

## Lead in the Flint, Michigan Water System

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Resources compiled by:

[National Library of Medicine, Specialized Information Services Division](#)

[National Network of Libraries of Medicine Greater Midwest Region](#)

Several Michigan, local, and federal agencies are responding to the presence of lead in the drinking water in Flint, Michigan. The National Library of Medicine Specialized Information Services Division (NLM SIS) provides information on the medical and public health aspects of chemical incidents for health professionals, policy makers, and volunteers who may be responding to an incident and for people living in or concerned about the affected region. The information below about health effects of lead and safe drinking water is from the National Library of Medicine resources including the Hazardous Substances Data Bank (HSDB); ChemIDplus, Tox Town, and MedlinePlus as well as from other federal agencies, local agencies, and other authoritative sources.

### Michigan Resources

- Taking Action on Flint Water - Michigan.gov  
<http://www.michigan.gov/flintwater>
- Facts About Lead in Flint Water (PDF, 600KB)  
[http://www.michigan.gov/documents/deq/LeadInWaterInfoSheetV2a\\_511710\\_7.pdf](http://www.michigan.gov/documents/deq/LeadInWaterInfoSheetV2a_511710_7.pdf)  
Flint Water Response Team, Michigan.gov
- City of Flint Emergency Declaration/Public Health Emergency Declaration (4/11/2016)  
[http://www.gc4me.com/alert\\_detail.php](http://www.gc4me.com/alert_detail.php)  
*Genesee County*
- Flint Water Advisory Task Force (Final Report)(PDF, 1.79MB) (3/23/2016)  
[http://flintwaterstudy.org/wp-content/uploads/2016/03/Flint-task-force-report\\_2438442\\_ver1.0.pdf](http://flintwaterstudy.org/wp-content/uploads/2016/03/Flint-task-force-report_2438442_ver1.0.pdf)
- Water Resource Sites  
[http://www.gc4me.com/departments/emg\\_mgt\\_homeland\\_sec/city\\_of\\_flint\\_water\\_emergency.php](http://www.gc4me.com/departments/emg_mgt_homeland_sec/city_of_flint_water_emergency.php)  
*Genesee County*

### Michigan Government Web sites

- Michigan Emergency Management Association <http://www.memaonline.org/>
- City of Flint <https://www.cityofflint.com/>

### U.S. Federal Government Resources Specific to Michigan

- Officials emphasize commitment to Flint after federal emergency declaration expires (8/3/2016) <https://www.epa.gov/newsreleases/officials-emphasize-commitment-flint-after-federal-emergency-declaration-expires>  
U.S. Environmental Protection Agency
- HHS awards \$500,000 in funding to Flint health centers (2/18/2016) <http://www.hhs.gov/about/news/2016/02/18/hhs-awards-500000-funding-flint-health-centers.html>  
U.S. Department of Health & Human Services
- Rash Study in Flint (8/25/2016) <http://www.phe.gov/emergency/events/Flint/Pages/rash-study.aspx>  
Includes translations in Arabic, Spanish, and American Sign Language  
Public Health Emergency.gov
- Flint Residents: You and Your Family Need Water Here's a Quick Reference Guide to Making it Safe (3/17/2016) (PDF, 150KB) [https://www.epa.gov/sites/production/files/2016-03/documents/flint\\_oh\\_fsv4.pdf](https://www.epa.gov/sites/production/files/2016-03/documents/flint_oh_fsv4.pdf)  
U.S. Environmental Protection Agency
- Getting Clean Water to Flint (3/12/2016) (PDF, 366KB) [https://www.epa.gov/sites/production/files/2016-03/documents/flint\\_oh\\_sampl\\_final\\_eng2\\_0.pdf](https://www.epa.gov/sites/production/files/2016-03/documents/flint_oh_sampl_final_eng2_0.pdf)  
U.S. Environmental Protection Agency
- Preguntas frecuentes sobre el agua potable de Flint (3/18/2016) <https://espanol.epa.gov/espanol/preguntas-frecuentes-sobre-el-agua-potable-de-flint>  
U.S. Environmental Protection Agency
- Advice to Flint Residents (3/21/2016) <http://www.epa.gov/flint/advice-flint-residents>  
U.S. Environmental Protection Agency
- Consejos para los residentes de Flint, Michigan (3/7/2016) <http://espanol.epa.gov/espanol/consejos-para-los-residentes-de-flint-michigan>  
U.S. Environmental Protection Agency
- Flint Water Sampling Objectives Efforts (7/13/2016) <https://www.epa.gov/flint/flint-water-sampling-objectives>  
U.S. Environmental Protection Agency
- Flint Drinking Water Response (6/16/2016) <http://www.epa.gov/flint>  
U.S. Environmental Protection Agency
- Respuesta al agua potable en Flint, Michigan (3/18/2016) <http://espanol.epa.gov/espanol/respuesta-al-aqua-potable-en-flint-michigan>  
U.S. Environmental Protection Agency
- Flint Safe Drinking Water Task Force (5/17/2016) <http://www.epa.gov/flint/flint-safe-drinking-water-task-force>  
U.S. Environmental Protection Agency
- Michigan Contaminated Water (EM-3375) (4/25/2016) <http://www.fema.gov/disaster/3375>  
Federal Emergency Management Agency (FEMA), U.S. Department of Homeland Security

- Contaminated Water in Flint (Contains summaries of the federal response and News and Announcements (6/27/2016)  
<http://www.phe.gov/emergency/events/Flint/Pages/default.aspx>  
Public Health Emergency, Office of the Assistant Secretary for Preparedness and Response, U.S. Department of Health & Human Services
- Response in Flint – HHS Blog posts related to activity in Flint, MI (6/27/2016)  
<http://www.hhs.gov/blog/tags/flint>  
U.S. Department of Health and Human Services

### Background Information on Lead

- Lead in Drinking Water (4/21/2016) <http://www.epa.gov/lead/protect-your-family#water>  
U.S. Environmental Protection Agency
- Sources of Lead – Water (2/18/2016) <http://www.cdc.gov/nceh/lead/tips/water.htm>  
Centers for Disease Control and Prevention
- Public Health Statement for Lead (1/21/2015)  
<http://www.atsdr.cdc.gov/phs/phs.asp?id=92&tid=22>  
Toxic Substances Portal, Agency for Toxic Substances and Disease Registry
- Lead (2/18/2016) <http://www.epa.gov/lead>  
U.S. Environmental Protection Agency
- ToxFAQs for Lead (answers the most frequently asked health questions) (3/12/2015)  
<http://www.atsdr.cdc.gov/toxfaqs/faq.asp?id=93&tid=22>  
Toxic Substances Portal, Agency for Toxic Substances and Disease Registry
- ToxGuide™ for Lead (PDF, 144 KB)(2008) <http://www.atsdr.cdc.gov/toxguides/toxguide-13.pdf>  
Toxic Substances Portal, Agency for Toxic Substances and Disease Registry

### Medical Issues

- Medical Management Guidelines for Lead (Pb) (10/21/2014)  
<http://www.atsdr.cdc.gov/MMG/MMG.asp?id=1203&tid=22>  
Agency for Toxic Substances and Disease Registry
- Water in Hemodialysis (4/10/2009)  
<http://www.cdc.gov/healthywater/other/medical/hemodialysis.html>  
Centers for Disease Control and Prevention

### Lead Exposure in Children

- Elevated Blood Lead Levels in Children Associated with the Flint Drinking Water Crisis: A Spatial Analysis of Risk and Public Health Response  
<http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2015.303003>  
Am J Public Health. 2016 Feb;106(2):283-90. doi: 10.2105/AJPH.2015.303003. Epub 2015 Dec 21.
- Blood Lead Levels in Children (PDF, 300 KB)  
[http://www.cdc.gov/nceh/lead/acclpp/lead\\_levels\\_in\\_children\\_fact\\_sheet.pdf](http://www.cdc.gov/nceh/lead/acclpp/lead_levels_in_children_fact_sheet.pdf)  
Centers for Disease Control and Prevention

- Childhood Lead Poisoning Publications (Data, exposure studies, guidelines, case management (11/4/2015) <http://www.cdc.gov/nceh/lead/publications/default.htm>  
Centers for Disease Control and Prevention
- Educational Interventions for Children Affected by Lead (PDF, 1.45MB) (April 2015)  
[http://www.cdc.gov/nceh/lead/publications/Educational\\_Interventions\\_Children\\_Affected\\_by\\_Lead.pdf](http://www.cdc.gov/nceh/lead/publications/Educational_Interventions_Children_Affected_by_Lead.pdf)  
Centers for Disease Control and Prevention
- State and Local Healthy Homes and Childhood Lead Poisoning Prevention Programs (CLPPPs) (6/9/2016) <http://www.cdc.gov/nceh/lead/programs/default.htm>  
Centers for Disease Control and Prevention
- CDC's Childhood Lead Poisoning Prevention Program (2/9/2015)  
<http://www.cdc.gov/nceh/lead/about/program.htm>  
Centers for Disease Control and Prevention

### Lead information for Parents

- Information for Parents (12/8/2015) <http://www.cdc.gov/nceh/lead/parents.htm>  
Centers for Disease Control and Prevention
- Prevent Childhood Lead Poisoning Infographic (12/18/2013)  
<http://www.cdc.gov/nceh/lead/infographic.htm>  
Centers for Disease Control and Prevention
- Protect Your Family from Exposures to Lead (4/21/2016) <https://www.epa.gov/lead/protect-your-family-exposures-lead>  
U.S. Environmental Protection Agency
- What Do Parents Need to Know to Protect Their Children? Update on Blood Lead Levels in Children (3/15/2016) [http://www.cdc.gov/nceh/lead/ACCLPP/blood\\_lead\\_levels.htm](http://www.cdc.gov/nceh/lead/ACCLPP/blood_lead_levels.htm)  
Centers for Disease Control and Prevention

### Lead Exposure and Pregnant Women

- Guidelines for the Identification and Management of Lead Exposure in Pregnant and Lactating Women (PDF, 4.24MB) (November 2010)  
<http://www.cdc.gov/nceh/lead/publications/leadandpregnancy2010.pdf>  
Centers for Disease Control and Prevention
- Lead - Tips - At risk Populations - Pregnant Women (12/8/2015)  
<http://www.cdc.gov/nceh/lead/tips/pregnant.htm>  
Centers for Disease Control and Prevention
- Lead and Pregnancy  
<http://mothertobaby.org/fact-sheets/lead-pregnancy/pdf/>  
MotherToBaby.org, Organization of Teratology Information Specialists
- Lead Screening during Pregnancy and Lactation (August 2012)  
<http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Lead-Screening-During-Pregnancy-and-Lactation>  
American College of Obstetricians and Gynecologists

### Health Resources for the Public from the National Library of Medicine

Tox Town – Interactive guide to toxic substances and environmental health issues in everyday places

- Lead [http://toxtown.nlm.nih.gov/text\\_version/chemicals.php?id=16](http://toxtown.nlm.nih.gov/text_version/chemicals.php?id=16)
- Drinking Water [http://toxtown.nlm.nih.gov/text\\_version/locations.php?id=18](http://toxtown.nlm.nih.gov/text_version/locations.php?id=18)

Tox Town en español

- Plomo <http://toxtown.nlm.nih.gov/espanol/chemicals.php?id=59>
- Agua potable <http://toxtown.nlm.nih.gov/espanol/locations.php?id=81>

MedlinePlus – Health information for patients, families and health care providers

- Lead Poisoning <https://medlineplus.gov/leadpoisoning.html>
- Chemical Emergencies <https://medlineplus.gov/chemicalemergencies.html>
- Coping with Disasters <https://medlineplus.gov/copingwithdisasters.html>
- Drinking Water: <https://medlineplus.gov/drinkingwater.html>

MedlinePlus en español

- Envenenamiento con plomo <https://medlineplus.gov/spanish/leadpoisoning.html>
- Emergencias químicas <https://medlineplus.gov/spanish/chemicalemergencies.html>
- Enfrentarse con desastres <https://medlineplus.gov/spanish/copingwithdisasters.html>
- Agua Potable: <https://medlineplus.gov/spanish/drinkingwater.html>

### Health Information on Chemical Components of Lead

Lead Compounds (This record contains general information for lead ions and compounds.)

- Hazardous Substances Data Bank (HSDB)  
<http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@DOCNO+6923>
- ChemIDplus  
<http://chem.sis.nlm.nih.gov/chemidplus/name/lead%20compounds>

Lead, Elemental (RN: 7439-92-1) (This record contains information for lead in its zero valence state only)

- HSDB <http://toxnet.nlm.nih.gov/cgi-bin/sis/search2/r?dbs+hsdb:@term+@DOCNO+231>
- ChemIDplus <http://chem.sis.nlm.nih.gov/chemidplus/name/lead>

### Other Information from the National Library of Medicine

- Lead and Human Health – Web guide with background information, laws and regulations, and pre-formulated searches of relevant National Library of Medicine databases.  
<https://sis.nlm.nih.gov/enviro/lead.html>
- Water Security in Disaster Lit<sup>SM</sup>: The Resource Guide for Disaster Medicine and Public Health  
<https://disasterlit.nlm.nih.gov/search/?searchTerms=water+%28emergency+OR+security%29&search.x=26&search.y=11&search=Search>

### Lead in Soil

- Lead in the home garden and urban soil environment (2016)  
<http://www.extension.umn.edu/garden/yard-garden/soils/lead-in-home-garden/>  
University of Minnesota Extension
- Lead in Residential Soils: Sources, Testing, and Reducing Exposure (2016)  
<http://extension.psu.edu/plants/crops/esi/lead-in-soil>  
Penn State Extension
- Soil Lead: Testing, Interpretation, & Recommendations (2016) <https://soiltest.umass.edu/fact-sheets/soil-lead-testing-interpretation-recommendations>  
University of Massachusetts, Amherst

### Communicating about Risk

- Drinking Water Advisory Communications Toolbox (9/16/2015)  
<http://www.cdc.gov/healthywater/emergency/dwa-comm-toolbox/resources.html>  
Centers for Disease Control and Prevention
- Gateway to Health Communication & Social Marketing Practice: Risk Communication (5/10/2011) <http://www.cdc.gov/healthcommunication/risks/index.html>  
Centers for Disease Control and Prevention
- Crisis & Emergency Risk Communication (CERC) (5/31/2016) <http://emergency.cdc.gov/cerc/>  
Centers for Disease Control and Prevention
- EPA Risk Communication (9/30/2015) <http://www.epa.gov/risk/risk-communication>  
U.S. Environmental Protection Agency
- Guidance Documents (risk communications tools used by EPA scientists to inform decisions makers <http://www.epa.gov/risk/risk-communication>  
U.S. Environmental Protection Agency
- Communicating exposure and health effects results to study subjects, the community and the public: strategies and challenges (Full text)  
<http://www.nature.com/jes/journal/v14/n7/full/7500392a.html>  
Brauer M, Bert Hakkinen PJ, Gehan BM, Shirname-More L.  
Journal of Exposure Analysis and Environmental Epidemiology. 2004 Nov;14(7):479-83

### Coping with an Environmental Crisis

- Disaster Distress Helpline for people affected by the water supply emergency in Flint, Michigan (1/16/2016) <http://www.samhsa.gov/newsroom/press-announcements/201601190400>  
Substance Abuse and Mental Health Services Administration
- Coping with Disasters, Violence and Traumatic Events (a guide to web resources) (9/16/2015)  
<https://disasterinfo.nlm.nih.gov/dimrc/coping.html>  
National Library of Medicine
- Psychological First Aid for Schools Field Manual <http://www.nctsn.org/content/psychological-first-aid-schoolspfa>  
National Child Traumatic Stress Network (NCTSN)

## Social Media

News, announcements, personal opinions and commentary

### Twitter Hashtags

- #Flint
- #FlintWaterCrisis
- #FlintWater
- #FlintForward

### Twitter feeds

- @MichEMHS <https://twitter.com/michemhs>  
Michigan State Police, Emergency Management and Homeland Security Division
- @MichiganDEQ <https://twitter.com/MichiganDEQ>  
Michigan Department of Environmental Quality (DEQ)
- @EPAGreatLakes <https://twitter.com/EPAGreatLakes>  
EPA Region 5
- @HHSgov <https://twitter.com/HHSgov>  
U.S. Dept. of Health & Human Services
- @SecBurwell <https://twitter.com/secburwell>  
Secretary of Health & Human Services Sylvia Mathews Burwell
- @PHEgov <https://twitter.com/PHEgov>  
Public Health Emergency, Assistant Secretary for Preparedness and Response, U.S. Department of Health and Human Services