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RESEARCH

The Water Next Time: Professor Who Helped Expose Crisis in Flint Says Public Science Is Broken

By Steve Kolowich | FEBRUARY 02, 2016

When Marc Edwards opens his mouth, dangerous things come out.

In 2003 the Virginia Tech civil-engineering professor said that there was lead in the Washington, D.C., water supply, and that the city had been poisoning its residents. He was right.

Last fall he said there was lead in the water in Flint, Mich., despite the reassurances of state and local authorities that the water was safe. He was right about that, too.

Working with residents of Flint, Mr. Edwards led a study that revealed that the elevated lead levels in people's homes were not isolated incidents but a result of a systemic problem that had been ignored by state scientists. He has since been appointed to a task force to help fix those problems in Flint. In a vote of confidence, residents last month tagged a local landmark with a note to the powers that be: "You want our trust??? We want Va Tech!!!"

But being right in these cases has not made Mr. Edwards happy. Vindicated or not, the professor says his trials over the last decade and a half have cost him friends, professional networks, and thousands of dollars of his own money.

The infrastructural problems go beyond the public utilities of certain American cities, he says. In an interview with *The Chronicle*, Mr. Edwards said that the systems built to support scientists do not reward moral courage and that the university pipeline contains toxins of its own — which, if ignored, will corrode public faith in science.

The following interview has been edited and condensed.



Danny Miller, AP Images

Marc Edwards, a professor of civil engineering at Virginia Tech, has been investigating dangerously high lead levels in the Flint, Mich., water supply. "The agencies paid to protect these people weren't solving the problem," he says. "They were the problem. What faculty person out there is going to take on" the government?"

Q. I just came back from Flint, and it may not come as a surprise to you that you're something of a folk hero there. What do you think about that?

A. It's a natural byproduct of science conducted as a public good. Normal people really appreciate good science that's done in their interest. They stepped forward as citizen scientists to explore what was happening to them and to their community, we provided some funding and the technical and analytical expertise, and they did all the work. I think that work speaks for itself.

Q. Scientific studies by university-affiliated researchers, namely you and Mona Hanna-Attisha, were a big part of what broke this case open. On the other hand, it took a Flint resident writing to a professor in Virginia to start the process of finding out that there was lead in the drinking water. Do you see this as an academic success story or a cautionary tale?



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sooner?

A. Yes, I do. In Flint the agencies paid to protect these people weren't solving the problem. They *were* the problem. What faculty person out there is going to take on their state, the Michigan Department of Environmental Quality, and the U.S. Environmental Protection Agency?

I don't blame anyone, because I know the culture of academia. You are your funding network as a professor. You can destroy that network that took you 25 years to build with one word. I've done it. When was the last time you heard anyone in academia publicly

A. I am very concerned about the culture of academia in this country and the perverse incentives that are given to young faculty. The pressures to get funding are just extraordinary. We're all on this hedonistic treadmill — pursuing funding, pursuing fame, pursuing h-index — and the idea of science as a public good is being lost.

This is something that I'm upset about deeply. I've kind of dedicated my career to try to raise awareness about this. I'm losing a lot of friends. People don't want to hear this. But we have to get this fixed, and fixed fast, or else we are going to lose this symbiotic relationship with the public. They will stop supporting us.

Q. Do you have any sense that perverse incentive structures prevented scientists from exposing the problem in Flint

criticize a funding agency, no matter how outrageous their behavior? We just don't do these things.

If an environmental injustice is occurring, someone in a government agency is not doing their job. Everyone we wanted to partner said, Well, this sounds really cool, but we want to work with the government. We want to work with the city. And I'm like, You're living in a fantasy land, because these people are the problem.

Q. Now that your hypothesis has been vindicated, and the government has its tail between its legs, a lot of researchers are interested.

A. And I hope that they're interested for the right reasons. But there's now money — a lot of money — on the table.

Q. Not as much as some of them would like. I heard a lot of people say they thought that a zero might have been missing from the grant money that the University of Michigan made available.

A. Right. But the expectation is that there's tens if not hundreds of millions of dollars that are going to be made available by these agencies. And some part of that will be directed toward research, so we now have a financial incentive to get involved. I hate to sound cynical about it. I know these folks have good intentions. **But it doesn't change the fact that, Where were we as academics for all this time before it became financially in our interest to help? Where were we?**

Q. Now, of course, when you walk around Flint and ask people about the reassurances they're hearing now, they don't believe anybody. When is it appropriate for academics to be skeptical of an official narrative when that narrative is coming from scientific authorities? Surely the answer can't be "all of the time."

A. I'm really surprised how emotional this interview is making me, and I've given several hundred interviews. What these agencies did in [the Washington, D.C., case] was the most fundamental betrayal of public trust that I've ever seen. When I realized what they had done, as a scientist, I was just outraged and appalled.

I grew up worshiping at the altar of science, and in my wildest dreams I never thought scientists would behave this way. The only way I can construct a worldview that accommodates this is to say, These people are unscientific. Science should be about pursuing the truth and helping people. If you're doing it for any other reason, you really ought to question your motives.

Unfortunately, in general, academic research and scientists in this country are no longer deserving of the public trust. We're not.

Q. I think of that rock with the spray paint on it that says, "You want our trust??? We want Va Tech!!!" That's a vote of confidence in you at the expense of confidence in anybody else. Is that a happy piece of graffiti in your eyes?

A. It's a symbol of the total failure of our government science agencies, and also of our academic institutions. I really derive no personal satisfaction from that. I feel shame. That's what I feel.

Q. I keep coming back to these university researchers in Flint who said: "The state has 50 epidemiologists. They say that the water's safe. So I'm going to focus my energy on something that's less settled." How do you decide when the state should be challenged?

A. That's a great question. We are not skeptical enough about each other's results. What's the upside in that? You're going to make enemies. People might start questioning your results. And that's going to start slowing down our publication assembly line. Everyone's invested in just cranking out more crap papers.

So when you start asking questions about people, and you approach them as a scientist, if you feel like you're talking to an adult and they give you a rational response and are willing to share data and discuss an issue rationally, I'm out of there. I go home.

But when you reach out to them, as I did with the Centers for Disease Control and Prevention, and they do not return your phone calls, they do not share data, they do not respond to FOIA [open-records requests], y'know. ... In each case I just started asking questions and turning over rocks, and I resolved to myself, The second something slimy doesn't come out, I'm gonna go home. But every single rock you turn over, something slimy comes out.

Q. But at some point in a place like Flint, trust has to be restored somehow in order for the system to continue working.

A. Exactly.

Q. I talked to this woman yesterday at the university pavilion. She's a senior, a nursing student. We looked at the stickers the university had put on its water fountain, saying that this has a filter, that this is safe. And she said: "No. I don't drink the water here. I don't care what they say. I don't care if it's from the university." At that level of mistrust, the system doesn't work. What do you think people would have to see in order to start trusting what scientists tell them?

A. It's going to take time for the people in Flint. They have been so betrayed, and the callous way that our most vulnerable were treated in Flint by the very agencies paid to protect them is so profoundly disturbing. That's why this is striking such a chord.

Q. You teach a course on ethics and heroism at Virginia Tech. How exactly does one teach heroism to college students?

A. We teach aspirational ethics. What I teach my students is, You're born heroic. I go into these animal studies, and heroism is actually in our nature. What you have to do is make sure that the system doesn't change you, that our educational system doesn't teach you to be willfully blind and to forget your aspirations, because that's the default position.

We talk about the realities of heroism too. It's not fun. These are gut-wrenching things. But the main thing is, **Do not let our educational institutions make you into something that you will be ashamed of.**

Q. And you sort of warn them that you're preparing them for a life of possible sadness and alienation?

A. Well, yeah. There's a price to be paid.

Steve Kolowich writes about how colleges are changing, and staying the same, in the digital age. Follow him on Twitter @stevekolowich, or write to him at steve.kolowich@chronicle.com.

1255 Twenty-Third St., N.W.
Washington, D.C. 20037

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