

Flint Lead Water Response Regulator Perspective

Flint, Michigan – 2016



Michigan Department of Agriculture & Rural Development

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What Happened

The Situation on the Ground

The Response

Lessons Learned

www.michigan.gov/flintwater



Flint

What Happened

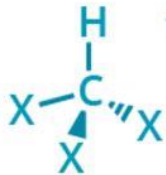




Water System Damage

THE FLINT WATER CRISIS

The American city of Flint, Michigan, has been in the news recently due to the discovery of very high levels of lead in its water supply. But how did this lead get there? Here's a brief explainer.



TRIHALOMETHANES

Disinfectant byproducts; formed by the reaction of chlorine (added to disinfect the water) with organic matter.

X = halogen (commonly Cl or Br)

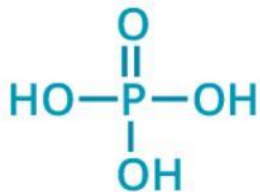
CORROSION: DETROIT VS. FLINT RIVER

0.45 vs 1.60
DETROIT vs FLINT

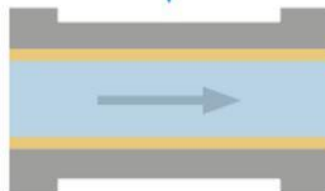
Chloride to sulfate mass ratio (CSMR);
0.45 = low corrosion;
1.60 = very high corrosion.

When high levels of trihalomethanes were detected in Flint's water, ferric chloride (FeCl_3) was added to improve removal of organic matter. However, this increased the water's already high concentration of chloride ions, and as a result made the water more corrosive.

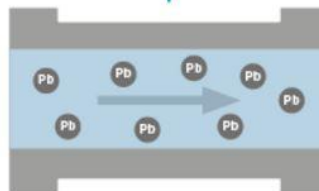
CORROSION CONTROL



WITH PHOSPHATES



WITHOUT PHOSPHATES



Orthophosphates are added to water to reduce the amount of lead leaching into it from pipes. They do this by forming a layer of low-solubility lead-phosphate complexes inside the pipe. This method of corrosion control was not used for the Flint River water supply.



Flint

The Situation on the Ground





Michigan's Food Safety Program

- **63,000 Licensed Food Establishments**
 - **18,000 Retail and Processing**
 - State Inspected
 - 75 FTEs
 - **45,000 Food Service**
 - Local Health Inspected
 - 365 FTEs

Food Code

U.S. Public Health Service



2009

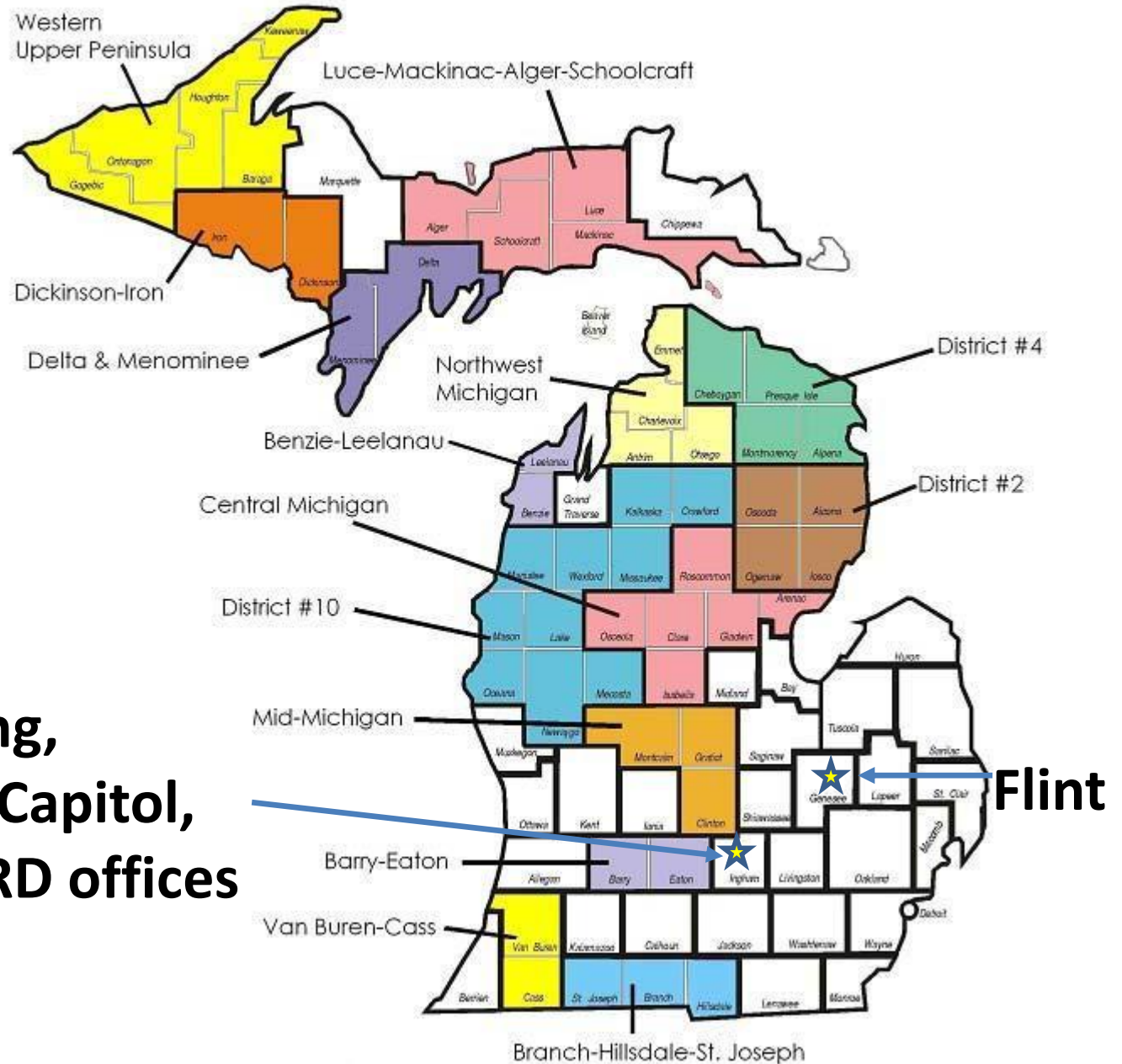
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service • Food and Drug Administration

College Park, MD 20740

-83 Counties
-45 State Accredited
Local Health Depts.

**Lansing,
State Capitol,
MDARD offices**





100,000 Population



612 Food Establishments



Getting the Work Done

- State food safety inspectors did all the food work from January-March
 - Regular local health input
 - Worked in teams
- Local health was understaffed and needed for other challenges
- \$330,000 to local environmental health to increase management and field staffing



Flint

The Response





Incident Command System (ICS)

- **State Emergency Operations Center (SEOC)**
 - Staffing challenges at SEOC and Joint Information Center (JIC)
- **MDARD ICS**
 - Food Safety/Nutrition ICS
 - Weekly planning and operational periods
 - First experience switching out ICS teams



1. Incident Name:

FDD Flint Water Emergency Response

2. Operational Period:

Date From: 2/8/2016

Time From: 0500

3. Objective(s):

- Ensure responder and public safety
- Continue scheduling and performing “first draw” water sample collection for testing. Division staff, including 100% high risk establishment water supplies sampled.
- Conduct follow up assessments at food establishments on the City of Flint water non-compliant with requirements during initial or follow up assessments

Requirements for Licensed Food Establishments Using City of Flint Water

January 13, 2016

Attention: This applies to licensed restaurants, grocery stores, convenience stores, food processors and food warehouses.

- The best way to determine if water contains lead is to have it tested. Safe results can be posted to inform consumers.
- To schedule a free collection and analysis of your food establishment's water for lead, call 1-800-292-3939 and state you're a "Flint food establishment requesting a water test." Be prepared to provide a time when your water system can be sampled where water won't have been used for at least 6 hours. Sampling appointments as early as 5 a.m. are available.
- Restaurants with general questions should contact Genesee County Health Department at: 810-257-3612.
- Grocery or Food Processing establishments with general questions should contact MDARD at: 1-800-292-3939.

Unless the water has been tested and found to not have a lead concern, do the following:

- Flush water lines for 5 minutes each day before using or serving water and after 6 hours of no water use. Then flush other equipment such as pop machines for at least 1-2 minutes.
- Install an NSF Standard 53 certified filter on the faucet where drinking/cooking water is obtained from. Approved filter information for faucet or in-line filters can be found at: <http://nsf.com/newsroom/statement-regarding-flint-water-system-lead-issue-and-to-certification-nsf>. Filters must be changed based upon the manufacturer's recommendations.
- Use cold water and store it for immediate consumption.
- Always use cold water for drinking, cooking and cleaning/rinsing food.
- Hot water must be used for dishwashing.

Other equipment that may use city water:

- Ice machines – Install a water filter on the supply line or use bagged ice in drinking water.
- Pop machines – Flush for 1 minute daily or use bottled beverages.
- Coffee machines or Tea Urns – Flush for 1-2 minutes daily or use filtered water. These products may be very low risk as young children under 6 are not likely to consume these.
- Slush machines – Use filtered water.
- Spray misters – Flush for 1-2 minutes daily or use filtered water.

A licensed plumber can check your plumbing and service lines for lead soldering or lead service lines.

Allowed for:

- Testing
- Filtering
- Flushing
- Alternate sources such as bottled water and bagged ice



TAKING ACTION **ON FLINT WATER**

FLINT WATER

Business and Food Establishment Information

[SBA Announces Change in Days and Duration of Operations at Business Recovery Center in Flint](#) 

[Food Establishment Compliance List as of March 28, 2016](#) 

[Carta a los Establecimientos de Comida \(Letter to Food Establishments\)](#) 

[Letter to Food Establishments](#) 

[Requirements for Licensed Food Establishments Using City of Flint Water](#) 

Flint Water Response Food Establishment Compliance List

The following Flint food establishments have received compliance checks and have either been found to be following the requirements for use of City of Flint water as directed by the Genesee County Health Department (GCHD) and the Michigan Department of Agriculture and Rural Development (MDARD) or had initial water samples taken by MDARD with results that had undetectable levels of lead.

Inclusion of businesses on this list does not represent endorsement of the businesses by MDARD, nor does it guarantee food safety at these facilities. The companies listed have demonstrated they are taking precautions to reduce the risk of foodborne illness from water that may be contaminated, as outlined in the Michigan Food Law and Michigan Modified Food Code or have received water test sample results from MDARD with undetectable levels of lead.

Flint food businesses not included on this list are not necessarily out of compliance with Michigan food regulations. Some businesses have not yet received a compliance assessment from food inspectors. Compliance checks are still taking place, and this list is updated as new inspections are done. Food businesses can schedule a compliance assessment by calling MDARD at 800-292-3939.

Flint Food Establishments Verified to be in Compliance as of: *Monday, April 11, 2016*

Firm Name	Firm Address	Zip Code
4-WAY PARTY STORE	1302 DUPONT ST	48504
501 BAR & GRILL	* 500 S SAGINAW ST	48502
A & G MARKET, INC	2012 W DARTMOUTH ST	48504
ABBOTT'S MEAT, INC	3623 BLACKINGTON AVE	48532



The Strategy

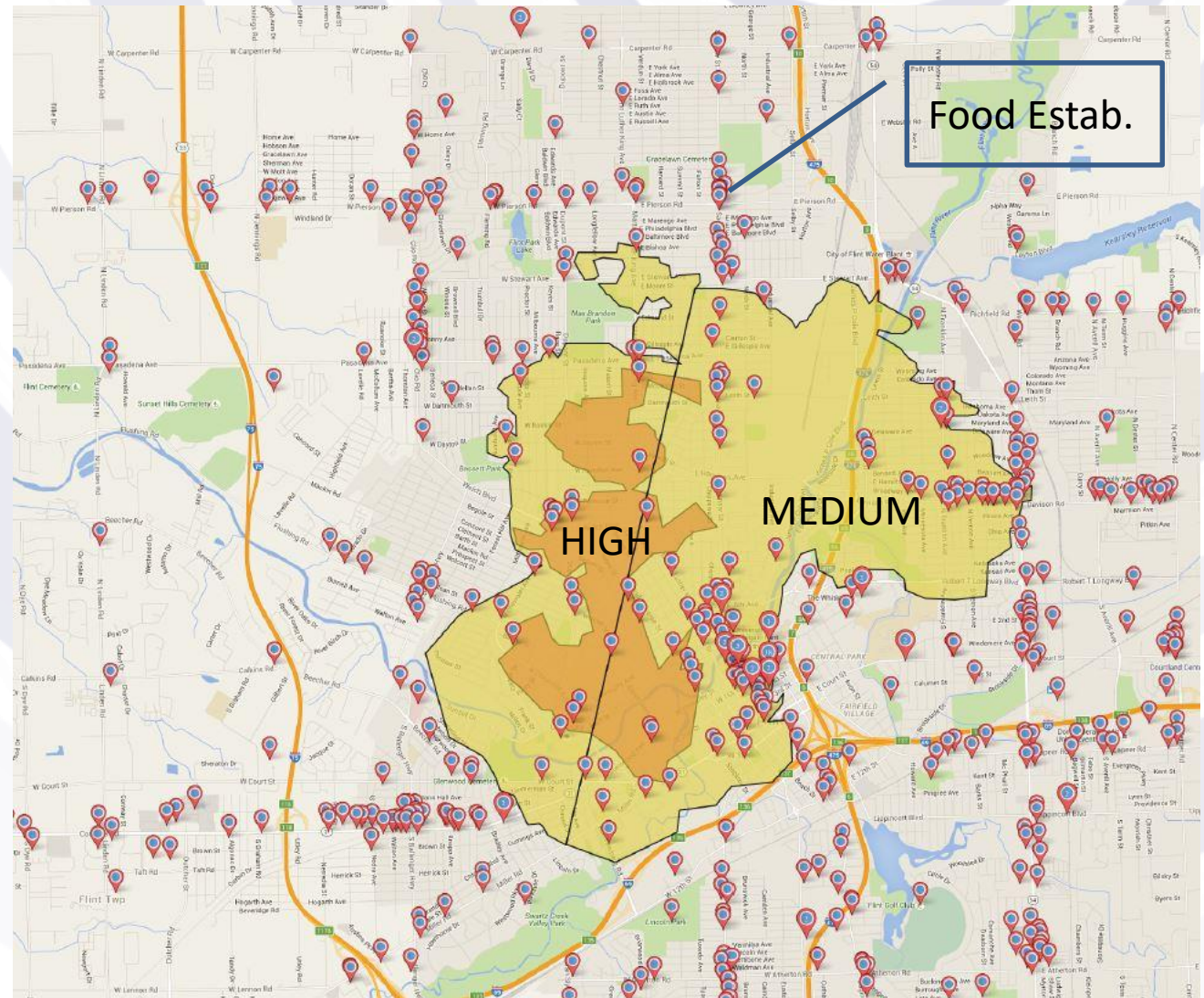
- Risk-Based Compliance Visits
 - First Draw Lead/Copper Sampling on Request
 - In-Use Sampling Everywhere
- Compliance Assistance or Enforcement
- Compliant Firm List: Web-Based, Updated Daily
- Home-Canned Food Testing and Advice
- Nutrition / Urban Garden Efforts



Approach 1

High Blood Levels=High Food Risk

Evolving
Risk-Based
Thinking



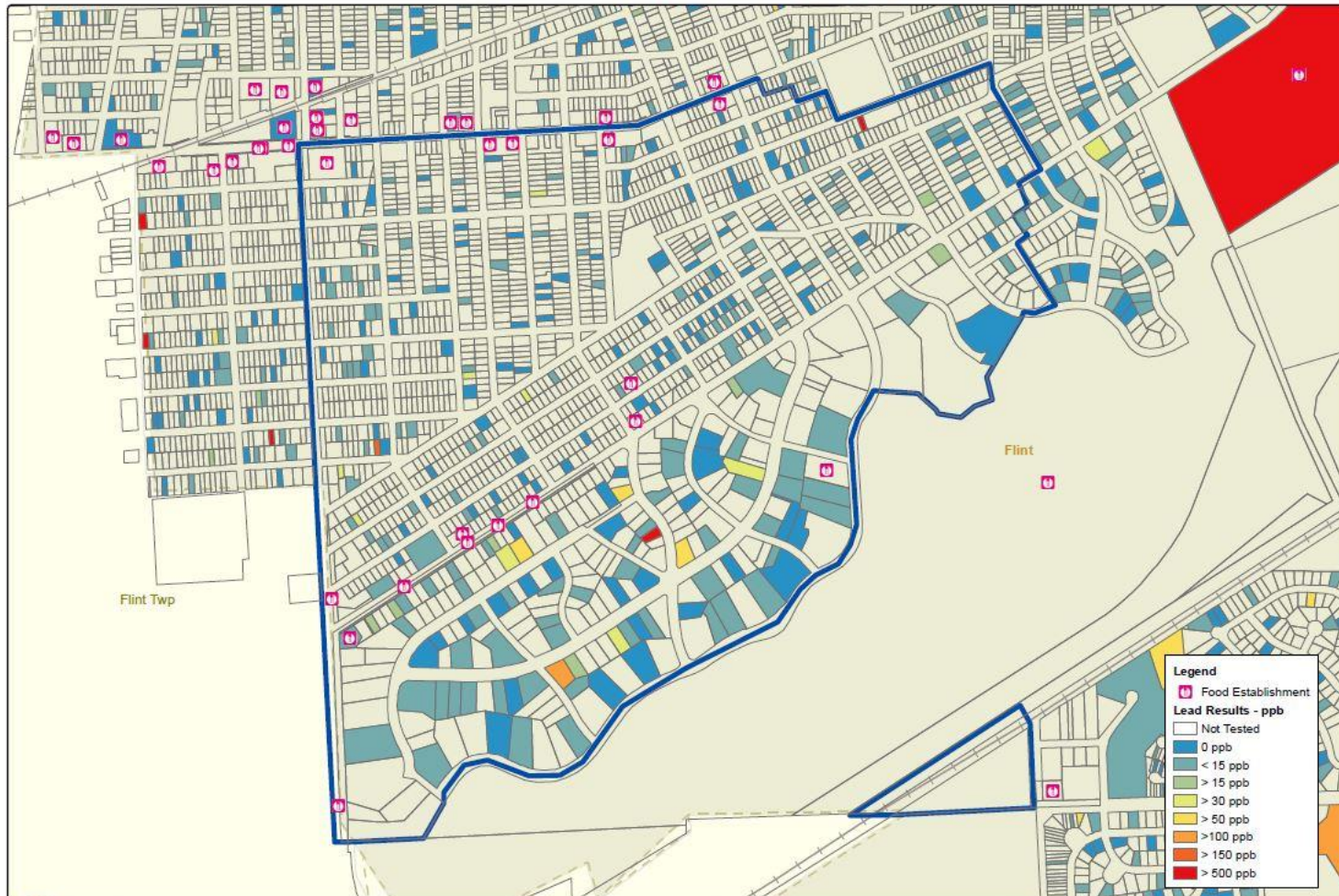


Approach 2

Positive Lead Samples are Random

Food Establishments by Team Assignment Area 11

(Flint Water Sampling Results as February 5, 2016)





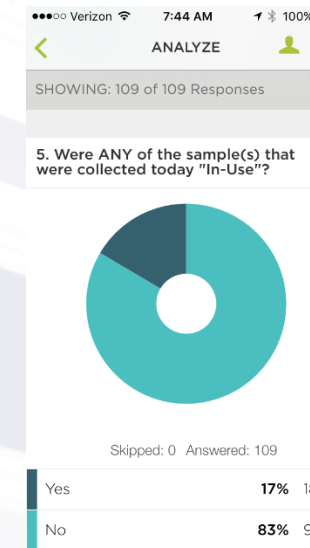
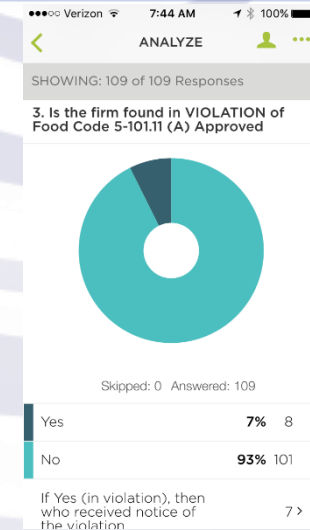
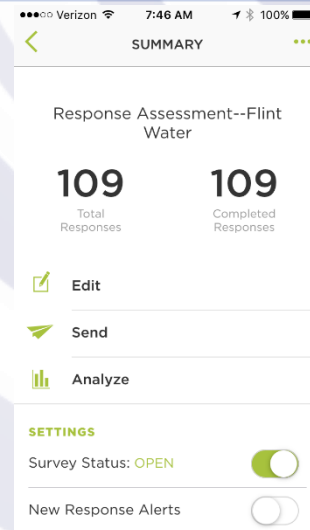
Final Risk-Based Approach

- **High Risk:** Food Processors, Schools, Food Service, High Drinking Water Usage
- **Medium Risk:** Convenience and Grocery Stores
- **Low or No Risk:** Don't normally use water, seasonally closed, found not to be on Flint water system, adult lounges, etc.



Tools

- Survey Monkey
- Inspection Reports
- Free Water Analysis
- Free Residential Faucet Water Filters (100 gal. capacity)



-
- MDA TESTED & GOT A NON-DETECT ON LEAD; THEY CHOOSE TO SERVE BOTTLED WATER & NOT USE THE DRINKING FOUNTAINS FOR NOW
 - MDA SAMPLED; NON-DETECT ON LEAD; THEY FLUSH BEFORE USE IN A.M.
 - Firm washes produce using a faucet that is equipped with an approved filter. Firm is aware the filter cartridge needs periodic changing and has extra cartridges.
 - Using bottled or filtered water for coffee and slushy machines
 - Firm is a coffee roaster and only uses water for hand washing and equipment washing.
 - 3M WATER FILTRATION CFS8112S IS ATTACHED TO THE WATER SUPPLY AT



Flint Food Compliance Results

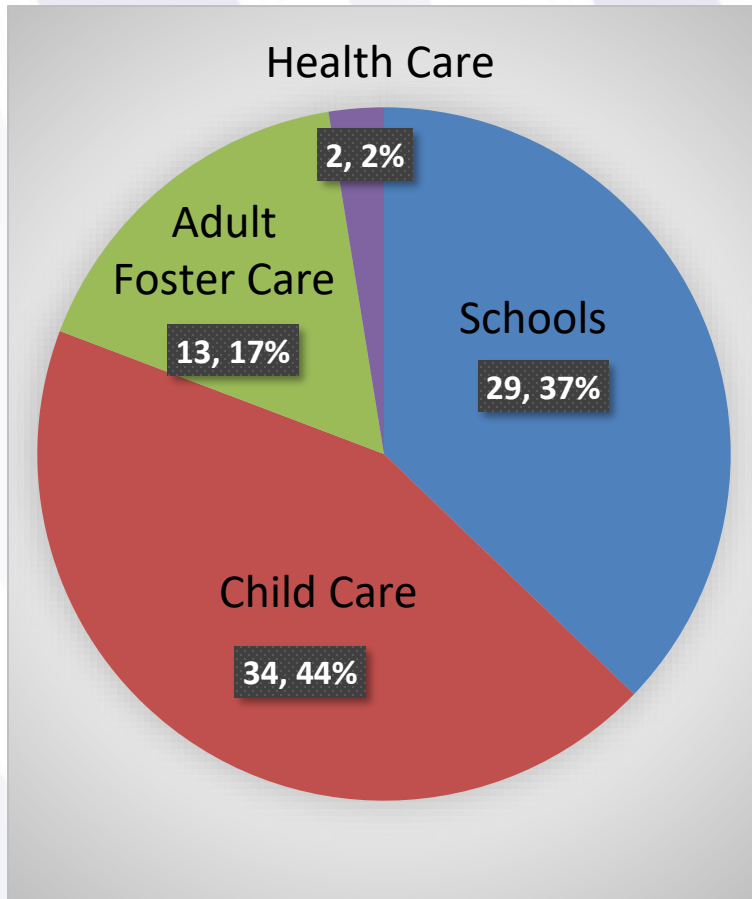
Overall Goal was Non-Detect

	MDARD	*Local Health	Total	Notes
Initial Total Number of Establishments	343	269	612	Original lists were derived from the Genesee County Health Department and MDARD Central Licensing.
Establishments Not Needing an Assessment	174	57	231	Firms either are permanently or seasonally closed, not on City of Flint Water, or the firm does not normally use water for cooking or drinking.
Revised Total Number of Establishments Needing Assessments	169	212	381	
Total Establishments with Initial Assessments	169	212	381	100% of needed compliance reviews and sampling completed. Conducted from 1/15/16-3/24/16.
Total samples tested	NA	NA	381	ND: 258 (68%), 1-3 ppb: 73 (19%), 4-14 ppb: 34 (9%), 15+ ppb: 16 (4%)
MDARD FDD costs	\$297,000	NA	NA	4,857 hours (app. 3 FTE's) through 3/19/16.
In Compliance with lead at "Non-Detect"	104	99	203	
In Compliance with lead at 1 (ppb) - 14(ppb) **	19	22	41	See Table Below

Jurisdiction	Firm Name	First Draw (ppb)	2 nd First Draw (ppb)	In-Use (ppb)	2 nd In-Use (ppb)	3 rd In-Use (ppb)	4 th In-Use (ppb)	Recommendation
LOCAL HEALTH	AC LOCAL 651 UAW			2				No Action – now at or near detection level limits.
MDARD	ADMIRAL PETROLEUM CO #286	1						No Action – now at or near detection level limits, plus this was a 1 st draw.
MDARD	BALKAN BAKING CO	3		ND				No Action – now at ND
MDARD	BREAD BASKET			5				No action- Not on Flint water- Use Grand Blanc system.



Schools, Health Care, Child & Adult Care Facilities



Sampling by other agencies

- Most or all fixtures were sampled (after 8 hours of no use):
 - Immediately – 30 seconds – 2 minutes
- Over 800 fixtures sampled
- Showed lead was often from fixtures
- Fixture replacement
- Follow-up verification sampling



Flint

Lessons Learned





Technical Lessons

- 70% food establishment initial compliance rate – with high resident awareness
- Lead problems are sporadic and hard to predict
- Lead is often from brass fixtures
- Safe levels of lead are difficult to identify
 - EPA- 15 ppb, Governor Snyder Proposal 10 ppb, Toxicologists express concerns with baby formula @ 5 ppb, Desired- Non-Detect, All agree safe- 0 ppb.
 - Lab detection limits vary (1-3 ppb in this case)
 - Safe levels in food are varied & much higher (50-300 ppb)
 - Elevated levels found in home-canned goods tested.



Operational Lessons

- **Residential and commercial strategies may differ**
- **New systems need to be quickly developed**
 - Sampling appointment and assignment
 - Data collection, database development, analysis
 - GIS mapping (used existing from other agencies)
 - Staff instructions / Sampling strategies
 - Compliance, assistance and enforcement strategies
 - On-going just in time staff training
 - Communication
- **Conduct after-action reviews / Share results**



Leadership Lessons

- **Trust your professional peers**
 - Whether local, state, or federal – everyone’s opinion and point of view must be listened to, valued, and considered.
- **Learn and use the Incident Command System**
 - Challenges:
 - Communications and IT/Data Management
 - Multiple teams ICS trained and ready



Questions?



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