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"Swimming in Poison": Reimagining Endocrine Disruption through China's Environmental Hormones

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Abstract

This article analyzes media responses to a 2010 Greenpeace China report titled *Swimming in Poison*. Among other alarming data, the report states that fish from collection points along the Yangtze River showed elevated levels of harmful "environmental hormones" (*huanjing jisu*), also referred to as endocrine-disrupting chemicals (EDCs). Scholars have critiqued EDC science and activism for its heteronormative pathologizing of intersexuality, nonreproductive sexual activity, and impaired fertility, drawing attention to the "sex panic" at work in EDC discourse. This article shows that such sex panic is neither necessary nor universal in anxieties surrounding EDCs. Unlike media responses to EDC events in Europe and North America, Chinese news articles that followed the report did not focus on anxieties surrounding sexual transgression. Instead, media reactions focused on food safety, industrial capitalism, and the ecological scope of pollution. Based on this analysis, the author argues that the disruptive quality and analytic potential of China's environmental hormones has less to do with a defense of sexual purity or bodily integrity, and more to do with acknowledging the depths to which human and nonhuman bodies in today's China are suffused with the sometimes toxic social, economic, political, and chemical environments in which people eat, grow, and live.

Keywords: China, toxicity, endocrine-disrupting chemicals, pollution, Yangtze River, Greenpeace, milk powder, environmental activism, hormones

In 2010, Greenpeace China released a report titled *Swimming in Poison: An Analysis of Hazardous Chemicals in Yangtze River Fish*. Among other alarming data, the report states that fish from collection points along the river show elevated levels of harmful "environmental hormones" (*huanjing jisu*). Environmental hormones are also referred to as endocrine disruptors or endocrine-disrupting chemicals (EDCs), which the World Health Organization defines as "an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub) populations" (2013, 11). The *Swimming in Poison* report pinpoints altered sexual development as a major threat of environmental hormones, "most notably the development of female organs in male fish" (Greenpeace 2010, 8).

Environmental hormones and their endocrine-disruptor counterparts are interesting objects through which to consider the chemical contours of the twenty-first century, in China and elsewhere. Historian Michelle Murphy describes the twentieth-century emergence of "a chemical regime of living in which molecular relations extend outside of the organic realm and create interconnections with landscapes, production and consumption requiring us to tie the history of technoscience with political economy" (2008, 697). Murphy and others show how the twentieth-century burst of industrial-capitalist-fueled synthetic chemical production has accelerated in recent decades (Casper 2003; Frickel 2004; Mitman, Murphy, and Sellers 2004). Now more than ever, synthetic chemicals are seeping, leaking, and leaching their way into the bodies of human and nonhuman animals through pills, plastics, foods, and fibers, exerting an impact on dreams, bodies, and imaginaries (Fortun and Fortun 2005; Nading 2017; Sanabria 2016; Shapiro 2015). This article is situated within increasing scholarship on the possibilities and perils of living with modern chemistry, which anthropologists Nicholas Shapiro and Eben Kirksey (2017) describe as "chemo-ethnography." Medical anthropologist Anita Hardon and her colleagues describe chemo-ethnography as an invitation "to analyze the many ways in which substances mediate social relations, as well as how social relations and techniques shape the multiplicity and fluidity of chemical effects in varied contexts of everyday life" (Hardon and The Chemical Youth Collective 2017). A focus on chemical mediations and relations also foregrounds the everyday conveniences and consequences of late capitalism (Fortun 2012), brought about by the deluge of synthetic chemicals that have been created and mass produced in the name of better living.

In China, the twentieth-century increase in industrialism and rise of a capitalist-infused socialist state vastly improved standards of living for many and dramatically changed China's chemical landscape. In a relatively short time span, China moved from what anthropologist Yunxiang Yan describes as "a largely preindustrial to a largely industrial and in certain aspects postindustrial state" (2012, 706). But such gains have come at great cost, as Mao's "War against Nature" (Shapiro 2001) and subsequent development strategies that embraced socialism with capitalist characteristics have led to many environmental challenges (Economy 2010; Holdaway 2013; Shapiro 2012), including the pollution of China's air, water, land, and humans. In chemical terms, the numerous pollutants that are found within China, and that notoriously linger in the products that China exports around the world (Chen 2012), point to the profound ubiquity of China's toxicity.

Such depictions of a toxic China have their own risks, as mentioned in Ruth Rogaski's introduction to this special issue of *Cross-Currents*—in particular, the risk of painting "a portrait of a 'Polluted Man of Asia,' echoing in some ways the narratives of previous centuries that posited Asia as a 'Sick Man'" (Rogaski, this volume, 2). But reflection on the pervasiveness of harmful chemical relations also occurs among those living in China, where experts and laypeople alike are increasingly anxious about today's environmental risks, as well as the ecological hardships that tomorrow will bring (Lamoreaux 2015; Lora-Wainwright 2013, 2017). Environmental concerns related to kinship and reproduction are often found in such

reflections (Lamoreaux 2016; Wahlberg 2018), as *renkou suzhi* (population quality) and *shengtai wenmin* (ecological civilization) are said to go hand in hand.[1]

In a world where biochemical transformations are increasingly being studied as the anthropogenic effects of pollution, EDCs are often considered particularly worthy of care because, in the words of sociologist Celia Roberts, "they disrupt what are widely perceived as the foundations of life: sexuality, sex and reproduction" (2017, 301). In the language of endocrine disruption, a toxin that was once outside the animal body enters, only to mimic an authentic interior substance or alter a bodily process, giving way to often feminizing, estrogenic effects. Internal hormonal authenticity, "normal" sex and sexuality, and reproduction are all threatened as EDCs transgress boundaries of the body. Because of the normativity at stake in such transgressions, environmental activists who oppose EDCs often base their opposition on grounds that problematically reify overly simplistic ideas of sex, sexuality, and reproduction. In EDC discourse, the chemical threat is often described as a threat to heteronormative order.

Social science and humanities scholars have critiqued endocrine-disruption discourse for its heteronormative pathologizing of intersexuality, nonreproductive sexual activity, and impaired fertility. EDC science and activism has been animated by "sex panic" and "a politics of purity" (Di Chiro 2010) that focus on the harm rendered to individualized bodies, particularly their sexual development and reproductive capacity, over and above other health concerns (Ah-King and Hayward 2013). In this article, I show that such sex panic is neither necessary nor universal. I highlight the Euro-American nature of EDC discourse, and scholarly criticism of it, by focusing on a particular moment in China, when more than one hundred media articles were published in response to the release of Greenpeace's *Swimming in Poison* report.

These media responses, unlike reactions to EDC events in Europe and North America, did not focus on anxieties about sexual purity. Instead, they focused on food safety and scandals, industrial capitalism, and the ecological scope of pollution. Poisoned fish were perceived as both embodying humanity's potential future demise and contributing to it, as a threat to food safety. The disruptive quality of China's environmental hormones, then, has less to do with a puritanical defense of sex or sexuality, and more to do with acknowledging the depths to which bodies in China are suffused with the sometimes toxic social, economic, political, and chemical environments in which people eat, grow, and live. What can we learn by reflecting on how environmental hormones are discussed and feared in China, about the ways EDC research and activism has operated in Euro-America? And how can we apply this knowledge toward developing less heteronormative ways forward for global EDC research?

[1] For further discussion of the concept of *renkou suzhi*, see Anagnost (2004), Handwerker (2002), and Wahlberg (2018).

The Creation of *Swimming in Poison*

I first learned about the *Swimming in Poison* report in January 2011, during interviews with Nanjing-based toxicologists and university administrators. The report had resulted in an unusual amount of national media attention to environmental hormones and industrial pollution impacting fish in the Yangtze River, which moves through the former capital city where I conducted most of my ethnographic fieldwork from 2008 to 2011. For one toxicologist I spoke with, the Greenpeace report was an exciting representation of toxicology's potential—a meaningful transfer of knowledge from scientific research to the Chinese public via a nongovernmental organization (NGO). To a senior administrator at the medical school of another university, the report was flawed, making too much of the impacts of water pollution in the river near campus. Whether *Swimming in Poison* represented inaccurate, provocative testimony or a model of publicly engaged toxicology, it seemed to be evoking attention among toxicologists and others in Nanjing. With the goal of understanding this evocative potential, I arranged an interview with a member of the Greenpeace team behind the report, Yu Xiao, at Greenpeace's office in Beijing.[2]

Greenpeace is an international environmental NGO, oriented toward confrontational activism and known for its creativity (Lam 2014). Founded in 1971 in Vancouver, Canada, as a grassroots organizing body focused on direct action, Greenpeace today has professionalized offices around the world (Zelko 2013), including several in East Asia. Greenpeace began working in mainland China in or before 2002, and established offices in Guangzhou and Beijing shortly afterward. The Beijing office remains open and is the base of operations for Greenpeace China, which is under the umbrella of both Greenpeace East Asia and Greenpeace International.

After a few minutes of searching, I found the Greenpeace China office in an inconspicuous gray building difficult to identify from the outside. "Everyone has trouble finding the place," my host said as she led me through the organization's corridor past meeting rooms and office spaces. We stopped in a small conference room and, after Yu Xiao fetched hot water for both of us, she began talking about her work at Greenpeace. As her laptop computer powered up, we discussed the strategies Greenpeace uses in its campaigns. She went through a list of tactics: research, raising awareness, putting pressure on industry. Shortly after stopping there, she chimed back in. "Oh, and direct action! Of course, direct action." For many, direct action is the foremost strategy associated with the organization whose foundational image is bearded white men aboard a small sea vessel protesting a giant ship off the Alaskan coast (Zelko 2013). But for Greenpeace China, activism is more effective in other forms.

In *Resigned Activism*, anthropologist Anna Lora-Wainwright seeks to broaden understandings of "activism" by drawing attention to a type of political activity that occurs despite, and even through, resignation. Lora-Wainwright writes

[2] All personal names have been anonymized as pseudonyms.

that resigned activism "demands that we attend to environmental concerns and environmental activism that may be present in unexpected and less visible forms" (Lora-Wainwright 2017, xxix). Although Greenpeace China does not conduct campaigns through resignation, Lora-Wainwright's theorization helpfully shows how activism exists in multiple forms. Similarly, anthropologist Tim Choy's work explores Hong Kong-based environmental activists' own depictions of "the cultural specificity of environmental aesthetics and ethics… a recognition of the situatedness of what constitutes environmental practice that is sorely missing in the actions of most Northern environmentalists" (Choy 2011, 134).

After Yu Xiao remembered direct action, I asked her if this method of activism was something she pursued in her work. She responded that although it was important to Greenpeace in general, direct action often seemed inappropriate to the context of her work. I asked what methods *do* succeed in China. She responded that it is hard to know, and that campaigns are often learning experiences of stumbling through the unexpected in a country "where it is not clear what will work." Later Yu Xiao stated that the team "followed their intuition" while developing *Swimming in Poison*, carefully considering what might motivate a Chinese audience to concern themselves with industrial pollution. In this instance, Greenpeace China's mode of activism was not so much resigned as roundabout or indirect, a movement through proximal means in order to achieve certain ends. [3]

Greenpeace China's environmentalist approach included thoughtful reflection on shared cultural values and symbols that the team believed would make the report resonate with a Chinese audience. Yu Xiao explained to me that the Yangtze River was selected as the focus of the report because of its high historical and cultural value in China, as expressed in songs, art, and television movies. Often called the Mother River, the Yangtze flows nearly 4,000 miles. As the longest river in Asia, it starts at the Tibetan Plateau, runs east through middle China, and eventually ends at the East China Sea. The river has played a key role in China's economic development. In 2013, its basin was home to more than 400 million people (Hollert 2013). The river also hosts more than ten thousand chemical enterprises and takes on enormous amounts of sewage, industrial wastewater, ship navigation waste, and agricultural runoff. Still, the river remains one of the most important sources for the large amount of freshwater fish eaten in China, accounting for about 60 percent of freshwater fishery production (Floehr et al. 2013).

Yu Xiao and her team selected fish as a focus of the report not only because they are regularly consumed in China, now more than ever before (Oxfeld 2017). The connections between fish and human were also symbolic, a quality that the Greenpeace team expected would resonate with people, alongside concerns about food safety. The report focuses in particular on two regularly consumed fish: the common carp and the catfish. At the Beijing office, Yu Xiao described the cold, wintry trips that she and the team took to the banks of the Yangtze as both exciting and difficult. In order to ensure the authenticity of the specimens collected, the

[3] This is not to say that more direct activism does not occur in China. See Perry (2002) or O'Brien and Li (2006) for analyses of forms of resistance in China that take a more direct approach.

group personally visited each of the four sites they had selected along the river—Nanjing, Ma'Anshan, Wuhan, and Chongqing. Yu Xiao and her colleagues did not pull the fish from the water; they recruited local fisherman at fish markets to collect four samples of each fish, and watched their boats come in and the fish come off. Fish were purchased for what Yu Xiao described as fair market price and stored on dry ice in insulated containers. The fish were then shipped to Greenpeace's European laboratory for testing.

Yu Xiao continued telling the story of the creation of *Swimming in Poison*, describing how relieved the team was when, after being stalled in Hong Kong due to delayed flights caused by the eruption of Iceland's Eyjafjallajökull in April 2010, the fish finally arrived in the Greenpeace Research Laboratory at the University of Exeter. There, scientists conducted tests to decipher the amount of hazardous chemicals in the fish. Many scientists in China had done similar research on fish from the Yangtze and other bodies of water, furthering Greenpeace's confidence in its pending results, and its chosen focus on rivers and fish.[4] Key findings from the laboratory tests were as anticipated. Many toxic chemicals were found in the fish, and three were classified as environmental hormones.

With the sample collection and results complete, the Greenpeace China team had the firsthand data it needed to create its report. The final product is a well-designed and expertly produced booklet showcasing high-impact photography across many of its pages. The fish data takes up limited space, but the particularly Chinese nature of industrial pollution and its national ramifications are stressed throughout the report. One section reads, "While most countries in the world have greatly reduced the production and use of many of the most hazardous chemicals, largely by means of new legislation, in China both production and use have increased considerably" (Greenpeace 2010, 2). Another section reads,

> In many countries and regions, the production and use of the more hazardous chemicals, including alkylphenols and PFCs [perfluorinated compounds], have been greatly reduced in recent years, largely as a result of legislation. However, the opposite is currently taking place in China, especially for alkylphenols and PFCs. Here, the production and/or use of these hazardous chemicals has either continued largely unabated or, in the case of some chemicals, has even increased considerably in the last decade. (Greenpeace 2010, 6)

Such internationally comparative contrasts turn pollution, and its impacts on fish and their consumers, into a national problem. In turn, the solution becomes a matter not of individual action, but of government legislation and regulations—at least this is what the Greenpeace China team hoped.

The report also describes numerous health effects of the nation's superlative toxic accumulation. It reiterates that the specific toxic chemicals found in

[4] For example, see Bao et al. (2010).

Yangtze River fish have been shown to cause a range of health concerns, but it concentrates mostly on threats to sexual development and reproduction. For example, focusing on the threat of feminization, *Swimming in Poison* describes male fish as particularly at risk. The report reads, "NP [nonylphenol] and OP [octylphenol] are endocrine disruptors, able to mimic natural estrogen in organisms. This can lead to altered sexual development in some species, most notably the development of female organs in male fish" (Greenpeace 2010, 8). Unlike the choice to focus on one of China's most meaningful rivers or commonly consumed fish, here a concentration on sexual development, feminization, and males "becoming" females replicates the emphasis of Euro-American campaigns, which have been highly criticized by scholars spanning the social sciences and humanities.

Critically Understanding EDCs

Swimming in Poison joins a growing international movement, primarily based in the United States and Europe, fighting for stricter regulation of EDCs. Such activism draws on depictions of EDCs by internationally-based scientists whose characterizations of EDCs include two important elements: (1) an exogenous (usually synthetic) chemical or chemical agents that (2) interferes, disrupts, or "perturbs" hormonal systems (Gore et al. 2015). Earlier EDC researchers often focused on estrogenic effects, brought about by EDCs mimicry of natural estrogen hormones.[5] Once called "environmental estrogens," definitions of the EDC chemical class have since expanded to include a variety of mechanisms through which interference occurs (World Health Organization 2013, 11). The number of substances now classified as EDCs has also increased to more than one thousand chemicals (Schug et al. 2016), which can be found in a wide variety of pesticides, plastics, personal care products, and textiles that many people use and consume on a regular basis in their daily lives (Giudice 2016). Regular human interaction with a wide variety of EDCs is at the heart of recently heightened concern about these chemicals, which are being researched by scientists who have departmental affiliations and training in fields from toxicology to obstetrics and gynecology, marine biology to neurochemistry.

Scientific research on EDCs has avalanched since the early nineties, particularly over the last decade. In 2003, Roberts suggested that based on the growing number of scientific journal articles and mass media reports, "It seems we might all be drowning in a sea of estrogens" (2003, 196). Today we have reached a new level of global submergence in EDCs and the discourse that surrounds them. Rates of production and diversification of synthetic chemicals continue to increase (Bernhardt, Rosi, and Gessner 2017). Although the level of research into such chemicals generally lags behind that desired by a growing number of advocates for toxin-free environments, studies of EDCs in particular continue to diversify and grow. From 1998 to 2008, more than 8,500 peer-reviewed and published academic

[5] Although beyond the scope of this article, much important historical and social scientific work shows how "hormones" have been defined and researched by scientists and used in medical treatment. See especially Fausto-Sterling (2000) and, more recently, Sanabria (2016).

articles listed endocrine disruptors, EDCs, or hormone disruptors as keywords. From 2008 to 2018, more than 23,000 peer-reviewed academic articles included the same key terms.

Environmental activists have drawn attention to the harmful effects of EDCs since the late twentieth century (Krimsky 2000; Roberts 2007; Wylie 2012). The U.S.-based Endocrine Disruption Exchange was founded in 2003 by scientist and activist Theo Colborn, one of the earliest voices advocating for attention to the potential impacts of synthetic chemicals on the endocrine system (Colborn, Myers, and Dumanoski 1996). More recently, EDC Free Europe has been established as a coalition of more than seventy European public interest groups in order to advocate for stricter regulation of a variety of environmental hormones. These and many other environmental organizations, such as CHEMTrust, have increased public awareness of EDCs' potentially harmful effects through traditional and social media campaigns.

Such campaigns are often conducted in dramatic, panic-inducing language that highlights the "disruption" of sex and reproduction (Roberts 2003), resulting in eye-catching media headlines. News reports on EDCs have increased at a similar rate as scientific research. From 1998 to 2008, more than eight hundred newspaper articles that mentioned endocrine disruptors, EDCs, or hormone disruptors were published. From 2008 to 2018, there were almost 3,000. Although this increase is in itself noteworthy, I am more interested—as was Roberts—in the form that attention to EDCs takes. For example, media headlines include "Boys Won't Be Boys" (Wakefield 2002), "Sperm Count Zero" (Halpern 2018), and "Gender-Bending Chemicals Putting Our Future at Risk" (Derbyshire 2008). Such headlines engage in what gender studies scholars Malin Ah-King and Eva Hayward describe as "a 'politics of purity,' that focuses more on non-life threatening differences in sex and sexuality than on changes in rates of cancer, immune diseases or death" (2013, 4). Euro-American news coverage of EDCs often involves alarmist "sex panic," in which transformation of sexuality and gender identity are foregrounded as chemically induced threats (Di Chiro 2010; Hayward 2014).

As Roberts describes, the panic-inducing, catastrophic language of EDC studies is "dependent on the mobilization of pervasive cultural understandings of sex differences as antagonistic, and of human and other animal existence as based on sexual reproduction" (2003, 202). EDC research regularly counts increased diversion from "normal" binary sex as a pathology that has an impact on present and future generations. As in other areas of science, EDC research often values sexual activity only for its functional, reproductive potential, deemphasizing the potential importance of nonreproductive sexual behavior.[6] In EDC studies, queerness is viewed as the aftermath of industrial damage (Pollock 2016).

In *Swimming in Poison*, Greenpeace China approached EDCs through a similar lens. By describing sexual difference as harm, and stressing the presence and impacts of environmental hormones on men in particular and reproduction in

[6] Whereas this paper specifically characterizes the problematic nature of EDC science and activism, heteronormativity also informs other domains of environmental science. For some examples, see Raffles (2010) and Sturgeon (2010).

general, the report is what environmental studies scholar Giovanna Di Chiro calls "econormative." Di Chiro uses this term to describe the heteronormative analysis of ecology often present in EDC research. Questioning how one might account for the potential harms of EDCs without invoking sex panic, Di Chiro writes, "Can we imagine environmental-feminist coalitions that can forge a critical normative environmental politics (we *all* should live in a clean environment; we should *all* have the right to healthy bodies) that resist appeals to normativity" (2010, 203)?

In the remainder of this article, I begin imagining a critical environmental politics of EDCs that breaks away from sex panic and econormativity. I take inspiration from the Chinese media response, which focused on issues other than the feminizing threat of EDCs. I argue that the cultural understandings and "cultural nerves" (Ah-King and Hayward 2013, 4) embedded in EDC discourse are, by definition, not universal. Through an analysis of Chinese media responses to *Swimming in Poison*, I show that EDCs triggered different cultural nerves in China, where the report resonated with the public less through a heteronormative sex panic and more through concern about food safety, government regulation, industrial capitalism, and ecological harm.

Fishing for Relations

According to Yu Xiao, the goal of Greenpeace's *Swimming in Poison* report was to bring attention to the issue of industrial pollution, and to link pollution of water in particular to lack of government regulation. The success of the report's media campaign was crucial for Greenpeace, as it is for many environmental and social movements in China (Lora-Wainwright 2017; Zhang and Barr 2013). Greenpeace issued English- and Chinese-language press releases and held a press conference about the report in its Beijing office on August 23, 2010. The media coverage that followed exceeded expectations; news of the report went viral in print and social media. Findings were discussed in more than 115 domestic media outlets, which included seventy-six print news articles, ten internet news articles, and twenty-nine op-ed pieces. Moreover, there were thousands of mentions and reposts on the Chinese microblogging website Sina Weibo. These numbers alone were indicative of a successful campaign to Greenpeace China. But the quality of the media also impressed Yu Xiao and her colleagues. In her view, many journalists went beyond the press release to theorize the relationships between environmental hormones, food, and the lack of industrial regulation in a more in-depth manner than anticipated.

Collectively, media responses to the report focused on four primary aspects: the necessity (or impossibility) of behavioral change related to food and diet, the contrast (or lack thereof) in the quality of wild and farmed fish; the need to look beyond fish as food and understand fish as sentinels of ecological devastation linked to industrial pollution, and, the skepticism toward expert knowledge, especially experts critical of Greenpeace's findings. A further analysis of each aspect follows.

Food Habits

Food is an important part of daily life in all cultures, particularly Chinese. According to anthropologist Judith Farquhar, in modern China eating "is perhaps a more extensively theorized and differentiated field of practice than in most other places and times" (Farquhar 2002, 49). Alongside other kinds of meat, fish are an increasingly important part of eating rhythms and rituals in China and are regularly eaten at banquets and holiday meals due to their symbolism (Oxfeld 2017).[7] Given this importance, perhaps journalists anticipated that their audience would reluctantly continue to eat fish from the Yangtze River, even with news of its poisoned state. In response to the report, one editorial suggested, "In addition to enhancing environmental awareness, people should also pay attention to eating habits. Don't eat the same food for every meal, every day, even if you like it, which will avoid the accumulation of hormones, heavy metals, and farm chemicals" (Yang, Zhong, and Ge 2010).

Besides dietary variation, news reporters also suggested particular cooking methods. For example, one article instructed consumers, "For fish living in water, once they intake harmful substances, those usually stay in their visceral. Therefore, make sure to boil and fully cook fish when eating them and never eat fresh fish or cooked visceral" ("Chang Jiang yesheng yu" 2010). Another article offered recommendations on how to carefully select fish that were safe to eat. "For example, when it comes to freshwater fish, try to choose small ones and those located on the ground floor of the food chain. Rear live fish in fresh water for one or two days back home after buying it; for dead fish, soak in fresh water for at least one hour" ("Chang Jiang yu" 2010).

Such recommendations could point to what some describe as the rise of individualism or neoliberalism in China, when individual responsibility becomes the default model for resolving what were once considered collective problems (Rofel 2007; Yan 2010; Zhu 2013). But such concrete tips for eating in a polluted landscape might also be understood as a means of ethically navigating an overwhelming situation. Small acts of food selection and preparation might be interpreted as a means of dealing with an overwhelming sense of ubiquitous pollution and unavoidable contamination. However, despite the many individualized solutions proposed, fresh-caught fish sales were reported to have fallen in some locations (Liu, Zhang, and Ying 2010).

Wild vs. Domestic

Eating became an expression of wealth with the rise of consumer culture in China in the early 1990s, as a growing number of middle-class people had an increasing number of food choices and an increasing number of reasons why certain foods were desirable (Farquhar 2002). This discernment has partially been about the consumption of wild foods. Chinese citizens often pay large sums of money for wild

[7] In Chinese, *yu* (fish) is a homonym for "plentiful," connoting abundance and prosperity (Oxfeld 2017, 79).

foods, including fish. As a journalist at the *Chengdu Business News* (*Chengdu shangbao*) wrote, "Being able to eat purely wild fish is almost the symbol of luck, status, and wealth" (Xu 2010).

With the report about the poisoning of Yangtze River fish circulating widely, reporters from multiple Chinese newspapers debated whether wild fish still provided more desirable food than their farmed counterparts. Such conversations were based on general knowledge that fish from farms are given hormone additives, likely in relation to food scandals revealing that fish had been fed contraceptive pills, as described by anthropologist Yunxiang Yan (2012). Yan points to the emergence of the concept of *shipin anquan* (food safety) in China during the 1990s, a time in which concerns about food shifted from quantity to quality (Chen 2010).

The concept of *youdu shipin* (poisonous food) emerged shortly thereafter, at the turn of the century, when a number of food scandals revealed that food had been adulterated for the sake of higher profits, putting banned additives in feed or directly in food products, using pesticides as food preservatives, or even producing fake food out of often-toxic chemicals and water or nonedible substances such as human hair. In Yan's words, "The defining feature of poisonous foods is deliberate contamination" (2012, 710). As such, the prevalence of *youdu shipin* and food scandals in China erodes not only public health but also public trust (Yan 2012).

The Greenpeace report cleverly moved this broad concern about intentionally produced poisonous food, which had resulted in a lack of public trust, into a new realm—the wild, disrupting ideas of a pristine or unadulterated characteristic or domain (Fearnley 2013; Friese 2013). In the words of an article from the *Commercial Times* (*Gongshang shibao*): "In the end, the idea that wild fish are safer is just opinionated and wishful thinking.…The unfounded trust in and pursuit of wild fish has turned out to be the same as eating hormones, there is no way to escape from 'environmental hormones,' which frustrates people" (Wu 2010). The author goes on to detail the pervasive degree of pollution's impact:

> After using all methods, including buying expensive wild fish from the Yangtze River, people still cannot prevent exposure to hormones. It seems that people have to stop eating anything or practice *bigu* [a Daoist fasting technique] in order to avoid hormones. When environmental pollution has already been accumulated in the bodies of undomesticated creatures and when environmental hormones have already become pervasive, not only are wild fish poisoned, so are human beings. In short, no one can escape from a polluted environment, and human beings themselves pay the costs of contaminated soil and water. (Wu 2010)

Here, the author argues that the price of a pervasively polluted environment goes well beyond the expense for wild fish. The price paid is the poisoning of human beings.

Similarly, another article reads, "After this report coming out, experts are focused on whether or not fish are edible, but the key question is if there are hormones even in wild fish, how bad is the condition of our ecological

environment?" (Han 2010) Such news articles turn the focus on poisoning away from the greedy individual that creates *youdu shipin* and toward a different scale, which encompasses entire ecosystems and—according to Greenpeace—requires the regulatory intervention of the state.

Fish as Sentinels

The Greenpeace China team was particularly pleased with editorials that expressed concern about issues that went beyond food safety, such as the future that poisoned fish forecasted for humans. An editorial in the *Shenyang Daily (Shenyang Ribao)* reads, "We, as the upper reaches of the food chain, are inevitably becoming the next 'Yangtze River fish'" (Bi 2010). Another piece in the *Chengdu Business News* states,

> The pollution along the Yangtze River is not only a disaster for fish. Destruction of vegetation, soil erosion, water shortages, an earlier dry season, lower quality water, the danger to drinking water in cities, and so on, every one of these is more significant than whether or not fish in the Yangtze are edible. Paying attention to our living environment begins with protecting food safety but will not end with it. (Xu 2010)

Here, fish are what historian Brett Walker (2011) calls "biological sentinels," or what anthropologist Frédéric Keck and sociologist Andrew Lakoff (2013) refer to as "sentinel devices," beings that—through death or obvious ill health—warn others of impending ecological catastrophe.

Another news article confers hope that poisoned fish will become sentinels and criticizes a strict focus on fish as food:

> Isn't it weird that our focus on wild fish in the Yangtze River is only about eating them? Truly, food is the god of the people, caring about food safety is reasonable. But, food shouldn't be the only thing that deserves attention. There are other things as important as food in this world. People who might be concerned could take a walk along the Yangtze.… Especially in recent years, many places have been building industries along the Yangtze: cement factories, shipyards, chemical plants, and so on.… Industry has brought lots of economic benefits to local people, but at the same time it has brought pollution. How could wild fish escape from this polluted environment? It's sad to realize that industrial civilization and urban civilization come at the cost of ecological civilization.[8] (Mao 2010)

[8] "Ecological civilization" is a term coined by former President Hu Jintao in 2007, and emphasized at the 18th Party Congress in 2012. The term gestures toward the importance of economic growth and prosperity balanced with environmental protection and social equality (Zhang and Barr 2013, 121).

Here, the author hopes that food safety concerns will be overshadowed by an understanding of poisoned fish as indicative of larger, civilizational problems that would be noticeable if only people took a walk.

Expert Knowledge, Critique, and Sarcasm

The final theme arising in news coverage of *Swimming in Poison* was a critique of expert knowledge, addressed in three different ways. One set of articles downplayed Greenpeace's findings, quoting environmental scientists who argued that the level of hormones in Yangtze-poisoned fish were low enough that they would not have an impact on human beings who consumed them. Another set of articles were critical of the experts who critiqued Greenpeace. For example, one author wrote, "Several experts have negated the reports of poisoned fish by Greenpeace overnight and issued labels of grandstanding, which is an attitude and tone more like that of governmental officials" (Zhou 2010).

Another author questioned the experts critiquing Greenpeace through a different premise, the concerns of ordinary people and their future:

> *Laobaixing* [ordinary people] want to know, even if the amount of hormones is not harmful to the health of human bodies at present, then how about in the future? The pollution of chemical substances in the Yangtze River is not static; qualitative change will happen one day after enough quantitative accumulation, which is what ordinary people worry about. When will this qualitative change that could poison fish and cause people who eat fish to die occur? Could experts give a schedule for that? (Han 2010)

A third set of articles sarcastically addressed the issue of not only the report but also the degree and ubiquity of pollution in China. For example, one news article included three comments by internet users, two of which were obviously sarcastic remarks. The first jokingly questions the validity of the report: "Greenpeace is fabricating rumors. Rivers, lakes, and the sea have no pollution at all. All water resources have met the standard of drinking directly!" Another comment reads, "It doesn't matter, from poisoned milk powder, melamine, illegal cooking oil, birth control pills, fattening preparations, to antibiotic-containing…Now we have already gotten a strong and sturdy body immune to all poisons" (Xu 2010, ellipsis in original). Perhaps such humor might be understood as its own kind of resigned activism, acting through humor to express the overwhelming sense of toxicity—in many senses of the term. As anthropologist Megan Tracy writes of jokes that followed the 2008 melamine milk-powder scandal, discussed in the next section, "this humour is not simply a political and social critique but also perhaps a survival strategy—how else to live in a world where one's food supplies are a continued source of anxiety and distrust?" (2010, 8). In addition, how else to live in a world where pollution is ubiquitous?

As these four themes and the excerpts in this section show, when *Swimming in Poison* was released in China, the report did not cause "sex panic." The politics of

purity at work in the discussion of the report and the poisoned Yangtze River fish do not emphasize anxieties about the disruption of heteronormative binary sex and sexuality (though they do work through and reflect on an idealization of the wild, with its own problematic characteristics). Instead, environmental hormones are vehicles through which journalists express concern about the quality of fish as food, as well as the way fish, as a broader part of the food chain and river ecology, indicate greater concerns for humans. Poisoned Yangtze fish are both symbols and material instantiations of anxieties and acrimony related to corruption, lax regulation, and the ecological impacts of China's industrial development.

Eating Hormones

In early August 2010, media attention gathered around another news story, one that might have been viewed as unrelated but was brought into conversation with *Swimming in Poison* through a shared focus on food and hormones. Three infant girls from Hubei Province were diagnosed with *cixing xingzaoshu* (female early sexual maturation) after their parents brought them to the doctor afraid that their babies had started to grow breasts. After confirming that the young girls were experiencing early sexual maturation brought about by increased estrogen levels, doctors suggested that the parents stop feeding their baby girls powdered infant formula (Bao 2010; "China Investigates Claims" 2010).

According to news sources, soon after the physician's warning, two sets of parents discovered through informal discussion that they had each given their daughter the same brand of formula, Synutra. Complaints to local authorities and the press followed. Chinese officials then tested the formula and eventually announced that it was not the source of the elevated hormone levels. However, with a recent history of similar milk-powder scandals in China, outspoken father Wang Gang and others remained convinced that hormones in the milk powder had caused their babies' premature development (Bao 2010; "China Investigates Claims" 2010). In 2008, six children died and more than three hundred thousand were suspected to have become ill from drinking formula that contained melamine, a highly toxic industrial chemical (Tracy 2010). This tragic food scandal not only justified parental concern but also caused the new *jisumen* (hormone scandal) to gain media attention.

Just weeks later, Greenpeace China held press conferences, distributed press releases on *Swimming in Poison*, and rode the wave of press attention to the most recent milk-powder scandal. Greenpeace China took advantage of this timing by adding to its press releases and PowerPoint presentations *cixing xingzaoshu* as a possible consequence of EDC exposure. By indirectly linking environmental hormones to another potential *jisumen* the campaign connected poisoned Yangtze River fish to early-maturing girls in Hubei Province. Greenpeace was not alone in drawing such connections; the media was also quick to see a relationship.

An editorial comment from the *QianJiang Evening News* (*Qianzhang wanbao*) reads, "In 1981 a famous song was written, 'The Yangtze River Song,' which praised the river: 'Your sweet milk has been feeding all *minzu* [national ethnic groups] children.' Is the mother river's 'milk' still so sweet?" (Hong 2010). Next to

this editorial is a cartoon of two Chinese children running from a gigantic fish whose body has morphed into a skull, the words *huanjing jisu* (environmental hormone) written into a substance dripping from its body and mutating its fins (figure 1). The cartoon portrays the vulnerability of children and bodies, giving feminist science studies scholar Donna Haraway's (2008) idea of multispecies "becoming with" a terrifying spin. Another article in the *Henan Business News* (*Henan shangbao*) reads, "The scary thing is that if there are hormones in the Yangtze River, perhaps cows won't be the only organisms that produce hormone milk (Wang 2010b).

Figure 1. A cartoon in the *QianJiang Evening News* (August 31, 2010) depicts children running away from a fish poisoned by environmental hormones. *Source*: http://qjwb.zjol.com.cn/html/2010-08/31/content_516084.htm?div=0.

Some authors tried to make sense of the initial *jisumen* by relating it to the Greenpeace report, asking if fish were the real cause of early sexual maturation or were suffering a similar fate as the infant girls. An editorial in the *Beijing Business News* (*Beijing shangbao*) joked, "Did these fish eat milk powder when they were growing up?" ("Yi jia guoji LuseHeping" 2010). Another article brought out a more skeptical interpretation of the link between the two, claiming that more than 50 percent of blogosphere participants agree that the Greenpeace China report was fabricated in order to pull attention away from the powdered-milk manufacturer and place blame elsewhere (Wang 2010a).

Finally, another news article compared the *jisumen* to environmental hormones, arguing that despite the connection between the two issues, the *Swimming in Poison* report "has revealed a more horrible problem of food safety as compared to the "milk powder *jisumen*." The author continues:

> Water is the origin of life; all creatures' existence depends on it. This problem is paramount because the food safety standards in our country are relatively low. The state has already realized it.… But if we don't change the mindset of being anxious to achieve quick success and get instant economic benefits, and if GDP [gross domestic product] is everything, there is no hope for the construction of laws on environmental pollution. (Xie 2010)

Here the author compares a willingness to address food safety to a lack of willingness to address, or even pay attention to, the need for the regulation of environmental pollution.

Both the concern about early sexual maturation and poisoned Yangtze River fish worked through a broad sense of social distrust in the quality of food, as well as concern about industrial capitalism and environmental regulation. Both events were about the impacts of exogenous hormones on human bodies, either immediately or through the food chain. However, anxieties about bodily permeability did not function strictly through an idea of sex panic in the same way as accounts of EDCs in Europe and North America. Instead they operated through the logic of *jisumen* (hormone scandal). This nuanced contrast is important.

Gender studies scholar Mel Y. Chen describes panic as "a disproportionate relationship between its purportedly unique threat…and the relative paucity of evidence at its onset" (Chen 2012, 159). Panics by definition are based in disproportionate concern about a supposed threat. In contrast, scandals propel public outrage (deserved or not) when a shameful act and its potentially negative impacts are brought to light. Scandals emphasize *the acts* that lead to damages, in this case the poisoning of food that led to early sexual maturation. Panics emphasize *the anxiety* about the damage done, in Chen's work disproportionate fear of toxic imported goods from China. In media responses to these hormone scandals, there was little doubt that either early-maturing girls or poisoned fish were convincing evidence and that parents or the public had legitimate concerns. Interpreted through an analytic of scandal, these hormone events opened up a broader scale of accountability for harm, and exposed the lack of trust in businesses and regulators that exists in China. Such questions would not have come to focus if these hormone events had been interpreted through an analytic of sex panic, which would have stalled news coverage at the deviant body in question, focusing on the individualized, sexual or developmental effects of hormones, both environmental and additive.

Reimagining the Comparative and Analytic Potential of EDCs

Greenpeace China considered the linkage of *jisumen* to *Swimming in Poison* and the resulting media coverage a great success. But within just a few months the campaign reached an even greater accomplishment, one so far-fetched that it was not anticipated. In January 2011, shortly after the report's publication and the subsequent media avalanche, China's Ministry for Environmental Protection announced that nonylphenols (NPs), one of the EDCs highlighted in the report,

would be added to the list of toxic chemical substances whose import and export must be regulated through the government. Those who wished to trade NPs would now have to apply for permission and certification. In the eyes of Greenpeace China, *Swimming in Poison* indirectly led to the ministry's announcement that a chemical found in the fish they collected would be newly regulated.

This success occurred despite the fact that media responses to Greenpeace's report did *not* focus on the gender-bending, boundary-crossing actions of synthetic, inauthentic chemicals interfering or disturbing the hormones of skin-bound animal bodies. Instead, the media's primary focus was on how the presence of EDCs in China's waterways raises concerns about food safety, as well as the stakes of the ecological relationships between humans, fish, waterways, and the industrial chemicals found in them. What can Chinese news coverage teach us about how EDC campaigns operate through situated cultural norms and nerves?

Recently, Roberts has suggested that although scholars should remain critical of EDC discourse, and embrace the queer critique of sexual and reproductive heteronormativity implicit within, they should also be willing to recognize the disproportionate vulnerability of people to the harmful effects of EDCs, based on both their geographic location and socioeconomic differences (Roberts 2017). This point is important as critical social science research on EDCs increasingly occurs within or focuses on locations outside Europe and North America. To research EDCs in China and other locations is to recognize the historical, political, economic, and cultural factors that influence unequally distributed conditions of toxicity. It might also be about recognizing the varied cultural nerves and norms through which EDCs make sense to activists, the media, and the public in various locations and socioeconomic positions.

By studying the creation, distribution, and media responses to *Swimming in Poison*, I have suggested a comparative approach to address the increasing transnational circulation of EDCs and EDC research and activism. Certainly, as one of the largest, if not the largest, producer and user of many EDCs, China must be considered within this comparative project. But comparison is not my only goal. Critiques of universality through anthropological conventions of describing "local knowledge" and cultural specificity are not enough (Choy 2011). As suggested by sociologists John Law and Wen-Yuan Lin, as well as anthropologist Mei Zhan, Chinese thought—whether in historical or popular forms—should also be considered for its analytic potential (Law and Lin 2017; Zhan 2011). How might the collective responses to Greenpeace's report act not only as a comparative other but also as an analytic resource through which to reimagine global EDC science and activism?

For example, as a final thought, what if EDC discourse were to shift from panic to scandal—from a focus on the disruption of sex, sexuality, and a narrow sense of reproduction that provokes anxiety about individual bodily integrity and function, toward an emphasis on understanding the scandalous acts that result in harm? As more and more research points to a growing acceptance that EDCs should be avoided due to their many negative effects (Schug et al. 2016), which appear to go well beyond impacts on sex and sexuality (Ah-King and Hayward 2013), EDC scholarship and activism might stop provoking (or critiquing) panic and start investigating the large-scale scandals and chemical regimes of living that bring about

the variably regulated, global production and use of EDCs. There is work to be done in reimagining a critical, non-heteronormative environmental politics. Such a reimagining might take inspiration from the varied cultural understandings and nerves that are created and expressed through environmental hormones.

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