Annotated Bibliography

Flint Water Crisis

2017

This bibliography was curated by the Global Health Education and Learning Incubator at Harvard University to supplement the case study, “Flint, Michigan: Lethal Water.” Selected publications and teaching resources in this collection focus on lead and water safety, children’s health, and health governance as they relate to the events of the toxic water crisis in Flint, Michigan; the bibliography also includes materials which relate to these issues more broadly at the national and global levels. The wide range of materials highlighted here may add value to teaching and classroom discussion about these issues.

These multidisciplinary resources may be suitable for students at the high school and undergraduate college levels. This collection may also be useful graduate school pedagogy on public health, health policy, maternal and child health, water and sanitation, and global governance. Learning objectives and supporting materials will vary depending on how the material is used in a course or class discussion. Brief annotations provide a cursory summary of resources, and within each subgroup, the most general or pertinent source is listed first.

- **The Flint Water Crisis**
  - Flint: What Happened and Why Is It Important?
  - Flint: A Focus on Lead
  - Flint: A Focus on Water Safety
  - Flint: A Focus on Environmental Science and Governance

- **Global: Lead as an Environment Risk**
  - Lead Toxicity in Children
  - Prevention and Regulation

- **Global: Water Safety and Regulation**

- **Global: Health Governance and Environmental Risks**
# Flint Water Crisis: Annotated Bibliography

## Selected Resources – At a Glance

### The Flint Water Crisis

**Flint: What Happened and Why Is It Important?**

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<th><strong>TEACHING RESOURCES</strong></th>
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<td><strong>Teaching Case.</strong> Gordon R, Holman S. Flint, Michigan: Lethal Water – Case Study. Global Health Education and Learning Incubator at Harvard University 2017. [<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11515.](<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11515.)</td>
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<td><strong>Instructor's Note.</strong> Flint, Michigan: Lethal Water – Instructor's Note Global Health Education and Learning Incubator at Harvard University 2017. [<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11516.](<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11516.)</td>
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<td><strong>Discussion Guide.</strong> Flint, Michigan: Lethal Water – Discussion Guide. Global Health Education and Learning Incubator at Harvard University 2017. [<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11517.](<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11517.)</td>
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<td><strong>Teaching Graphic.</strong> Flint, Michigan: Lethal Water – Teaching Graphic. Global Health Education and Learning Incubator at Harvard University 2017. [<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11518.](<a href="http://repository.g">http://repository.g</a> heli.harvard.edu/repository/11518.)</td>
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<td><strong>Course.</strong> Flint Water Crisis: An Online Course. University of Michigan-Flint 2016. <a href="https://www.youtube.com/playlist?list=PLXTcWgqRYbI15MwCzeQhFKiASxol416u.">https://www.youtube.com/playlist?list=PLXTcWgqRYbI15MwCzeQhFKiASxol416u.</a></td>
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<td><strong>Film.</strong> Poisoned Water. NOVA 2017. <a href="http://www.pbs.org/wgbh/nova/body/poisoned-water.html.">http://www.pbs.org/wgbh/nova/body/poisoned-water.html.</a></td>
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<td><strong>Video.</strong> Flint Water Crisis: Timeline of Communication. MLive 2016. <a href="https://www.youtube.com/watch?v=yoXDH90024.">https://www.youtube.com/watch?v=yoXDH90024.</a></td>
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Flint Water Crisis: Annotated Bibliography


**General – Learn More**


Flint: A Focus on Lead


Flint: A Focus on Water Safety
Flint Water Crisis: Annotated Bibliography

**SELECTED RESOURCES**


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**Global: Lead as an Environmental Risk**

**Lead Toxicity in Children**

**SELECTED RESOURCES**


Flint Water Crisis: Annotated Bibliography


**SELECTED RESOURCES**

**TEACHING RESOURCES**


### Flint Water Crisis: Annotated Bibliography

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### Global: Water Safety and Regulation

#### SELECTED RESOURCES


#### TEACHING MATERIAL


Global: Health Governance and Environmental Risks

**SELECTED RESOURCES**


Annotated Bibliography

The Flint Water Crisis

Flint: What Happened and Why Is It Important?

TEACHING RESOURCES

Flint, Michigan: Lethal Water – Teaching Pack
This teaching pack is focused on the toxic water crisis in Flint, Michigan between 2011 and 2016. The teaching pack is centered on a case study, which outlines the social, economic, health, and policy consequences faced by Flint in the aftermath of a governmental decision to switch the city’s public water supply from Lake Huron to the more corrosive Flint River. The case highlights the role of citizens, scientists, and activists in raising public awareness of the crisis and the toxic long-term effects of lead poisoning on affected children. It also illustrates the challenges and questions such a crisis poses for other communities in the United States and globally. The teaching pack also includes an instructor’s note, role play exercise, and discussion guide with an accompanying teaching graphic, all designed to help students understand the interconnected nature of a complex health issue like Flint’s poisoned water, and the complexity of addressing it.

Flint Water Crisis: An Online Course
This a series of 12 approximately 30-minute videos about the Flint water crisis and related issues produced by the University of Michigan. Each video includes a panel addressing a specific issue.

MULTIMEDIA AND NEWS

The Controversial Case Over Dangerous Lead in Water in a Michigan City
This photo essay documents moments in the Flint, Michigan water crisis, such as community rallies, water distribution points, community blood testing, and government press conferences.

Poisoned Water
This documentary, approximately one hour in length, investigates the science behind the Flint water crisis, and examines the similar contexts of water system vulnerability across the country.

Good People, Bad Water, The Flint Water Crisis – A Short Documentary
This 5-minute documentary video features short soundbites from several Flint residents who tell how the Flint water crisis was affecting their lives as of December, 2015.
Flint Water Crisis

Flint Water Crisis: Timeline of Communication

Articles on Flint Water Crisis
News. Articles on Flint Water Crisis. The Conversation. https://theconversation.com/us/topics/flint-water-crisis-24224. This news portal highlights news stories—national and international—related to safe water, including stories about the Flint water crisis between January 2016 and the present. The Conversation is an independent news source from the academic and research community written for the general public.

OTHER SELECTED RESOURCES

Focused on Key People

Meet the Mom who Helped Expose Flint’s Toxic Water Nightmare
News. Lurie J. Meet the Mom who Helped Expose Flint’s Toxic Water Nightmare. Mother Jones 2016; Jan 21. http://www.motherjones.com/politics/2016/01/mother-exposed-flint-lead-contamination-water-crisis. This news article tells the story of LeeAnne Walters, the Flint citizen and mother who led public awareness efforts to alert citizens and identify experts who would measure and begin to address the city’s water crisis.

The Mom and the EPA ‘Rogue Employee’ Who Exposed Flint’s Water Crisis

Memo on High Lead Levels in Flint, Michigan – Interim Report

The Heroic Professor Who Helped Uncover the Flint Lead Water Crisis Has Been Asked to Fix It

Q&A: What Really Happened to the Water in Flint Michigan?
News. Lovell J. Q&A: What Really Happened to the Water in Flint Michigan? Scientific American 2016; Mar 2. https://www.scientificamerican.com/article/q-a-what-really-happened-to-the-water-in-flint-michigan. This article interviews Marc Edwards, the water treatment expert who, with his team of students, was the first group to
test water in Flint. Edwards and his students established the Flint Water Study (http://flintwaterstudy.org), to provide public information on their findings and follow-up action on the crisis.

**Flint Water Crisis Caused by Interrupted Corrosion Control: Investigating ‘Ground Zero’ Home**


This article summarizes what the environmental scientists at Virginia Tech found when they first investigated water samples and water pipes in the home of Leanne Walters and her family in 2015.

**Pediatrician Sees Long Road Ahead for Flint After Lead Poisoning Crisis**


This article profiles Dr. Mona Hanna-Attisha, the pediatrician who documented elevated lead levels in children’s blood in Flint, Michigan following the water supply switch to the Flint River. It outlines her activities in mobilizing public awareness of lead contamination in Flint’s water supply.

**Flint’s Water Crisis and the Unique Role of the Reporter Who Helped Uncover It**


This interview with American Civil Liberties Union (ACLU) investigative journalist, Curt Guyette, highlights the intersection of journalism and public health. Guyette initially planned to investigate and write about the state's emergency management law, but instead uncovered the Flint water crisis.

**Flint Water Crisis: Key Figures**


This one-page pictorial graphic shows the key players in the Flint water crisis. Rollover links provide short bios and summaries of each individual’s role and activities.

**General – Learn More**

**Flint Water Study Updates**


The Flint Water Study, maintained by the research team of Professor Marc Edwards at Virginia Tech, offers the latest data and development regarding the Flint water crisis. This includes stories from Flint residents; findings from Flint River corrosivity experiments and citizen testing; resources on lead in water/blood lead and opportunistic pathogens such as Legionella, bacteria, chlorine, and TTHMs; FOIA emails; documents and reports from formal investigations and the Water Study Analyses (MDEQ, EPA, MDHHS, City of Flint, and Michigan Governor’s Office); information on the study group’s Flint trips and work with school kids; data, talks, podcasts, LCR analyses, and presentations; stories about goodwill efforts on behalf of Flint; and lawsuits, petitions, letters, press releases, and other announcements.

**FlintWaterStudy.org Guide**


This topic portal provides a guide to the key data about the Flint water crisis, including lead resources, investigative reports, data, lectures, and lawsuits. The site was last updated in June 2016, and includes excellent resources for background on creating lessons and other teaching materials about the Flint water crisis.
Flint Water Crisis: Annotated Bibliography

What Went Wrong in Flint
This article describes the factors that led to Flint's water crisis, including the omission of key data points when the city's water supply was tested. The article includes graphics and neighborhood maps illustrating the data collection process and rise in percentage of children with elevated blood lead levels.

I'm in Flint. I See the Pallets of Free Water. It's Not Enough.
This article describes effect of the Flint water crisis on free donations of bottled water and the role of religious communities in the citizen response. The article features an interview with Imam Hanafi Abdul-Malik and members of his congregation as they coordinate donated water distributions and reflect on their experiences as Flint residents.

The Flint Water Crisis, Explained
This article summarizes the many different issues that are part of the Flint water crisis. It provides a helpful introductory overview of the situation and the context in which it emerged. A bar chart compares elevated blood lead levels in Flint with those identified in 20 cities in Pennsylvania.

10 Things They Won't Tell You About the Flint Water Tragedy. But I Will.
This opinion article, by filmmaker Michael Moore, summarizes 10 factual aspects of the Flint water crisis, focusing on the effect of cost-cutting decisions on children's health.

A Toxic Timeline of Flint's Water Fiasco
This article summarizes key events in the Flint water crisis between April 25, 2014—the date of the municipal water switch over to the Flint River—and January 27, 2016, the date of a coalition lawsuit requesting federal court intervention to provide Flint with clean drinking water.

America is Flint
This editorial, by Pulitzer Prize-winning journalist Nicholas Kristof, looks beyond the Flint water crisis to other communities across the United States where children suffer from lead poisoning.

Analysis: How Michigan and National Reporters Covered the Flint Water Crisis
This article analyzes news coverage of the Flint water crisis between the spring of 2014 and January 2016. The article includes a graphic timeline image useful in classroom or group discussion about health issues and the public media.

Documents Show Flint Filed False Reports About Testing for Lead in Water
This article summarizes the investigation into what caused the Flint water crisis up to November 2015. It includes a 92-image photo gallery illustrating the crisis.
Flint: A Focus on Lead

SELECTED RESOURCES

Lead in the Water -- The Flint Water Crisis
This graphic summary and accompanying explanation illustrates the chemistry behind the Flint water crisis. Includes a downloadable graphic and links to additional background information about the Flint water crisis.

University of Michigan GIS Center – Flint
This web portal of the University of Michigan (UM) Geographic Information Systems Center highlights data from UM’s project to map the lead water pipes in Flint, Michigan, in response to the Flint water crisis. Maps identify the city’s water service lines and provide information that can be used help identify which pipes the city needs to remove and replace.

Elevated Blood Lead Levels in Children Associated With the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response
This article, written by the leading pediatrician involved in studying and combatting the Flint water crisis, summarizes the analysis of elevated blood lead level incidence in children before and after Flint’s switch of its municipal water source to the Flint River. The study found that the percentage of children with elevated blood levels increased after the water source change, especially in children that lived in socioeconomically disadvantaged neighborhoods.

Blood Lead Levels Among Children Aged <6 Years—Flint, Michigan, 2013-2016
This article summarizes data on 7,306 children living in the area served by the Flint Water System (FWS) between 2013 and 2016. It indicates a significantly higher proportion of elevated blood levels during the early period of the switch from the Detroit Water Authority (DWA) to the FWS.

Lead Contamination in Flint -- An Abject Failure to Protect Public Health
This op-ed article criticizes the failure of government agencies and officials to protect the health of Flint’s residents. The online article includes a link to an audio interview with the author, Professor of Environmental Health at the Harvard T.H. Chan School of Public Health, on lead contamination in Flint and the lack of political will to protect public health.
Flint Water Crisis: Annotated Bibliography

Flint: A Focus on Water Safety

SELECTED RESOURCES

Flint Water Advisory Task Force Final Report
This report summarizes findings of the Flint water crisis by Michigan Governor Rick Snyder’s appointed Flint Water Advisory Task Force. It was based on interviews and public documents and aimed to clarify who did what and determine accountability; highlight causes of the crisis and suggest preventive measures; and make recommendations to better safeguard Michigan residents and the Flint community. The 63 interviewees included three Flint citizens.

Dangerous Disregard for the Right to Water
This editorial summarizes the failure of the American legal system—at the local, state, and national levels—to recognize the human right to water. The editorial was published as part of an issue celebrating Human Rights Day, and invites readers to think of water issues broadly, including the debates over privatizing water supplies and the effects of oil pipeline spillages on impoverished populations at risk in the U.S.

This Is How Toxic Flint’s Water Really Is
This infographic visualizes the toxicity of Flint’s water supply, and explains the difference between health and legal regulations in their understanding of “acceptable” lead limits.

Michigan’s Medicaid Section 1115 Waiver to Address Effects of Lead Exposure in Flint
This brief describes Michigan’s efforts to address the health-related effects of the Flint water crisis on Medicaid-eligible children and pregnant women served by the Flint water system. The Medicaid waiver submitted by the State of Michigan and approved by the Centers for Medicare and Medicaid Services (CMS) expands health care coverage to children and pregnant women with incomes up to 400% of the federal poverty line. Under the waiver, an estimated 15,000 people would be newly eligible for coverage.

The Flint Water Crisis and Beyond
This series of webinars examines the Flint water crisis from multiple public health lenses: community solutions to lead exposure in homes, the connections between drinking water chemistry and long-term health, and the implications of water quality regulation for health equity.

Flint: A Focus on Environmental Science and Governance

SELECTED RESOURCES

EPA Official Letter to Michigan DEQ Regarding Flint
This letter from the United States Environmental Protection Agency (EPA) Office of Water to the Michigan Department
of Environmental Quality (DEQ) ordered specific actions to improve the quality of Flint’s drinking water within 30 days. It is represents one example of the many available primary documents in the legal battle of the Flint water crisis.

**Social and Built Environmental Correlates of Predicted Blood Levels in the Flint Water Crisis**


**Remember Flint**


**Flint, Michigan: A Century of Environmental Injustice**


**Politics and Public Health: The Flint Drinking Water Crisis**


**What the Flint Crisis Reveals About Inequality in the U.S.**


**Flint Water Class Action**

Topic Portal. Flint Water Class Action. [http://www.flintwaterclassaction.com](http://www.flintwaterclassaction.com). This web portal is the homepage of the class action lawsuit filed by residents of Flint, Michigan affected by the Flint water crisis. The site includes basic information about the crisis, the effects of lead poisoning on children, and recent news updates on Flint’s water and the lawsuit.

**The Flint Water Crisis: Using Systems Thinking to Understand Critical Failures**

Global: Lead as an Environmental Risk

Lead Toxicity in Children

SELECTED RESOURCES

Lead Poisoning and Health Fact Sheet
This fact sheet summarizes key facts about lead poisoning and its effects on the health of young children, as well as the response of the World Health Organization.

Economic Costs of Childhood Lead Exposure in Low- and Middle-Income Countries
This research article estimates the economic costs of childhood exposure to lead in low- and middle-income countries. It suggests a total economic loss due to elevated lead exposure of between $728.6 and $1162.5 billion, even though children's blood lead levels have declined worldwide.

Issue Brief: Childhood Lead Exposure and Educational Outcomes
This short policy brief describes the negative impact that even low levels of lead exposure can have on children’s health and educational outcomes. It also notes that lead exposure occurs more frequently in low-income children and children of color.

Here’s How One of the World’s Most Common Toxins is Poisoning American Children
This infographic illustrates the physical effects of lead ingestion on children's health and development.

Preventing Lead Poisoning in Young Children: A Statement by the Centers for Disease Control
This seminal report details how to prevent lead poisoning in young children. The report, most recently revised in 1991, outlines the scientific data showing the adverse effects of lead in young children even at low blood lead levels, and makes recommendations based on practical considerations and essential preventive follow up. Unlike previous versions, this document emphasizes the need for primary care prevention and the importance of coordination between pediatric health-care providers and public agencies.

How Lead Can Get Into the Water Supply, Explained in 5 Charts
This online media article features five graphic images to illustrate and briefly explain how lead can have a harmful effect on health, and how it can enter the drinking supply through old service lines.

Don't Pollute My Future! The Impact of the Environment on Children's Health
GHELI repository link: http://repository.gheli.harvard.edu/repository/11698.
This report synthesizes evidence about the impact of environment risks on children’s health. Fetuses and young children are particularly vulnerable to environmental threats due to their developing organs and immune systems, and it is estimated that approximately a quarter of both childhood deaths and the total disease burden in children under five could be prevented through the reduction of environmental risks such as air pollution, unsafe water, sanitation and inadequate hygiene, or chemicals. The report describes children’s specific vulnerability to such environmental threats during development, and offers selected interventions and economic evaluations by disease group.

**Lead Contamination Beyond Flint: Drinking Water and Children’s Health**
This one-hour panel discussion discusses cities outside of Flint that are also grappling with the effects of toxic drinking water on population health. The panelists explore potential responses to safekeeping American drinking water, the role of regulation and funding in averting crises, and essential information for the public.

**Chemical Exposures and the Brain: The Flint Water Crisis and More**
This one-hour panel discussion describes the toxic impacts of chemicals on the brain, outside of lead. In particular, the discussion looks at links between certain pesticides, mercury, and flame retardants and children’s cognitive development. The conversation also explored public policy success and failures in safeguarding the public health from neurotoxins.

**Why Lead?**
This infographic describes the health effects of lead exposure, common sources of exposure, morbidity and mortality estimates associated with lead exposure, economic costs, and potential avenues for response.

**Lead**
This topic portal provides recent resources, news, funding, and data about lead exposure in the United States.

**Childhood Lead Poisoning Data, Statistics, and Surveillance**
This data portal compiles state surveillance data for children under 72 months who were tested for lead at least once since January 1, 1997. The data portal includes information by county and state, and also standard lead surveillance definitions and classifications. Although data are not generalizable—only funded health departments are required to provide data to the CDC—the portal provides and important snapshot of lead exposure in the United States.

**Educational Interventions for Children Affected by Lead**
This report summarizes the consequences of lead on learning and educational attainment, and outlines available services and successful early childhood education programs to respond to potential cognitive impacts.

**The Poisoned Generation**
This essay from The Atlantic describes a decades-long lead-poisoning lawsuit in New Orleans, which illustrates how lead exposure disproportionately impacts the health and well-being of black families and communities. An audio version is also available.

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Assessing Child Lead Poisoning Case Ascertainment in the US, 1999–2010
This research article indicates that under-testing of blood level by pediatric care providers is pervasive in many U.S. states. The authors compare prevalence estimates for elevated blood lead levels with data reported to the Centers for Disease Control and Prevention (CDC) for children 12 months to 5 years of age on a state-by-state basis. During the 1999-2010 study period, the greatest number of children with blood lead levels greater than 10.0 ug/dL lived in the South.

Prevention and Regulation

Global Report on the Status of Legal Limits on Lead in Paint
This report provides an overview of the progress made towards the global target of all countries having lead paint controls by 2020. Only 36 percent of nations had legally binding limits on lead paint as of 2016, indicating a significant gap still needs to be filled if the 2020 target is to be met successfully.

Operational Framework Global Alliance to Eliminate Lead Paint
This document outlines a framework to prevent children’s exposure to lead from paint and to minimize occupational exposure. It was developed by the Global Alliance to Eliminate Lead Paint, a collaborative initiative between the World Health Organization and the United Nations Environmental Programme, with the ultimate goal of phasing out the manufacture and sale of lead paints. The framework (pp. 1-5) is followed by three Annex documents: the text of international declarations concerning lead in paint; Global Alliance participation information; and group terms of reference.

Lead Paint Alliance Regulatory Toolkit
This toolkit provides government officials with information on how to establish legal limits for lead poisoning in their countries. The materials would also be relevant to other interested stakeholders working to prevent lead poisoning. The toolkit includes select references as well as 10 downloadable modules on understanding the problem, identifying the market, and taking action.

International Lead Poisoning Prevention Week of Action
This topic portal includes resources from the International Lead Poisoning Week of Action (October 22-27, 2017). Available tools include information and resources, infographics, flyers, and posters.

Countries With Legally-Binding Controls on Lead Paint
This data visualization describes which countries do and do not have legally binding controls on lead paint. Using data from the World Health Organization and the United Nations Environment Programme, the visualization illustrates that more than one-third of countries do not yet have legally binding controls on the production, import, export, and use of lead paint, which has had demonstrable negative effects on human health.
Flint Water Crisis: Annotated Bibliography

TEACHING RESOURCES

Establishing Legal Limits on Lead in Paint: Four Country Case Studies
These four case studies explain existing lead paint laws and demonstrate various perspectives from a country that has worked to prevent exposure to lead from paint.

Middle School Lesson Plans – Environmental Chemistry of Lead Lesson Plan. The Lead Placemat: Understanding Lead Exposure
This lesson introduces middle-school students to the history of lead, its use in society and industry, and its adverse public health effects. Additionally students learn how to identify lead’s chemical and physical properties. The lesson plan is part of the CDC’s Science Ambassador series to help introduce middle- and high-school students to public health topics and to apply mathematical and scientific thinking to these issues.

High School Lesson Plans – Environmental Chemistry of Lead Lesson Plan. Take the Lead – Get the Lead Out
This lesson plan focuses on how lead leaches into inorganic compounds such as soil, paint, and water, and describes the adverse health effects of elevated lead levels in the body. The lesson plan is part of the CDC’s Science Ambassador series to help introduce middle- and high-school students to public health topics and to apply mathematical and scientific thinking to these issues.

How to Reduce Lead Exposure
This discussion guide includes a short video, background essay, and discussion questions that describe the potential effects of lead exposure and how to reduce its impacts. A doctor discusses frequent ways children become exposed to lead and how high blood lead levels can affect their health. The materials are designed for grades 6-12.

The Effects of Childhood Lead Poisoning: A Video
This discussion guide includes a short video, background essay, and discussion questions describing the impact of lead poisoning on children through two families’ experiences. The materials are designed for grades 6-12.

Global: Water Safety and Regulation

SELECTED RESOURCES

Water Safety Portal
This topic portal shares recent resources, toolkits, auditing and risk-assessment tools, training materials, and news to support communities that are developing water safety plans. Water safety plans are a comprehensive risk assessment
and risk management approach to ensuring the safety of a community’s drinking water supply.

**Water, Sanitation, Hygiene**


**Recognition of the Human Rights to Water and Sanitation by UN Member States at the International Level**


**Drinking Water Requirements for States and Public Water Systems**

Topic Portal. Drinking Water Requirements for States and Public Water Systems. United States Environmental Protection Agency. [https://www.epa.gov/dwreginfo](https://www.epa.gov/dwreginfo). This topic portal provides extensive details on water regulations in the United States, including drinking water rules on more than 90 contaminants, quick reference guides, state resources for implementing drinking water regulations, and information about drinking water in school and child care facilities, including an educational toolkit to help schools prevent lead in their water sources.

**Detroit Water and Sewage Department: The First 300 Years**

Report. Daisy M, ed. Detroit Water and Sewage Department: The First 300 Years. Detroit Water and Sewage Department 2002. [http://dwsd.org/downloads_n/about_dwsd/history/complete_history.pdf](http://dwsd.org/downloads_n/about_dwsd/history/complete_history.pdf). This report is a history of water and sewage in the city of Detroit since its foundation in 1701. The report was produced as part of the Detroit Water and Sewage Department’s celebration of the city’s 300th anniversary. It includes historical images and narrative, affirming Detroit’s ongoing commitment to safe water for its citizens.

**Mortality Due to Unintentional Poisoning Fact Sheet**


**Global Strategy for Women’s, Children’s and Adolescents’ Health (2016-2030): Data Portal**

Data Portal. Global Strategy for Women’s, Children’s and Adolescents’ Health (2016-2030): Data Portal. World Health Organization 2016. [http://apps.who.int/gho/data/node.gswcah](http://apps.who.int/gho/data/node.gswcah). GHELI repository link: [http://repository.gheli.harvard.edu/repository/11676](http://repository.gheli.harvard.edu/repository/11676). This data portal shares reliable and open data about the health of women, children, and adolescents worldwide. The portal selects 16 key indicators from the United Nations Sustainable Development Goals (SDGs) and other global monitoring initiatives that provide a snapshot of global progress on ending preventable deaths, ensuring health and well-being, expanding enabling environments, and improving equity and human rights. It accompanies The Global Strategy for Women’s, Children’s, and Adolescents’ Health (2016-2030) report, a collaborative effort led by the World Health Organization to position adolescents, in addition to women and children, at the heart of the SDGs for the first time.
Flint Water Crisis: Annotated Bibliography

Water Safety Planning Resources
This topic portal summarizes the World Health Organization’s tools and resources for managing and assessing global water safety. Water safety plans are an effective way to ensure safe drinking water supply across diverse communities and contexts. The plans require a risk assessment at all steps of the water supply chain, as well as the implementation and monitoring of risk management control measures.

Drinking Water
This fact sheet summarizes key information about the access to and impact of safe drinking water. In 2015, 71 percent of the global population used a safely managed drinking water service—one that was located close by, available when needed, and free of contamination.

Toxin Alert
Toxin Alert—founded by students at the Harvard T.H. Chan School of Public Health—is a clean water supply and combined public water alert system, with the goal of empowering citizens and communities to prevent toxic drinking water epidemics like the Flint water crisis. Toxin Alert combines mapping and analysis from national and state governments; certified laboratory testing of drinking water; and critical alerts of new toxin water data based on geolocation. Their recent “Safe Water for Schools” campaign encourages citizens to petition and crowdfund the testing of drinking water quality of their local schools.

Drinking Water
This topic portal shares recent news, research, fast facts, policies, and public health recommendations related to safe drinking water. Resources in the portal also include data and statistics, as well as best practices for testing water quality.

A Snapshot of the World’s Water Quality: Towards a Global Assessment
This report assesses the quality of global water systems, with particular focus on water quality and how it relates to development objectives such as health, food security, and water security. The most common water quality problems in surface waters like rivers and lakes include pathogen pollution, organic pollution, salinity pollution, and eutrophication. The analysis focuses on Latin America, Africa, and Asia, and indicates water pollution has worsened since the 1990s in a majority of rivers in these regions.

TEACHING MATERIAL

Poisoned Waters: The Startling New Contaminants
This 8-minute video discusses the new level of contaminants found in U.S. drinking water. Produced as an educational tool for grades 6-13+, the video is accompanied by student questions and a teacher discussion guide. Associated interviews and related materials are also available.
Flint Water Crisis: Annotated Bibliography

Poison in the Rockies
This hour-long film describes the 100-year legacy of pollution left behind by mining that has polluted the American West's limited water supply. Other factors that impact the water supply are urbanization and acid rain.

The Water Crisis - Lesson Plans for All Grades
https://thewaterproject.org/resources/lesson-plans.
This educational portal features water-related lessons that can be used across a variety of subjects, such as social studies, earth sciences, and writing. Interactive activities, worksheets, research ideas, and resource lists are available for both teachers and students. Each of the five lessons is organized into three main sections—“the problem,” “the solution,” and “additional resources”—with background information, classroom activities, and a reading list.

Got Water? 2010 Science Ambassador Workshop Lesson Plan
This lesson plan looks at how natural disasters may affect water quality and in turn a community's health. The lesson plan is part of the CDC's Science Ambassador series, to help introduce middle- and high-school students to public health topics and to apply mathematical and scientific thinking to these issues.

The Habitable Planet, Course Unit 8. Water Resources
http://www.learner.org/courses/envsci/unit/text.php?unit=8&secNum=0.
This lesson unit offers a systems approach to environmental science, with a focus on water: how it is distributed around the globe; how it cycles among the oceans, atmosphere, and land; and how human activities are affecting the earth’s finite supply of usable water. The lesson is one of 13 units in The Habitable Planet, an online multimedia course for high school teachers and adult learners interested in environmental science. Supplemental materials for each lesson unit include a video, interactive labs, visuals, a glossary, and a professional development guide.

Water Management: Explore Water Management Concepts and Technologies
https://www.edx.org/xseries/water-management#courses.
This series of three online water management courses examine drinking water treatment, urban sewage treatment, and introduction to water and climate. They are offered by Delft University of Technology in the Netherlands.

WaterAid Teaching Portal
This collection for elementary educators includes downloadable lesson plans and free videos on topics such as toilets and hygiene, saving water, finding out where water really goes when it drains or flushes, and more.

Global Water Supply Elementary Curriculum
These elementary school lessons explore the global water supply through lessons relevant to multiple subjects, from science and math to global studies, language arts, and poetry.

Global Water Supply Middle School Curriculum
These middle school lessons explore the global water supply through lessons relevant to multiple subjects, from science and math to global studies, language arts, and poetry.
Global Water Supply High School Curriculum
http://static.water.org/docs/curriculums/WaterOrg%20HighCurricFULL.pdf.
These high school lessons explore the global water supply through lessons relevant to multiple subjects, from science and math to global studies, language arts, and poetry.

Knowledge Dissemination and Private Well Water Testing in Middlesex County, Ontario
https://www.schulich.uwo.ca/publichealth/cases/Western%20MPH%20Casebook%202015.html.
GHELI repository link: http://repository.gheli.harvard.edu/repository/10754.
This case study introduces the steps taken by the Environmental Health Department at the Middlesex-London Health Unit in Ontario, Canada to determine the knowledge level of well water testing information, attitudes towards the program, and needs of local community members around this issue. It is estimated that more than four million Canadians receive drinking water from private wells, which is subject to bacterial and chemical contamination, and these risks are particularly prevalent in rural farming communities. The responsibility and maintenance of private wells resides with their respective owners, and although free water testing is provided by the government, compliance to testing recommendations is extremely low due. The case, part of a 13-case collection, includes guidance for instructors, including learning objectives and discussion questions.

Global: Health Governance and Environmental Risks

SELECTED RESOURCES

Environmental Awareness - Think Global, Act Local
This lesson plan explores the nature of hazardous materials at the local, state, and national levels and associated health issues with these substances. It also introduces students to the federal agencies in charge of hazardous substances. The lesson plan is part of the CDC’s Science Ambassador series, to help introduce middle- and high-school students to public health topics and to apply mathematical and scientific thinking to these issues.

The United Nations Environment Programme (UNEP)
GHELI repository link: http://repository.gheli.harvard.edu/repository/11304.
The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system, and serves as an authoritative advocate for the global environment. UNEP’s website offers resources—such as news, multimedia, and the UNEP Knowledge Repository—on related topics including climate change, disasters and conflicts, ecosystem management, environmental governance, chemicals and waste, and resource efficiency.

Voices in Leadership: Gina McCarthy
https://www.hsph.harvard.edu/voices/events/mccarthy.
This half-hour video is part of the Harvard University Kennedy School’s “Voices in Leadership” series and shows a discussion between Harvard T.H. Chan School of Public Health Professor Howard Koh, former U.S. Assistant Secretary for Health for the U.S. Department of Health and Human Services, and Gina McCarthy, Chief of the U.S. Environmental Protection Agency. The conversation, from February 2016, focuses on a wide variety of challenges McCarthy has faced over her 30-year career, including the Flint water crisis, the Clean Power Plan, and the Gold King Mine accident on the Colorado River, as well as her vision for improving environmental protection in the United States. The video is

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accompanied by a written transcript.

**The UN World Water Development Report 2015: Water for a Sustainable World**


GHELI repository link: [http://repository.gheli.harvard.edu/repository/10942](http://repository.gheli.harvard.edu/repository/10942)

This report on global water and development demonstrates how water resources are essential to global sustainability. Taking into account economic growth, social equity, and environmental sustainability, it presents a forward-looking narrative about how major challenges in the modern world will affect—and can be affected by—water resources, services, and related benefits. The report provides a comprehensive overview of major and emerging trends from around the world, with examples of how some of the trend-related challenges have been addressed, their implications for policy-makers, and further actions that can be taken by stakeholders and the international community. Additional resources include an executive summary, facts and figures, a video entitled “The Future of Water: A Vision for 2050,” and a set of seven country case studies, “Facing the Challenges.”

**International Water Association**


The International Water Association focuses on issues related to water management worldwide. With presence in 130 countries, the International Water Association shares resources and news on thematic areas such as agriculture, climate change, energy, environment, health, industry, society, and urbanization.

**Manual of the Human Rights to Safe Drinking Water and Sanitation for Practitioners**


This report explores the human rights principles related to drinking water and sanitation, and the policies and practices that will support the realization of universal access worldwide. In particular, the report looks at the role of legal and regulatory frameworks in this process, and thinks through institutional implications for water supply and sanitation companies.

**Public Health, Environmental and Social Determinants of Health**


This topic portal shares recent news, publications, infographics, and information focused on the intersection of public health and environmental and social determinants of health. The World Health Organization estimates that 12.6 million deaths each year are attributable to unhealthy environments, which are influenced by risk factors such as air, water, and soil pollution, chemical exposures, and climate change. This collection of resources focuses on reducing environmental and social risk factors.

**Progress on Drinking Water, Sanitation and Hygiene: 2017 Update and Sustainable Development Goal Baselines**


GHELI repository link: [http://repository.gheli.harvard.edu/repository/11628](http://repository.gheli.harvard.edu/repository/11628)

This report provides a comprehensive global assessment of progress on water, sanitation, and hygiene monitoring, or WASH. It establishes country, regional, and global baseline estimates for the new Sustainable Development Goal targets and indicators relating to WASH. The latest data show that 30 percent of people worldwide, or 2.1 billion individuals, lack access to safe, readily available water at home, and 60 percent, or 4.5 billion, lack safely managed sanitation. This report also presents the first-ever estimates of the population using “safely managed” drinking water and sanitation services—meaning drinking water at home that is free from contamination, and toilets where excreta are safely treated and disposed. The report is accompanied by an interactive website that allows users to explore the most recent data by country, socioeconomic status, service level, and much more. This update draws on data from the
WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, which has reported country, regional and global estimates of WASH progress since 1990.

**Global Water Forum**
This topic portal brings together recent news and research on water governance, policy, and science. The portal also includes open access courses and tools to help understand new as well as ongoing water challenges.

**Towards a Worldwide Assessment of Freshwater Quality**
This report outlines linkages between water quality and the Sustainable Development Goals. At present, the global community is facing a water quality challenge wherein increasing pollution of freshwater resources in developing and developed countries threatens public health, food security, and biodiversity. The report indicates that better monitoring and surveillance is needed to quantify the magnitude of these challenges to appropriately and effectively protect and improve water quality over the coming years.

**UN-Water GLAAS 2017: Financing Universal Water, Sanitation, and Hygiene Under the Sustainable Development Goals**
This report analyzes and discusses how to finance universal access to water and sanitation under the Sustainable Development Goals. The report aims to provide policy- and decision-makers at all levels reliable and comprehensive information about investments to ensure drinking water safety and appropriate sanitation. This assessment indicates that 700 million people worldwide still do not receive drinking water from improved water sources, and further outlines previous challenges and successes in reducing the proportion of individuals without access to safe drinking water.