

**Statement of Mona Hanna-Attisha MD MPH FAAP**

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Before the

Steering and Policy Committee Hearing

February 10, 2016

Good afternoon. I would like begin by thanking Leader Nancy Pelosi, Co-chairs Congresswoman Rosa DeLauro and Congresswoman Donna Edwards, and of course Congressman Dan Kildee, for the opportunity to speak to the Democratic Steering and Policy Committee regarding the Flint Water Crisis. This is a very important topic and I am pleased you have chosen to devote this hearing to discuss the situation and the urgent needs of the Flint community.

**Background**

On April 26, 2014, the city of Flint changed its water source from Detroit-supplied Lake Huron to the Flint River water as a temporary measure until a new pipeline to Lake Huron was completed. Water from the Detroit Water and Sewage Department had very low corrosive potential for lead, while the Flint River water had a higher corrosive potential. This is due to a number of factors, including higher levels of chloride, a high chloride-to-sulfate mass ratio, and most importantly, a lack treatment with corrosion inhibitor. Additionally, due to population loss and high water rates, water usage in Flint decreased significantly. The change in the water corrosivity - coupled with the decreased water usage and aging lead-based infrastructure - resulted in a perfect storm for lead to leach into the water.

Lead is a potent, irreversible neurotoxin with lifelong, multigenerational impacts. Blood lead levels (BLL) 5 ug/dL and greater are considered elevated blood lead levels (EBLL). Increasing evidence shows that there is no safe blood lead level and that lead disproportionately impacts low income children. Lead has been linked to decreased IQ and an increased likelihood of ADHD, delinquent behaviors, total arrests, and increased rates of arrests involving violent offenses. There are other adverse effects on health attributable to lead exposure, including but not limited to hematological, cardiovascular, immunological, and endocrine.

To examine the impact of the water switch on young children's lead levels, we examined the blood lead levels of children less than 5 years old living in the city of Flint before and after the change in water source. We looked to see what proportion of children had elevated blood lead levels in each time period. We limited the time period to January to September 15, 2013 for the pre-period and January to September 15, 2015 for the post-period. We found that 2.4% of children had elevated blood lead levels in the pre-period compared to 4.9% in the post-period. This doubling was a statistically significant change. When we looked at those areas with the highest reported water lead levels, we found

that the rates of elevated blood lead levels in young children more than tripled. (For example, in ward 5 of Flint, there was an increase of 4.9% to 15.7%.) There was no statistically significant change in blood lead levels outside of Flint water limits.

A link to the research publication is provided for reference:

<http://ajph.aphapublications.org/doi/pdf/10.2105/AJPH.2015.303003>

Our data greatly underestimates the number of children affected by lead in the water. We routinely measure blood lead levels for children around age 1 and 2 years. This is because these ages represent when hand-to-mouth behaviors are strongest and children may be exposed to lead through old paint and dust, the “traditional” sources for lead exposure. Lead in water disproportionately impacts developmentally-vulnerable formula-fed infants and pregnant mothers who were not screened for lead in our community. We know that for about 25% of infants drinking formula made from tap water at 10 ppb, blood lead would rise above the CDC level of concern of 5 ug/dL. Also, blood lead levels may have peaked before being measured as the half-life of lead in the blood is only 20-30 days.

Our data is just a snapshot of a small group of children at one point in time. Due to the extended time period of potential exposure, the likelihood that most living in the area ingested the water directly or cooked with it, and the short time period in which we are able to detect blood lead levels in children, it is highly likely that there are a large number of children whose elevated blood lead levels have gone undetected. All of this has resulted in our need to treat this crisis as a population-wide exposure.

We now have a known population-wide exposure and a traumatized population due to governmental betrayal and the unknown consequences of lead exposure. There is an existential fear among the Flint community, and others, that their children have been poisoned and will have life-long irreversible effects.

### **Moving Forward**

We are now focused on moving forward. Although state of emergency has been declared, it is sadly two years too late. Those of us in the medical and public health fields have an obligation and professional responsibility to help our community rebuild and create a sanctuary where the community’s children can recover and flourish. We are now attempting to build a model public health program, the Pediatric Public Health Initiative, to help the children of Flint thrive.

The Pediatric Public Health Initiative is a joint venture between Michigan State University, a land grant university, and Hurley Medical Center, a public academic children’s hospital located in the city of Flint. The Pediatric Public Health Initiative has three main aims: we want to assess what has happened; we want to monitor the effects from the water lead exposure, and most importantly and where our greatest energy is focused, we want to intervene so that these children can have the brightest future possible. It is through evidence-based interventions that we believe we can mitigate the effects of the lead exposure and make a difference in a community and in a generation of children. And finally, we hope to use our experiences from this crisis to share best practices with the nation.

The evidence-based interventions we have proposed span the domains of education, nutrition, and medical/health. These are proven interventions to optimize children's health, especially for children with toxic stress. This is a population that faces multiple stressors on a daily basis, given the lower socioeconomic status of over 40% of Flint's population. We are considering the lead exposure essentially one more toxic stress that these children were exposed to.

Within education, these high priority, evidence-based interventions includes universal early education, school nursing, and early intervention (Early On in Michigan). Early education can help to mitigate toxic stress, buffer potential cognitive impact of lead exposure, and promote school readiness. These strategies have a proven return on investment. For school nursing, it is recommended that the minimum student to school nurse ratio should be 1 nurse to 750 well students. Tragically, Flint schools have one general nurse for every 6500 students (1:6500). Unfortunately this is a state-wide problem - Michigan ranks last in the nation in nurse to student ratio. Finally, early interventions (Early On), which provide early developmental services for children with delays, is hamstrung by chronic underfunding. This has created limited capacity and long waitlists for an important program to tackle these problems head on.

Within nutrition, there are both short term and long term needs. We need to address the issues of food insecurity, availability, and access. To put it bluntly, Flint is a food desert. We need to increase capacity of food bank resources to address food insecurity, which could be accomplished through a voucher system. If established, we could create a model program to allow physicians to provide vouchers to families with children when a food insecurity is assessed and recognized as a clear barrier for that family. We should also consider establishing innovative ways to subsidize neighborhood stores. Finally, we should implement mobile food markets to reach all city wards on a recurring basis with use of centers especially in targeted, at-risk areas.

Within medical/health, we want to promote caregiver capacity. Genesee County runs several evidence-based state, federal, and foundation-funded home visiting programs. All of them have the potential to increase their capacity to serve more families. We also would like to see relaxed eligibility criteria so more mothers and infants can participate in these programs. And finally, we want to increase pediatric healthcare access to a patient centered medical home and encourage initiatives between Medicaid HMOs and Flint/Genesee County medical homes.

These are important interventions to create the wrap around services needed for the lead-exposed people of Flint, both in the short and the long term. I firmly believe that it is imperative for public policy makers at all levels of government, regardless of party or affiliation, to act quickly to address the urgent needs of the Flint community. We need congressional lawmakers to respond to this man-made disaster with the same impetus and robust response as they would for any other kind of disaster. It is my hope that our discussion today, and this committee's interest in Flint, will help spur action by Congress.

Thank you again for the opportunity to address the committee today and I look forward to your questions.

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