residents. Following the switch, residents report their observations about the new water source's alarming appearance, taste, and smell. In the weeks ahead, they also report rashes, hair loss, and other health impacts.

June: The first recorded case of Legionnaires' disease in the Genesee County outbreak is reported.

August: The City of Flint issues a boil advisory after coliform bacteria is detected in the water supply. Chlorine is added to treat the water. The initial advisory is lifted, but additional and expanded boil advisories are issued in the months ahead.

October: General Motors announces it is discontinuing use of Flint River water because it is causing corrosion of engine parts.

2015

January: The City of Flint sends a notice to residents stating that the city is in violation of the Safe Drinking Water Act due to elevated presence of total trihalomethanes (TTHM).

Flint EM Gerald Ambrose declines DWSD's offer to reconnect Flint to its previous water source and waive the \$4 million connection fee.

Residents attend Flint's first city hall meeting about water safety and bring samples of the discolored water from their homes to show officials.

February: Flint resident LeeAnne Walters notifies the U.S. Environmental Protection Agency (USEPA) after testing reveals 104 parts per billion of lead in her home's drinking. Within a month, this jumps to 397 parts per billion.

March: Flint's City Council members vote (7-1) to reconnect to DWSD, but the decision is overruled by Ambrose.

EMERGENCY MANAGERS IN FLINT:

This frequently-challenged law states that when a Michigan city or school district faces a financial emergency, a governor-appointed individual assumes the elected official's responsibilities. Flint has had four state-appointed emergency managers (EM).



July: American Civil Liberties Union (ACLU) reporter Curt Guyette shares news of USEPA employee Miguel Del Toral's leaked internal memo, which discusses a lack of corrosion control, testing concerns, and the alarmingly high lead levels in Flint residents' homes.

August: Dr. Mona begins her research into Flint children's blood-lead levels.

September: Virginia Tech's Marc Edwards reports on his research team's analysis of Flint resident-organized water sampling, emphasizing the impacts of corrosion and Flint's very serious lead-in-water problem.

September 24: Dr. Mona holds a press conference to announce the results of her study. Since the change in Flint's water source, the number of children citywide with high lead levels in their blood nearly doubled, and for children living in higher risk areas, it nearly tripled.

September 25: The City of Flint issues a lead advisory, the first since the water switch.

October: Genesee County Health Department declares a public health emergency.

After being initially discredited and dismissed, Dr. Mona's findings of high lead levels are confirmed by state officials. Governor Rick Snyder orders the distribution of filters, the testing of water in schools, and the expansion of water and blood testing.

October 15: Snyder signs a bill for \$9.35 million to address the public health crisis in Flint, including reconnecting to DWSD until the KWA pipeline is complete. The following day, the switch is made, but residents are advised to use filtered or bottled water while the new source is flushed through the system.

Snyder forms the Flint Water Task Force to review the government's actions and recommend next steps for water safety.

December: Flint mayor Karen Weaver declares a state of emergency in the city.

2016

January: Snyder declares a state of emergency for Genesee County and requests federal assistance. The National Guard begins assisting with the distribution of water and water filters.

Michigan Attorney General Bill Schuette launches a Flint water investigation. Over the next year, criminal and civil charges are filed against government officials and companies.

Snyder and the Michigan Department of Health and Human Services (MDHHS) announce the details of the Legionnaires' disease outbreak that started in June 2014, and has resulted in at least 90 reported cases and 12 deaths.

President Obama declares a state of emergency in the City of Flint and Genesee County.

March: Flint's FAST Start program begins replacing lead service lines.

The Flint Water Task Force's final report concludes that Flint is a case of environmental injustice, and that race and poverty contributed to the crisis. The report places primary responsibility with the state, is critical of the emergency manager law, and asserts that the Michigan Department of Environmental Quality (MDEQ) and Michigan Department of Health and Human Services (MDHHS) both failed to protect public health.

2017

February: In their final report, the Michigan Civil Rights Commission cites the role that structural racism played in Flint.

Flint's City Council votes to approve 30-year contract with Great Lakes Water Authority (GLWA), rather than switch to KWA pipeline.

March: The State of Michigan settles civil lawsuit brought by the ACLU of Michigan, Concerned Pastors for Social Action, Melissa Mays, and Natural Resources Defense Council. Requirements include the payment of \$87 million to Flint to identify and replace service lines.

2018

January: The MDEQ reports that Flint water samples have been testing below action levels for 18 months.

April: The State of Michigan announces it will end distribution of free bottled water.

2019

June: Michigan Attorney General Dana Nessel announces that charges are dropped against eight city and state officials, and that investigations will be restarted.

MIGRATION & LABOR RIGHTS

In *What the Eyes Don't See*, Dr. Mona describes how people from Europe, the Middle East, and the American South moved to Michigan's industrial centers for work.

Between 1910 and 1970, an estimated 6 million African Americans left the South.

America's **Great Migration** began around 1916 and was prompted in part by increased labor demands fueled by World War I production needs and a decreased workforce caused by deployment and restrictions in foreign immigration. The first wave of African American migration to the North from the South began, largely by railway system. Between 1910 and 1920, the African American population of urban areas in the North grew significantly, including 66 percent in New York, 148 percent in Chicago, 500 percent in Philadelphia, and 611 percent in Detroit.

Job opportunities eventually slowed following the 1929 stock market crash and Great Depression. Then, during World War II, more African American individuals and families began to move again from rural to urban communities, and from southern cities to northern ones. Many scholars refer to this as the **Second Great Migration**, a period from 1940 to



Courtesy David Rumsey Map Collection.

J.F. Leahy. *Leahy's Railway Distance Map of the United States*. 1934. Chicago: American Hotel Register Co.

1970 that included more than 4 million African Americans leaving the South's dire economic situation, Jim Crow laws, and racial violence. As Andrew R. Highsmith notes in his book *Demolition Means Progress*, the African American workforce at General Motors (GM) in Flint more than doubled from 1941 to 1945. Though post-war job opportunities continued to expand for these urban workers, a fight against employment discrimination and poor working conditions was underway.

As Dr. Mona details in *What the Eyes Don't See*, autoworkers in the early 1900s had limited rights, were unfairly paid, and endured factory conditions that were unbearably hot and dangerous. The first strike in Michigan and the U.S. was organized at Detroit's Studebaker plants in 1913 and led by the Industrial Workers of the World.

On December 30, 1936, the now infamous **Flint Sit-Down Strike** began when workers occupied GM's Fisher Body 1 plant. Other sit-downs and walkouts followed across the city and at factories beyond Michigan, significantly limiting GM's output. Michigan Governor Frank Murphy refused to use force



Wikimedia Commons

A newsboy sells the *Chicago Defender* in April, 1942. By publishing pro-migration editorials, articles, job listings, and train schedules for African American readers, the *Chicago Defender* played a major role in the Great Migration and Second Great Migration.



“BIG ANNIE” CLEMENC

As a major force in the labor movement, Anna “Big Annie” Clemenc (1888–1956) fought for social and economic justice during the 1913 miners’ strike against the Calumet & Hecla Mining Company.



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The Detroit News

FLINT SIT-DOWN STRIKE

Demonstrators gather outside General Motors Plant #2 in Flint in support of the sit-down strikers in the winter of 1937.

to break the strike, and called for the National Guard to prevent further violence. At President Roosevelt’s urging, GM agreed on February 11, 1937, to recognize the United Auto Workers (UAW) and engage in collective bargaining. Frequently considered the most important strike in history, the Sit-Down Strike prompted a wave of additional sit-downs and led to other industries across the U.S. pursuing unionization.

Though African American workers made up a small percentage of the auto industry’s workforce before World War II, the UAW’s first contract—signed in February, 1937—included

Flint was once home to GM’s largest assembly facility in the country. In the 1940s through 1960s, GM’s presence expanded as they built a number of factories in the city’s suburbs. In the late 1970s and 1980s, GM managers began measures to downsize by cutting and relocating jobs and closing plants across the metropolitan area.

antidiscrimination language. As Andrew Highsmith notes in *Demolition Means Progress*, UAW’s visibility as a racially progressive union may have played a role in Flint’s popularity as a destination for African American workers during the post-war years.

DISCUSSION QUESTIONS

HOW? WHAT?

How does a history of discriminatory employment and housing policies and school segregation still impact Flint? Why does Dr. Mona believe it’s important to teach her residents about “this ugly history and enduring reality”?

What histories do you know about the place you grew up? The place you live now? How do those histories still impact you and others?

ARAB AMERICAN COMMUNITY IN MICHIGAN

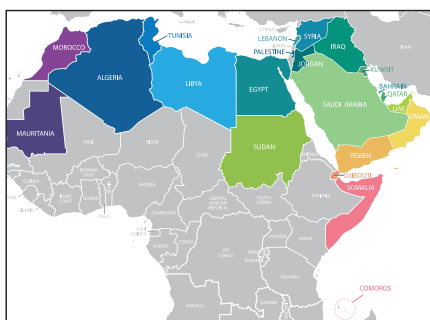


Dr. Mona describes the powerful influence of her family's immigrant experience and of Iraqi and Arab culture throughout *What the Eyes Don't See*.

Arab American refers to anyone living in the U.S. with ancestry in any of the 22 Arab countries.

Around 1890, the Arab American community first began to develop in the U.S. following an initial period of **Arab immigration**. At the beginning of the 20th century, many Arab Americans were drawn to the jobs in Detroit's factories, including Ford's Highland Park and Rouge facilities. But, as noted in the Arab American National Museum and Dr. Randa Kayyali's "Arab Americans: History, Culture & Contributions," changes to legislation—including the 1921 Quota Act and Immigration Act of 1924—slowed Arab American immigration from 1925 to 1965.

Following the monumental 1965 Hart-Celler Immigration and Nationality Act, the U.S. accepted more immigrants from non-European areas, including the Arab countries. In the 1990s, Iraqis, Somalis,



and Sudanese arrived in large numbers due to war and violence in their home countries. According to Migration Policy Institute data, the number of **Iraqi immigrants** in the U.S. tripled from 32,121 to 102,000 between 1980 and 2007, with most growth occurring in the 1990s. In 2007, half of all Iraqi immigrants lived in Michigan and California.



"I am Arabic and Chaldean and Iraqi and American, an immigrant and a Michigander, and a woman and doctor and a mom and a wife and many other things.

This is how I identify myself and

I am proud

of all of those identities."

DR. MONA

DISCUSSION QUESTIONS

HOW?

How was Dr. Mona impacted by her family's immigrant experience, cultural values, and connection to social justice? What was her reaction to the Arab concept of *aeb*?

How have migration and immigration been a part of your family's history?

Are Chaldeans Arab?

Dr. Mona is part of the Chaldean community, an Iraqi Christian sect that includes at least 121,000 individuals in Michigan. Some scholars assert that a Chaldean would fit the general definition of an Arab, and Iraq is a founding member of the Arab League. But, cultural, ethnic, and religious identities are complex, and many Chaldeans see being Arab and Chaldean as mutually exclusive.



Wikimedia Commons

WOMAN AUTOWORKER

Eva Habeeb, a Lebanese autoworker, 1929

From the collection of the Arab American National Museum



MAKING THE JOURNEY

Members of the Safady family, Ellis Island



From the collection of the Arab American National Museum

Learn More at AANM

The Arab American National Museum's (AANM) mission is to document, preserve, and present the history, culture, and contributions of Arab Americans. Visit AANM in Dearborn or online at arabamericanmuseum.org for exhibit and program details.

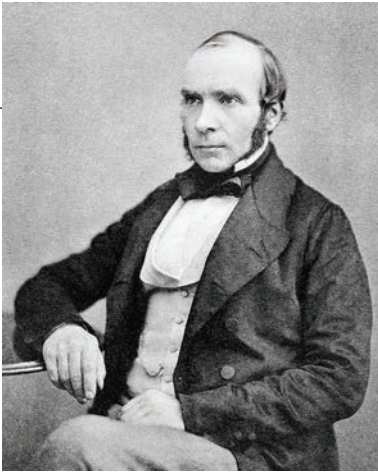
WHERE

SCIENCE AND HUMANITIES MEET



I love stories about people who can—simply by being persistent, methodical, and dedicated—change the trajectory of a life or even an entire population and generations to come.”

What the Eyes Don't See



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In *What the Eyes Don't See*, Dr. Mona shares the scientific work of several “public health warriors,” including John Snow and Paul Shekwana.

The Centers for Disease Control and Prevention (CDC) agency defines **public health** as “the science of protecting and improving the health of people and their communities.” Dr. Mona emphasizes how a lack of public health understanding and expertise was a key factor in the Flint water crisis, and how scientific tools and technology should be used to make lives better. One priority in public health is limiting healthcare disparities by increasing equity and accessibility.

JOHN SNOW

In the 19th century, John Snow discovered that cholera was being spread through London's water supply. Snow's findings challenged the miasma theory, which asserted that disease was transmitted via “bad air.”

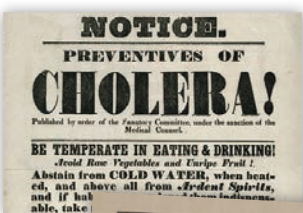
As areas connected to public health, **medical humanities, health humanities, and bioethics** are similar in their focus on the moral, ethical, social, and humanistic elements of medicine and health. The medical humanities field includes an emphasis on physician education and practice. The area of health humanities has evolved from that and seeks to understand how arts and humanities can inform and transform healthcare and the health



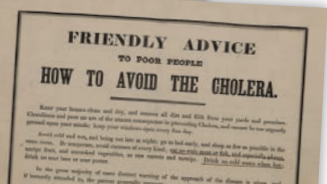
Wikimedia Commons

Cancer Alley

“Cancer Alley” is the name given to an 85-mile industrial corridor between Baton Rouge and New Orleans, Louisiana. With more than 150 plants and refineries, this area contains toxic levels of pollution. In the town of Reserve, the risk of cancer is 50 times the national average. For additional details and interactive maps, visit MSNBC’s “Geography of Poverty” online series.



Wikimedia Commons



DISCUSSION QUESTIONS

HOW? WHY?

How do you see the purpose of science demonstrated throughout the book? Has your perspective about its purpose changed? Why or why not? Why do you think Dr. Mona included the histories of John Snow, Paul Shekwana, and Alice Hamilton?

The Flint Water Advisory Task Force report identified the crisis as a case of environmental injustice and also connected it to emergency manager law. Do you agree or disagree? Why?

of communities. Bioethics is the study of applying ethics to the fields of medicine and healthcare, including why and how decisions are made.

During her time as a student at the University of Michigan, Dr. Mona took courses and participated in workshops led by **environmental justice** movement leaders Bunyan Bryant and Paul Mohai. The primary tenets of environmental justice include the fair treatment of all people and ensuring that they—regardless of race, national origin, or income—have a voice in decisions about their environment and health.

Robert Bullard, who has authored numerous books, including *The Wrong Complexion for Protection* with Beverly Wright, is often called the father of environmental justice. Dr. Bullard wrote, “Whether by conscious design or institutional neglect, communities of color in urban ghettos, in rural ‘poverty pockets,’ or on economically impoverished Native-American reservations face some of the worst environmental devastation in the nation.”

**THE STORY OF LEAD**

*From Charles Kettering to Alice Hamilton, the story of lead is described by Dr. Mona as a conflict between industry and public health advocates. There is no level of lead exposure that is considered safe. In 1991, the U.S. Environmental Protection Agency issued the **Lead and Copper Rule**.*

*The revised **Michigan Lead and Copper Rule**, passed in June, 2018, requires water utilities to inventory all water service connections, expand and increase sampling, inform customers if they have a lead service line, and replace all lead service lines over the next 20 years.*

“This is why training in public health is so critical for all physicians. We need to be able to step back from the individual patient and look at the bigger picture.”

THREATS TO SAFE DRINKING WATER



Resilience isn't something you are born with. It isn't a trait that you have or don't have. It's learned. This means that for every child raised in a toxic environment or an unraveling community—both of which take a terrible toll on childhood development and can have lasting effects—there is hope.”

What the Eyes Don't See

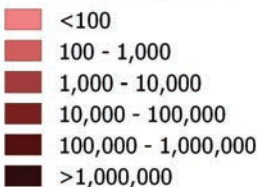
From lead and PFAS contamination to runoff pollution and algal blooms, threats to water quality are critical concerns for residents across Michigan, the Great Lakes region, and beyond. In *What the Eyes Don't See*, Dr. Mona learns about details of the Washington, D.C. water crisis from Elin Betanzo. Residents were exposed to water with elevated lead levels for several years, and the information was not made public until the release of a *Washington Post* report in 2004. Beyond D.C. and Flint, lead-contaminated water is being reported across the country and communities are being confronted with how to replace **aging lead pipes**.

Emerging contaminants affecting Michigan's water include per- and polyfluoroalkyl substances (PFAS), man-made chemicals that are resistant to heat, water, and oil. PFAS can be found in contaminated water, fish, soil or dust, food packaging, cleaning products, and other consumer goods. Further research is required to learn more, but PFAS may affect the development of infants and children, fertility, risk of cancer, and hormone and cholesterol levels. Within Michigan, approximately 1,700 public, school, and tribal water supplies were tested in 2018. A second phase of testing is continuing in 2019. View the State of Michigan's results and additional PFAS resources at michigan.gov/pfasresponse.

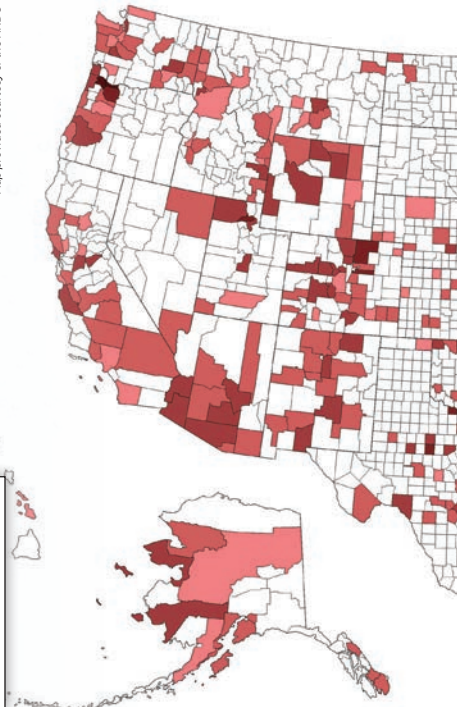
Looking for Lead

This map from a 2016 Natural Resources Defense Council (NRDC) report shows populations served by community water systems that exceeded the 15 parts per billion action level for lead in 2013 through 2015. Parts per million (ppm), parts per billion (ppb), and parts per trillion (ppt) are ratios used to measure the concentration of a contaminant in our environment. Across the nation, 1,110 community water systems exceeded the lead action level. These systems serve 3,947,770 people.

Number of People Served



Map provided courtesy of the NRDC



DISCUSSION QUESTIONS

WHAT? HOW?

Dr. Mona describes the Flint water crisis as preventable. What policies and practices can be implemented in Michigan—and around the United States—to prevent future water crises? How can residents, government officials, activists, and journalists learn from past events like the D.C. water crisis? How are Dr. Mona's current efforts in Flint contributing to the hope and resilience she describes? What barriers exist?

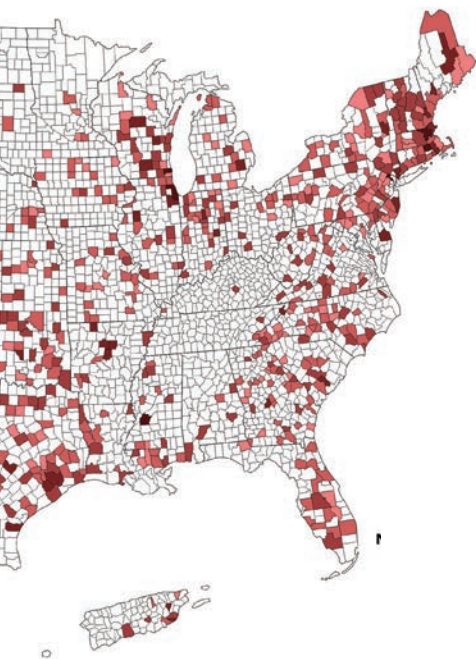
For decades, Lake Erie has been impacted by **algal blooms**, an overgrowth of algae fueled by nitrogen and phosphorous in runoff pollution. An estimated 11 to 12 million people get their drinking water from Lake Erie, and after a toxic byproduct of algal blooms was detected in the Toledo area's water supply in August, 2014, nearly half a million people were ordered to not drink or use the water. As algal blooms become increasingly widespread, it is crucial to understand how the sources contributing to runoff pollution—farm and lawn fertilizers, sewers, and defective septic systems—can be better regulated.

Wikimedia Commons



For Further Reading

Interested in learning about the Great Lakes' history, ecology, and sustainability? Check out *The Death and Life of the Great Lakes*, by Dan Egan, and *The Living Great Lakes: Searching for the Heart of the Inland Seas*, by Jerry Dennis.



NRDC FOOTNOTES:

- For action level exceedance data, we used a three-year time frame to account for the variability in monitoring and reporting requirements under the Lead and Copper Rule. Some systems are required to test and report their results only every three years (and in some instances every nine years). A three-year time frame allows for the inclusion of the test results for most systems—i.e., those that follow a six-month, annual, or three-year reporting period—and is the default data download time frame in the SDWIS.
- We include as lead action level exceedances all active community water systems that had lead levels recorded as exceeding the action level in 2013-2015, which includes systems with exceedances that initiated prior to January 1, 2013. If we limit the data to include only water systems with an action level exceedance that began on or after January 1, 2013, 3.2 million people were served by 758 systems exceeding the lead action level.
- From January 1, 2013, to December 31, 2015, an additional 849 active non-community water systems (for example, schools or factories with their own water systems) reported action level exceedances. These systems served 248,614 people. These values were not included in the action level exceedance calculations to avoid double-counting the populations served by both community and non-community systems.



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