The Fractivists – Interview with Dr. Nicholas Shapiro

Ramya: [00:00:00] Hey everyone, it's Ramya with the Fractivists, and I'm here today with special guest Dr. Nicholas Shapiro, who is an expert in researching on community engagement via environmental justice. Hi, Dr. Shapiro, thank you so much for joining us today.

Dr. Nick Shapiro: [00:00:14] Hi, Ramya. Thanks for having me.

Ramya: [00:00:16] All right, so first off, I want to give our listeners a little bit of information about your background. Would you mind giving us a couple quick blurbs about how your research intersects with fracking and community engagement on the fence line?

Dr. Nick Shapiro: [00:00:29] Sure. I first started doing community engaged research, working on environmental justice in places we don't really consider to be the environment, which is the home. We kind of think about the environment being everything outside of the home. But we spend most of our time there, and the air quality is often worse than outside. So I started working on formaldehyde exposures in the home and then I wondered, why do we have formaldehyde holding together all the engineered woods that make our domestic spaces, that make our shelter, but then actually lead to exposure? And that's because formaldehyde derives from methanol, which derives from methane, which is increasingly harvested, extracted via fracking. So to understand why we're all exposed to low level formaldehyde levels in our home, I had to go upstream, follow the supply chain of petrochemicals to the site of extraction of the precursor chemical, which is methane. And so that led me to work with communities that were also dealing with formaldehyde issues, especially formaldehyde coming from the incomplete combustion of methane in something called a compressor site, which I'm happy to talk about more later. But they're all over the fracking fields and they lead potentially to increased formaldehyde levels outside next to these facilities. So that's how I got started.

Ramya: [00:02:00] And the communities you're researching, do they have any type of pattern on who is affected?

Dr. Nick Shapiro: [00:02:08] Yeah, there's the community I was working with is in northeast Pennsylvania, Susquehanna County, and they faced a number of issues. Some are air quality and some are water quality issues. Famously, Susquehanna County was the seat of very early research on methane migration. So methane migrating from the well - the fracking well - communicating with drinking water wells. And that was sort of first proved in Susquehanna County. So these are people proximate to these well sites and then also you don't even have to be near the well site sometimes to get exposures from the infrastructure. So, there's something that I just mentioned earlier called a compressor station. And a compressor station, they occur every few miles on a pipeline, and pipelines span all over the continent. If you want to Google a map of the pipeline network, I think you'll be blown away to understand the intricacy of the mesh of pipelines, both the gathering lines which come from the wellheads themselves, and then go to their smaller gauge, and then they go to the transmission lines. And those are the big highways, superhighways of gas transmission. You'll have a transmission pipeline going all the way from Pennsylvania down to the refineries in Louisiana. And so those are the big transmission lines. And then you'll have the gathering lines going from the fracking fields, collecting little capillaries all into the transmission lines. And you need to dehydrate and increase the purity of the methane through these compressor stations. You also need to pressurize the gas so they move through the pipelines. So these little compressor stations are seemingly innocuous, but they are basically little refineries, and they happen every few miles. And you've got so many different gathering lines that you have these little tiny refineries all over the landscape. And we're used to regulating one big facility. But what happens when there's a little tiny refinery every three quarters of a mile for, you know, hundreds of miles? It really, really impacts the air quality.

Dr. Nick Shapiro: [00:04:36] So in terms of who is impacted, it's people that are living near the wellheads, people that are on the trucking routes because you're trucking in all this water, you're trucking in all the sand. In this rural Pennsylvania town that we were looking at, the air quality was worse than London where I was living, because of the trucking routes. And then you also have people that are living proximate to the compressor stations, which don't even have to be near the fracking fields, which can just be on the transmission lines or or near the gathering lines.

Ramya: [00:05:13] So in essence then, in general, we've only been looking at proximity to fracking sites as the main indicator for whether or not you'd be affected by these pollutants. But in actuality, it's all over the country depending on those networks.

Dr. Nick Shapiro: [00:05:34] Absolutely. Yeah. And I think that what's interesting is – so there's these guys called landmen and they go out when the oil company or the gas company realizes they want to start fracking somewhere, they go out and they try and get the leases because you need to get access to substrata in order, or also above ground for some of the wells and, you know, they try and make the whole process sound, hunky dory, safe, etc. But what's interesting is that, even the landmen who are basically the salesmen of the process, were telling people in Pennsylvania, like “I got to admit, like, don't sign up for this compressor station on your land.”

Ramya: [00:06:09] Wow.

Dr. Nick Shapiro: [00:06:10] You know, those compressor stations are just that bad. Yeah, and so though those don't even need to be in proximity to the wellheads, and also you don't even need surface access, so a lot of people don't have non surface access leases because of the way fracking works. You're drilling down for a mile and then over for a mile, you often have the risk of methane migration into your water and fracking fluids getting into your water, even if the well isn't drilled vertically on your property.

Ramya: [00:06:44] And so in our research and in literature in general, we've kind of termed those communities ‘fenceline communities’ as in living near these pollutant sites. And we've noticed that oftentimes the communities are targeted, have a certain racial demographic. They're primarily black or brown communities. They are typically demographically of lower socioeconomic status, have fewer resources to fight against these industries. And I'm curious how you have found, kind of the pattern of communities targeted in your research, and why do you think those are the communities that are targeted?

Dr. Nick Shapiro: [00:07:28] Those are good questions, and they're hard for me to totally answer. I think that, oftentimes, so you have to look at the geology first, it's all about where the shale deposits are, where they're close to the surface, where the soil geochemistry is right because wells were failing more often in the soil chemistry in

Pennsylvania than they were in, say, Arkansas. So there's all of these geochemical reasons that helped determine where fracking is and where fracking goes especially wrong. And they often go for the most rural communities because there's the least potential for push back. The community where I worked was very divided because it was bringing in a lot of money. I think I stayed in one Airbnb or no, just a regular B&B, a regular bed and breakfast that was hosted by a family on their frackpad, which was pretty wild. So you look out the window and you can see the frackpad from the B&B. And they were doing this, they're making, I think, over a hundred thousand dollars a month. And the reason they were doing this was to pay off medical bills and college tuition bills of their children. And so it's really, it gets very complicated about the cycles of debt that then get people vulnerable to taking deals with serious, serious consequences. The community that I worked in on fracking was very white, and that whole part of northeast Pennsylvania is pretty white, and then there are very different racial demographics. Some of the shale fields in Texas and also shale fields in North Dakota, indigenous land, on sovereign indigenous lands, on reservation lands, and also in Oklahoma. So the impacts for environmental justice are usually racially asymmetrical. In one of the communities that I worked with, just because of its proximity to where I was living in Philadelphia at the time, it was very white. And I think we see that these white communities are having successes that are not repeated as often in the communities of color. And so I think that's a serious problem of who scientists are allying with and supporting, who nonprofits are supporting and their struggles for environmental justice. And so I see an asymmetry not only in where these wells are sited and where the impacts are falling, but who is being supported. I think that's a big problem.

Ramya: [00:10:45] Yeah, that brings me to another important point, which is a lot of times with community engagement, academia often fails to maintain an adequate relationship that serves those communities. And so I really want to ask, like, what can we, as academics, do to better understand and serve fenceline communities via our research?

Dr. Nick Shapiro: [00:11:07] Yeah, I think that's a great question and something I think about a lot. I think one thing that can be done is fully acknowledging the labor that communities do in supporting research. Basically, much of the research that you see on fracking has been produced by communities like ghostwritten, basically, not necessarily

the science writing itself. But that methane migration study that I talked about that made the scientist who led it famous and gave him a job at a very well-paying job at an extremely prestigious university, that was funded because the people on the shale field used a family connection to get his attention, like through an administrator that worked at that school. And then they held a fundraising dinner at their house, trying to convince the environmental school to fund it. So the fundraising was done by the community. The access, the permission to access land was done by the community. A lot of the samples, the community trained up and got the well samples. And then I think just a very clear answer to your question is then the university needs to return the individual data, because what happened in that case is that the analysis was published in a leading journal, but the individual analysis of individual people's wells were not returned to all of the people.

Dr. Nick Shapiro: [00:12:48] So, you know, in general, this is happening. And maybe you can guess based upon the anonymized map with like sort of obfuscated geopositioning, like “Maybe that's my well, maybe it's not I don't know.” But as a result of people not getting their data back, there's an increased distrust in science and that study can never be replicated because all the people that were like, “All right, I'm going to take a gamble, you can come up on my property and sample my well,” expecting something in return, didn't get that thing in return. And they're not letting anyone else on their property to take a sample. So I think that is, you know, a major failing of the people that are sort of doing the pathbreaking science is that they do the path breaking and then they break the path, and then no one else can go down that path. And the communities can't have community control over the data. That's really important, especially with indigenous groups having data sovereignty. And then there's also a replication issue that comes out of that because no one will ever be allowed to go into these people's property and take another sample. So I think that's an important part. I think meeting with the local communities and asking them what their goals are and being very clear about how science might or might not be able to achieve that. I think there's an idea that data is like an Excalibur, it is this ultimate weapon and will make people listen to them. But I think especially in the cases of environmental racism, more data isn't going to convince people. They know what they're doing to a degree and how it is an illogic, you know, racism is an illogic. It is illogical. And so having more logical information about why this is bad is not necessarily the solution.

Ramya: [00:14:48] Kind of branching off of that, then I want to ask you, what are the solutions you advocate for in your work besides just from academia? If we had to include both local government, industry, what should we be advocating for here?

Dr. Nick Shapiro: [00:15:07] I think that the thing is that it's not just one thing.

Ramya: [00:15:14] Yeah.

Dr. Nick Shapiro: [00:15:15] And the way I like to think about it is, there needs to be things that are done immediately. That are not super efficacious, but they are stopgaps and they help people survive, and ultimately these stopgaps also help the infrastructures of exposure survive. You're making the problem stronger in some ways by pushing it back a little bit, by saying, OK, fracking is fine, we just need to have more of a setback. We just need to have the fence line one hundred feet further away. That's helpful. You know, that's a win for people on the fence line. But it's also, it releases some of the organizing and advocacy and activist energy into a reform that doesn't change the problem. That make sense?

Ramya: [00:16:29] Yeah, it does.

Dr. Nick Shapiro: [00:16:31] And so, yes, so we do need to have reforms. I think in L.A. in particular, there's a conversation happening right now about who has the authority to set setbacks from the oil and gas extraction that's happening in our communities. And it's increasingly clear that our council people do have that authority. And so that's something that can be done now. That's something that can happen. We also need to be thinking about in a future that isn't even maybe in your lifetime, we also need to be thinking about what our relationship with energy is going to be. So we've got this right now, very small scale, urgent action. But equally important is thinking about the long term. And those are often mutually exclusive logics of change. Like what is going to help your children's children is very different from what's going to help the people right now.

Dr. Nick Shapiro: [00:17:34] So what am I talking about? All super abstract. What is this guy talking about? I'm talking about we need to think about our relationship to energy that isn't about moving just to batteries and electrification. We've got a world that's built around hydrocarbon energy, extremely dense energy, that is very rare, and I

think we need to move towards an energy relationship that is less dense and more omnipresent. And so people would say, “Oh, that sounds like you're talking about solar panels.” Maybe, but also - because that's what solar energy is - it's very weak and very inefficient to gather, but it also is intermittent and so requires batteries. And where do you get the batteries? Well, you go to indigenous territories in South America and you get the lithium. You go to Central Africa and you use child mining to get other metals that are intrinsic to these batteries. Yes, the issue of fenceline communities in the US reduces when you're not extracting oil in them, but you're also impacting other places. Or you go and you're doing deep sea sweeping and we don't really even know the environmental consequences of.

Dr. Nick Shapiro: [00:19:05] I think you're looking for a shorter answer than all this, but that's what you need to also be fighting for, is something bolder than the Green New Deal. Is something more radically a departure from our relationship with energy now. And so I think it's harder to envision, but it's something if people want to enroll in my winter seminar Prototyping Planetary Improvement Soc Gen 180, we can talk more about it there. So that's the thing that I tell communities, is that you need to be fighting what you need to survive, but then also build the coalitions of people, build coalitions of people fighting similarly to you to try and push a paradigm shift, because so often what happens in the fenceline community work is it's the more powerful, the whiter communities that are able to fight back. And the system still needs sacrifice zones. And the externalities just continue to concentrate on communities of color. So every time we have one of these white communities have a victory, the system is distributing that harm to other communities. Often, not always.

Dr. Nick Shapiro: [00:20:30] So, that's what I advocate for. Do your survival, do your small wins, but also know that equally important is to fight for a radical change, and I think that science has an important role in showing the physical possibilities of radical change. So many people are focused on building better batteries, that are all predicated on mining. And somehow we've justified it to ourselves that this is better, because we fetishize carbon as the metric of damage. But what if you also are including in your metric child labor? What if you're also including indigenous dispossession? So, that's my long answer, is you can fight for the fence line. You can fight for getting better catalytic converters on these compressor stations. But, you know, like some of the work that, Ramya, you and I do, we also need to be thinking about abolition. Abolition is not

just a thing of criminal justice, but it should be a part of environmental science and environmental justice.

Ramya: [00:21:47] They're all interconnected, yeah. All right, I know that is our time, I just want to thank you again, Dr. Shapiro, for taking the time to talk to us today and to thank you for your work.

Dr. Nick Shapiro: [00:22:03] My pleasure. Shout out to Dr. Rensel, always great work.

Ramya: [00:22:09] I guess I just want to give you the floor and these last couple of minutes for any closing remarks, anything you want to say about these topics you think a wider audience should know about.

Dr. Nick Shapiro: [00:22:22] I'm not sure, I think, related to that last point, natural gas has been pitched as the transition, as this transition fuel between oil and sustainability. And so we've built all of these infrastructures that are supposed to last hundreds of years. And we fallaciously have been told that this is what transition looks like, that this is the pathway to increase sustainability when methane is a much more hyper potent greenhouse gas in the short term. When these leaks are underestimated by over 60 percent, I think it's over 60 percent, the EPA's been underestimating the methane leaks from oil and gas infrastructure.

Dr. Nick Shapiro: [00:23:13] So we find that the leaks, these aberrations in the system are not really aberrations, but really they're key parts, they're ongoing parts of the building and the engineering of our ecology in the present moment. So I think the thing to keep in mind is what you're being sold when you're being sold a solution. Fracking was sold as a solution. You know this shale gale, this oil and this gas boom, focus on natural gas, was already sold as a transition to greener futures. I think we're going to see with the proliferation of batteries, with the sort of romanticisation of a national grid, knowing that having energy distribution sites far away from energy consumption sites leads to things like increased inefficiency because there’s transmission costs and also forest fires. Remember, like a lot of these forest fires being caused by these transmission wires of electricity. So that's, I think the charge to the scientists of your generation is to be thinking critically about all of these really tightly confined ideas of a solution, and think capaciously about what two generations beyond, what the problems

are going to be, and I think it's in those long term visions that we will be able to not just hand on new struggles to the generations below us.

Ramya: [00:25:00] Well, thank you again for your time. We have a saying we end our lab meetings with, I wonder if you want to say that right now for our listeners.

Dr. Nick Shapiro: [00:25:09] Oh, we steal a line from the amazing Mariame Kaba: “I hope tomorrow finds more justice and some peace.”