

7 The Water Is (Not) Safe: Expertise, Citizen Science, and the Science Wars

The water movement in Flint was multifaceted, a unity-in-diversity of long-time activist and political neophyte, preacher and protestor, councilman and professor, but its message was simple: *the water is not safe*. The demand attached to that message was equally simple: *get us off the river now*.

The medium used to transmit the message varied depending on the audience. Sometimes activists embodied it—literally—in vivid displays of corporal harm. Sometimes they expressed it in the form of personal testimony. Increasingly they pieced it together—on social media, on makeshift maps—into mosaics of accumulating experiences from all over the city. And gradually, they translated it into the language of science, first through the exploratory research of enterprising individuals, later through the systematic collection of sampling data.

Not everyone believed this act of translation was worthwhile. Some activists were convinced there was little point in turning to “research” (a term sometimes employed sneeringly) for “proof” that the water was bad. The water movement’s basic premise, after all, was that the water was *self-evidently* bad, and that the reason officials were stalling was not for want of proof but out of indifference or malice. It was futile, then, to speak scientific truth to power: officials did not care what the truth was, as shown by their disregard for the wealth of experiential evidence of contamination and harm residents had been bringing forward since spring 2014. The only way to fight their mendacity and delay, from this perspective, was through militant activism in the streets.

The activists who did turn to science did not dispute that the badness of the water was unmistakable, or that officials were disinterested and dishonest, or that militant action was necessary. Indeed, what attracted them to science was precisely that it could be used as a weapon (a “punch,” as

Melissa Mays put it¹) in the service of popular struggle—not to convince people who were beyond convincing, but to compel action from people who were resisting doing the right and obvious thing. For activists to be scientifically literate, and even, in some sense, practitioners of science, altered the balance of power, allowing them to push back more forcefully whenever officials used science to sugarcoat the pills residents were supposed to swallow about the water. As for activists' own claims about water quality, rendering them in scientific terms gave them weight that experiential knowledge—no matter how extensive—lacked when viewed through the technocratic lens of officialdom. It was not that the claims became *true*, but rather *less arguable*—even *inarguable*. As LeeAnne Walters liked to say: “You can’t argue with science.”²

The problem was that there *were* arguments about science—lots of them. Activists argued with the science put forward by officials and scientists they mistrusted. Officials contested scientific claims made by activists and scientists alike. And scientists quarreled not only with activists and officials, but also among themselves. Assertions about the inarguability of scientific knowledge served mainly to make these clashes more violent, for they were used to sharpen spears on multiple sides.

Within this knotty epistemic terrain, the scientific value of particular claims was often less important than the perceived credibility of the people making them. New fronts of struggle opened up around efforts to construct, protect, and, at times, *deconstruct* credibility.³ As discussed in chapter 5, it was a challenge for Flint activists to establish themselves as credible knowers even when the subject of their knowledge was their own personal experience. Staking a claim to scientific knowledge presented another layer of difficulty. Activists had to navigate thickets of technical jargon, comply with exacting standards of evidence,⁴ and yoke their assertions about the water to scientifically verifiable “facts” that captured only imperfectly their sense of its full risks and harms. They also had to alter their demeanor at times, showing that they could be calm and logical when speaking in a scientific register even as they bristled with indignation at the smug condescension of officials.⁵

Brandishing science effectively in the service of the cause was difficult to do without help. No matter how much activists built up their own lay expertise, and no matter how dispassionately they presented their evidence, it was always possible their claims would fail to make an impact without the backing of established scientific authorities. Some allies with claims to

varying degrees of scientific expertise were close at hand—people like Laura Sullivan, to whom activists turned at various times for advice and assistance, as well as a few other residents with backgrounds in chemistry and water. The expertise activists were able to muster from within their personal networks only went so far, however, as captured in the anecdote of Sullivan the mechanical engineer having to improvise an explanation of the health effects of lead exposure (see chapter 6). Furthermore, the data activists were able to compile on their own, while plenty compelling when viewed through lay eyes, lacked the statistical bite to pierce the official narrative about Flint's water problems being localized and fleeting. The combination of limited resources within the community and the hardened resolve of officials to avoid taking action meant that activists could not “afford” but to accept expert help from wherever it came.⁶

While assistance from the outside could enhance the strength of the movement, however, it could also make activists vulnerable. Whenever activists partnered with an outsider, Claire McClinton told me, they had to ensure they maintained their “independence.” Would-be allies had to recognize that activists were already operating with their “own agenda,” and that “helping” meant figuring out how to support that agenda.⁷

Alliances with experts could be difficult to fit into this paradigm. They involved inequalities of resources, access, and influence that could be disempowering if not carefully managed, as well as institutional and financial entanglements on the expert side that could divide loyalties and bring unwelcome outside influences into the picture. Even experts who purported to play a support role and let local activists take the lead were rarely free of their own agendas or fully committed to the principle of local control. One reason was that experts tended to derive their sense of entitlement to speak about matters of local concern from their own expertise, rather than from the wishes of their local partners. In the event of disagreement, this meant they sometimes spoke for themselves rather than the movement, in ways that could potentially undermine activist objectives as well as activists' own representations of their struggle and social reality.

In their eagerness—and at times, desperation—for help, activists did not linger on the potential downsides of expert alliances, or even perceive them, necessarily. The relationships they entered into were informed by the imperatives of the moment and extemporaneous assessments of their benefactors' motivations and personal character. At first, it seemed those

assessments had been sound: between early 2015 and early 2016, they brought several outside expert figures to Flint, all of whom appeared to have the interests of residents at heart, and all of whom moved pieces of the movement's agenda forward.

As time went on, however, it became clear that power handed over to expert allies under conditions of crisis could be just as unaccountable, and just as vulnerable to abuse, as the emergency state power they had been fighting since 2011. In fact, these two species of power seemed to be drawing ever more closely together, as the state neutralized the disruptive effect of outside expertise by bringing it into the fold of the official response to the crisis. The scientific idiom activists had used, with the assistance of their allies, to crack the case of Flint's contaminated water became the state's preferred language for bringing that case to a close—well before activists (and residents more broadly) were prepared to do so.⁸

At the center of this dynamic was Marc Edwards, the ultimate example—for many Flint activists, anyway—of the expert-scientist-ally turned enemy collaborator. His devolution from “hero” to “zero” in their eyes (to borrow Tony Palladeno's always-colorful phrasing) was not only the most spectacular, it also sucked every other lay-expert alliance into its orbit in one way or another, shaping, in the process, the activists' attitudes toward science and expertise more generally. Unsurprisingly, Edwards and the activists had two completely different explanations for the decline of his reputation in Flint. As activists saw it, Edwards “changed,” falling prey to the allure of power, fame, and money—or simply his own egotism—and selling them out in the process. As Edwards saw it, he was perhaps the most steadfast character of all, maintaining a stoic commitment to the truth no matter how inconvenient, as allegiances shifted all around him and he was shot full of arrows by dishonest, unfair, and politically-motivated people. He began to describe the situation in Flint as “science anarchy,” with the unifying and objective qualities of science replaced by “tribal” loyalties and “subjective,” “unscientific,” “postmodern social justice.”⁹

For Edwards, it was all a sign, apparently, that what he once called the “netherworld” of activism was less penetrable by the luminous rays of scientific truth than he had originally hoped.¹⁰ The scientist who began by defending his own “activism” to fellow members of his profession,¹¹ and was heralded as an apostle of a more democratic and inclusive science, ended up suggesting that “as a scientist you can't really engage with activism unless

it's a ... public emergency."¹² Activists were just too prepared to part ways with the truth when it didn't suit them, and to crucify those who attempted to steer them back onto the right path.

While activists were never as enamored with the idea of scientific truth as Edwards—an important part of their struggle, always, was validating other ways of knowing—by no means did they see any inherent conflict between science and activism. As often as not, they framed their criticisms of him in scientific terms, maintaining that his science was biased, faulty, or, more often, simply incomplete. They strongly suspected that Edwards, along with the Michigan Department of Environmental Quality (MDEQ) and the EPA, was exaggerating the scientific consensus about the improvements to Flint's water quality for political reasons: the sooner the water was declared "safe," the sooner all involved could move on. More generally, having learned to think of Flint's water infrastructure as an unwieldy, complicated, open system, they were suspicious that knowledge of that system could ever really be "closed." They had grown too used to surprises—lead appearing in unexpected places, new contaminants cropping up, main breaks and leaks and all manner of things bubbling from the tap. Besides, there were still questions residents had about the water and its effects on their health that had not been answered to their satisfaction. There were political reasons, no doubt, for activists' tendency to resist consensus and closure when it came to the safety of the water, but there were also more sophisticated epistemologies at play than activists were typically given credit for.

It made a difference that activists themselves had been involved in the production of scientific knowledge. They operated with heightened awareness of how science gets made, freshly awake to the infrastructure of knowledge production just as they were to the infrastructure under their feet. When they encountered a scientific claim, they saw not just the claim itself but the personalities, the practices, the institutions, the money, and the interests wrapped up with it. They had also come to perceive the artificiality of definitions of "science" and "scientist," and it emboldened them to contest uses of those terms they believed were overly narrow and self-serving. Activists did not have to deny the truth in science to see that science also involved power—that it mattered who got to define it, who got to decide how it was used, and who got to declare scientific controversies "over."

When activists began to witness erstwhile expert allies contributing to politically convenient closures—by deploying their own credibility or

attacking the credibility of others—without any kind of democratic process behind them, they once again felt the lash of power that was unaccountable and unresponsive, and it stung all the more, in this case, because they had helped to create it.

Bob Bowcock and the Appeal to Expertise

On January 20, 2015, a post appeared on Facebook that sent a shiver of excitement through the activist community. After receiving numerous pleas for help from Flint activists, Erin Brockovich, *the* Erin Brockovich, was denouncing the city's "dangerous, undrinkable drinking water." Shortly thereafter, she promised to send her longtime right-hand man, water consultant and former water utility manager Bob Bowcock, to assess the situation firsthand.

Bowcock visited Flint for four days in mid-February. Parts of his visit had an official flavor: he met with Mayor Walling, Public Works Director Howard Croft, and Councilman Wantwaz Davis and was granted a personal tour of the water treatment plant. He also, however, cemented a lasting reputation as a friend of the activists, marching side by side with them through the freezing cold on Valentine's Day in a scarf borrowed (in good Californian fashion) from Laura Sullivan. Addressing the marchers with a bullhorn, he affirmed the importance of activism: "Your attendance on this very, very cold day is important. You're demonstrating leadership to everyone in this community that this water issue is a problem that can be solved with community action."

After the march, Bowcock laid out his initial impressions of the water situation at a well-attended talk at Saints of God Church. In some ways, his message was sharply at odds with what the activists were saying at that point about the water. Most significantly, he did not think it necessary to abandon the river as a drinking water source. In the short term, he said, some "very, very simple" changes to the water treatment process—like dialing down the chlorine, discontinuing the lime-softening process, and introducing an activated carbon barrier—would improve matters considerably. (Notably, what Dayne Walling took away from his conversation with Bowcock was that the situation was "manageable."¹³) Given how committed activists were to returning to Lake Huron water, it was the first disconcerting example of an expert ally unexpectedly undermining a nonnegotiable demand.

In other ways, though, Bowcock bolstered the activists' position. He told them that for anyone to say the water was safe was "just not honest," that

there could be a big difference between the quality of the water leaving the treatment plant and the water coming out of the tap, and that water with a noticeable color or smell was indeed a concern from a health standpoint (contrary to what other “experts” had said at the disastrous town hall the preceding month). He also warned that there could be contaminants in the water the city was overlooking or not acknowledging. There were hundreds of unregulated disinfection byproducts (DBPs), for example, that were just as dangerous as the four trihalomethanes residents had been told about. There were species of bacteria, like legionella, that weren’t being tested for. And the fluoride added to the water at the treatment plant, while not officially considered a contaminant, could just as well be: Bowcock said it was making the water more corrosive and was “a huge waste of money” besides. He warned that household filters would “polish” the water aesthetically but would not make it safe and advised residents to take warm baths rather than hot showers to avoid steam inhalation.¹⁴

On February 17, Bowcock sent a letter to Walling and the City Council with sixteen recommended changes to the city’s water treatment and distribution processes. They turned out to be very similar to the recommendations made the next month by Veolia, which received \$40,000 of taxpayer money for its trouble. It was a point of pride with the activists that the person they brought in *pro bono* had effectively scooped the Veolia report, and it taught them that they could marshal experts every bit as competent as those put forward by officials—*more* competent, even. Bowcock, after all, seemed to be tuned in to contaminants that weren’t being taken seriously by other experts, particularly fluoride. Shortly after Veolia released its final report (which nowhere mentioned the word “fluoride”¹⁵), and inspired by what Bowcock had said about the chemical a few weeks earlier, Water You Fighting For? organized a “take the poison out” press conference and rally focused on fluoride’s corrosivity and purported health dangers.

Bowcock’s mixture of alarming intimations of neglected risks and straightforward advice to the water utility gained him an audience with both activists and officials, but ultimately he made more of an impression on the former than the latter. Although he stayed in touch with Howard Croft, who for some time thereafter would call him looking for guidance, his recommendations mostly, in his estimation, “fell on deaf ears.”¹⁶ Ironically, it was precisely the fact that he was not listened to that was useful to the activists: it was yet another indication that the city was not committed to

or capable of getting the chemistry of the river water right and needed to switch sources entirely. It was also a source of commonality between activist and expert: Bowcock, too, had tried to get officials to change course but was not taken seriously.

When Bowcock left Flint after his short visit, he did so with what would prove to be enduring credibility with the activists. Although the fit between his perspective and theirs was imperfect, he had come at their behest, without any professional or financial incentive for doing so, and helped to initiate them into a still-new world of technical discourse around water. He had gone about his business in an unassuming way, without any sign of an agenda or desire for the spotlight (“It can’t be mine and Erin’s issue,” he told me. “It *has* to be the community’s issue.”¹⁷) He had celebrated the activists precisely for their *activism*, and even joined in it (though he and Brockovich later declined to get involved in the Coalition for Clean Water’s legal injunction or endorse Karen Weaver for mayor).

Bowcock remained in regular touch with activists behind the scenes, providing advice and support on a sometimes daily basis. His failure to get much movement out of officials, however, while in some sense good for his street credibility, did not solve the immediate problem: getting off the river. It would take an alliance with another expert to do that.

Marc Edwards, “Citizen Science,” and the Limits of Lead

When Marc Edwards took up Flint’s cause in the summer of 2015, he was already well known to the scientific community as a leading expert on lead corrosion. During his involvement in the Washington, D.C., lead-in-water crisis of the early 2000s, some mythologized him as a scientific superhero who used the powers of science to assist communities in distress (a sketch from a grateful D.C. resident, hung on his office wall, depicted him as “Corrosion Man”).¹⁸ Edwards received national recognition at the time for his work. He was profiled in *Time* magazine (where he called the elimination of lead in drinking water “a cause to die for”),¹⁹ awarded a MacArthur “Genius Grant,” and dubbed, simply, “The Water Guy.”²⁰

Edwards himself, however, remembered the D.C. experience as one of impotence and failure. Not only were residents exposed to lead for years before the story broke, it took even longer to prove that the city’s attempt at a solution (partial service line replacement) was making the problem worse

and that the Centers for Disease Control and Prevention (CDC) analysis of D.C. children's blood lead levels (showing no change despite huge exposures) was wrong. Although there was ample evidence of official malfeasance, none of the people harmed ever received reparations. In the origin story Edwards gave his Flint intervention, D.C. was the prologue in which the hero watches helplessly as those he has tried to save meet their doom—and vows never to let it happen again.

Flint was a second chance: it was shaping up to be “another D.C.,” but there was still time to spare residents a great deal of harm.²¹ Edwards was determined, however, to go into Flint with the right “narrative,” one in which the heroes and the villains were sharply delineated.²² The villains, as in D.C., were the dark forces of “institutional scientific misconduct”—an epidemic (said Edwards) within the state and federal agencies charged with protecting public health.²³ These agencies were swarming with “weak, unethical cowards” because their “perverse” incentive structure put loyalty to the agency over loyalty to the human race.²⁴ Instead of treating science as a “public good,” they used it “to fool people”²⁵ whenever doing so meant saving face or avoiding inconvenient remedial action. And they did not take kindly to people exposing their way of operating—a lesson Edwards learned the hard way in D.C. when the EPA canceled its subcontract with him for lead testing.²⁶

The heroes, by contrast, were those who dispelled government obfuscation with fearless scientific inquiry and put science in the service of the public, without consideration for professional or material gain. Edwards liked to say that he and his team had gone “all in for Flint,”²⁷ “dropp[ing] everything” to come to the city's aid at a time when no one from the area with comparable expertise was offering to help.²⁸ He described the intervention to me as a “suicide mission” that required putting his “career on the line,” not to mention considerable expenditures of resources, time, and energy.²⁹ At one point, Edwards estimated that the team had spent \$300,000 out of pocket to make its work in Flint possible,³⁰ and put in the equivalent of six years' worth of man-hours. The team was so strapped for cash, he claimed, that its \$850,000-per-year lab operation—funded largely by grants he said he now had precious little time to apply for—was becoming unsustainable.³¹ The motif of altruistic sacrifice on behalf of Flint residents by an uncommon breed of scientist infused the story the Flint Water Study team told about its own intervention, and it created the impression that the criticism later directed at Edwards was not only unfair but also ungrateful.

Edwards also had a place for the activists, of course, within his science-centric Flint narrative: they were the “citizen scientists” who had put together a first-rate ground operation and distinguished themselves by their intuitive grasp of the scientific method. As far as I could tell, Flint activists did not have any previous familiarity with the term “citizen scientist.” As LeeAnne Walters told me, “I did not coin myself a citizen scientist. That was coined on me. . . . That wasn’t something I put out there.”³² While Walters came to embrace the designation, others were less comfortable with it. Claire McClinton balked when I asked her if she identified with the term, screwing up her face. The thought of deriving an identity from the Virginia Tech collaboration, which was “just sampling,” as she put it, seemed absurd. As far as she was concerned, the sampling effort was simply one prong of the struggle among others—it in no way defined the struggle or the people waging it. The way she made sense of the term “citizen science” was to think of it as a “political term about the activism of the people,” expressing the determination of residents to take matters into their own hands.³³ The real significance of citizen science, in other words, was not the “science” part but the democratic initiative that made it possible. Edwards’s framing of Flint activists as citizen scientists was one sign among others that he was attempting to write them into his own preconceived narrative rather than figuring out how *he* fit into *theirs*. In this dynamic were seeds of later controversies.³⁴

Given the unfamiliarity of the term “citizen science” to Flint activists, Edwards and his team had considerable influence over how it was defined and applied. They employed it like a badge of honor, a compliment they paid to their most valued collaborators, at first applying it freely to all the activists who participated in the original sampling effort. As these activists fell off the Virginia Tech bandwagon, however, whittling the Flint wing of the team down to LeeAnne Walters and a few allies, Edwards increasingly held Walters up as *the* citizen scientist *par excellence*. (The other activists, he told me, were “heroic in their own way” but didn’t have her “poster child” qualities.³⁵) The more Walters’s personal journey from resident to activist to citizen scientist came to be seen as the summation of the grassroots side of the Flint Water Study’s intervention—even as her support of Edwards and part-time residence in Flint began to marginalize her within the activist community—the more Edwards’s version of citizen science looked like a success. Every award Walters received, all the way up to the prestigious

Goldman Environmental Prize (the “Nobel” of environmental activism), enhanced his credibility, too—at least, with outsiders.³⁶

If Edwards and the Flint Water Study team could bestow the honorable designation of citizen scientist, they could also take it away. The most striking case was that of Melissa Mays, an important contributor to the original sampling effort who became one of Edwards’s most vocal critics. As relations soured, Edwards began to depict her as Walters’s foil, as the anti-citizen scientist: whereas Walters was ethical, honest, and rigorous, willing to follow the science of the water wherever it led, Mays was an unscrupulous liar, who exemplified the kind of fearmongering and refusal to face facts Edwards believed was plaguing the activist community. There were signs that the revocation of Mays’s citizen science card was even retroactive: in a presentation subtitled “*Ut Prosim in Action*” (after Virginia Tech’s motto of service), Flint Water Study’s Siddhartha Roy used a cropped photo of the original sampling team that cut her out of the picture.³⁷

One of the most important vehicles Edwards used to promote his citizen science frame and narrative of the water crisis as a whole was the website established by the Virginia Tech team, flintwaterstudy.org. Its main inspiration was WASAwatch, a website founded in 2009 that became an important means of disseminating information to residents about the D.C. water crisis and its aftermath as well as influencing the local water utility (WASA³⁸) and federal agencies like the CDC, which paid close attention to the site. There was a qualitative difference between the two sites, however: WASAwatch was controlled by local residents and activists, with Edwards playing a behind-the-scenes support role, whereas flintwaterstudy.org was controlled by Edwards and his team, and what happened with it was out of the activists’ hands.³⁹ This is not to say the activists weren’t glad of its existence, at least at first. As Nayyirah Shariff told me, they even “built it up and legitimized it,” helping to turn it into the place to go for breaking news about the crisis. The problem was that after the site “flipped” (a shift she dated to January 2016), becoming a platform for commentaries that clashed with the activists’ point of view and eventually for public attacks on activists, their allies, and fellow scientists, there was little anyone could do about it.⁴⁰

Although these structural imbalances of power over framing and communication were present from the beginning of Virginia Tech’s involvement in Flint, the wave of grassroots credibility on which Edwards and the

team rode in made it easy to overlook them at first. Not only was Edwards, like Bob Bowcock, an independent outsider stepping up to help and willing to work with activists, he was much more aggressive about calling out the officials who activists felt were stonewalling them. Of course, his intervention was also far more involved and effective than Bowcock's, at least with respect to the short-term goal of getting off the river. The storybook version of that intervention, heavily promoted by the Flint Water Study team itself, depicted the resulting collaboration as a triumph of grassroots initiative, benign expert support, and "stunning" accomplishment.⁴¹ It seemed at first that it had been genuinely empowering to the activists, who took pride in having led a sampling operation impressive in its sophistication, scale, and impact, and having done science "better" than trained scientists. The compliment fed into the populism at the heart of the water movement's conception of democracy: in a city turned over to authoritarian technocrats due to the supposed deficiencies of its residents, laypeople had taken the science of the water into their own hands and wowed the experts with their competence.

The success of the collaboration, however, also had an empowering effect on the expert. The media showered Edwards with attention and the STEM community showered him with accolades, awards, and opportunities, holding up his work in Flint as a "gold standard" to be emulated elsewhere.⁴² Although Edwards seemed to revel in the idea that he was a maverick and an outsider, all the attention and esteem gave him considerable influence over mainstream perceptions of the water crisis—including, critically, perceptions of whether or not the crisis was "over." Edwards became the default scientific authority outsiders rushed to for comment whenever there was a new development in Flint, accumulating the kind of *a priori* credibility—one might describe it as "credibility excess"⁴³—that put competing perspectives at an automatic disadvantage.

When Edwards had his guns trained on the state, activists saw his credibility as an asset to the movement, consciously cultivating it by talking up his scientific expertise, his independence, and the trust he had earned from residents. While their endorsement could not by itself vindicate Edwards's science—it would take Dr. Mona Hanna-Attisha's blood lead study to do that—it went a long way toward building up his national reputation as someone who put science in the service of the "public good."⁴⁴ The idea that grateful Flint residents had embraced Edwards as their champion became an invitation for outsiders to play up his "heroic" qualities.⁴⁵

By the time I began attending activist meetings in early 2016, however, cracks were already beginning to appear in Edwards's credibility with the activists. Now that Edwards was the scientific face of the lead crisis, Governor Snyder decided it would be better to take him on as a partner than risk incurring more of his wrath, appointing him in January to the state committee overseeing the crisis recovery effort in Flint. Edwards became a trusted advisor and even—according to a rumor circulating within the activist community—the governor's "friend." Right around the time when activists started calling for Snyder's arrest, Edwards began singing his praises, describing him as "very, very committed to getting this fixed for the city of Flint." Once Snyder learned of Hanna-Attisha's blood lead data, Edwards said, he "immediately intervened to remove the health threat," effectively putting an end to the public health crisis as early as October 2015. He also brought in international experts to look at Flint's infrastructure and "studied the Lead and Copper Rule" so carefully that he could be classed as one of the "top experts" in the country on the rule.⁴⁶

Edwards's attitude toward the EPA followed a similar trajectory. At first he was fiercely critical of the agency: during his Congressional testimony in early 2016, he passed up no opportunity to excoriate it, much to the delight of his Republican questioners. (Snyder, during his own testimony, followed suit.) As activists learned more about Edwards's rocky history with the EPA, and his right-wing political leanings, it got some of them thinking: what if his main motivation for getting involved in Flint was actually to continue a personal and political vendetta against the agency?

Although Edwards initially went after the EPA with guns blazing, however, he became increasingly laudatory of the agency right around the time it gave him an \$80,000 grant to retest homes for lead: whatever its initial failings, it was now doing "good work" and "effectively assisting with the recovery."⁴⁷ Edwards insisted that his change of heart began earlier, with the resignation of EPA Region 5 Administrator Susan Hedman and the agency's embrace of Miguel del Toral, but for the activists the timing, once again, seemed more than just coincidental.

It is possible, though, that none of this would have mattered—not the kind words for mistrusted people and agencies, or the willingness to accept money from them—if the activists had not felt like Edwards's message about the water was taking an unwelcome turn. The main value Edwards had to the water movement—and in this sense he was no different from Bowcock—was

that he breathed authority into its message that the water was not safe. Up through October 2015, the political importance of that claim was that it formed the basis of activists' demands to leave the river. From October onward, its political implication was that Flint was still in crisis and still needed help. The claim was not *merely* political, however, but also an expression of the deeply felt belief of activists and many, many residents of the city.

It was Edwards's particular interpretation of *why* the water was not safe that proved to be a liability. What brought the Virginia Tech team to Flint was, of course, lead—far from the first contaminant to spark concern among residents and one that only gradually became a priority for the water movement during the spring and summer of 2015. The main significance of lead to the activists was that it was perking up the ears of officials who were otherwise ready to be done talking about the river. Shifting attention to lead made good strategic sense from this perspective, but it had a downside whose consequences became progressively clear: lead explained little to nothing about what residents had actually experienced or were experiencing. It was not responsible for the “aesthetic” issues with the water (color, taste, smell), or skin rashes, or hair falling out, or respiratory illness, or a variety of other health symptoms residents attributed to the water. The existence of these symptoms gave activists strong reason to believe that lead was not the only or even the main thing harming residents. However, if the strategic value of lead caused them to look past this difficulty—at least temporarily—Edwards had stronger incentive for Flint to be understood, fundamentally, as a *lead-in-water crisis*. Characterizing the crisis this way had the effect of making his expertise preeminently relevant, especially after scientists with other kinds of expertise began sampling in Flint. And most importantly, from a narrative perspective, it set Flint up to be the redemptive sequel to D.C.

Despite Edwards's focus on lead, he wanted residents to know that he was well aware of their health symptoms and on the lookout for other contaminants of concern. When his team came to Flint for a short visit in the middle of the activists' sampling effort and did some sampling of its own, it left, he said, “no stone unturned.”⁴⁸ Initially, the team raised some concerns about bacterial growth because of the abundance of iron in the water but, after further research, reported nothing alarming in the way of pathogens. The team also corroborated the city's claim that TTHMs had fallen to levels well within the acceptable range. (As for the period of time when TTHM levels were high, the team affirmed that “in the grand scheme of things, worse

things can happen.”⁴⁹) These results led to a fateful determination, relayed at the September 2015 town hall at which the team debuted its findings directly to residents: the water was “safe for bathing and showering.”⁵⁰

As long as the team was supplying a knockout punch in the form of high lead results, the activists could tolerate these kinds of statements for the time being; the lead issue by itself was enough of a bombshell to bolster greatly the demand to leave the river as well as a robust set of demands for remediation and reparations. But for Edwards, seemingly—and for the state, which came to consider him the main authority on the subject—the city’s ninetieth percentile for lead became the preeminent indicator of whether or not the water was “safe.” And within months of the switch back to Detroit water, system-wide lead levels were dropping.⁵¹ All indications, Edwards suggested, were that a D.C.-scale tragedy had been averted. He chalked up the positive trend to the reestablishment of a passivation layer through the addition of orthophosphates (on his advice) at the water treatment plant: in layman’s terms, the pipes were “healing,” preventing the further leaching of lead. So much so, he submitted—to much shock and derision among activists and residents—that removing them did not have to be a top priority given all of Flint’s other infrastructural needs.⁵²

Statements of this kind had a whiplash effect on residents who had come to see lead service lines as acute threats to their health. Edwards himself had taught residents to imagine that they were drinking their water through a “lead straw,” a straw with the capacity to leach soluble lead and, at unpredictable times, particulate lead that could send their blood lead levels soaring if ingested. Using the water, he had said, was like playing “Russian roulette.”⁵³ It was little consolation, then, to hear that the water was getting back to normal on average, since that was no guarantee that any particular glass of water was lead free. For Edwards, however, the remedy for such worries was simple: point-of-use faucet filters, which by January 2016 were available, for free—a “generous” act, he told me⁵⁴—at state-sponsored distribution sites in every ward of the city. Until the day that all the lead pipes were replaced, he said, Flint residents could, like D.C. residents, “learn to live with lead in water.”⁵⁵

While Edwards would not flatly assert that the water was “safe,” he began to stress that the water in Flint was as safe as, or safer than, municipal water in most other parts of the country. At one point, he claimed that filtered Flint tap water was “every bit as good if not better than the quality of ... bottled water.”⁵⁶ In response to these kinds of statements, activists seized upon every



Figure 7.1
Banner outside a Flint home. Christina Murphy.

high lead result from an individual home as evidence that he was wrong: the water was *not* getting better (or was even getting worse), and the lead crisis was far from over. At other times, though, the same activists would say they had no argument with the overall lead picture Edwards was painting, or even that they weren't worried about lead anymore. Instead, they argued that the real problem was with contaminants *other* than lead that Edwards was neglecting to take seriously because they contradicted his sanguine narrative of Flint as a "success story."⁵⁷ Conflating the water crisis with the lead crisis seemed like a dismissal by implication of all the ailments unrelated to lead that residents continued to complain of (and that had, in many cases, turned them into activists in the first place). With national outrage over Flint running high by

early 2016, these ailments were being treated with more respect than ever—it was a child with rashes, after all, who was chosen to symbolize the crisis on the cover of *Time*.⁵⁸ Attributions of symptoms like rashes to the water, however, still lacked a scientific foundation, and activists knew by now that compiling anecdotal evidence of the water's dangers would only get them so far. Once again, they would seek to infuse their experience of harm with the weight of science, and with trust in Edwards dwindling, they would do it not with his help, but with the help of yet another “expert” outsider.

Water Defense and the Boundaries of Science

Scott Smith, like Bob Bowcock, was closer to the world of activism than academia. He, too, was the “expert” arm of a small advocacy group associated with a high-profile celebrity: Water Defense, a nonprofit founded by the actor Mark Ruffalo in 2010. Water Defense grew out of Ruffalo's involvement in the anti-fracking movement, and much of its work revolved around this cause. It was an oil spill, however—the March 2013 rupture of the ExxonMobil-owned Pegasus Pipeline in Mayflower, Arkansas—that brought Ruffalo and Smith together. Smith was in Mayflower doing volunteer water sampling and finding oil where ExxonMobil said it wasn't. Intrigued by his work, Water Defense reached out through social media and struck up a dialogue that eventually led to a position with the organization.⁵⁹

What stood out about Smith was not just his revealing sampling results, but the instruments he used to obtain them. A Harvard MBA, Smith's background was in the plastic foam business. In 2006, the New York factory housing his foam company was heavily damaged in a flooding event that deluged it in sewer backup and oil-contaminated water.⁶⁰ After the flood, Smith became “obsessed with coming up with a simple solution to filter oil from water.” Over the next several years, he invested \$5 million in the development of a foam-based product that would fit the bill.⁶¹ The result was OPFLEX®, described by Smith as “the World's only proven Open-Cell Elastomeric Foam technology to filter oil from water and other contamination from the surface water including the entire water column.”⁶² The material's secret, Smith maintained, was its “biomimicry” of the human lungs, absorbing some substances while repelling others. More specifically, it was “oleophilic,” attracting oil like a magnet, and “hydrophobic,” repelling water after cleansing it of contaminants.

Prior to founding Opflex Solutions in 2011, Smith began taking his prototypes to disaster sites around the country and the world to test—and, at the same time, demonstrate—their efficacy. In the process, he had a catharsis that expanded his sense of what the material might be used for. In 2010, the Deepwater Horizon oil spill brought him to the Gulf of Mexico, where BP made some experimental use of his foam during its cleanup effort (a proud moment that Smith, years later, clearly viewed as signaling the arrival of his invention).⁶³ As he was “working side by side with fishermen and people in the communities of the Gulf of Mexico,” he “realized the world was relying on instantaneous water testing—taking water samples for a split second from the surface of the water.” The problem with this method of testing was that it “was giving false negatives of dangerous oil-related chemicals.” It suddenly dawned on Smith that OPFLEX® could be deployed not only for cleanup purposes, but as an “environmental indicator” capable of detecting chemicals that would otherwise go unnoticed. From that moment on, he recalled, his life “changed forever.” He realized that he “had a duty and obligation to inform people” about the importance of what he described as “cumulative” water testing. Unlike “instantaneous,” grab-sample testing, Smith claimed that testing water with his sponge-like material mimicked the body’s exposure to contaminated water over time, offering a video of what was in water rather than a snapshot. It increased the likelihood, he said, of picking up contaminants that might be randomly missed by grab samples, at levels of accumulation analogous to what people encounter while swimming, bathing, or showering.⁶⁴

Ruffalo was attracted to the technology for its potential to provide a fuller index of water contamination.⁶⁵ His vision was to use OPFLEX® to develop a “national open-source mapping of the nation’s headwaters” cataloguing baseline contaminant levels.⁶⁶ Such a map would make it easier to gauge the severity of contamination events, but it would also have an empowering effect on communities, opening their eyes to “the true state of their water based on proven, scientific data.”⁶⁷ OPFLEX®’s low price point and ease of use would also enable “civilian scientists to test the water,” decreasing reliance on testing by industry and the EPA and “arming the public with a technology that can’t be gamed.”⁶⁸

Water Defense wore its science-and-technology-meet-real-life philosophy on its sleeve. Smith emphasized that part of what made his foam special was that he had developed it out in the field, not in a traditional laboratory. In

a joint interview in June 2014, he and Ruffalo explained that Water Defense was “unique in that our laboratory is the real world. We go into a community, listen to their concerns, and help them diagnose and then solve [their] specific water contamination problems.”⁶⁹ Just as loose as the organization’s definition of a “laboratory” was its definition of a “scientist”: it presented Smith, a businessman and activist with no particular scientific training, as its “Chief Scientist,” and occasionally as its “Chief Chemist.”

In a video posted on January 9, 2016, Smith debuted a new configuration of his OPFLEX® foam: the “Water Defense WaterBug.” While Smith’s other foam devices were designed for large-scale water cleanup and were thus large themselves (like his “synthetic eel grass” and “megapads”), the WaterBug was small and sleek—one could imagine using it in everyday settings.⁷⁰ Demonstrating its absorbent properties, in the video Smith articulates the logic of WaterBug sampling in language Flint residents would hear repeatedly over the next several months:

Typical water testing that is used to declare water “safe” for communities is based on testing the water for a split second. That doesn’t make sense. We don’t encounter water for a split second. We don’t swim in the water for a split second, we don’t bathe for a split second, we don’t shower for a split second. So why are we relying ... our health and human safety on testing that tests water for a split second?

He then rattles off a number of ominous-sounding chemicals he says he has found with his foam in bathtubs and sinks all over the country: trimethylbenzene, toluene, xylene—chemicals all the more insidious for being “clear, colorless, [and] odorless.” “It is simply unacceptable,” he opines, “for people to have to bathe, shower, cook, or drink water with any level of these toxic chemicals.”

Three weeks later, after connecting with Melissa Mays through a mutual contact, he arrived in Flint. Another video documents Smith’s four-day visit. It opens on the night of January 29, 2016, in Smith’s room at the local Holiday Inn Express. He explains that he has been instructed by hotel staff not to drink the water but reassured that it is safe for bathing and showering. “The question is,” he asks the camera rhetorically, “if water is not safe to drink, why is it safe to bathe and shower in?” He proceeds to extract a device from a glass jar—an aquamarine sponge, shaped like a Koosh ball with thicker tentacles, that he introduces as “the Water Defense WaterBug.” What makes the device distinctive, he informs the viewer, placing it under the open faucet of the hotel bathtub, is its ability to “mimic the way we all encounter water.”

The next clip finds Smith setting out at sunrise to take another sample—this time, of the Flint River. His “mission,” as he puts it, is to “get baseline Flint River readings” for “the full gamut of potential chemicals of concern.” Speaking in a car on the way to the sampling site, he explains that “once we have ... these baseline readings, we can then have an index and we can trace that throughout homes we test, hotels we test, schools we test, and so on.” After arriving at a convenient bridge, Smith throws a larger version of the sponge over the side. Thirty minutes later, he hoists it back up and cuts several tentacles off for analysis before returning the device to the river to soak for 24 hours.

What Smith does not explain in the video is how he proposes to trace an “index” of chemicals from the river to residents’ taps, given that the city had stopped using Flint River water in October of the previous year. The *non sequitur* seemed to suggest that Smith had not been following the news coming out of Flint closely enough to realize that the city was back on Lake Huron water. Although Smith would later, in his own defense, cite other reasons why it was useful to have a baseline reading,⁷¹ Marc Edwards would point to the gaffe as one reason, among others, to question his competence.

However, that controversy was still in the future. *Prima facie*, there was much about Smith that was alluring to activists looking for more evidence of the water’s impurity. His focus on the “cumulative” effects of contaminants in bath and shower water could help to explain health problems like rashes and hair loss, problems being treated—or so many residents felt—condescendingly and dismissively by officials (a much-maligned poster put out by the state and county health departments cheerily proclaimed, “Hey Flint! It is safe to wash!” with a picture of two smiling babies in a bubble bath).⁷² Furthermore, Smith had the appeal of being an outsider independent of the agencies now funding Edwards—a masterless warrior (in his self-description, “Water Warrior One”), free to follow the evidence where it led him. Melissa Mays became Smith’s closest ally, developing the kind of loyal and defensive relationship with him that LeeAnne Walters had with Edwards, but I heard numerous activists, after meeting Smith for the first time, speak of their intuitive trust in him and sense that he was on their side. Some activists did raise concerns that Smith was trying to make money by scaring residents, using the crisis as a showcase for a proprietary technology from which he could, in theory, profit. But Smith was generally seen as far less compromised by his ties to the business world than Edwards was by

his ties to state and federal agencies; ironically, while the activists accused the tenured professor of being motivated by money, they painted the businessman as an altruist who, like Bob Bowcock, had merely responded to pleas from the community for help and had no ulterior motive. It was a sign that Smith's reputation as an activist committed to the cause of clean water would take primacy in their minds over his business background.

Smith found another important anchor of support in a less obvious corner of the community: the plumbers of United Association Local 370. The plumbers were already highly regarded for their contributions to the water crisis response,⁷³ but the specific issue that brought Smith to the union hall during his first visit to Flint was water heaters: he wanted to sample them, but didn't trust himself to open them. On that simple basis, a collaboration was born. United Association (UA) plumbers Harold Harrington and Ben Ranger would accompany Smith to residents' homes and assist with his sampling and the installation of shower filters. Smith took to sporting a UA 370 jacket and posting grave-faced pictures of himself and the plumbers to Facebook during sampling visits, continual reminders that they were on his side.⁷⁴

As with Edwards, however, what ultimately mattered more than who Smith chose to work with was what he had to say about the water. And what he had to say was, to put it simply, sensational. Within two weeks of Smith's first visit to Flint, Water Defense put out a press release that led with a gripping hook: "There is much more than lead in the water in Flint, Michigan." Not only had Smith found "dangerous levels of lead in bath-water" (16 parts per billion [ppb], to be exact), but also "dangerous levels of volatile chemicals including chloroform, methylene chloride, and other trihalomethanes in bathroom sinks and showers." Appended to the release were more than two hundred pages of test results provided by the independent lab ALS Environmental, where Smith's samples had been analyzed.⁷⁵

Press coverage of these claims was spotty at first, but picked up during Smith's next visit, which coincided with the Flint Democratic presidential debate and found him accompanied by a delegation that included Mark Ruffalo, Van Jones and Vien Truong (co-founder and CEO, respectively, of the green economy group Green for All), and billionaire philanthropist Tom Steyer. On March 7, activists from the Flint Rising coalition (whose story is told in the next chapter) arranged a joint press conference that took advantage of the national spotlight and star power on hand to amplify Smith's message. From a podium in the basement of St. Michael's Church

(the coalition's headquarters), Ruffalo warned that "you've got a lot more contaminants in this water than what you're being told about." During his own remarks, Smith said it was "absolutely incomprehensible ... how anybody with any responsibility could make any kind of statement that this water is safe to bathe and shower in."⁷⁶

The same day, standing on a bridge over the Flint River and ringed by Flint Rising activists, Smith delivered what he called "breaking news": he had found levels of "chloroform and trihalomethanes" as high as 95 ppb at the home of a family with a three-year-old suffering from persistent rashes, and 900 ppb of dichlorobenzene at the home of Harold Harrington (whose wife was plagued by rashes, hair loss, and respiratory problems, and whose dog had mysteriously died)—more "irrefutable" scientific data to add to his earlier findings. Smith said he was seeing levels of contaminants, particularly chloroform, that were the worst he had ever encountered across sixty-two disasters—contaminants other samplers were missing entirely because they were fixated on lead and copper and weren't testing hot water. He also gave residents reason to believe that efforts to "heal" the water system would not be effective, due to the difficulty of coating damaged galvanized pipes with orthophosphates.⁷⁷

Over the next two months, as Water Defense further solidified its relationship with the activists,⁷⁸ the stream of bad news coming from Smith continued. I was present for his talk at a Flint Rising community meeting in early April, at which he summarized findings from WaterBug and grab sampling at twenty houses. He continued to find high levels of DBPs, he told us (a full eighteen samples taken with the WaterBug had come back over the federal limit), but there was even more to worry about. At a time when officials, guided by Edwards, were desperately trying to increase water usage to distribute orthophosphates and chlorine more efficiently throughout the water system, he warned that flushing the pipes would aerosolize chemicals (including lead) and put residents at risk of inhaling them. (As support for this claim, he cited the work of "expert" toxicologists and "experts in plumbing systems" and distributed an arcane scientific paper from 1993 on the volatilization of lead.) Smith also cautioned that the extra orthophosphates being dumped in the system could have the "unintended consequence" of causing low blood pressure, saying he had heard from a "multitude" of people suffering from the problem.⁷⁹

With all the many red flags Smith threw up between February and May—not to mention his assertion that the contamination in Flint was the worst he'd ever seen—it came as a surprise to me when he later claimed that he had never said the water was unsafe. It sent me back to the video of his presentation at the church, and to the media coverage of his earlier statements (which invariably implied or stated outright that Smith was calling the water unsafe for bathing and showering).⁸⁰ When I pored over Smith's actual words, I realized there had been a streak of agnosticism running through them all along. At the church he had said (and there were other, similar, instances) that "Water Defense would never say that Flint water is unsafe for bathing or showering; we are just saying we do not know." Perhaps my powers of observation simply failed me, but I found it telling that this statement had escaped me the first time. After all, the activists were seizing upon Smith's findings as proof of the water's dangers and of officials' continuing dishonesty—this was their version of Smith's "breaking news" and it was broadcast far and wide throughout the activist community, over social media, and beyond. Smith's position on the water was treated as one of a piece with the position taken by Bob Bowcock, who said unequivocally on a Flint-themed episode of the *Steve Harvey Show* around this time that the water in Flint was *not* safe for bathing and showering. Melissa Mays would repeatedly contrast Edwards's alleged treachery with Bowcock's and Smith's loyalty to residents and willingness to give them the straight story. As far as I could tell, Smith did little to discourage these kinds of interpretations. Consequently, his statements about "not knowing" seemed like technicalities—it was plain to see that, in practice, they were not nearly enough to prevent the activists from arriving at dire conclusions about the meaning of his findings.

For all his criticisms of official pronouncements about the water's safety, however, Smith did not come to town looking to pick a fight. On the contrary, he hoped his sampling would command the respect of the scientists already at work in Flint and earn himself a voice in the conversation about the city's water quality. He was particularly hopeful for the approval of the EPA, which had previously recognized his foam as being of some use in water cleanup. As the issues raised by Smith began to make headlines, the agency promised to look into them, even as it continued to tell residents it was safe to bathe and shower. But if Smith had reason to feel encouraged by this nibble of official interest in (or at least acknowledgement of)

his findings, he soon encountered a formidable foe among the scientific authorities on Flint's water in the person of Marc Edwards.

By March, Edwards had learned enough about Smith to have formed an exceedingly low opinion of him. Smith's "ludicrous claims," he told me, could not have come at a worse time. As officials at the EPA and other agencies puzzled over how to respond to Smith, he said, energy was being siphoned off from the core recovery effort (i.e., lead remediation), and the temporary goodwill of state and federal agencies was being squandered.⁸¹ Edwards did not immediately call Smith out, however. Initially, there was talk of some sort of conference call between the two of them and the activists. Despite efforts at mediation by Bob Bowcock and Erin Brockovich, however, the various parties could not agree on terms, Smith backed out, and the idea fell through. In the meantime, activists began to invoke Smith's results as evidence that Edwards was not telling the whole truth about the water. LeeAnne Walters pleaded with Edwards to make some sort of public statement about Smith and Water Defense.⁸²

What Edwards responded with was more than just a statement—it was a scornful and unsparing takedown that impugned Smith's message, motivations, and scientific pretensions. In scathing, satirical posts to Flintwaterstudy.org, Edwards wrote that Smith (whom he called "SpongeBob Scarepants") had "exploited the fears of traumatized Flint residents, whose unfortunate prior experience taught them to carefully listen to views of outsiders who question authority." He compared Smith's tendency to set off alarm bells before paradoxically professing neutrality on the question of the water's safety to yelling "FIRE!" in a crowded theater and then, during the ensuing stampede, "I DO NOT KNOW IF THERE IS A FIRE!"⁸³ Aside from unnecessarily complicating the recovery effort, Edwards said, Smith's alarmism was frightening residents away from proper hygiene, contributing to a surge in gastrointestinal illness that reached epidemic levels over the summer. The claim (later contradicted by the CDC's conclusions about the outbreak⁸⁴) was angrily denounced by activists as victim blaming for its implication that residents' own washing habits were making them sick.

Edwards was similarly uncharitable in his assessment of Smith's motives: Smith was an ambulance-chasing huckster who was using the water crisis as a platform for a "product launch."⁸⁵ More than one product was, apparently, on offer, actually: in addition to the WaterBug, in May, Smith began

marketing his open-cell sponge technology as a filtration device under the name AquaFlex™, having earlier hinted to the activists of the possibility of bringing “green jobs” to the area by “working with the plumbers’ union and the residents” to create “solar-powered filtration” systems.⁸⁶ The two technologies would, presumably, complement each other: after one revealed contamination missed by other sampling methods, the other could be used to remove it. Over Smith’s protestations that he had never had any intention of trying to sell Flint residents anything, Edwards’s contact at the *Huffington Post* described him as an “opportunistic sponge salesman.”⁸⁷

As for the scientific merits of Smith’s sampling, these Edwards savaged mercilessly. Given that Smith’s WaterBug had not been properly vetted by the scientific community, he said, it was impossible to compare it against standard methods of sampling: it “could give results two, five, ten, or even one hundred times higher than the EPA standard, and it would say nothing at all about the regulated safety of Flint water.”⁸⁸ Edwards also pointed to evidence that Smith did not understand the importance of controls to the scientific method—he had sampled airborne water particles in residents’ showers, for example, but hadn’t thought to sample the air before turning on the water. More broadly, Smith lacked control *cities*: despite his insinuations that Flint was particularly bad off relative to other disaster-stricken parts of the country, he didn’t have the hard data to show it was true. And the data being collected by others, using tried and tested methods, directly contradicted the notion that there was anything unusual going on with DBPs in Flint. To make the point, Edwards arranged a press conference with Shawn McElmurry of Wayne State University—an environmental engineer doing his own sampling in Flint—and David Reckhow of the University of Massachusetts—a leading expert on DBPs—to explain that there was nothing strange about either the type or quantity of DBPs being found in Flint’s water.⁸⁹ In fact, as Edwards put it, the levels were “typical of a very good tap water.”⁹⁰

Edwards did not stop at panning the WaterBug and scoffing at the rough edges around Smith’s sampling endeavors. He went after Smith’s credentials, too. Again and again, Edwards came back to the fact that Smith did “not appear to have any scientific degree,”⁹¹ suggesting that this disqualified him from speaking with any kind of authority about the science of the water. He had enlisted McElmurry and Reckhow to help him smother Smith’s claims under a blanket of academic science and slam the door shut on his attempt

to insert himself into official conversations about the water.⁹² Smith, by Edwards's reckoning, was no "citizen scientist" (a term Smith began to apply to himself), much less a worthy mentor to budding citizen scientists in Flint, but a "pseudoscientist," a *poseur* who had come to town masquerading as an expert and profaning the good name of science in the process.⁹³

Of all Edwards's criticisms of Smith, this one provoked the most indignation from the activists: hadn't they, despite their lack of scientific training, just been praised to the skies for doing science "better" than the professionals? How could Smith's lack of credentials be a deal-breaker? LeeAnne Walters insisted to me that the activists' sampling had been qualitatively different because it was carried out under the guidance of a leading scientific expert. But Smith, as he never tired of pointing out, had his expert support too (notably, Judith Zelikoff of the New York University School of Medicine), and his samples—which included traditional grab samples in addition to WaterBug data—were analyzed at a legitimate lab. One could question his way of communicating about the safety of the water, or the merits of the WaterBug, or point out mistakes he had made, but to dismiss everything he did and said as bunk because he didn't have a degree? It seemed like pure elitism, an attack on citizen science itself, with every jab at Smith glancing off the activists, too.⁹⁴ In the midst of a heated exchange with members of the Edwards camp on Facebook, Melissa Mays wrote sarcastically: "Since the citizens did the first three hundred Virginia Tech tests, not Marc himself, that first round of testing must be completely invalid because none of us had PhDs. Makes sense." She went on to quote the Wikipedia definition of "scientist," which implies that any "individual who uses the scientific method" may qualify.⁹⁵ (Smith himself greatly played up the apparent snobbishness of Edwards's appeal to authority, depicting him, in a series of photographs posted to social media, as a plush, star-bellied Sneetch.)

When Mays and other activists rallied around Smith, then, they were not only defending him, but defending themselves—defending their own competence, defending their ability to judge who was trustworthy and who wasn't, and defending (once again) their view of reality, their staunch belief that there *was* something abnormal about the effects of bathing and showering in Flint water, and that there *were* contaminants being missed by other sampling methods. They were also defending their right to know as much as possible about their water, and condemning any paternalistic insinuation that they could not handle the truth—that they would inevitably overreact

to negligible threats or misuse data they thought confirmed their fears or served their political objectives. In this connection, another means Smith used to differentiate himself—the fact that he made detailed lab reports for the homes he tested publically available, each consisting of around fifty pages of raw data—became an ever more important mark of distinction. Smith and his allies argued that this gesture of transparency was an indication of his respect for residents' intelligence and judgment, in contrast to Edwards's apparent belief that residents were easily bewildered and spooked.

In October, I personally tried to convince Edwards that the approach he was taking with Smith was counterproductive. Yes, he had landed some blows: Smith had pushed his WaterBug into the background (saying it was “under on-going review”⁹⁶), moderated some of his claims, and changed the way he tended to identify himself (preferring “Chief Technology Officer and Investigator” to “Chief Scientist”), and he no longer got the kind of media attention he did when he first came to town. Edwards, however, was clearly overestimating the extent to which he had discredited Smith. He was under the impression, for example, that Bob Bowcock thought Smith was “insane” (unaware, until I told him, of Bowcock's even more extreme statements about bathing and showering⁹⁷), but Bowcock ultimately came down on Smith's side, appearing in a video in which he and Brockovich extolled Smith's efforts in Flint to put science into the hands of everyday people. And Smith continued to make inroads in his quest for respectability: Mark Durno, the head of the EPA's response in Flint, agreed to sample with him side by side and presented with him at an EPA roundtable, and a member of Snyder's Cabinet Office invited him to visit MDEQ's lab. By this time, Smith was not only full of praise for the EPA, but had concluded that even the state was starting to come around.

The irony in Edwards's attack on Smith was that it had the unintended consequence of greatly prolonging the latter's involvement in Flint. It turned out (I had not realized it at first, for he had not broadcast the fact) that Smith had come to Flint in the middle of shooting a documentary centered on his disaster-hopping travels throughout the United States and the world. He did not anticipate his stop in Flint lasting for more than a couple of weeks, but when Edwards attacked him, Flint became the place where he had to make a stand and defend his reputation. I got the impression in my own conversations with Smith that he was irked at having gotten bogged down in Flint, and was looking for some way to exit the situation gracefully. This turned out to be an important factor during the next chapter of the science wars.

The Battle over Bacteria

The conflict between Edwards and Smith revolved mainly around DBPs, but there was another type of contaminant lurking in the background, one that also offered some hope of explaining unexplained illnesses and impeding the rush to declare the crisis over: bacteria. Residents had been wary of bacteria ever since the boil water advisories of 2014, but the state's admission in January 2016 that cases of Legionnaires' disease had boomed during the two summers prior took these concerns to a new level. It was the strongest evidence yet that the water could actually *kill* people, and residents looked ahead to the summer months with trepidation. So did the state. The revelations about Legionnaires' had gotten the attorney general talking about possible manslaughter charges for some state employees, and officials in Lansing were terrified that they would have to deal with another slew of cases as the weather warmed.

To get out ahead of any potential problem, the state recruited Shawn McElmurry from Wayne State University to carry out a study of legionella contamination, awarding him a \$4.1 million grant to be overseen by the Michigan Department of Health and Human Services (MDHHS). McElmurry was already in the process of forming the Flint Area Community Health and Environment Partnership (FACHEP), a multiuniversity team of researchers working with grants from the National Institutes of Health and the National Science Foundation to study the water system's recovery and the point-of-use filters being distributed to residents. For help with community engagement around these various studies, McElmurry enlisted Laura Sullivan and, in April, me, writing us both into the legionella grant.

I accepted the assignment with some hesitation. I was hard at work at the time trying to integrate myself into the activist scene, and signing on to a state-funded study was hardly going to boost my credibility with people who saw the state as their number-one enemy. It would not be easy for Sullivan and I to convince the activists that the study was shaping up to be serious and important work worth paying attention to or even getting involved in (for it, too, had a large "citizen science" component).⁹⁸ Our initial idea, to arrange small-group conversations between the activists and core members of the team, went nowhere: the activists wouldn't even respond to messages about it, and acted annoyed when Sullivan unexpectedly invited some members of the team to a Flint Rising community

meeting. Activists already had their expert (or at least counterexpert) of choice in Scott Smith, and were extremely skeptical, understandably, that state-sponsored research would result in anything but whitewashing.

Still, FACHEP was doing work that piqued at least some interest, even early on: like Smith, it was looking for contaminants other than lead and sampling hot water heaters as well as hot water in showers. Pointing out that Edwards also made a point of sampling hot water heaters around the same time, Harold Harrington told me that it seemed like Smith's methods were catching on, with the scientists following the lead of the so-called "pseudoscientist."⁹⁹ This perceived overlap of FACHEP's work with Smith's created at least some possibility of winning over the activists allied with him.

I did not see much hope of this happening, however, without directly, and respectfully, engaging Smith. My preference was to have members of FACHEP, the Virginia Tech team, and the EPA sit down with Smith in some sort of a public setting and have a civil conversation about his data. I figured that under these conditions Smith would self-moderate his claims and we could move on from Edwards's unhelpful barrage of *ad hominem* insults to a more substantive discussion of residents' concerns. Sullivan and I spent two months trying, behind the scenes, to arrange a panel of this nature, without success: there was little appetite for wading into the waters that Edwards and Smith had bloodied with their mutual animosity. Ironically, as Sullivan and I worked diligently to give Smith what he wanted—a seat at the table—he and Melissa Mays came to the conclusion that we were aligned with Edwards, or at least hostile to Water Defense, and kept their distance from us for the next several months.¹⁰⁰

In the meantime, we were still faced with the conundrum of how to convince the activists (and, more broadly, residents) of the credibility of FACHEP's work, particularly the legionella study. After the failure of our initial overtures, there were two things the team needed to prove, as I saw it: first, that it could accept money from the state while retaining its independence, and second, that it had something to say about the water that was worth hearing. On the first front, it helped that McElmurry had negotiated strict conditions to ensure the study's integrity, but it didn't stop the state from attempting to corral the study in a politically acceptable direction. Tortuous contract negotiations delayed the start of sampling until the warmest summer months had passed (and with them, the most suitable conditions for studying bacterial growth). It appeared to the core members of the team

that the state was fearful their work would show cases of Legionnaires' disease were being underreported, or that the outbreaks of 2014 to 2015 were caused by the switch to the river. Carrying out even the work we had contracted for proved to be a continual battle, leading to combative exchanges with the MDHHS¹⁰¹ and repeatedly putting the future of the project in jeopardy. When the team refused to compromise some key parts of the study, Rich Baird, Governor Snyder's close advisor and his man on the ground in Flint, told us that we were not giving our "customer" (i.e., the state) what it wanted, and that there were "other" teams waiting in the wings (i.e., Virginia Tech) that would. At one point, it looked virtually certain that the state would pull the project's funding and we would all end up in court.

As frustrating and time consuming as all the drama was, it did bolster the team's credibility with residents and activists by suggesting that FACHEP was not simply taking orders from the state. I took it as a good sign when, at a Flint Democracy Defense League meeting, Claire McClinton and Nayyirah Shariff expressed their willingness to help generate some popular pressure to move the study forward. What really began to arouse activists' sympathies, however, was their burgeoning realization that FACHEP's message about the safety of the water was going to be different from that of Edwards.

Several of FACHEP's early findings suggested that bacterial contamination was still a potential concern in Flint. *Legionella* was not present in the water system in large quantities, but the type of legionella (serogroup 6) showing up in samples was virtually invisible to urine antigen tests, raising the possibility (just as the state feared) that cases of Legionnaires' disease were being missed in clinical settings. Furthermore, chlorine residuals at the tap were minimal to nonexistent in some homes (between 10 and 20 percent of them), creating a favorable environment for bacterial growth. And early results from the point-of-use filter study suggested that the filters could pose a threat to Flint's most at-risk residents. Scientists had long known that bacteria proliferated in such filters, but McElmurry and Nancy Love of the University of Michigan, the leaders of the filter study, were finding significant amplifications of opportunistic bacterial pathogens linked with upper respiratory infections, as well as bacteria typically associated with the mammalian gut (suggestive of some sort of fecal contamination). Among the bacteria found were species listed by the World Health Organization as being especially dangerous because of their resistance to antibiotics.¹⁰²

The filter issue was full of political significance. The state was determined to get out of the business of providing free bottled water, and the most obvious means to this end was to make filters available to all residents and argue that the water could be safely consumed through them. To raise the issue of bacteria in the filters at all, given popular fears about bacteria in general, was an obstacle to that agenda. Residents could see right on the boxes the filters came in that they did not filter out bacteria, but no official attempt was made (to my knowledge) to inform the community about the implications of filter use for bacterial exposure. In fact, the state seemed determined for the filters to remain “black boxes,” actively seeking to prevent FACHEP from sampling filter cartridges for legionella.¹⁰³ Consequently, when the team informed residents that the filters actually exacerbated bacterial contamination, it came as a surprise—yet another piece of information they would like to have known but no one saw fit to tell them.¹⁰⁴ FACHEP even quantified the growth by providing participants in its filter study with heterotrophic plate count data showing the extent to which bacteria had proliferated from the influent to the effluent side of the filters.

In the results letter it sent to participants, FACHEP stressed that even high quantities of bacteria are not necessarily harmful, using the example of yogurt as a reference point. The unforeseen discovery of potentially pathogenic bacteria, however, threw a wrinkle into this message. Given everything residents had experienced, it seemed like they were entitled to know about the findings while there was still time to take extra precautions, even though the results were preliminary and analysis ongoing. At the same time, the team certainly did not want to oversell the risks and cause unnecessary anxiety in people who had plenty of it to deal with already.

As we debated the finer nuances of risk communication internally, Marc Edwards contacted McElmurry in early December with a request. Based on Virginia Tech’s latest findings, he was prepared to declare Flint water as safe as municipal water in other cities and wanted the FACHEP team to sign off on a statement acknowledging that water quality had improved substantially. The request was hardly a surprise by that point. Edwards had already given indications that he was determined to treat as nonissues the very subjects of FACHEP’s ongoing research. In August 2016, he made his claim about filtered water being as good as, if not better than, bottled water. In October, he claimed to me that Flint and Genesee Counties had seen the lowest numbers of Legionnaires’ cases that year in their history, looked

surprised when I told him how many cases there had actually been, and then explained the numbers away as a product of more vigilant monitoring.¹⁰⁵ In November, he made his claim about filtered water being as good as, if not better than, bottled water.¹⁰⁶ The thrust of these remarks seemed to be that the science of the water was settled (for Edwards and his team had settled it), implying that any further research was superfluous and any suggestion of lingering risks irresponsible.

McElmurry told Edwards that a sweeping statement about Flint's water quality would be premature and declined to endorse the proposed statement. Although it seems Edwards was already positioning his narrative about the water to undercut FACHEP's work, from that point on my impression was that he was watching us like a hawk. It was plain that all the business about bacteria, just like Smith's warnings about DBPs, was interfering with his attempts to bring the story of his intervention in Flint to a triumphant conclusion.¹⁰⁷

Edwards was not the only one watching FACHEP's next moves. Scott Smith, too, had begun to take a keen interest in the team's work. Although he had not given up on proving his earlier claims about DBPs (he was now doing control sampling in other cities and posting to social media about the "non-detects" he was getting outside of Flint), his emphasis began to shift to bacteria after two pathogenic species turned up in his samples. He was hopeful that FACHEP's far more extensive research would corroborate this finding and thereby bring it more scientific legitimacy. He also seemed to sense that FACHEP's work was opening up an escape hatch for him, presenting an opportunity to pass the torch of "more-than-lead" credibility to us and thereby moderate expectations that he would continue to conduct regular sampling in Flint (he told me that his work in Flint was "done" and that he saw our team as picking up where he was leaving off). Scarred by his experience with Edwards, however, and still unconvinced of our sympathies, he first had to make sure he was not going to get burned. In the lead up to our first community meeting in mid-December 2016, at which we planned to roll out our preliminary findings directly to residents, Smith called me almost daily as he tried to feel out whether he could safely get behind FACHEP. Because the team would not (indeed could not, by the terms of our contract) share nonpublic data with him, declaring his support for FACHEP was a bit of a gamble, premised largely on his perception of my trustworthiness. Nevertheless, it was a gamble he decided to take, and

he began the delicate process of convincing his allies, particularly Melissa Mays and the plumbers, to attend our meeting with open minds.

They did indeed attend, but when they arrived skepticism was etched so deeply into their faces that I could tell we would have our work cut out for us winning them over. As soon as the scientists on the team began to speak, Mays began furiously scribbling away (I figured she was planning some sort of retort). But gradually, as I darted around the room from her to the plumbers to the tables full of other activists (for a good number of them had turned out), emphasizing the takeaway points, her demeanor softened. Our message was moderate and full of caveats, but at least we were not proclaiming the water “safe” and were expressing an ongoing commitment to look further into the concerns we (and residents) had identified.

“It was nice to hear that things aren’t all better,” Mays told the press afterwards, “because that’s what we’re used to hearing—that things are better, that things are all fine.”¹⁰⁸ From that point on, she and many of the other activists began to cite the work of “Wayne State” (for this was the name by which the team was popularly known) alongside the work of Smith as having revealed inconvenient truths about the water. Smith, for his part, decided that FACHEP’s findings resoundingly confirmed his own. He threw his symbolic support behind the team and praised our work effusively on social media.

The changing landscape of scientific credibility in Flint was illustrated vividly the next month during a key town hall about water. The timing of the town hall—a day after officials and scientists met for a closed-door summit in Chicago to hash out a “consensus” about the state of the water—reflected an all-too-familiar pattern: the “experts” settle the technical side of the water question without public input or oversight before imparting the end product, scrubbed of all residue of debate and disagreement, to an essentially passive audience. The activists, however, were determined not to be passive. Some of them had traveled to Chicago to protest the closed-door summit outside of EPA Region 5 headquarters. Now, for the town hall, which was to feature the experts from the summit, they had devised a craftier means of expressing their discontent, distributing empty water bottles that members of the audience were to crinkle whenever they disagreed with something being said. Edwards, appearing via webcam, touted the water system’s recovery over some of the most emphatic crinkles of the night. Even Miguel del Toral received his fair share for making similar comments

(not coincidentally, it was the last public appearance I saw him make in Flint). When McElmurry and Love presented about FACHEP's work, however, the activists sat in respectful silence.

By that time, it appeared Edwards's next campaign would be against FACHEP, beginning with a critique of the team's messaging about the filters. The essence of his critique was that it was irresponsible to provide residents with heterotrophic plate count data—it only frightened them needlessly—and even more irresponsible to suggest that the filters might be creating new health risks.¹⁰⁹ The kinds of bacteria raising eyebrows, he insisted, were commonly found in water. Worried that Edwards was “backing himself into a corner” by rushing to judgment before all the data were in, McElmurry and Love tried to get him to reconsider his position on a conference call in the lead up to the Chicago summit. “That just failed,” Love recalls. “He just didn't wanna hear it.”¹¹⁰ Instead, at the summit, Edwards accused FACHEP of causing “much of Flint” to lose faith in the filters, offering only anecdotal evidence. In fact, it was well known that large numbers of residents had always mistrusted the filters.¹¹¹ Not even Edwards's couple of diehard defenders in Flint used them, and ironically, it was one of them who first sounded the alarm over social media about the issue of bacterial proliferation after getting a results letter from FACHEP, explaining to a member of the Virginia Tech team who tried to talk her down that her preference was to be extra careful about bacterial exposure.

In public presentations, Edwards began to cite a World Health Organization statement to the effect that an increase of bacteria in filters does “not indicate the existence of a health risk,” while leaving out the statement's critical caveat: “*so long as the entry water meets acceptable water microbial quality norms*” (emphasis added).¹¹² The idea that Flint water might still be microbiologically compromised, a possibility FACHEP continued to take seriously, entailed the no-longer-allowable assumption that there was still something *abnormal* about the water situation in Flint. Edwards also began to stress that filter use was common around the country, as if the elective use of filter technology by a typical filter-using household raised the same considerations as the citywide, emergency deployment of a device largely unfamiliar to, and unwanted by, residents—for political as well as public health reasons.¹¹³ Filter use in Flint was not, in other words, obviously comparable to filter use elsewhere, nor could it be reduced to a merely technical issue of the proper functioning of the

filters.¹¹⁴ Finally, Edwards teamed up with the National Sanitation Foundation to launch a separate, state-funded filter study in Flint and control cities, in an apparent effort to lay a firmer foundation for his criticisms. The collaboration failed totally, and all the samples taken were destroyed due to problems with the sampling methodology—a fact not communicated to the residents who opened their homes for the study (I was one of them), who waited and waited in vain for an update. Meanwhile, the Genesee County Medical Society and Genesee County Health Department recommended that “children less than 6 years old, pregnant women, and individuals with weakened immune systems should continue using only bottled water”—or boil filtered water before drinking it.¹¹⁵

As FACHEP began to prepare for its second round of legionella sampling in the spring of 2017, Edwards grew increasingly hostile. After being confronted in person by angry activists (including Quincy Murphy, a member of FACHEP) accusing him of downplaying concerns about bacteria, and criticized on Facebook by Laura Sullivan, Edwards gave McElmurry an ultimatum. FACHEP, he said, had “repeatedly made false statements and spread rumors, that promote FACHEP at the expense of the State and VT.” He ordered McElmurry to put out an “unambiguous” statement disavowing Murphy’s and Sullivan’s supposed falsehoods or he would “correct the record publicly” to “the utmost of [his] abilities.”¹¹⁶ When McElmurry took the position that Flint residents, speaking as residents (as both Murphy and Sullivan were), had a right to express themselves, Edwards launched what would become a two-year-plus-long campaign to delegitimize FACHEP and its members.

He began by co-filing, with LeeAnne Walters, a Freedom of Information Act (FOIA) request for a wide range of internal FACHEP emails, in an apparent fishing expedition. Edwards and Walters portrayed the FOIA as part of an attempt to help a resident obtain sampling data on her house.¹¹⁷ To try to massage tensions and address the resident’s concerns, I initiated two days’ worth of diplomacy with Walters, with whom I had up to that point been on friendly terms. Soon thereafter, however, Edwards and Walters decided, for the first time, to call out the team by name.¹¹⁸ This they did in a clumsy, lo-fi video streamed over Facebook in collaboration—in yet another irony—with an out-of-town activist with a reputation for purveying conspiracy theories about the water. From that point on, Edwards became much bolder in his

public criticisms of the team, referring to its members as “unscrupulous” and depicting us in keynote addresses as fledgling birds incompetently bumbling our way through research that was out of our league.¹¹⁹

The baby-bird metaphor became more difficult to sustain after the team published results from its legionella work in top journals in early 2018, including a paper in *Proceedings of the National Academy of Sciences (PNAS)* that linked the Legionnaires’ disease outbreaks of 2014 to 2015 to low chlorine residuals within households after the switch to the Flint River.¹²⁰ Arguing that FACHEP had failed to give proper credit to the Virginia Tech team’s work on legionella, Edwards and colleagues immediately, and unsuccessfully, challenged the paper. It was *his* team’s work, Edwards claimed, that had first demonstrated the connection between the outbreaks and the source change and hypothesized the chlorine connection, and FACHEP was trying to rewrite history by giving itself credit for the discovery.

If Edwards had difficulty perceiving the difference between FACHEP’s research (which included rigorous statistical analysis of the legionella/chlorine correlation) and his own (which lacked such analysis), the state did not. The MDHHS was already prepared to attack the papers upon publication¹²¹ after FACHEP refused to submit to the state’s insistence that the team continue its work under the supervision of an “independent” water research institute with prior ties to the Snyder administration.¹²² The reason for the state’s power play soon became apparent, as the *PNAS* article (unlike Virginia Tech’s work on legionella) made a major political splash in the preliminary hearings of MDHHS Director Nick Lyon and Chief Medical Executive Eden Wells, who faced involuntary manslaughter charges for failing to alert the public about the Legionnaires’ threat.

If activists had any lingering doubt that Edwards’s interests and the state’s were now aligned, it was dispelled when he was called to testify in defense of Lyon and Wells in March 2018.¹²³ Whereas FACHEP members had testified to Lyon saying things in meetings like “everyone has to die of something,” and to his and Wells’s efforts to prevent certain kinds of research, Edwards spoke glowingly about his own interactions with them and their commitment to public health in Flint.¹²⁴ He also took the opportunity to criticize FACHEP’s work.¹²⁵

Almost as soon as Edwards left the stand, a post in the form of an exposé, targeted at Shawn McElmurry, appeared on flintwaterstudy.org under the title “FACHEP vs. The People of the State of Michigan.” It accused McElmurry

of misleading the state about his past work in Flint and stealing a former graduate student's model of the city's water system in a plot to procure grant money made available by the water crisis, concluding that McElmurry was potentially "guilty of perpetrating, one of the most insidious cases of scientific misconduct ever, in relation to procurement of disaster relief research funding."¹²⁶ In conjunction with the blog post, Edwards filed a complaint against McElmurry's professional engineer's license (later dismissed for lack of evidence) and promised that similar exposés were to come on Nancy Love and Laura Sullivan. When I declared on Facebook that we would not be bullied by him, he called me out by name, too, and accused us all of "gorg[ing]" ourselves "at the FACHEP funding trough."¹²⁷

Edwards also said on the website that FACHEP's legitimacy was now "completely tied" to McElmurry's proving his claims about his earlier work in Flint.¹²⁸ It was another sign of how thoroughly divorced Edwards's understanding of credibility was from that of the Flint activists and residents I knew. Whereas there was plenty of community interest now in FACHEP's findings, there was almost none whatsoever that I could detect—certainly among activists—in what McElmurry did or did not do in Flint prior to the water crisis. In fact, Edwards's attack, in conjunction with his earlier testimony for Lyon and Wells, provoked the fiercest backlash against him yet. One prominent activist who had never spoken out against Edwards before excoriated him up and down social media for doing the work of the state by trying to destroy McElmurry's reputation, posting a headshot of Edwards struck through with a red "no symbol" and bracketed by the words "Your 'Welcome to Flint' Card has been REVOKED!! GET OUT AND DON'T COME BACK!!"

Accountability in a "Post-truth World"

As late as the summer of 2018, Edwards maintained that it was only ever "a few folks" who were resistant to his message about the water and driving the criticisms of him.¹²⁹ That claim did not comport even remotely with my observations on the ground. From 2016 onward, I observed, in public and private settings, a steady stream of concerned, perplexed, and outraged reactions to his statements and behavior. Significantly, I encountered these reactions not only within Flint's activist community (where LeeAnne Walters was Edwards's "only friend,"¹³⁰ as Claire McClinton put it) but within other communities I had contact with as well, including the medical and

academic communities, and even within the EPA. Beginning in 2017, I started to hear variations on the claim that Edwards was going to “crash and burn.”¹³¹

In May 2018, in a historic development, sixty residents signed a letter in protest of Edwards’s attack on FACHEP and behavior toward the community generally, sending it to a variety of professional engineering and scientific associations and calling for an independent investigation.¹³² Edwards, denouncing what he called the letter’s “many false claims”¹³³ and depicting it as a plot to smear him by Melissa Mays and two of his former activist colleagues from D.C. (who had also become vocal critics), pledged to track down each of its signatories individually and ask them whether they agreed with its every last word.¹³⁴ After multiple academics with knowledge of the situation expressed a desire to help, I worked with them to put together another letter, affirming the right of residents to be heard and condemning any attempt to intimidate and silence them.¹³⁵ Edwards’s response was to accuse the twelve academic signatories of jealousy¹³⁶ and to attribute the support letter to a “cancer” infecting the social sciences that needed to be “exposed and dealt with.”¹³⁷

Edwards and Siddhartha Roy also went on the offensive against Mays. After she shared a picture through Facebook of a fire hydrant spewing brown water and mistakenly said it was current, they deputized a sympathetic resident (technically, Walters was not their *only* friend) to “investigate” and document the fact that the hydrant had not been opened in months. They then built two Flintwaterstudy.org posts around the notion that Mays and a few other individuals were stirring up fears about the water still being unsafe (a belief that was, in fact, still the conventional wisdom throughout a huge swath of the community).¹³⁸ It did not matter, apparently, that the claim about the photo did not originate with Mays, that thousands of other people had also shared it, or—most tellingly—that the very resident doing the “investigating” had also posted the picture and said it was taken a few days before, in a similar effort to show that the crisis was not yet over.

Mays was an obvious target for a head-on attack of this nature, not only because she was such a scathing critic but also because Edwards and Roy knew she was a controversial figure within the community, with detractors who would gloat over her misfortune even if they agreed with her about the water. A FOIAed email later revealed, however, that the Flint Water Study team was targeting a wider range of activists and groups behind the scenes. In November 2017, Edwards and Roy enlisted a student to compile a record

of social media posts from groups and persons of “interest” that included “falsehoods” about the water, claims about health harms, and criticisms of the team (Edwards specifically requested a screenshot “anytime they call each other heroes, or complain about the money or awards [Mona, Lee-Anne, VT] we are getting”). When Roy and the student floated the idea of creating a “fake” page to collect the information surreptitiously, with a stock image instead of an authentic headshot, Edwards seems to have done nothing to dissuade them.¹³⁹ Edwards later claimed that such a page was never used, and defended the data collection as part of a paper on the dissemination of misinformation through social media. Fake page or no fake page, however, from the activists’ perspective it was a shocking revelation that those who continued to speak out most forcefully about the water were being actively surveilled, not to mention discredited in academic publications. One activist felt harassed enough that she expressed her intent to file a personal protective order against Edwards.

The list of targets specified in the emails suggested that Edwards and Roy were still focused on the Scott Smith–Melissa Mays alliance as the Pandora’s box that unleashed “science anarchy” on Flint, for all had been vocal about being sampled by Smith. It made the next twist in the Scott Smith subplot even more counterintuitive. In July 2018, a guest blog post appeared on Flintwaterstudy.org featuring a mea culpa purportedly written by Smith, in which he detailed the mistakes he had made in Flint and the lessons he had learned from them. Edwards and Roy held it up as a model of responsibility in a “post-truth world,”¹⁴⁰ calling Smith “intellectually honest,”¹⁴¹ and citizen science guru Caren Cooper (who had just been written into a \$1.9 million EPA grant awarded to Edwards and his team¹⁴²) praised the two sides for reconciling and “uniting for #CitizenScience!”¹⁴³ It was a vindication for Edwards, with the added benefit of stripping Mays of one of her chief allies in the middle of a broader campaign to isolate and discredit her.

From the ground in Flint, however, the whole thing looked awfully suspicious. Shortly after the post went live, Smith began telling people that he had not wanted to write it, that he had been threatened by Edwards and Roy, and that he disliked Edwards as much as anyone else.¹⁴⁴ When draft versions of the post leaked, it became clear that Edwards himself had written a substantial portion of the confession. Changing Smith’s “lessons learned” (the phrasing of the original draft) to “*citizen science* lessons learned,” Edwards put a number of admissions into Smith’s mouth, including that Smith had caused “a lot of

pain and suffering for everyone involved” by avoiding dialogue in early 2016, and that it was “possible, and even likely” that his manner of presenting his data had “changed” residents’ “bathing and showering habits.” Edwards also seems to have come up with some of the “lessons” himself, including the lesson that “confrontations” are sometimes necessary and that scientific authority is valuable.¹⁴⁵ In his original draft, Smith seems to have been fishing for at least some contrition from Edwards. Writing that “launch[ing] devastating personal attacks without adequately vetted true and accurate facts can be very painful for many people and cause permanent reputational and financial damage if not corrected properly,” Smith asked Edwards to consider handling such situations differently in the future.¹⁴⁶ The request did not make the cut, however, and Edwards continued to act as though his hands had been tied when he began publicly shaming Smith in 2016.

The situation became even more bizarre and confusing when Smith, even as he maligned Edwards in some contexts, began working as a mole for him. He contacted multiple signatories of the residents’ complaint letter to ask if they knew their names were on it, sent Edwards years’ worth of email exchanges he’d had with residents, and passed along an in-progress paper shared with him as a courtesy by a signatory to the academic support letter. He also exploited the trust of an activist who had participated in an FDDL meeting where the issue of Edwards had come up, milking her for information before concocting a totally fabricated account of what Laura Sullivan and I had said at the meeting and sending it to Edwards, who forwarded it to colleagues.¹⁴⁷ The resurrection of Scott Smith as a duplicitous double agent, then, only wreaked more havoc within the community, exacerbating activists’ sense of betrayal and directly contributing to the circulation of new falsehoods.

The developments with Smith coincided with Edwards’s most aggressive sally against activists yet: a \$3 million defamation lawsuit against Melissa Mays and the two D.C. activists he accused of having helped to compose the residents’ complaint letter. The lawsuit sent a ripple wave of shock through the community. Residents started to warn each other—tongues only half in cheek—about speaking out against Edwards, for fear that more people would be sued.

Although no one could have anticipated how bad things would get, Nayyirah Shariff lamented that activists had not placed stricter terms on their collaboration with Edwards from the start. She told me she considered it a “personal failure”: more than any of the other activists who decided to

partner with the Flint Water Study team, she knew how academic research was supposed to proceed in marginalized communities. She was familiar with the history of the Tuskegee Experiment, which she invoked when Edwards began to turn on members of the community. Even the original sampling effort, she said, should have included stronger protections: human subjects training, approval by Flint's community-based review board, and a consent form for sampling. More broadly, there should have been a memorandum of understanding between Edwards, his team, and their resident collaborators, with "built-in accountability measures."¹⁴⁸ Without such measures in place, the power Edwards exercised—whether he was making authoritative pronouncements about the water or using his sizable platform as a bully pulpit to tear others down—was as unchecked as the power of any emergency manager.

Where power is effectively unchecked, the disposition of the individual exercising it becomes the key factor in determining whether it is abused. In this connection, activists regularly remarked on what they saw as Edwards's imperiousness: his tendency to appoint himself to crusading roles, to speak with airs of authority about areas outside his expertise, and to disparage the contributions of other researchers who did not align themselves strictly with his perspective. Of Edwards's campaign against "bad actors," Shariff joked that she wanted to see the notes from the meeting at which he was delegated that role.¹⁴⁹ Of his attacks on other scientists with differences of opinion about the condition of Flint's water, Claire McClinton asked, rhetorically, "Who died and made him king of all scientific data?" The community, she said, did not need him to be the "arbiter of sound science."¹⁵⁰

And Edwards certainly, she said, had "no business" suing residents, or otherwise attacking them—it was an attempt to "demoralize" people that fed directly into the state's efforts to minimize the crisis and shut down lingering concerns. "This is *Flint*," McClinton told me. "If you're trying to silence people's voices, it's not gonna work."¹⁵¹

The Fight Is (Not) Over

When the Virginia Tech Flint Water Study team introduced itself to the world in the summer of 2015, it said its first aim in Flint was "To support *citizen scientists* concerned about public health."¹⁵² At that time, no one could have imagined what the consequences would be for residents and their allies who failed to live up to Marc Edwards's definition of "citizen

science,” or for other researchers who dissented from his views about how science was to be conducted and communicated. I found that Edwards’s own explanation for the breakdown of relations—that deep-seated anti-expertise and post-truth sentiment had taken root in Flint,¹⁵³ supplemented by a catastrophic breakdown in trust and intensified by the allegedly unscrupulous behavior of activists, their allies, and other researchers—was inadequate, limited by its erasure of the power dynamics involved in his own intervention.

Certainly, challenging the “expertise” of those who said the water was safe *was* a central part of the activists’ fight in Flint—as Quincy Murphy put it to me, “that’s how we broke the door down.”¹⁵⁴ And residents *had* lost a great deal of trust, even in people who were probably worthy of it. However, activists bristled at the suggestion that lingering concerns about the water were the products of an anti-expertise, antisience, mistrustful worldview. Such concerns were not about not trusting people, Claire McClinton said—after all, there *were* people residents trusted, they just happened to be people other than Edwards—but about unanswered questions and indications of risk within the science produced about the water.

McClinton, like many of the other activists, believed the more people looking into the water, the better.¹⁵⁵ One tragic effect of the atmosphere of hostility and suspicion clouding the conduct of scientific research in Flint was that lines of inquiry of great significance to residents were greatly hindered or stalled out entirely. A citizen science project I spent months developing with a member of the Virginia Tech team who disagreed with Edwards about bacteria fell apart after Edwards began to attack FACHEP. Time that could have been spent on science was sucked up by credibility struggles, and much to my frustration the core members of FACHEP—battered alternately by the state and by Edwards—became reticent about making any public statements at all about the team’s work.¹⁵⁶ While the team developed close relationships with the city’s chief public health advisor and the Genesee County Medical Society—critical voices in the conversation about public health in Flint—it was too focused on watching its step and triple checking its results (knowing they were likely to be attacked) to develop a full-bodied presence in the community. Most tragic was that the worthy project of building close, collaborative relationships between community members and scientific experts had to take a backseat, at least in the short term, to confronting, in the behavior of Edwards, another crisis of

unaccountable power. It was one among other reasons why the activists felt their fight had to continue.

The idea that there might still be reason to keep fighting was, ultimately, the source of the starkest contrast between Edwards and the activists. Edwards told me in the fall of 2016 that the fight for Flint was “pretty much over”—there were no more “doors” to break down (to adopt Quincy Murphy’s metaphor), for officials were now embracing “good” science and trying to do the right thing. In fact, the response to the crisis as a whole was as close to a model as one could imagine, he said, with the state going above and beyond the call of duty.¹⁵⁷ The problem was that the city’s “warriors,” who had earlier played a constructive role, were finding it difficult to transition into “peacetime.” They were not only on the wrong side of the science of the water, in other words, but they were at this point fighting for nothing—not least of all when they fought against him.¹⁵⁸

It was news to the activists, however, that “peace” in their city had been realized and that there was nothing left to fight for in Flint. Whatever Edwards believed, it was their deep conviction that Flint had not yet been made “whole,” not even close. The next chapter in the struggle for justice, they insisted, had yet to be written, and this time they were more determined than ever to write it themselves.

