

MORE WORK FOR MOTHER:

Chemical Body Burdens as a Maternal Responsibility¹

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Environmental chemicals (e.g., lead, pesticides, flame retardants) accumulate in all human bodies and have the potential to affect the health of men and women, adults, and children. This article advances “precautionary consumption”—the effort to mediate personal exposure to environmental chemicals through vigilant consumption—as a new empirical site for understanding the intersections between maternal embodiment and contemporary motherhood as a consumer project. Using in-depth interviews, I explore how a group of 25 mothers employ precautionary consumption to mediate their children’s exposure to chemicals found in food, consumer products, and the home. Most of the mothers in the study situate their children’s chemical “burdens” within their own bodies and undertake the labor of precautionary consumption as part of a larger and commodity-based motherhood project. In actively expanding the sphere of responsible motherhood to include managing children’s body burdens, these mothers navigate multiple and overlapping contexts that hold women accountable for children’s futures and value the agency of the proactive consumer. Yet, as the sphere of responsible mothering expands, women without financial resources, time, and family stability are pushed to the margins of normative motherhood.

Keywords: *motherhood; intensive mothering; reproduction; body burdens; environmental risk*

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And if there was ever a need to invoke the Precautionary Principle—the idea that we must protect life from possible toxic danger well before scientific proof of that danger—it is here, deep inside the chest walls of nursing mothers. . . . The woman's body is the first environment.

Steingraber (1999, 365)

From the moment of conception, the human body carries traces of synthetic chemicals absorbed through daily interactions with polluted environments, foods, and commodities like electronic devices, furniture, and cosmetics (see Sexton, Needham, and Pirkle 2004; Thompson and Boekelheide 2013). Reports from national health agencies in the United States and Canada have found hundreds of these chemicals, including pesticides, lead, mercury, bisphenol A (BPA), phthalates, and brominated flame retardants (Centers for Disease Control and Prevention 2009; Health Canada 2010; Washburn 2013), as part of the human body burden. These findings provide clear evidence that synthetic chemicals reside in *all* human bodies, which speaks to the failure of governments to properly evaluate the safety of synthetic chemicals and implement stringent regulatory and legislative frameworks to govern chemical innovation, manufacture, and release (Cranor 2008; Vogel 2013; Vogel and Roberts 2011). The health consequences of chronic exposure to synthetic chemicals is unclear, although exposure has been linked to cancer, obesity, behavioral disorders, and reproductive disorders (see Meeker 2012; President's Cancer Panel and Reuben 2010; Sharpe and Irvine 2004).

Both men and women carry a chemical body burden acquired through multiple pathways of exposure, including eating, drinking, breathing, and touching contaminated soil, air, water, food, and consumer products (Sexton, Needham, and Pirkle 2004).² Fetuses, infants, and children are considered more vulnerable to chemical exposure than adults, because they absorb more chemicals relative to their small body mass (see Makri et al. 2004). Environmental health research also identifies the pregnant and breastfeeding body as a key pathway through which chemicals are transferred to fetuses and infants (Faustman 2000). Concern about children's body burdens has generated a legion of popular books about non-toxic consumption and safe shopping guides written expressly for pregnant women and parents of young children.³ Similar messages appear in health promotion materials published in the United States and Canada.⁴ They also advise pregnant and breastfeeding women to reduce their consumption of certain kinds of fish and seafood (Canadian Partnership for Children's Health & Environment [CPCHE] 2008; Massachusetts

Department of Public Health 2007), select more organic foods (CPCHE 2008; Toronto Public Health 2009), avoid specific ingredients in personal care products (CPCHE 2010), and store children's food and beverages in nonplastic containers (Bureau of Environmental Health 2009; Colorado Department of Public Health and Environment 2010; Pediatric Environmental Health Specialty Units 2008; U.S. Department of Health and Human Services 2010). These materials also recommend discouraging children from putting toys and soil in their mouths (Agency for Toxic Substances and Disease Registry 1999), allowing all new furnishings to "off-gas" before bringing them indoors, and mopping floors to rid the home of chemical-laden dust (New York State Department of Health 2003). One publication even suggests that women begin these practices prior to conceiving a child (CPCHE 2008).

These books, shopping guides, and health promotion materials promote a practice that I call "precautionary consumption" (MacKendrick 2010). Precautionary consumption represents the deployment of precaution at the individual level through a "better safe than sorry" logic to avoid chemicals in foods and commodities, and fits within the larger social trend of "shopping our way to safety" (Szasz 2007). By amplifying the significance of what women incorporate into their preconception, pregnant, and breast-feeding bodies, much precautionary consumption advice is congruent with existing logics of maternal risk avoidance (see Armstrong 2003; Lupton 2012; Markens, Browner, and Press 1997; Waggoner 2013).

In this article, I make the case that precautionary consumption is a new empirical site for exploring how women contend with risks that implicate the maternal body and women's caregiving practices. Precautionary consumption involves scrutinizing what one eats, drinks, and breathes and applies to one's skin and hair (e.g., lotions, shampoos, cosmetics, and soaps) to minimize personal exposure to synthetic chemicals. It entails restricting children's movements and activities (e.g., by preventing them from mouthing toys and crawling on dusty floors) and monitoring the safety of all objects (e.g., by checking the type of plastic used in a baby bottle). In contrast to the experiences of pregnancy and breastfeeding, precautionary consumption is not only an embodied process that implicates the female biological body. Chemicals are ubiquitous and enter *all* bodies, yet considerable public health attention is focused on the maternal body (see Kukla 2010) and even women's nonpregnant bodies (e.g., Food and Drug Administration 2013). Compared to standard maternal health advice (e.g., to avoid alcohol and monitor nutrition), precautionary consumption is especially restrictive and labor-intensive, as the focus is on mediating women's total exposure to chemicals at various stages of the

reproductive trajectory, while also managing infant and children's exposures. Because hundreds of synthetic chemicals exist together in multiple environments outside of one's direct control, it is unclear whether non-toxic consumption can lower total chemical exposure (see Oates and Cohen 2011; Sexton, Needham, and Pirkle 2004).

Drawing from in-depth interviews, I examine how a group of 25 mothers talk about the practice of precautionary consumption, and pay close attention to where they locate the responsibility to mediate children's exposure to chemicals. I also examine variations in how respondents actualize precautionary consumption and the meanings they attach to it. In the first section of this article, I situate this study within the literatures on maternal embodiment, risk, and motherhood. I then outline the methods used to interview mothers and explore the main themes that emerged from the interviews. In the findings section, I discuss how mothers locate chemical risks within their own maternal bodies and outside the corporeal realm in tasks like grocery shopping, cleaning, and managing the home. I note the class-based resources that make actualizing these routines possible. In the concluding section, I argue that the study of precautionary consumption reveals the interplay among "reproductive equations," contemporary mothering ideologies, and a consumer-based "freedom of choice" in negotiating environmental risk (Rose 1999). This interplay has implications for all mothers, but especially those who already exist on the margins of normative motherhood.

WOMEN'S BODIES, RISK, AND MOTHERHOOD

Social and scientific understandings of the permeability and vulnerability of the body to toxins is disproportionately focused on the maternal body (Daniels 1997), and concern about environmental chemicals in indoor environments and consumer products has only reinforced this focus (Kukla 2010). Knowledge about men's and women's contributions to "reproductive equations" is strongly determined by social context, and men's contribution to reproduction typically loses significance in cultural and medical discourse following the moment of conception (Almeling and Waggoner 2013, 2). As "vectors for fetal risk" (Daniels 1997, 583), women's bodies are subject to intense scrutiny during all phases of reproduction, and particularly during pregnancy and following the birth of a child (Almeling and Waggoner 2013; Lupton 2012; Markens, Browner, and Press 1997; Murphy 2000), and, increasingly, in the preconception

period (Waggoner 2013). Through prescriptive discourses of personal responsibility and risk avoidance, women's bodies become sites that bear and transfer risk, and their actions and choices are mechanisms that both create and mediate risk (Armstrong 2003; Blum 1999; Daniels 1997; Knaak 2010; Lupton 2011, 2012; Murphy 2000; Waggoner 2013).

The social organization of responsibility for feeding and caring for children likewise implicates mothers more than other actors (Apple 2006; Blum 1999, 2007; DeVault 1991; Knaak 2010; Lee 2008; Lupton 2011; Waggoner 2013; Wall 2001; Walzer 1998). Mothers are increasingly expected to eliminate *all* health risks to children (Wolf 2011), and this expectation begins before pregnancy as part of a contemporary ethic of "anticipatory motherhood" (Waggoner 2013, 347). Mothers are held accountable for multiple aspects of their children's well-being, from fetal health problems (Daniels 1997, 2006) to illness and disabilities (Blum 2007; Malacrida 2002; Murphy 2000; Singh 2002), genetic abnormalities (Reed 2009), obesity (Bell, McNaughton, and Salmon 2009; Maher, Fraser, and Wright 2010), and cognitive development (Wall 2010). As Blum (2007, 202) argues, this amplification of "mother-blame" coincides with an intensification of mothering practices. Contemporary mothering ideologies shape these practices and are described in the social science literature in distinct but overlapping ways, including intensive mothering (Hays 1996), scientific motherhood (Apple 2006), medicalized motherhood (Litt 2000), and, most recently, total motherhood (Wolf 2011). These ideologies demand each mother's personal energy, time, and financial resources (Fox 2009; Lareau 2011; Vincent and Ball 2007). They require that women put children's needs before their own, while deferring to the authority of medical and child-rearing experts (Apple 2006; Hays 1996; Litt 2000; Wolf 2011). Low-income women feel considerable pressure to conform to such a demanding form of mothering and must negotiate such ideologies against the social and economic inequalities that ultimately shape their caregiving practices (Elliott, Powell, and Brenton 2013; Romagnoli and Wall 2012).

The ideology of intensive mothering infuses spaces of consumption by urging mothers to buy with the best interests of the child in mind (Afflerback et al. 2013; Avishai 2007; Pugh 2005). Consumption is therefore entangled with other routine activities that parents—and mothers in particular—view as integral to securing a child's future outcomes (Berhau, Lareau, and Press 2011; Pugh 2009). Indeed, women's transition to motherhood is marked by the consumption of specific material goods (Avishai 2007; Clarke 2004). As a form of daily provisioning, foodwork

is gendered labor, as women do most of this work or, at the very least, orchestrate it (Beagan et al. 2008; Cook 2009; DeVault 1991; Koch 2013).⁵ Grocery shopping requires effort and sacrifice on the part of women, who must balance the competing demands of efficiency, affordability, and family preferences (Koch 2013). Shopping can, nevertheless, constitute leisure and be an expression of identity, and is therefore not always a chore (Zukin 2004). Likewise, many mothers view shopping for children as an expression of love and caring (Cook 2009).

At first glance, precautionary consumption appears to be the latest iteration of family foodwork and intensive mothering. Yet it is unique in at least two key respects. First, it represents an additional burden of labor to manage a *ubiquitous* risk—one that implicates all bodies. Second, accountability for chemical production and dispersal lies outside of women's individual bodies. How, then, do mothers engage with the practice of precautionary consumption? Is it an unwelcome "chore" or does it meld easily into an intensive and commodity-based project of motherhood? How do mothers talk about the origins of children's body burdens and the responsibility for mediating children's exposure to synthetic chemicals? I explore these questions through interviews with women who occupy various phases of maternal embodiment and motherhood.

METHODS

The study is situated in Toronto, Canada, a large metropolitan area with active environmental health promotion programs aimed at middle-class and low-income families, and whose major print newspapers employ precautionary consumption in the framing of environmental pollution issues (see MacKendrick 2010). I obtained Institutional Research Ethics Board approval from the University of Toronto for this project, and began the study with a review of Canadian and U.S. health promotion documents and shopping guides directed at chemical avoidance. I then organized three exploratory focus groups and conducted 25 in-depth interviews to investigate how women and mothers talk about environmental chemicals and precautionary consumption.

The focus group phase of the research was a pilot study to inform the interviews. To learn more about precautionary consumption as a practice, I deliberately recruited participants who had purchased certified organic or nontoxic products in the past month. In total, 17 women and three men agreed to participate, and I randomly assigned these individuals to three

groups. The focus groups generated a broad cross section of themes that highlighted gendered ideas about caregiving labor. Nearly all participants felt that precautionary consumption itself was gendered labor owing to women's role in meal preparation and household shopping. Most significantly, some of the childless women in the groups described their bodies as repositories for environmental chemicals that they would eventually pass on to future children. These findings informed the design of the in-depth interview phase and the purposive sample of parents.

When the focus group phase was completed, I recruited interviewees who were parents or expectant parents. To locate respondents with varying levels of awareness of environmental chemicals, I advertised for a study on the more general topic of family food shopping. I used two selection criteria: first, being pregnant or having children under the age of 18 living at home, and, second, having some responsibility for household food shopping. To recruit across social classes, I placed posters in grocery stores in low-income, middle-class, and working-class neighborhoods throughout the city, and posted a notice about the study on local parenting websites and e-mail list servers. I contacted community social workers and community centers with food programs to help recruit low-income mothers. I provided a small honorarium (a \$25 gift certificate) to all respondents.

In total, I recruited 25 mothers and three fathers, despite attempts to use snowball sampling to recruit more fathers. Because of this article's focus on the female body and mothering (and the small number of men in the sample), my analysis of the interview data draws only from the interviews with the mothers. All of these women had at least one young or primary-school-aged child (under the age of 12) at home or were pregnant with their first child. The level of educational attainment among this sample was fairly high, as most had some postsecondary education or a bachelor's degree. Even so, I detected distinct class differences among my interviewees. I drew on Gilbert (2011) to make these distinctions by considering total household income and the respondent's (and spouse's) occupation, which were documented in a postinterview survey. Fifteen of the women were middle-class, having a total household income that exceeded \$50,000 per year, and they or their spouse worked in professional and relatively secure occupations (e.g., teaching, finance). Two of the women were working-class, where they or their spouse as the main breadwinner earned a total annual household income between \$25,000 and \$49,999 and were employed in less secure occupations (e.g., retail sales). Eight of the mothers were low-income and underemployed, earned less than \$25,000

a year, and received government social assistance. Nineteen of the women were partnered (married or common-law), and nine of the women in the sample were visible minorities. All interview respondents have been assigned pseudonyms, and their demographic characteristics are summarized in Table 1.

Interviews were guided by a semi-structured questionnaire developed from the themes identified in the focus groups and environmental health promotion documents published by public health agencies in Canada and the United States. I conducted all interviews, which were digitally recorded and transcribed verbatim. I used the Atlas.ti software package to code the transcripts. Coding followed an interchange process (Schmidt 2004, 253) where I compared theoretical assumptions about gender, the body, motherhood, and risk with my observations from multiple close readings of the interview transcripts. This process began by reading and rereading the entire transcript to identify an overall narrative. From there, I began open coding to identify new and unexpected themes. I then used focused coding to refine the open codes and identify codes that were most important to the research objectives (see Esterberg 2002). By using both open and focused coding, I was able to identify new and unexpected themes, recognize moments when participant narratives overlapped, and detect if anticipated themes did not emerge. In the following section, I present the key analytical themes that emerged from the interviews.

EXPERIENCING PRECAUTIONARY CONSUMPTION

All respondents felt that environmental chemicals in foods and consumer products posed some threat to personal, maternal, or children's health. To assess concern about environmental chemicals, I asked respondents whether they had heard about "chemicals in the environment, home or consumer products." All indicated that they had by answering in the affirmative or nodding, and all were able to name a specific chemical or group of chemicals that worried them. Most referred to pesticides, BPA, hormones in meat, and chemicals in cleaning products. Some respondents expressed concern about their own fertility. Most pointed to uncertain threats to children's future health, while a few women mentioned specifically cancer, early onset of puberty, and behavioral disorders. Children were considered more vulnerable than adults owing to their "small bodies" that are still growing.⁶

All women practiced some form of precautionary consumption. Some bought only one certified organic food item per week or used a nontoxic

TABLE 1: Description of the Interview Sample

<i>Pseudonym</i>	<i>Age</i>	<i>Marital Status</i>	<i>No. of Children</i>	<i>Employment Status</i>	<i>Education</i>	<i>Ethnicity^a</i>	<i>Social Class</i>
Audrey	27	M/CL	2	Homemaker	Bachelor's	White	Middle class
Brenda	41	M/CL	1	Employed (FT)	Bachelor's	South Asian	Middle class
Cara	35	M/CL	3	Homemaker	Some College	White	Middle class
Carla	25	Single	1	Homemaker	Some College	Caribbean	Low income
Delores	20	Single	1	Unemployed	High school	Hispanic	Low income
Diane	33	M/CL	1	Employed (PT)	Some College	White	Middle class
Faye	35	M/CL	1	Homemaker	Some College	White	Low income
Karen	36	M/CL	2	Homemaker	Some College	Korean	Middle class
Kerri	29	M/CL	Pregnant ^b	Employed (FT)	Bachelor's	White	Middle class
Linda	35	M/CL	1	Employed (FT)	Bachelor's	White	Middle class
Lori	35	Divorced	2	Homemaker	Some College	White	Low income
Maaren	30	M/CL	Pregnant	Unemployed	Graduate	White	Middle class
Marie	38	M/CL	2	Employed (FT)	Bachelor's	White	Middle class
Megan	31	M/CL	1	Employed (FT)	Bachelor's	White	Middle class
Moira	35	M/CL	1	Homemaker	Bachelor's	White	Working class
Nancy	37	M/CL	1	Homemaker	Bachelor's	White	Middle class
Nasifa	35	M/CL	6	Homemaker	Less than high school	South Asian	Low income
Olivia	40	M/CL	1	Employed (FT)	Bachelor's	Hispanic	Middle class
Rachel	38	M/CL	1	Maternity leave	Some College	White	Middle class
Samantha	25	M/CL	1	Employed (FT)	Bachelor's	Hispanic	Working class
Sandra	26	Divorced	1	Homemaker	Some College	White	Low income
Tamara	36	M/CL	1	Employed (FT)	Graduate	White	Middle class
Tracy	31	Single	1	Self-employed	Some College	White	Low income
Trina	33	M/CL	Pregnant	Employed (FT)	Bachelor's	South Asian	Middle class
Zhen	40	Widowed	1	Self-employed	Graduate	Chinese	Low income

NOTE: M/CL = married or common-law; PT = part-time; FT = full-time.

a. Ethnicity was self-identified in the demographic survey.

b. Pregnant with first child.

cleaning product, while others adopted complex routines involving multiple nontoxic commodities, certified organic foods, and specific practices (e.g., airing out new furnishings before bringing them indoors).

In this section, I draw on the experiences of several key respondents whose narratives best illustrate the more significant patterns that emerged from the interview data. First, I discuss how awareness of environmental chemicals begins during various phases of maternal embodiment, including preconception, pregnancy, and breastfeeding. I then outline the kinds of practices that I see as constituting precautionary consumption and explore the sense of agency women feel in actualizing this routine.

The Maternal Body

Most strikingly, mothers connected their awareness of chemical body burdens to the experience of maternal embodiment—while trying to conceive a child, after becoming pregnant, or when breastfeeding. These women saw precautionary consumption as necessary to lowering their own internal chemical burden during critical moments of fetal and infant development.

Brenda, a middle-class mother of an infant, links her concern about environmental chemicals to all possible phases of maternal embodiment, including preconception, pregnancy, and breastfeeding. Before trying to conceive a child, Brenda and her husband consulted with a naturopath, who recommended that they switch to a diet of certified organic foods. Brenda became pregnant soon after this change. While her husband returned to his regular diet, Brenda continues to eat organic foods and feeds her baby organic foods: “I thought, ‘Well, I’m pregnant, so it’s better for the baby,’ and then when the baby was born I thought, ‘Well, it’s better for her for breastfeeding,’ and [now] I also feed her all organic food.” While her husband’s period of precautionary responsibility ended early, Brenda’s continues throughout her child’s infancy and early childhood. She actively genders precautionary consumption by connecting her child’s exposure to chemicals within her maternal body and, later, to her foodwork. Underlying her narrative is a conceptualization of the female body as the primary contaminating environment. Once she became pregnant, her husband’s body lost significance. Likewise, she does not mention the health risks posed by contaminants in the air, water, and soil that surround her body and her child’s body. According to Brenda, what she incorporates into her body determines her child’s chemical body burden. Her perspective on precautionary consumption reveals the norms surrounding maternal accountability for children’s health (Daniels 1997)

along with notions of reproductive equations (Almeling and Waggoner 2013). Importantly, this accountability extends past phases of maternal embodiment into aspects of her caregiving.

Many of the women in this study identified pregnancy as the key moment when they became aware of environmental chemicals. Maaren, a middle-class woman who is eight months pregnant with her first child, explains that she had little concern about environmental chemicals prior to her pregnancy. She tells me about living in Thailand, when she did not think about air pollution or lifestyle risks such as smoking: “Before, it was just about me, and it wasn’t about my baby. I mean, yeah, in your early twenties you live in Bangkok and I would smoke and, of course, all those chemicals, but it’s about me.” After becoming pregnant, Maaren changed her consumption practices to incorporate more organic produce, and began reading the labels on packaged food to avoid chemical additives. She immediately replaced her cosmetics, soaps, and cleaning products with “natural” or “ecological” alternatives. What is interesting here is how the risks surrounding Maaren’s prematernal body—like smoke and urban pollution—are acceptable, because her body is “about her.” Pregnancy marks not only a corporeal change, but also an ontological shift in thinking about environments, where her body now “belongs” to her fetus. When I ask her to reflect on her exposure to chemicals now that she is pregnant, Maaren does not mention downtown Toronto’s poor air quality but focuses instead on her personal commodity choices. Reflecting on her pregnant body, her gaze turns inward; her body and her private sphere labor—rather than the larger environment within which her body is embedded—transfers chemicals to her fetus. Her body is the fetus’s first environment.

Cara, a middle-class mother of three children, describes breastfeeding as a moment of awareness of chemical body burdens. When breastfeeding, she thinks about her breast milk as a source of impurities that are absorbed by her child’s comparatively pure and vulnerable body: “You have a child and they’re perfect, then you start thinking when you’re nursing, ‘Everything I’m eating is going through to that perfect baby.’” According to Cara, she can protect her “perfect baby” by controlling what she puts into her body. Earlier in the interview, she expressed concern about air pollution in Toronto, but when our discussion turns to her children, she focuses on her body as a pathway for their chemical exposures.

Attention to the maternal body in the narrative of chemical body burdens is entangled with the discourse of mother-blame (Blum 2007), as I

saw with Audrey, the middle-class mother of two young children. Audrey's first-born son was diagnosed with autism. While Audrey acknowledges that the causes of autism are unknown, she reflects on her "unsafe" consumer decisions while pregnant, such as dyeing her hair and eating conventional—rather than certified organic—foods. She tells me that she "kind of screwed up" her first pregnancy, and so during her second pregnancy she began buying more organic foods and "green" cleaning products, and used natural hair coloring. Audrey implicates both her maternal body and consumer choices in trying to explain her son's autism. A profound feeling of maternal culpability surfaces in her interview:

There are probably a lot of products that are now used in things, where . . . our kids will look back and say, "I can't believe my parents used those products with me or had them in their homes or that people didn't know that this particular thing was dangerous!"

While Audrey refers to "we" and "parents" here, the larger narrative in her interview reflects the discourse of mother-blame. At no point in the interview does she reflect on her husband's preconception body and lifestyle choices, the products he brings into the home, or the role of government regulators and manufacturers of the products she avoids. By implicating her body and consumption routines as the contaminating pathways, she brackets the contribution of others. In forecasting her children's incredulity at their parents' ignorance of chemical hazards, the underlying *precautionary* element in her consumer choices becomes visible. Precautionary consumption allows Audrey some sense of reassurance that she can manage both known and *unknown* threats to her children. In the next section, I show how mothers manage the expectation to mediate their children's exposures to environmental chemicals—not as passive actors responding to a punishing discourse, but as part of crafting an agentic mothering project.

A Personal "Project"

Mothers who view their bodies as "contaminating" might express tremendous anxiety about the problem of environmental chemicals and may resent having to manage this problem through foodwork and lifestyle changes. Many of the partnered middle- and working-class women in this study focused instead on the positive aspects of precautionary consumption, because it provided them with some control over their children's body burdens. Moreover, they framed this practice as being their own interest and responsibility. Only one mother, Nancy—who is middle-class—admitted to

being overwhelmed by precautionary consumption: “There’s way too much information out there. You’re just inundated with stuff. . . . I feel like I can’t buy a thing.” While she ostensibly refuses to practice precautionary consumption (“I don’t want him to live in a bubble”), she does buy organic milk for her son, reasoning that it is a simple choice that reduces some of his exposure to pesticides and hormones.

Megan, a middle-class woman with an infant, has a complex precautionary consumption routine that she undertakes alone. She consults books, magazines, and websites to find information about chemical avoidance and organizes her shopping list according to what items should be organic and nontoxic (e.g., meat, dairy, produce, cleaning products). For her, precautionary consumption is “routine” and was developed through careful attention to ingredient labels and by reading up on the topic. Megan proactively seeks expert advice, and incorporates this advice into her own priorities for her child’s well-being. Her approach to precautionary consumption is congruent with the middle-class practice of “concerted cultivation” (Lareau 2011, 2). While concerted cultivation often requires the labor of two parents, many mothers in this study framed precautionary consumption as gendered labor. Megan explains that her husband “is on board with it, but he definitely doesn’t initiate. It just wouldn’t enter his realm of thought.” When he does the grocery shopping, she “send[s] him out” with a list of specific brands of items to buy for their child, as she would not trust him to make the “right” choices. This contrast of her knowledge against her husband’s relative ignorance rationalizes the gendered division of precautionary consumption within her household.

Megan lives in a neighborhood with stores selling free-range chicken and discount organic foods. During our interview, she shows me a baby chair that she bought at a local store, and speaks enthusiastically about the natural wood and organic cotton. Megan clearly feels that shopping in a precautionary way is enjoyable. She talks positively about the range of choice of organic goods in her neighborhood: “It’s great . . . it’s a foodie neighborhood for sure.” By invoking “foodie” as a descriptor, she presents her neighborhood as a place where precautionary consumption can be a form of leisure (see Johnston and Baumann 2009). When Megan frames precautionary consumption this way, we see the privileges afforded by her social class position, where buying green commodities is easy, enjoyable, and affordable.

Cara had one of the most complex precautionary consumption routines of all of the women I interviewed. She is a stay-at-home mother who home-schools her children, and can therefore incorporate precautionary consumption into her daytime routine. She buys chicken from a farm outside the city

where the animals are raised naturally, uses only non-toxic cleaning products and cosmetics, and refers to a shopping guide to identify produce with the lowest pesticide residues, all of which require her to shop at several different stores. Cara's husband never takes part in this labor, and she describes him as too busy and uninterested. Like Megan, Cara is able to afford these nontoxic commodities. While her neighborhood has fewer options than Megan's, Cara has the time and flexibility in her routine to travel to other neighborhoods.

Cara considers precautionary consumption as an expression of vigilant mothering that protects against health problems: "I want it to be organic, to be as pure as possible—you know, they can put a lot of crazy ingredients in there . . . that's why all these kids are medicated, they're eating all this crappy stuff and then they can't behave themselves and what's it doing to them?" Her approach to precautionary consumption evokes both a natural mothering (Bobel 2002) and an intensive mothering ideology (Hays 1996). For Cara, precautionary consumption is more than sorting out "what to buy"—it involves internalizing and normalizing personal responsibility for everything that goes into (and stays in) her children's bodies. By pointing to "all these kids," Cara furthermore situates herself in relation to a hypothetical, careless parent who fails to connect a child's ingestion of chemical additives to behavioral problems (cf. Cairns, Johnston, and MacKendrick 2013).

Because of its labor intensity, inherent commodification, and overlap with mothering ideologies urging mothers to give children "the best," precautionary consumption appears to be another middle-class mothering "project" (see Avishai 2007). In contrast to projects like breastfeeding, precautionary consumption can begin before motherhood—as in the case of Brenda, who plans her preconception health. It can also extend past breastfeeding to provisioning for children. Precautionary consumption can ostensibly be undertaken by fathers as well as mothers, yet mothers in the sample gender this practice by tying it to their maternal bodies and responsibilities.

Finally, precautionary consumption provides a sense of control over a largely intangible threat to children's health. As a self-directed project, it can reinforce a powerful feeling of accomplishment. This was most evident in my interview with Samantha, a working-class mother of an infant. Samantha has a complex and labor-intensive precautionary consumption routine. Because she is breastfeeding, she eats only certified organic foods and her son's diet of solid foods is also organic. She carefully inspects his toys to remove those that might contain lead and prefers to buy "eco" toys.

Her small income means that she cannot afford these commodities without financial help from her parents. Samantha is grateful for this support as it allows her to undertake a more rigorous form of precautionary consumption. When I ask her how well she feels she is managing her child's exposure to environmental chemicals, she responds:

I'm happy because he's 99.999% organic. . . . Like, the only time he won't eat organic is if we go out to eat and I manage to give him bread and I know that it's not organic. When it comes to his diet, I'm really happy. And especially because I'm concerned more about what I eat because I am still breastfeeding him.

With these comments and elsewhere in her interview, Samantha attributes the purity of her child's body to the purity of her body and the rigor of her shopping routine. Importantly, she frames the active management of her child's body burden as a personal responsibility and integral to the accomplishment of "good" motherhood.

On the Margins of Normative Motherhood

The preceding narratives highlight how women's feeling of accomplishment is connected to consumer agency. This sense of agency was not expressed by all of the mothers in the sample. Here, I draw on my interview with Sandra to demonstrate how some low-income mothers in the study struggled to accomplish "good mothering" as the expectations of normative motherhood expand and intensify.

Sandra is a divorced and low-income mother of a toddler. Her ex-husband is incarcerated and she now lives on social assistance. Sandra became concerned about environmental chemicals after attending a parenting class for low-income mothers. She explains, "I learned through a nutritionist and that was forced, you know? It was like, 'Okay, you're going to learn about this.' . . . And then at the end you're like, 'Shit, I needed to know that!' [laughing]." After attending this class, Sandra started to buy more affordable brands of organic baby food and looked for a "BPA-free" label on baby bottles. Like Megan, Sandra engages with messages from parenting experts ("I needed to know that!"), but she frames her engagement as passive by telling me that she was "forced" to learn it.

Absent from Sandra's interview were themes of pleasure and agency that I observed in my discussions with some of the middle- and working-class respondents. When Sandra describes "learning" to practice precautionary

consumption, we see a tension between her support for this practice and the difficulties imposed by her social class position. This tension is most evident when Sandra compares her basic precautionary consumption routine to a middle-class friend who consumed only “natural” foods while breastfeeding:

To get the best possible breast milk she stopped eating dairy. She stopped eating meat except for chicken—all natural foods, no dairy whatsoever, all soy products, everything healthy. She went to extremes, you know what I mean? Her daughter is completely healthy and beautiful. I’m like, “How much money *really* do you spend? How much is my grocery bill compared to yours?” And she’s like, “Well, it’s a *little* bit more.” I’m like, “It’s a *little* bit more?!” [laughs] And she’s like, “I just want the best for her.” And I’m like, “I want the best for my son too but I didn’t do all that!”

In comparing herself to her friend, Sandra reflects on her own class position and places precautionary consumption within an array of practices that define normative (and middle-class) motherhood. Her interview speaks to the incongruity between the lived experiences of low-income motherhood and the growing intensification of mothering that requires ever greater financial resources, time, and access to commodity choices.

CONCLUSION

Chemical body burdens represent a universal health risk for all bodies, yet many mothers in this study saw the maternal body and foodwork as key vectors for children’s exposures, and minimized the contribution of other environments and actors. For these women, the transition to motherhood represented a moment when they saw their bodies as the child’s “first environment.” Thus, the *maternal* body is the vector for chemical exposures, and exposure can be controlled by modifying what the mother incorporates into her body. Such a deep sense of accountability for children’s body burdens even extends beyond pregnancy and breastfeeding to the feeding of children. Put another way, respondents not only connected chemical body burdens to women’s biological bodies, but they also gendered the practice of precautionary consumption. I expected more women to feel burdened by the extra labor of precautionary consumption, and to point to the contribution of other environments on children’s body burdens. Instead, many drew on a language of informed and proactive mothering and excluded the participation of

others—particularly husbands and fathers. In doing so, these women actively expanded the sphere of maternal accountability to include the management of children's body burdens.

Respondents with more complex routines often had neighborhood-level access to green commodities, the income to afford their price premium, flexible time to adopt specific practices of chemical avoidance, and sufficient consumer literacy to incorporate precautionary consumer advice. During our interview, many of these women did not reflect on their social class position and ability to access the resources necessary to do precautionary consumption "properly." Yet, as Sandra's interview illustrates, precautionary consumption belongs to a classed performance of good motherhood. Sandra, who exists on the margins of normative motherhood by virtue of her marital status and very low income, feels considerable pressure to perform this labor-intensive and commodity-based version of motherhood but struggles to actualize it. The marginalization of low-income women in normative definitions of mothering is well documented in a vast feminist literature (e.g., Blum 1999; Bobel 2002; Elliott, Powell, and Brenton 2013; Romagnoli and Wall 2012). Precautionary consumption illuminates this process of marginalization within the context of social responses to environmental and health risks.

Women's narratives also reflected notions of reproductive equations. Here, women shoulder the burden of reproductive responsibility much more heavily, even after children are born and breastfed, despite the fact that chemical body burdens are themselves nongendered. Mothers in this study identified their maternal bodies—rather than the environment surrounding them or the body of the child's father—as the primary environment for determining children's body burdens. Some women began adopting precautionary consumption before conception, and others started this practice when they began feeding their young children and shopping for them. Almeling and Waggoner's (2013) exposition of reproductive equations ends at the moment of birth, but attention to precautionary consumption extends their framework. Most significantly, it makes visible the ways in which disproportionate assessments and practices of embodied reproductive responsibility persist well beyond the usual reproductive "moments" into the mundane practices of childrearing.

Together, these insights reveal how women engage with and reproduce mothering ideologies that prize a full and total commitment to children's well-being. Importantly, women in this study are not just passive recipients of ideological messages. They are active participants in expanding

the sphere of maternal accountability to include new forms of labor. I do not interpret their role here as naïve. Rather, the mothers in this study appeared to welcome precautionary consumption as a personal responsibility, and deliberately insulated it from the “intrusion” of others. I interpret their orientation toward precautionary consumption as part of a negotiation with the larger cultural discourse of mother-blame, whereby mothers increasingly try to control children’s futures, as they are held accountable for them.

As a case study of contemporary motherhood, precautionary consumption also makes visible the overlap of contemporary mothering ideologies with the neoliberal logic of personal responsibility. The potential stress created by precautionary consumption (yet another responsibility placed upon mothers) appears to be offset by a feeling of control acquired through greater “freedom of choice” (Rose 1999, 65). With the expansion of choice over the possibilities for managing personal exposure to risk, individuals feel a measure of control over future uncertainty (Rose 1999; see also O’Malley 2000).⁷ In other words, access to “green” and nontoxic commodities makes precautionary consumption more of an enjoyable and agentic experience for women with sufficient financial resources and the time to do research on best practices. By participating in precautionary consumption, these mothers feel able to navigate multiple and overlapping contexts that hold women accountable for children’s chemical body burdens and value the agentic, proactive consumer.

There is considerable room to explore the classed nature of precautionary consumption, as this study draws from a small sample of mothers and an even smaller number of low-income women. Likewise, this practice may vary by race and ethnicity, sexuality and geographic location (urban vs. rural). Future work on precautionary consumption should also consider whether men, women without children, and women with adopted children feel the same deep, personal accountability for children’s chemical burdens.

Suggesting that individuals increasingly try to shop their way out of environmental problems, sociologists like Andrew Szasz (2007) argue that consumer-based approaches ultimately fail to provide universal environmental protection. I make the case that such consumer-based responses are not only representative of the commodification of “safety” but strongly reflect gendered ideas of bodies and responsibility for children. Feminist sociologists have reason to be concerned about the emphasis on maternal bodies and individual choice in the discourse of chemical body burdens. All bodies are exposed to environmental toxins. Chemical body burdens

are representative of a larger social problem that implicates chemical producers and government regulators that are charged with monitoring and mediating population-level exposure to environmental toxins.

NOTES

1. I borrow from the title of Ruth Cowan's (1983) influential book *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*.

2. Chemical body burden refers to the total internal contaminant load within the human body.

3. See, for example, O'Brien and Kranz (2009). Several organizations publish safe shopping guides, including Environmental Defence in Canada and the Environmental Working Group in the United States.

4. Precautionary consumption advice in Canadian and U.S. health-promotion materials are very similar and appear to draw on the same body of epidemiological and toxicological research.

5. Foodwork refers to all aspects of food provisioning, including grocery shopping, cooking, and cleaning up (Beagan et al. 2008).

6. These worries align with the issues identified in the public health materials reviewed in the exploratory phase of the study, and should not be read as a form of "chemophobia."

7. There is a vast literature on the rise of the self-governing subject under neoliberalism. I point to this literature only briefly to highlight the importance of control and commodity markets in relation to risk.

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