Ed. Nadine Scott, Dayna (2015). *Our Chemical Selves: Gender, Toxics, and Environmental Health.* Vancouver: UBC Press. ISBN 978077488338

Reviewed by Angela Cope

This edited volume takes up the intersections between gender and a variety of different toxins, within the nascent field of Environmental Health, to create a theoretical framework for a "feminist political economy of pollution" (p. 5). Through the collected works of a diversity of authors, Scott seeks to unravel the ways in which the differential effects of toxins along gender, class, and racial lines affect both health and equity under capitalism.

In the introduction, Scott et al. argue that toxins are uniquely gendered in that women's smaller average size and greater fat stores result in a higher body burden for women with the same exposure profiles as men. Women are also more frequently found in workplace environments where their exposures are both different and worse than those of men, and where they have less agency due to the "feminization of poverty" (p. 13) to change their circumstances. In addition to effects on women, xenoestrogenic chemicals affect crucial windows of fetal development, which in turn translates into unknown epigenetic and broad, population-level consequences. Finally, as those who primarily continue to make domestic purchases, women are often the ultimate arbiters of the household products to which their families are exposed.

Women are the ones who participate in the "critical work that is performed… to support life on a day-to-day basis and to foster, sustain, and encourage a new generation" and "[c]apitalism as a mode of production depends on social reproduction" (p. 10). It is for this reason that a feminist political economy of pollution is important: it "contextualizes the interconnectedness of environmental health harms, chemical production, gender, and consumption within historical and structural findings" (p. 7). In doing so, this volume hopes to answer the questions of why the risks associated with toxins are unevenly distributed, where the

highest risk profiles often map to those who are most marginalized, and how to "interrogate the systems of production that enable [chemicals] to continue being produced and consumed" (p. 7).

As with any edited volume, there are a variety of perspectives represented in these collected works. Scott defines four broad categories in which to group the four sections of the book. The four sections are "'Consuming' Chemicals; "Routes of Women's Exposures"; "Hormones as the 'Messengers of Gender'?"; and finally "Consumption in the Production Process". These sections will be addressed in turn.

The first part is comprised of three chapters and focuses on the ways in which chemicals and consumption inter-relate. The first chapter, Phillips' "Wonderings on Pollution and Women's Health", is an evocative first-person account of the complex ways in which women interact with chemicals on a daily basis. Using narrative methods and focus group participants' own words, Phillips shows the ways that class, race, and social position are inexorably intertwined with a gendered experience of exposure. Her and MacKendrick's "Precautionary Consumption" piece (Chapter 2) both point to the lengths that women in particular go to avoid products for themselves and their families that are perceived as more harmful than those labeled "non-toxic, natural, or certified organic" (p. 59). MacKendrick uses her findings to show that precautionary consumption "represents an uneven and ad hoc approach to protecting environmental health compared with precautionary policy mechanisms" (p. 73). The third chapter is Scott and Lewis's "Sex and Gender in Canada's Chemicals Management Plan". It breaks down the ways in which Canada's recently instituted Chemical Management Plan (CMP) functions to evaluate toxicity under the Canadian Environmental Protection Act's (CEPA) definition of "toxic". It details how the CMP fails to acknowledge the uneven and fragmentary regulatory frameworks when it comes to sex and gender considerations, and lacks mechanisms to

consider "cumulative, synergistic, longitudinal or delayed effects" or occupational exposures (p. 89), amongst other shortcomings. They argue that an emphasis on mitigating risks with a focus on individuals and end-of-pipe emissions rather than industrial pollution prevention fails to apply a precautionary approach. Scott and Lewis, along with Phillips and MacKendrick, all advocate for the application of an effective precautionary principle that removes the burden of vigilance from the hands of the consumer and instead locates it squarely in the hands of an extended producer responsibility.

The second section, "Routes of Women's Exposures", broadens this argument and looks at different understandings of how women might be exposed to chemicals outside of the more commonly understood Volatile Organic Compounds, Pesticides, and Pharmaceutical & Personal Care Products that much of toxicity research is currently focused on. Chapter 4, Phartiyal's "Trace Chemicals on Tap", considers the effects that low levels of lead, tri-chloroethylene (TCE) and nitrates have on women's health, focusing in particular on critical windows of vulnerability in reproductive years, and arguing that one guideline for all populations is inadequate without taking a more precautionary approach. Amani's chapter, "Consuming DNA as Chemicals and Chemicals as Food", argues that food that has been genetically modified should be treated as potentially toxic chemicals and subject to the same precautionary approach that Scott and others argue for. Chapter 6, "Consuming Carcinogens: Women and Alcohol" is a survey on the toxic and carcinogenic effects of alcohol on women, and Ross et al., like the other contributors in this section, urge for more gender based research, as female consumers of alcohol are growing in number.

The third section, “Hormones as the ‘Messengers of Gender’?” contains three papers which are surveys of the effects of endocrine disrupting chemicals (EDCs) on various facets of women’s reproductive health. Chapter 7, “The Impact of Phthalates on Reproductive Health”, is a summary of the existing literature on phthalates and contains a justification for an increased research emphasis on specific windows of developmental vulnerability. Chapter 8, “Plastics Recycling and Women’s Reproductive Health”, takes the specific case of plastics waste and recycling as a lesser studied but no less important route of exposure to EDCs and provides a brief survey of the status of plastics recycling around the world. It ultimately argues for extended producer responsibility and the use of new policy tools like the Consumer Product Safety Act in Canada and the Restriction of Hazardous Substances act in Europe to enact stronger laws with respect to EDCs. Chapter 9, “Xenoestrogens and Breast Cancer”, is a thorough treatment of EDCs effects on breast cancer. Its breakdown of social determinants of health is particularly useful, as many of the articles have referred to social determinants of health but few have treated the subject exhaustively.

Finally, the fourth section, “Consumption in the Production Process”, covers exposures to EDCs and carcinogens as an occupational health and safety issue. Chapter 10, “Plastic Industry Workers and Breast Cancer Risk”, uses focus group participants from auto parts manufacturers based in Ontario. Through personal narratives, Keith et al. ask why blue-collar women who work in the auto-parts industry are relatively invisible in the discourse surrounding EDCs, as they often experience disproportionate harms. The authors come to the conclusion that as researchers, and in society, their challenge lies in “overcoming the inherent limitations of the dominant scientific paradigm for establishing causation” (p. 355). Finally, in Chapter 11, “Power and Control at the Production-Consumption Nexus: Migrant Women Farmworkers and Pesticides”,

authors Smith and Stiver introduce the concept of the "production-consumption nexus," arguing that women, as both producers and consumers of food, live a highly interdependent existence in global capitalism, and that consumption enables production, and vice versa.

The book achieves what it sets out to do at the onset. It provides a wide variety of scholarship on chemical threats from a feminist political economy perspective. It is particularly effective at arguing for both extended producer responsibility for potentially harmful substances and the precautionary principle as a policy adoption strategy when dealing with uncertainties in the science of chemical pollution. It was especially appropriate to see chapters on lead in drinking water, given the current water crisis in Flint, Michigan, and the very important chapter on women and alcohol use, which is often overlooked in other literature on chemical exposures. The intersectional analysis provided by the final chapter on female migrant agricultural workers and exposure to pesticides, though a small cohort, is also an important chapter given that it draws together the many disparate threads of how chemical harms are unevenly distributed throughout both production and consumption, and are an occupational health and safety issue. These provide a good counterbalance to the many other chapters on EDCs and round out the collection considerably.

Scott then argues in the conclusion of the volume that "the nature of contemporary pollution harms is changing… they are diffuse, body altering and intergenerational… unevenly distributed and… derive from continuous low dose exposures that are largely within legally sanctioned limits" (p. 388). It is for these reasons that the current paradigm of individualized "precautionary consumption" campaigns and initiatives such as calls for increased labelling and enhanced ingredient listing is ultimately inadequate to address the harms that these chemicals cause, as women are both "disproportionately responsible for putting into place and carrying out

the practices needed to avoid toxic chemicals, and that women vary dramatically in their abilities to make effective use of labels" (p. 390). In addition to this, while some well-informed consumers may be able to effectively protect themselves from exposure, the "workers inside the manufacturing facilities and the communities surrounding them will continue to be exposed until the substances are eliminated from our economies" (p. 391).

The sole criticism of the book, and one that will undoubtedly be addressed as a new pollution paradigm becomes more prominent in the landscape of environmental health and justice, is to perhaps begin a critical interrogation of the word "chemical" itself. While the essays included in the volume were, for the most part, specific with respect to the chemicals they were interrogating, the use of the word as an overarching concept requires a more engaged and careful treatment. For example, in the introduction, there is a discussion of how the "category 'woman' is not deployed without reflection" (p. 8) but in the very same paragraph there is an uncritical deployment of "women's exposure to chemicals" (p. 8). Chemicals are, of course, the building blocks of life and present everywhere. As the essays contained in this volume have made clear, chemicals have social, technical, and economic contingencies when it comes to their toxicity in human and non-human bodies. The work that the word 'chemical' does when it comes to the emotive and affective reactions to toxins in the environment could be a fruitful avenue for further research.