A “TRICKY BUSINESS” – KNOWLEDGE PRODUCTION IN CHILDREN'S ENVIRONMENTAL HEALTH

By

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Abstract

Using critical feminist theories and methodologies, my research investigates the power relations and influences at play within the field of children's environmental health. I begin with the research question of how a parent's everyday purchase of a toy or other children's product is "hooked into" extra-local governance (agenda-setting, rule-making and monitoring). Focusing on Bisphenol A and phthalates as an example, in-depth interviews were conducted with six government officials (three federal and three municipal), three non-governmental organization (NGO) representatives, a politician, six higher education faculty members and a parent, as well as two focus groups of 23 parents. Legislation and other relevant documents from governments, NGOs, industry and media were analyzed together with reports of their activities and attitudes to theorize "how things work" in the identification and management of toxic substances in products for sale, with a special interest in how this affects children's environmental health.

My research revealed the influence of neo-liberalism, corporate power and over-reliance on strictly evidence-based biomedical reductionism in slowing down assessment and regulation of chemicals while many health professionals and grassroots activists have called for swifter responses based on the precautionary principle, as favoured by European governments. That is, politics and bureaucracy, with the approval of industry, over the past two decades, have clung to reductionist science as the only paradigm for understanding toxicity, thus slowing down regulatory processes. Although the historical and epistemological power relations mapped in my research work together to legitimize scientific certainty rather than the precautionary principle, I argue that the resulting regulatory logjam has been and could be addressed by reference to European examples, knowledge produced by collectives and the establishment of upstream and equity-based public health strategies with public input into the process.
Acknowledgments

Conducting this research has been an invigorating experience. I am privileged to have had the opportunity to explore a subject matter that began with my own struggle, and to discover that this struggle is shared and of interest to other parents. During the course of my investigation, I was humbled by the immensity and complexity of children’s environmental health as it relates to other aspects of life. I speculate that what I have documented in this thesis is only the tip of an iceberg. Much remains unknown about knowledge production in children’s environmental health. In addition to my awe regarding the topic, I was also greatly inspired by the generosity of my key informants who, for the most part, shared with me candidly their personal and professional experiences. They have convinced me that changes are needed and that a better world is possible.

This dissertation would not have been possible without the help, contributions and support of many individuals in my life.

First and foremost, I would like to thank Dr. Linda Muzzin, my thesis supervisor who has guided me on my entire journey of studies at OISE, University of Toronto both in my Masters degree and now my PhD. I am grateful in particular, for her guidance in my conducting, writing and editing of this research study. I will always remember the countless hours she spent reading my thesis and painstakingly writing down her revisions. Her valuable feedback helped to shape the thesis and has made it a product of knowledge that I am extremely proud of. Thank you Linda, for your patience and unfailing support.

Dr. Dorothy Goldin Rosenberg has been more than a member of my thesis committee. To me she has been a mentor and a cheerleader, whose sincerity and encouragement I will never forget. Her passion and commitment for children's health and the environment is an inspiration to her numerous students and people who know her (myself included). Dr. Geraldine (Jody) Macdonald, Lawrence S. Bloomberg Faculty of Nursing, University of Toronto, a member of my thesis committee who has been kind and considerate regarding my academic requirements.
Dr. Jamie-Lynn Magnusson, my fourth reader, for spending the time to read my thesis and providing me with her valuable insight. Dr. Dayna Scott, my external assessor, for agreeing to read the thesis and providing me with questions and comments.

I am also deeply indebted to my many friends and colleagues at Toronto Public Health who have provided unselfish support and steadfast encouragement throughout my years of trying to balance a fulltime management position and my higher education. In particular, I am grateful to my mentor Susan Makin for reading my proposal and giving me feedback, my dear friends Saleha Bismilla for editing the thesis and, Loren Vanderlinden for reading my proposal, providing me feedback and being there for me to ask questions.

In addition, I am grateful to the brothers and sisters in Logos Baptist Church for their prayers and moral support despite my pulling back during the later part of my writing.

Last but not least, it is to my family, to whom I owe my deepest gratitude. First of all, my father who gave up his life’s work in China as a university professor and migrated to Canada in 1981 so that my sister and I could have a better education. Here, he worked as a kitchen cleaner until 1983 when he collapsed and passed away on the job. Father, instilled in me a love for learning and education. I still remember the countless evenings sitting on father's lap as a young child listening to discussions he had with his students who visited him regularly after supper. I remember sneaking into the piles of student essay assignments that were sitting on our desk (father and I shared a small desk), reading them and writing my own commentary about them. There are so many fond memories … thank you father, for everything, most of all, for making the ultimate sacrifice for us.

My studies would not have been possible without the support of my mother who has been taking care of almost everything at the home front all these years. Every mother needs a mother. Thank you mother! I would also like to thank all my sisters and their family for playing a big part in my life.

My boys, Janson, Joshua and Jacob are the energy and sunlight in my life. Thank you boys, for your understanding when I had to be temporarily absent during the more intensive periods of my studies. Joshua, our special child, you were the inspiration for my pursuit of studies in the field of children’s environmental health.
To my dear partner in life, Alfred, thank you for your firm embraces, gentle consoling and soothing in times of tear; and your cheers of joy during my periods of triumph. I cherish every moment of celebration and grief we shared in our journey together.

And to the one above all, the omnipresent God, for answering prayers, for giving me the strength to plod on despite my wanting to give up and attempts to throw in the towel. Thank you so much dear Lord.

So-Yan Seto

March 16, 2011
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<td>ACC</td>
<td>American Chemistry Council</td>
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<tr>
<td>ARET</td>
<td>Accelerated Reduction/Elimination of Toxics</td>
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<td>BPA</td>
<td>Bisphenol A</td>
</tr>
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<td>CAPE</td>
<td>Canadian Association of Physicians for the Environment</td>
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<td>CCPSA</td>
<td>Canada Consumer Product Safety Act</td>
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<tr>
<td>CDC</td>
<td>Centre for Disease Control and Prevention</td>
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<td>CEPA</td>
<td>Canadian Environmental Protection Act</td>
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<tr>
<td>CERHR</td>
<td>Centre for Environmental Risks to Human Reproduction</td>
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<td>CESD</td>
<td>Commissioner of the Environment and Sustainable Development</td>
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<td>CIAC</td>
<td>Chemistry Industry Association of Canada</td>
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<td>CIHR</td>
<td>Canadian Institutes of Health Research</td>
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<td>CISE</td>
<td>Canadian Information System for the Environment</td>
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<td>CMP</td>
<td>Chemicals Management Plan</td>
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<td>CPCHE</td>
<td>Canadian Partnership for Children’s Health and the Environment</td>
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<td>CPSC</td>
<td>Consumer Product Safety Commission</td>
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<tr>
<td>DES</td>
<td>Diethylstilbestrol</td>
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<td>ECE</td>
<td>Early Childhood Education</td>
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<tr>
<td>ELCC</td>
<td>Early Learning and Child Care</td>
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<td>ENGOs</td>
<td>Environmental Non-Governmental Organizations</td>
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<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>EWG</td>
<td>Environmental Working Group</td>
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<td>FDA</td>
<td>Food and Drug Administration</td>
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<tr>
<td>GAO</td>
<td>General Accounting Office</td>
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<tr>
<td>GATT</td>
<td>General Agreement on Tariffs and Trade agreement</td>
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<tr>
<td>GLP</td>
<td>Good Laboratory Practices</td>
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<tr>
<td>GTA</td>
<td>Greater Toronto Area</td>
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<tr>
<td>H2E</td>
<td>Hospitals for a Healthy Environment</td>
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<td>HCWH</td>
<td>Health Care Without Harm</td>
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<tr>
<td>IE</td>
<td>Institutional Ethnography</td>
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<td>IPR</td>
<td>Intellectual Property Rights</td>
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<tr>
<td>MEP</td>
<td>Message Event Proposal</td>
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<td>MIREC</td>
<td>Maternal-Infant Research on Environmental Chemicals</td>
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<td>MMT</td>
<td>Methylcyclopentadienyl Manganese Tricarbonyl</td>
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<tr>
<td>MOUs</td>
<td>Memorandum of Understanding</td>
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<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
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<td>NCI</td>
<td>National Cancer Institute</td>
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<td>NET</td>
<td>National Environmental Trust</td>
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<td>NIEHS</td>
<td>National Institute of Environmental Health Sciences</td>
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<td>NOGs</td>
<td>Non-Governmental Organizations</td>
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<td>NTP</td>
<td>National Toxicology Program</td>
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<td>OAG</td>
<td>Office of the Auditor General of Canada</td>
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<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
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<tr>
<td>OISE</td>
<td>Ontario Institute for Studies in Education, University of Toronto</td>
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<tr>
<td>OHA</td>
<td>Ontario Hospital Association</td>
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<tr>
<td>PCB</td>
<td>Polychlorinated Biphenyls</td>
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<td>PCPA</td>
<td>Pest Control Products Act</td>
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PMO – Prime Minister’s Office
PVC – Polyvinyl Chloride
SSHR – Social Sciences and Humanities Research Council
TCBCC – Toronto Coalition for Better Child Care
TINA – There is No Alternative
TPH – Toronto Public Health
WTO – World Trade Organization
WWF – World Wildlife Fund
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Chapter 1
INTRODUCTION

1.0 Introduction

The Bangkok International Conference on Environmental Threats to the Health of Children by World Health Organization (WHO, 2002) recognizes that a growing number of diseases in children have been linked to environmental exposures. These diseases and illnesses range from the traditional waterborne, foodborne and vector-borne diseases and acute respiratory infections to asthma, cancer, certain birth defects and developmental disabilities. There are new emerging risks being identified and an increasing number of children being exposed to unsafe environments where they are conceived and born and where they live, learn, play, work and grow. Children are clearly susceptible to harmful environmental exposures and disproportionately bearing the burden of our deteriorating environment (Landrigan & Garg, 2004). What is being done to protect children from contaminated environments?

Starting at the local level of examining parents’ experiences of purchasing a toy or other children’s product, I will address this question by determining “how things work” (Smith, 1987, p98) in the field of children’s environmental health. In identifying and mapping the power relations involved, the following questions will guide my research. How do purchasing decisions affect children’s health? Who or what discourses or institutional ideologies influence this everyday activity? How are knowledges being generated and negotiated within the discourses of children’s environmental health? And how do these knowledges in use, in turn, produce new knowledges? In the process of investigating this set of power relations, I hope to find answers to questions such as who is being privileged and who is being marginalized. Further, while it is important to understand “how things work,” my ultimate desire is to advance the children’s environmental health agenda. Hence, my research will involve documenting sites of effective resistance and praxis in this field.

As issues of children’s health and the environment are deeply entrenched in women’s health and equity, my theoretical and methodological approach will be critical feminist and eco-feminist. In the study, I will compare and contrast critical feminist and eco-feminist philosophies
and methodologies with the conventional biomedical scientific paradigm in knowledge production as well as explore how these very different perspectives are activated in children’s environmental health.

In this chapter, I will first declare my personal and professional location with respect to the topic and delineate how the thesis is organized. Second, I will introduce the topic of children’s health and the environment, providing reasons for children’s susceptibility to harmful environmental exposures. Third, I will look at the stories of regulating Bisphenol A (BPA) and phthalates in the European Union (EU) and the United States (US). These stories will highlight similar issues in the Canadian context which is my focus. I will close the chapter with an examination of the landscape of children’s environmental health in Canada, its laws and regulations, as well as knowledge production in teaching and research in both higher education institutions and environmental non-governmental organizations (ENGOs).

1.1 Personal and Professional Location

My interest in children’s environmental health grew out of my journey with my son, Joshua, who was diagnosed with autism in 1997. Autism, like many childhood disorders and illnesses, is linked to harmful environmental exposures (for example, Palmer, Blanchard, Stein, Mandell, & Miller, 2006). However, when Joshua was diagnosed, we were told it was linked to genetics. In 2005, I took a course with Dr. Dorothy Goldin Rosenberg in environmental health at Ontario Institute for Studies in Education, University of Toronto, (OISE) and realized that autism is often linked to toxic environmental exposures. In the course, I learned about the serious issues involved in children’s environmental health and realized that these issues are well hidden from the public view. With the influence of Dr. Goldin Rosenberg, I have become somewhat of an activist in this area. On my own time, I have been conducting educational workshops for professional colleagues and parents of young children, informing them about children’s environmental health and its associated issues. As I go around the City facilitating these workshops, I have found that most parents are still in the dark about the problems. And unknowingly, they are exposing their children to toxic chemicals. Increasingly realizing the seriousness of this situation, I began to wonder why these issues were not in the public domain.
In addition to being a mother, I am also a public health nurse by profession. My major responsibility is to promote health and well being in children of high risk families through health promotion and teaching. Children’s environmental health was not among the many topics we teach. Why was this issue not being taken up by public health nurses in their practices? Curious about the answer to this question, I conducted an exploratory study as my master’s major research paper, and asked the question of what facilitates and prevents public health nurses promoting children’s environmental health to their clients. I interviewed seven public health nurses and asked about their opinions and experiences in relation to this subject area. The study found that these public health nurses did not include children’s environmental health as part of their health teaching for their clients despite the fact that they know that this is a very important determinant of health for children (Seto, 2007).

At the beginning of my doctoral research, I continued to dig deeper into the area of children’s environmental health and became concerned about the interconnections among children’s environmental health, issues of power, knowledge and relations of gender, race and class. I wondered why the issues of children’s environmental health are not readily taken up by citizens in society. I began to question what knowledges are being formulated, and how they are constructed and disseminated. This thesis represents my beginning in addressing these questions systematically.

1.2 Organization of the Thesis

This thesis consists of nine chapters, beginning with my setting of the context for the study and a review of my theoretical framework. This is followed by the study findings. Specifically, the rest of Chapter 1 first explains the situation of children and toxicity and then recount how toxicity and plastics was dealt with historically in the US. This story is told from a critical perspective just as I aim to use in researching the parallel story in Canada. The chapter closes with a review of relevant literature on children’s environmental health within the Canadian context. Chapter 2 reviews relevant theoretical literature drawn from various areas such as the conventional scientific paradigms, knowledge economy approaches, post-structural critical theorists, critical feminist and eco-feminist studies. These bodies of theories and frameworks provide a critical starting point for my study. They lead to a problematization of
what Dorothy Smith (1987) calls ruling relations, operating through textual discourses. Chapter 3 develops the methodological approach of the study. Institutional ethnography (IE) and other critical feminist writings are primary inspirations for my methodological approach.

The findings of the study are presented in Chapters 4 to 8. Chapter 4 tells the story of chemical management in Canada starting from the issue of labelling on toys and other children’s products. It provides a map of what Dorothy Smith calls “boss texts” that are involved in governing the activities of chemical management. This includes a historical account of the Canada Consumer Product Safety Act (Bill C-36); behind-the-scene arguments on chemical legislation; and a critique of the current government’s plan for chemicals management. Chapter 5 offers textual analyses of four reports from the Auditor General that provides an in-depth examination of the problems in chemical management within the Canadian government. Chapter 6 explores the operation of federal politics and industrial power. Chapter 7 moves the focus to the grassroots level, illustrating sites of agency sprouting from various forms of community organizations and other institutions. Chapter 8 focuses on the discourses of knowledge in children’s environmental health produced in higher education institutions. And Chapter 9 concludes the research by delineating the major contributions, as well as pointing to implications for future research, policy development, and practice.

The following section provides six reasons why the physical environment is a strong determinant of children’s health. Then I turn to the story of plastics, specifically, Bisphenol A (BPA) and phthalates, which reveals the contested landscape of this area of research full of political, economic, epistemological and social intricacies. Next, I take a first look at the field of children’s environmental health in Canada. I look at the relevant Canadian laws and regulations, and higher education programs as well as research in relation to children’s environmental health. Finally, in this chapter, I review literature on the role of non-governmental organizations (NGOs) specifically in knowledge production.

There are many more toxic exposures which are concerning in relation to children’s environmental health. They include ionizing radiation from nuclear facilities, dioxins and other toxic chemicals from incinerators, WIFI and cell phone tower emissions located in high density population areas, asbestos from parents exposed in work places, and a variety of other carcinogens, mutagens, teratogens, hormone disruptors, and heavy metals (Goldin Rosenberg, 2011, Feb. 1. Personal Communication).
1.3 Children’s Health and the Environment

While there is recognition that the environment plays a major role in the health and development of children and there has been some significant high level policy development in place (Canadian Partnership in Children’s Health and the Environment [CPCHE], 2008; Hazel, et al., 2006), many concerns about children’s environmental health have not yet been recognized in protective policy and practice. The World Health Organization (WHO, 2002) states that almost one-third of the global disease burden can be attributed to environmental factors, many of which are a result of human activities, and that over 40% of this burden falls on children five years of age or under. It is easy to locate high morbidity rates in so called developing countries (Selevan, Kimmel & Mendola, 2004). However, Canada has one of the worst pollution records among industrialized countries according to The Maple Leaf in the OECD (Gunter, 2005). It reports that Canada has held on to its poor environmental ranking for over a decade, placing 28th of 30 countries in 1992, 2002, and again in 2005.

There are six main reasons why children are theorized to be disproportionately affected by environmental toxicity. First, it has been pointed out by toxicologists that children have immature organs, faster metabolism and greater intake per unite of body weight than adults (Cooper, 2004a; Landrigan, Kimmel, Correa & Eskenazi, 2004; Phillips, Burkhardt, Bradshaw & McBrien, 2002). Therefore, they have substantially heavier exposures than adults to environmental contaminants. Second, children have unique pathways in transmission of and direct contact with environmental poisons. For example, children can become exposed to toxins in utero and in the first months after birth (Cooper, 2004b; Landrigan et al., 2004; Steingraber, 2001). Third, the developing fetus and growing children have sensitive developmental “windows of susceptibility” (Selevan et al., 2004, pp. 17) within which toxins can do damage. From the experience of thalidomide in pregnant women (Lenz, 1962; McBride, 1961; Taussig, 1962), it was discovered that the timing of the exposure to environmental contaminants can be just as important as the dose of the toxin to the developing body. These developmental processes are easily disrupted during rapid growth and development before and after birth, and the smallest amount of toxin has been shown to cause serious damage (Bellinger, Leviton, Waternaux, Needleman & Rabinowitz, 1987; Jacobson & Jacobson, 1996; Needleman, Schell, Bellinger, Leviton, & Allred, 1990).
The fourth reason why children are especially open to harm from environmental contaminants can be related to their developmental behaviours. Children mouth everything to learn about their surroundings. This unique characteristic puts them at risk for environmental poisoning from substances such as BPA and phthalates – two groups of chemicals commonly found in plastic toys and products, where children could mouth them, breathe in the fumes and absorb them through their skin (Cooper, 2004c; Phillips, Burkhardt, Bradshaw & McBrien, 2002). The fifth special circumstance exposing children to environmental hazards is their relatively longer life remaining compared to adults to develop delayed health effects. Environmental diseases such as cancer and neurodegenerative diseases are thought to arise through a series of changes within cells that require many years to evolve from initiation to actual manifestation of illness – what is called the latency period (Landrigan & Garg, 2004). That is, exposures to environmental agents early in life, including prenatal exposures, are more likely to produce chronic disease than similar exposures encountered later in life (Ekbom, Hsieh, Lipworth, Adami & Trichopoulos, 1997; Gray, Peto, Brantom & Grasso, 1991). Finally, children are completely dependent on well-informed and caring adults to protect them. They are completely reliant on adults to keep their environments free of harmful contaminants such as tobacco smoke, lead in their toys and drinking water, and BPA and/or phthalates in their toys and foods. It follows that given children’s special physiological and susceptibility as well as the preventability of environmental harm, it is vitally important that society as a whole is activated to protect their health and well being (Landrigan & Garg, 2004; Selevan et al., 2004).

Healthy children grow up to be healthy productive adults and hence create healthy populations. Therefore, keeping our children as healthy as possible matters in the sustainability of the human race (Landrigan et al., 2004). Central to the protection of children’s health and the environment, the precautionary principle has long been argued to be the key standard in research, policy development and practices (CPCHE, 2008; Toronto Public Health, 2005). According to the Wingspread Conference on Precautionary Principle, “when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically” (1998, para. 1). Critiques of the conventional scientific biomedical model will be discussed in Chapter 2. My research examine the extent to which the precautionary principle is being used as a foundational principle for regulatory decision making on chemicals in Canada.
The following section provides the context for this study. The first part is a critical historical account of the regulation of BPA and phthalates in the US and Europe. The stories of these two chemicals serve as case studies informing my investigation. The second part surveys the Canadian landscape for sources of knowledge production within children's environmental health. Specifically, I will review literature critiquing Canadian laws and regulations that aim at protecting human health from environmental harm, and knowledge produced by Canadian higher education and environmental non-governmental organizations (ENGOs).

1.4 The Case of Plastic

Plastic is a common everyday material found in children’s environments. Toys and other children’s products such as teething rings, rubber ducks and plastic food containers are usually made of plastics. These items are considered "must-haves" for children to play with and use. However, there are many chemical substances in plastic that scientists are concerned about. In this study, I will focus on BPA and phthalates, especially in relation to children’s health. The section below will review the history of these two chemicals and the stories behind their regulation.

1.4.1 The Story of Bisphenol A

BPA is a synthetic chemical first developed in 1891; its estrogenic properties in the form of diethylstilbestrol (DES) were discovered in the mid-1930s by a British medical researcher, Edward Charles Dodds. In the 1940s, DES was commercialized as a therapeutic treatment for numerous female problems linked to menstruation, menopause, nausea during pregnancy, and for the prevention of miscarriages (Bell, 1995). This synthetic estrogen was also used to increase meat production by injecting it into farm animals. According to Marcus (1994), DES was prescribed to millions of pregnant women and injected into millions of animals despite persistent concerns about its toxicity. The drug was finally banned for use in pregnant women in 1971 after the first epidemiological studies reported rare vaginal cancers in young women exposed to DES while in their mothers’ wombs (Herbst, Ulfelder & Poskanzer, 1971) and problems in male reproductive organs (DES Action Canada, n.d.). The ban in animals fed it for meat production came in 1979 (Hutt, 1982).
Failed in its use as a drug, BPA found its utility in plastics. Building on Dodds’ research, scientists in the US and Switzerland were successful in synthesizing the first epoxy resins using BPA and production of it for commercial uses started in the early 1950s. By the mid to late 1950s, another form of BPA was synthesized as polycarbonate to be used to form hard plastic that is strong enough to replace steel and clear enough to replace glass. BPA, in the form of polycarbonate, then became a material for extensive use in electronics, safety equipments, automobiles, and food containers. By the mid 1970s, BPA was in use in every major US industry, either directly or indirectly (Anonymous, 1974), and its production reached half a billion pounds by the late 1970s (Greiner, Kaelin & Toki, 2004). As industries found more markets for the use of BPA, its production soared. There are over six billion pounds of BPA being produced world wide each year (Susiarjo, Hassold, Freeman, & Hunt, 2007), with approximately 200,000 pounds of the chemical released into the atmosphere annually (Markey, Michaelson, Sonnenschein & Soto, 2001). The use of BPA in the production of plastics is ubiquitous. It is found in commercial products such as laptops, cell phones, water main pipes, the linings of metal food cans, dental sealants and laboratory and hospital equipments. BPA is also found in children’s products such as toys, food containers, and baby bottles(Vogel, 2009; National Institute of Environmental Health Sciences [NIEHS], n.d.) – with this last use banned in Canada since 2008 (Health Canada, June 26, 2009).

1.4.1.1 Health Effects and Low Dose Exposures of BPA

Endocrine disruptors are chemicals such as BPA with the potential to interfere with the function of endocrine systems (U.S. Environmental Protection Agency, n.d.). And people, including children, are exposed to BPA on a daily basis through consumption of food and drink contaminated with BPA as well as through environmental contamination, with the highest estimated daily intakes of BPA occurring in infants and children (National Institute of Environmental Health Sciences [NIEHS], n.d.). The U.S. Centre for Disease Control and Prevention (CDC) has found that 95% of urine samples from children six years of age and older and adults have detectable levels of BPA in the US (Calafat, Kuklenyik, Reidy, Caudill, Ekong & Needham, 2005). In laboratory animal studies, BPA has been found to be associated with developmental and reproductive toxicity. Exposure to BPA during pregnancy and/or lactation can reduce survival, birth weight, and growth of offspring early in life, and delay the onset of
puberty in males and females (National Toxicology Program, 2008, September). Evidence from animal studies has also indicated that BPA may cause adverse effects such as obesity, behavioral changes, diabetes, asthma, cardiovascular disease, reproductive disorders, development of prostate, breast and uterine cancer, and transgenerational or epigenetic effects (National Institute of Environmental Health Sciences [NIEHS], n.d.).

In the US, the Environmental Protection Agency (EPA) considers exposures to 50 μg/hg/day of BPA to be safe. However, since 2005, over 130 studies have examined the low dose effects of BPA and found harmful health effects in animal and cell studies from these low dose exposures (vom Saal & Welshons, 2006). For example, Sugiura-Ogasawara, Ozaki, Sonta, Makino & Suzumori, (2005) found in their study that women with a history of recurrent miscarriage had average blood serum levels of BPA at 2.59 ng/ml, three times higher than women with successful pregnancies. This is a finding predicted by previous animal studies (Hunt, et al., 2003). BPA has also been linked to altered brain development and behaviour. Researchers found that BPA exposure in the womb modifies sexual differentiation of the brain and behaviour in rats at only 30μg/kg/day (Kubo et al., 2003), which is lower than the 50 μg/hg/day dose considered safe by the EPA. Research using cell cultures has shown that a concentration of BPA of one nM made prostate cancer cells less responsive to the hormone treatment used to control prostatic adenocarcinomas into remission (Wetherill, 2002). This concentration is lower than the average level of BPA found in Americans according to the 2005 CDC report (Calafat et al., 2005). Finally, a recent study in adult mice found evidence of a link between BPA exposure and increased risk of type II diabetes, hypertension and dyslipidemia (Alonso-Magdalena, Mormoto, Ripoll, Fuentes & Nadal, 2006). In this study, researchers found that chronic low dose exposures of BPA were linked to insulin resistance in adult mice during the experiment. The dose used in this study was five times lower than the dose considered safe.

\(^2\) Epigenetics is the study of gene-environment interactions that influence development and embryology (Van Speybroeck, 2002); and Skinner, Manikkam and Guerrero-Bosagna (2010) further defined the term as “molecular factors and processes around DNA that are mitotically stable and regulate genome activity independent of DNA sequence” (p. 217). Skinner et al. indicated that endocrine disruptors in particular can have epigenetic effects – long term responses of molecular processes that “will promote downstream developmental events and adult-onset disease” (p. 221).
by the EPA. Given the above evidence in the study of toxicity of BPA, Vogel (2008) asks why the “safe” level of BPA defined by law is still in place in most jurisdictions.

1.4.1.2 The Politics of BPA in the US

According to Vogel (2008), the definition of BPA safety, like most chemicals, is governed by the scientific presumption that the dose-response relationship is monotonic – that is, that with increasing doses, the effect increases and vice versa – summarized as “dose makes the poison” (“Paracelsus,” n.d.). Therefore, at minimal doses, the effect is assumed to be minimal. This interpretation of chemical safety based on dosage was foundational in the 1958 Federal Food, Drug and Cosmetics Act, which included provisions for the regulation of chemicals in food. As BPA was synthesized from epoxy resins and polycarbonates used in food packaging and production, it is therefore considered by the US Food and Drug Administration (FDA) as an indirect food additive. Early research showing BPA’s low general toxicity and rapid metabolism in animals, plus the low levels at which it contaminates food, provided support for FDA’s approval of its uses in food packaging. Included in the 1958 law was a separate standard for the safety of carcinogenic chemicals, called the Delaney Clause. It stated that carcinogens were hazardous regardless of dose. According to this clause, if a chemical was considered to be a carcinogen, it would be defined as hazardous even at a low dose. In terms of BPA, the carcinogenicity was never studied until the late 1970s (Vogel, 2009).

According to Vogel (2009), the National Cancer Institute (NCI) launched the first carcinogenesis study of BPA in 1977 responding to its high volume of production and its potential for occupational health and safety issues for workers handling the chemical. The study followed a standard carcinogenesis study design to assess cancer risk which included exposing adult rodents to high daily doses at and just below the toxic threshold on the assumption that if a carcinogenic effect was present, it would more likely be seen at high doses (National Toxicology Program, 1982). Such a study was not designed to detect transplacental effects or exposure effects on an offspring whose mother had been exposed. As well, it was not designed to look for the hormonal carcinogenicity of the estrogenic compounds, where the chemical substances combine with hormones of the hosts’ body causing adverse hormonal reactions. BPA was only found in 1993 to be an endocrine disruptor (Krishnan, Stathis, Permuth, Tikes & Feldman, 1993).
after more than 30 years of use. The discovery of BPA as an endocrine disruptor is an important topic to which I will return later in this chapter.

1.4.1.3 Laboratory Practices and Conflict of Interest in Knowledge Production

Not only was the study commissioned by NCI in 1977 not designed appropriately to look for health effects other than cancer in the experimental animals, the quality of the laboratory which was contracted to conduct the experiment also came into question. During the course of the BPA study from 1977 to 1979, the responsibility of the BPA carcinogenesis study was transferred from NCI to the then newly established National Toxicology Program (NTP) which was created to coordinate federal toxicological research (National Toxicology Program, 1982).

In the process of the handover, Congress asked the General Accounting Office (GAO) to investigate the quality of the private laboratories conducting research for the Carcinogenesis Bioassay Program of which the BPA study was a part. Litton Biotechnics was one of many private laboratories hired to conduct the carcinogenesis research of BPA in 1977 which was found to have extensive fraudulent practices. In 1979, the GAO found Litton Biotechnics to be the worst among the many private laboratories under investigation at the time. The GAO found maintenance problems, poor quality-control measures and poor pathology practices, all of which, the GAO concluded, could have affected the outcome of any research (Hart, 1979).

Despite the inadequacy of the original BPA toxicity research design and the GAO’s findings, the original results of the BPA carcinogenicity were accepted without any requirement of reassessment. In 1982, the NTP released the final report on the carcinogenesis study (which only has two categories of evidence – “convincing evidence” or “no convincing evidence.”) In describing the data, the NTP Report (National Toxicology Program, 1982) concluded that there is “no convincing evidence” of carcinogenicity. However, it went on to say

[t]hat “bisphenol A is not carcinogenic” should be qualified to reflect the facts that leukemia in male rats showed a significant positive trend, that leukemia incidence in high dose male rats was considered not significant only on the basis of the Bonferroni criteria, that leukemia incidence was also elevated in female rats and male mice, and that the significance of interstitial-cell tumors of the testes in rats was dismissed on the basis of historical control data. (p. xi)
Based on this conclusion, the original regulatory safety standard for BPA was established by the EPA in 1988 and adopted by the FDA. As such, BPA was considered to be a non-carcinogen, and the lowest dose from the carcinogenesis study (at which the “lowest observed adverse affect level” occurred) was divided by an uncertainty factor of 1000 to determine a reference dose of 50 μg/kg of body weight per day (U.S. Environmental Protection Agency, 1993, Jan. 7). This level of daily exposure remains the current US “safe” level. In terms of BPA’s estrogenic properties, the EPA concluded that because of BPA’s lack of bioaccumulation and short half-life, it did not present a likely threat or hazard (Parris, 1982).

Good Laboratory Practices (GLP) was a set of rules and guidelines for conducting research produced by the US FDA in the late 1970’s after the GAO investigation described above was undertaken in order to prevent misconduct and poor quality research (DeBoer Consulting, 2010). According to the FDA, the definition of GLP is

[A] set of principles that provides a framework within which laboratory studies are planned, performed, monitored, recorded, reported and archived. These studies are undertaken to generate data by which the hazards and risks to users, consumers and third parties, including the environment, can be assessed for pharmaceuticals, agrochemicals, veterinary medicines, industrial chemicals, cosmetics, food and feed additives and biocides. GLP helps assure regulatory authorities that the data submitted are a true reflection of the results obtained during the study and can therefore be relied upon when making risk/safety assessment. (FDA, Department of Health and Human Services, 1987. September 4; Health Canada, 2009)

Since the late 1970s, research studies have to be conducted under GLP in order to qualify for their use in U.S. regulatory decisions. According to Myers et al. (2009), adherence to GLP does not guarantee sound research; they have termed GLP the US FDA’s “misguided gold standard.” Myers and 35 co-authors from the US, Europe, and Japan revealed that the studies that FDA relied on for their most recent assessments of BPA toxicity, were two studies performed and reported by Tyl et al. (2002; 2008) and two older studies by Ashby, Tinwell and Haseman (1999) and Cagen et al. (1999). All of these studies were conducted using GLP rules and all were funded by industry (DeBoer Consulting, 2010). Hence, the results of these studies are suspicious because:
1. Tyl et al. (2002) was coauthored by scientists from GE Plastics, Aristech Chemical Corp. (now owned by Sunoco), Shell Chemical Co., Bayer Corporation, Bayer Healthcare AG, and Dow Chemical Co., and was sponsored by the Society of the Plastics Industry, Inc.

2. Tyl et al. (2008) included authors from SABIC innovative Plastics, Bayer Material Science, Bayer Healthcare AG, the American Chemical Council, the Dow Chemical Co., Experimental Pathology Laboratories, Inc, and Toxicology/Regulatory Services, Inc. This study was funded by the Polycarbonate/BPA Global Group.

3. The Ashby, Tinwell and Haseman study (1999) was conducted by the AstraZeneca International – a pharmaceutical company.

4. The Cagen et al. study (1999) was produced by scientists working for Shell Chemical Co., Shell Chemical Ltd., Dow Chemical Co., General Electric Corporation, Bayer Healthcare AG, Bayer Corporation, MPI Research (private research firm for pharmaceutical and other industry), a consultant to Aristech Chemical Corp. (now owned by Sunoco), and the Society of the Plastics Industry, Inc.

The issue of conflict of interest in research and knowledge production is part and parcel of critiques of advanced capitalism which will become an important theme as the story of BPA continues. As demonstrated by Myers et al. (2009), GLP does not warrant reliability or validity of study results; however, FDA in the US and many other countries including Canada and the United Kingdom (UK) only accept research that conforms to GLP guidelines for policy decisions (DeBoer, 2010).

By the late 1980s, production of BPA in the US soared to a billion pounds per year and the safety of BPA’s estrogenicity – the hormone like effects of the synthetic chemical - attracted investigative attention (Vogel, 2009). In 1993, by accident, endocrinologists at Stanford University found that BPA was leaching from polycarbonate flasks in their laboratory (Krishnan et al., 1993). Their published results brought attention to BPA’s estrogenicity and its ill effects on human health – it was then referred to as an endocrine disruptor (Korach, 1993). In 2000, the EPA requested NTP to review the research on the effects of low dose estrogenic compounds such as BPA. The National Toxicology Program’s (2001) Report of the Endocrine Disruptors Low Dose Peer Review concluded that there was credible evidence for effects from BPA.
exposure at or below the safety standard; further, the Report recommended renewed consideration of the current monotonic dose-responses assessment paradigm.

The above NTP 2001 Report alarmed the major industries involved in the original research and the American Plastics Council. They were concerned enough to contract the Harvard Centre for Risk Analysis to conduct a review in this regard. The Harvard Centre for Risk Analysis is an organization that has received financial support from the American Chemistry Council, the Society of the Plastics Industry, Dow Chemical Company, the Business Round Table, Phillip Morris and General Electric (Barnard, March 13, 2001; Vogel, 2009). In 2004, the Harvard Centre for Risk Analysis published its report on BPA using a “weight of the evidence” assessment model (Gray et al., 2004) developed at a 2001 meeting sponsored by the Annapolis Centre for Science and Policy (Gray et al., 2001). The Annapolis Centre for Science and Policy is an organization established by the former vice president of the National Association of Manufacturers and funded by tobacco giant Phillip Morris and ExxonMobil Foundation (Vogel, 2009). The Harvard report assessed seven categories of literature to evaluate the “relevance” and “reliability” of the data. The Harvard review, along with a more recent report in 2006 conducted by Gradient Corporation, a private consulting firm (Goodman et al., 2006), concluded that two large multigenerational studies provided the most relevant and reliable data, both of which were funded by the American Plastics Council and the Society of the Plastics Industry (Ema et al., 2001; Tyl et al., 2002).

By concluding that only the above two studies on BPA were relevant, the Harvard review effectively discounted evidence of significant effects presented in many of the low-dose studies (vom Saal & Welshons, 2006). In response to the Harvard study, Frederick vom Saal, a prominent biologist and a leader in the field of environmental endocrine disruption along with Hughes, one of the original participants of the Harvard panel, published an article criticizing the Harvard review (vom Saal & Hughes, 2005). In the article, they critiqued the Harvard review for failing to consider the body of research which included knowledge produced in endocrinology, developmental biology, and estrogen receptor research. More important, they exposed an apparent funding effect in the BPA research. According to these researchers, between 1997 and 2005, there were 115 research studies conducted on the effects of BPA at or below the safety standard in the US, Japan and Europe. Of the 115 studies, 90% of those funded by the
government reported some effects from the BPA exposure at or below the reference dose while none of the 11 studies funded by industry reported any effects (vom Saal & Hughes, 2005). This pointed to corporate capitalist interests at work in environmental health research in general and children’s environmental health knowledge production in particular.

In August 2007, the Chapel Hill panel, a group of 38 experts on endocrine disruptors and BPA, published a consensus statement in the peer-reviewed journal *Reproductive Toxicology*. The statement pointed to significant evidence indicating adverse health effects occurring in animals at levels within the range of exposure that is typical for humans living in developed countries (vom Saal et al., 2007). It concluded that BPA at concentrations now found in the human body is associated with “organizational changes in the prostate, breast, testes, mammary glands, body size, brain structure and chemistry and behaviour of laboratory animals” (vom Saal et al., 2007, p. 134). Later that month, a second major US government assessment was released from the Centre for Environmental Risks to Human Reproduction (CERHR), at the US National Toxicology Program. This review of evidence was sponsored by CERHR but was originally drafted by a private firm, Sciences International. After a number of public meetings and internal audits to assess possible conflicts of interest within Sciences International, CERHR released its final report by NTP staff in 2008. The CERHR report stated that there was “minimal concern” about the safety of BPA in human reproduction, and only “some concern for its effects on the brain, behaviour and prostate gland in fetuses, infants and children at current human exposures” (National Toxicology Program, 2008, September, p. vii). Nevertheless, the CERHR report was the first government panel in the world to declare that BPA is not safe, which made headlines in major national newspapers (Layton, April 16, 2008; Mundy Australian News, April 16, 2008). Within days of the NTP-CERHR report, the Canadian government announced its decision to declare BPA toxic and banned its use in baby bottles; retailers also began to pull BPA children’s products off the shelf and started to find alternatives for the BPA baby and water bottles (Vogel, 2009). In March 2009, six of the major baby bottle manufacturers announced the removal of BPA from their products (Layton, March 9, 2009). As well, Sunoco, a BPA producer, in an unusual move that places it out of line with its major trade association’s defence of BPA’s safety, is now requiring its business consumers to provide written confirmation that no BPA will be used in food containers intended only for children under three years of year (Perrone, March 12, 2009). This chain of events demonstrates how quickly legislation can be put in place.
In the US, in contrast to Canada, a number of ENGOs and researchers have until recently unsuccessfully lobbied the state governments to ban BPA in children’s products. Politicians have also sent letters to the FDA demanding action on BPA regulations (Vogel, 2009). In response to these appeals (Vogel, 2009), the FDA released a draft assessment of the literature on the reproductive and developmental toxicity and carcinogenicity in August 2008. There, the FDA again upheld the current safety standard based on the “no observed adverse effect level” reported in the two multigenerational studies funded by the major trade associations discussed above. Furthermore, the FDA also cited the Harvard Centre and the Gradient Corporation reviews to support its decision (Food and Drug Administration, 2008).

When the above report was released, the FDA Science Board, an external advisory board, struck a temporary committee – the FDA Science Board Subcommittee on BPA – to examine the above report (Philbert et al., 2008). The Subcommittee argued that the process by which FDA conducted its review – that is, excluding the hundreds of studies on low-dose effects of BPA in the peer-reviewed literature, was inadequate. As a result of this subcommittee’s work, the FDA announced plans to conduct extensive toxicity tests of BPA at the National Centre for Toxicological Research in August 2009. In September 2009, EPA announced that it would conduct its own review (Vogel, 2009; U.S. Environmental Protection Agency, March 29, 2010).

In 2010, FDA expressed a level of “some concern,” and EPA issued an action plan that included a call for environmental impact studies and finding safer alternatives to BPA use (U.S. Environmental Protection Agency, March 29, 2010). In the US, several states and cities have passed Bills to ban the use of BPA in children’s products such as Washington, California and Wisconsin. Jurisdictions in the US, such as Missouri, New Mexico, Maryland, New York, New Jersey, Pennsylvania, and Vermont have introduced Bills to ban BPA (Deboer Consulting, 2010).

In her article, Vogel (2009) contests the safety of BPA and more broadly the long-standing struggle of what scientific research should be used to define chemical safety. In her words,

> defining the acceptability, reliability, and relevance of this low-dose BPA research in assessing risk and safety affects not only the future of this chemical; if there is consensus
that the scientific paradigm informing safety testing has changed, the implications for reforming risk assessment and safety testing will be profound. (p. S564)

The debate over the current BPA safety as discussed above illustrates the complexity of chemical regulation and hidden politics involved in knowledge production. The above review is based on the US context. The story continues with the related US and EU account of phthalate politics before I turn to the planning of my own research focused on the Canadian process of chemical substances regulation.

1.4.2 The Story of Phthalates

Phthalates are a group of more than 30 colourless, odourless liquids produced by reacting phthalic anhydride with alcohols and eliminating water (Bruins, 1965). Phthalates have been in use in chemical manufacturing, primarily as a plasticizer additive in polyvinyl chloride (PVC) to make plastic more flexible and soft since the 1940s. The use of phthalates in plastics accounts for 80% of the market for phthalates. Phthalates are also used as solvents in cosmetics and body care products and there has been a campaign to increase the awareness of the harmful effects of phthalates in personal care products. For example, the David Suzuki Foundation (n.d.) has compiled a list of toxic chemicals to avoid in personal care products.

As ingredients of plastic, phthalates are found in numerous consumer products which can affect children such as cars, shower curtains, toys, medical blood bags, and floor tiles (Iles, 2007). Phthalates are high production volume chemicals, amounting to a million tons yearly in Europe, over at least 100,000 pounds of production in the US (Iles, 2007). No Canadian data is available. Phthalates are not structurally bound in chemical compounds and hence can leach out with time and under everyday use (Iles, 2007). People can be exposed to the chemicals by breathing in the particles, ingesting them in food, and absorbing them via the skin. Because phthalates can degrade quickly in the environment and are currently not regarded as persistent chemicals, industry has maintained (as in the case of BPA) that these chemicals are biologically non-threatening to health (Iles, 2007). However, phthalate ester has, like BPA, been found to be an endocrine disruptor because of its known estrogenic activity (Colon, Caro, Bourdony & Rosario, 2000). It has been linked with premature breast development, a condition called thelarche in girls six months to eight years old (Colon et al., 2000). The most important sources
of exposure of phthalate ester for children are ingestion of contaminated formulas, food, and water from contact with plastic wrappings and containers (baby bottles and liners) and mouthing of plastic toys and pacifiers (Colon et al., 2000).

1.4.2.1 Regulating Phthalates in Europe and the US

Similar to the BPA story, phthalates became substances of concern in the early 1970s when medical researchers in the US were worried about the potential occupational health hazards on workers from PVC manufacturing (Jaeger & Rubin, 1973). In the 1980s, as phthalate manufacturing and releases of phthalates into the water became pervasive, NTP published assessments of literature reviews on the carcinogenicity of several phthalates based on animal studies (Iles, 2007). The work done by NTP occurred between 1980 and 1986, and as with BPA, the research studies emphasized individual chemicals, ingestion pathways, cancer risks, and mortality outcomes. It was not until the late 1990s that, as with BPA, several regulatory bodies within the US government became involved in producing knowledge about phthalates. The EPA, FDA, and the Consumer Product Safety Commission (CPSC) all conducted their own reviews on the toxicity of phthalates. The CDC also began bio-monitoring studies of phthalates in human populations (Sexton, Needham & Pirkle, 2004).

In addition to the activities of US regulatory bodies and scientists, in the late 1990s, several European regulators and scientists also took an interest in assessing the risks of phthalates. The European Commission, responsible for regulating chemicals and consumer products, did their own audits of phthalates and funded new research designed to feed into regulatory processes (Iles, 2007). In addition, governmental regulators and academics, as well as a number of consumer and ENGOs generated independent analyses of chemicals in consumer products such as phthalates. At the same time, the cosmetic and chemical industries organized their own scientific expert panels to review the literature and to testify that the chemicals and therefore the products containing the chemicals were safe (Iles, 2007).
There are two interesting developments in Europe, which arguably eventually led to the regulation of phthalates in Europe but not in the US or Canada. First was the surprise discovery of an unexpectedly high level of phthalates in baby foods in a routine consumer product testing by the Ministry of Agriculture, Fisheries and Food in Britain in 1996 (Allen, 1999). This resulted in the beginning of further surveying of what other consumer products might contain phthalates by European countries such as Denmark, Germany, and Austria. The second development was the communications campaign about product risks directed to consumer and public audiences by European ENGOs such as Greenpeace, the World Wildlife Fund (WWF), and Friends of the Earth (Iles, 2007). These two developments ultimately opened a path to the regulation of phthalates in Europe based on the precautionary principle (Iles, 2007). Arguably, the regulation of phthalates has led a wave of governmental and ENGO activities on the debate of chemical risks in products. In Denmark, for example, the Danish Consumer Council has agreed to test products for chemicals and has a program to evaluate 100 toy brands for phthalates. Again in Denmark, in 2000, a major conference took place at which ENGOs and consumer NGOs agreed to build a Europe-wide network to research, report on, and advocate against product risks; furthermore, they have agreed to pool their resources to counter industry influences (Iles, 2007).

In contrast to the journey towards regulating phthalates in Europe, the story of phthalates in the US is quite different. Iles (2007) uses the concept of civil epistemologies to describe the differences between the two jurisdictions. In doing so, Iles focuses mainly on the role of NGOs in the successful advocacy in Europe and the failure of the same in the US. According to Iles (2007), the participation of NGOs in advocacy differs markedly between the US and Europe. First of all, the ENGOs and the consumer NGOs in Europe came together and joined forces to produce knowledge and to lobby the public and the government to develop policies based on the precautionary principle. Second, the European countries have long been investing in knowledge production about chemical risks from consumer products – at least since the mid to late 1990s. In contrast, in the US, only a few ENGOs have paid attention to chemical risks in products and have rarely associated with consumer NGOs to support the goal of chemical regulation (Iles,

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3 At least not until the 2011 ban just being put in place – see chapter 9.
Differences in the vigour of activism to regulate phthalates in toys can also be observed between Europe and the US. In 1997, while the governmental regulatory bodies were waiting to develop assessment methodologies to evaluate the leaching process of phthalates and what the “safe” level of exposures should be, the European ENGOs started their own knowledge production on the chemistry of the substances as well as the use of toys by children. Greenpeace began evaluating toys in Europe and initiated a society-wide dialogue on chemical policy focusing on the damage to children in the use of toys containing phthalates. It also funded a research laboratory at Exeter University to test the toys, by which it gained credibility and hence was able to influence European regulatory agencies (Iles, 2007). After testing over 60 soft toys, the study commissioned by Greenpeace showed that phthalates were present in high levels, and because children were likely to use a number of toys, therefore multiple exposure risks were well beyond those of individual toys. As a result, Greenpeace in Europe led a campaign targeting national governments and the European Commission and Parliament to ban soft toys. In 1999, the European Union Council of Ministers imposed emergency bans on the use of three phthalates (DINP, NIDP, and DnOP) in soft toys made from PVC designed for mouthing by children under three years of age (Scott, 2003) and three other phthalates (DHEP, DBP, and BBP) were banned from all toys and child care items (Iles, 2007).

The story of regulating phthalates in the US, however, took a different turn. In October of 1998, following the lead of the European ENGOs, the National Environmental Trust (NET) based in the US commissioned a laboratory to test soft toys, for phthalates, specifically, DINP (Di Gangi, 1998). When the results of the tests were presented, the Consumer Product Safety Commission (CPSC) and the toy industry appeared unaware of the presence of phthalates in toys. The US toy manufacturers denied that phthalates could be in soft toys (Iles, 2007). As NET, Greenpeace, and other ENGOs petitioned CPSC for regulatory intervention, in 1998, CPSC requested toy manufacturers to withdraw soft PVC toys voluntarily until scientific data
could be reviewed (CPSC, 1998a; CPSC, 1998b). According to Iles (2007), this call was kept in low profile. For example, US ENGOs did not communicate to consumers about the risks of these products. Rather, they focused their energy on directly lobbying the government to change the regulation. The CPSC refused to act based on the immediate risk paradigm. Using this criterion, it is more likely to intervene if a toy poses an imminent hazard such as choking than if the exposure outcomes are more chronic or long term. The acute vs. chronic hazardous exposure debate will be explored and discussed below in Chapter 4 in the context of labeling in Canada.

Along with its refusal to act, the CPSC was also firm in their focus on individual toys rather than on how children’s accumulating exposures through their use of multiple toys and other products (Iles, 2007). However, ENGOs did further surveys of children’s behaviours, intending to urge the US regulatory bodies to pay attention to the social context of product use which could be part of the criteria for evaluating chemical exposures. But the regulatory scientists and the governments rejected their arguments and continue to test for phthalates for leaching and migration standards only in laboratory settings (Iles, 2007). Arguably the Canadian approach differed from both the US and the EU; I now turn to a review of what is known about chemical regulation in the Canadian context, in preparation for my research exploring the social relations and practices within it.

1.5 Preparing to Research – The Canadian Landscape

It has been argued that the most effective way to protect children as a population from environmental toxicity is through regulatory strategies such as the institutionalization and enforcement of laws, regulations and policies (Tyshenko et al., 2007). In this section, I first ask whether Canadian laws and regulations concerning toxicity are protective of children. To address the question, I will review literature that critiques the process of risk assessment which is necessary, according to the Canadian government, to manage the toxicity of chemicals. Besides critiquing risk assessment, I will review literature that critiques how Canadian environmental laws are written and enforced. Following this, as higher education institutions are generally thought of as the location for knowledge production, I will also review what is known about how the Canadian higher education system deals with the topic of children’s environmental health. Finally, I will review the literature on the new role of NGOs as knowledge producers in this area.
My goal here is to determine what is known about “how things work” in preparation for my research on Canadian chemical management.

1.5.1 Canadian Laws and Regulation

According to Cooper (2004a), current Canadian laws and regulation, including environmental ones, are not protective of children. Major issues include limitations of risk assessment, questions about how the laws and regulation were written, and how they are interpreted and reinforced.

1.5.1.1 Risk Assessment Theory and Practice in Canada

In the past, toxicology has maintained that “the dose equals the poison” as discussed earlier. As suggested above, this theory has long been proven not to be true in the case of toxic chemicals in children’s health, especially in endocrinology when hormones are considered. For example, low doses of hormone drugs to treat prostate or breast cancer can result in a rise in testosterone levels or cell proliferation, whereas higher doses have the opposite effect (Garner, 1994; Mortimer et al., 2001). Despite numerous publications discounting the dose theory, our governmental regulatory system continues to operate under this assumption. A tremendous amount of resources are invested in finding the “safe” levels of exposure to toxic substances such as BPA and phthalates, and this process is called risk assessment. The formula for setting the “safe” level of exposure is

\[
\frac{\text{Acceptable Exposure Level} \text{ (from animal studies, human data, what is known about the chemical...)} }{\text{Uncertainty Factors} \text{ (usually 10,000 or 1000)}} = \text{“safe” level of exposure for the entire population}
\]

Phillips et al. (2002) argue that this formula of risk assessment is dangerous and limiting in many ways. First, the acceptable exposure levels typically were derived from occupational studies where an average 150 pound white male’s acceptable exposure was used. For reasons discussed above, this “acceptable” level of adult exposure is automatically too high for children and therefore the results of this formula will be invalid for this population. Second, the effects of these exposures may be delayed for many years, as in the case in hormonal disorders linked to
plastic exposures. The observable ill effects are not usually diagnosed until puberty or adulthood, and some will not appear until subsequent generations when the index case becomes a parent. When the effects are not evident immediately after the exposure or within the time line of the actual research, then safety may be falsely assumed. Third, this formula does not account for synergistic or cumulative effects of the poison. Fourth, in many cases, research is not available and therefore the acceptable exposure level is unknown or there may be *no* safety dose. For instance, there is no safe level in the case of BPA; as I have illustrated earlier, numerous research studies have demonstrated ill effects in animal studies of low-dose BPA exposures.

Fifth, the risk assessment process itself can be critiqued. According to many writers on the subject (Chance, 2001; Cooper, 2004c; Raphael, 2000; Steingraber, 2001), there are 23,000 chemicals in use in Canada and very few have been fully evaluated for their potential impacts on children, particularly on the developing brain or reproductive system, as I will show in Chapter 4.

The sixth reason for the inadequacy of risk assessment is the impossibility of measuring the exact exposure to toxins for any given individual. For example, in the case of BPA in plastic, how do we begin to measure the amount of exposure, as the sources of BPA can be numerous? Even after the Canadian government banned BPA in baby bottles, children could still be exposed to BPA through eating canned foods with BPA linings or through a pregnant mother eating the canned food and then passing the chemical to her fetus. The seventh reason to question risk assessment is the cost relative to the process if it is undertaken properly. For example, Chance (2001) has reported that in the American NTP, a 13-week single species toxicology test of all interactions in a mixture of 25 chemicals would require 33 million experiments at a cost of three trillion dollars. This astronomical cost is obviously a prohibitive factor in testing the substances and their interactions quickly and thoroughly. The process is also mainly controlled by a few scientific elites and their best judgement, which raises serious ethical issues. In environmental health studies, there is rarely certainty. That is, in order to determine the level of risk, one has to make discretionary decisions about toxic levels and these decisions may be affected by any number of circumstances, such as political and commercial influences. While scientists and government officials are pre-occupied with establishing the “safe” levels of exposure, Phillips et al. (2002) argue that the potentially toxic substance is allowed to continue in use as if it was
harmless. More details about Canadian risk assessment and management processes will be presented in Chapter 4.

In addition to these critiques of risk assessment processes, there are three main critiques of existing Canadian laws and regulation in the literature. First, it is pointed out that Canadian laws such as Canada’s Hazardous Products Act tend to be reactive. Specifically, this legislation only comes into effect when something goes wrong. Second, the laws are not always used or enforced. This may be due to the impact of widespread cuts in governmental programs, the effects of trade agreements on regulatory responses to contaminants in the environment and especially in consumer products, and political corporate pressure (Cooper, 2004b). This last critique of Canadian toxicity laws suggest that they have limited impact on the risk management process. As Waring (1988) has argued, American risk management is a negotiation process where “cost effectiveness” and/or other legal and political factors are taken into consideration against the potential for harm to human health. In many cases, economic considerations may override considerations about human health in the implementation of the law. I will elaborate on this point in my analysis in Chapter 6.

Critics have pointed out that in historical struggles over lead, asbestos, tobacco, and radiation contamination, debates over regulatory controls have often lasted for decades while exposure to these contaminants continued. When Tyshenko et al. (2007) reviewed the main Canadian federal, provincial, and municipal legislation as well as the non-governmental strategies used to protect children from environmental harm, they concluded that on the whole, in Canada, neither regulatory nor non-regulatory strategies were adequate to protect children. They have pointed out major deficiencies in risk assessment, research agendas and funding allocation, and systematic operational lack of capacity. Thus in the literature, it is generally agreed that Canadian laws and regulation set out to protect citizens from environmental harm are not protective of children.

What about knowledge production in Canadian higher education institutions? Do universities teach their health professionals about the politics of children’s environmental health? Further, do universities actively conduct research and produce knowledge in this area? Finally, who else is producing knowledge in the area of children’s environmental health besides
universities? To answer these questions, I will examine here what is known about the role of Canadian universities in teaching and research, as well as the contributions of ENGOs to knowledge production, and this sector will be discussed more fully in Chapters 7 and 8.

1.5.2 Canadian Higher Education Institutions and Children’s Environmental Health

In my previous research on the integration of children’s environmental health knowledge into the work of public health nurses, I found a systemic lack of attention in this area, even though public health nurses were in an ideal position to use the knowledge for the benefits of their clients (Seto, 2007). This phenomenon is apparently not unique to public health nursing. Medical professionals are reported in the literature to be unable to effectively recognize, diagnose, treat, and prevent environmentally-related illnesses in clients (Wiseman & Stefanovic, 2009). As there only a few publications in this specific area of knowledge production in children’s environmental health in the Canadian context, only the two key articles will be reviewed here. The Wiseman and Stefanovic (2009) publication is about education and training in Canadian universities on children’s environmental health, and the Masuda, Zupanic, Poland and Cole (2008) publication is about equity based research in environmental health of vulnerable populations in Canadian universities.

1.5.2.1 Education and Training on Children’s Environmental Health in Canada

In 2009, Wiseman and Stefanovic conducted a national Canadian survey on education and training for health professionals on the topic of children’s environment and health, identified “gaps and barriers” (p. 411), and developed recommendations for improvement. They conducted a systematic internet review of all university websites, specifically targeting programs such as medicine, nursing, public health, social work and toxicology. In addition to studying these programs, Wiseman and Stefanovic also approached 275 people with a variety of health backgrounds for a web-based survey.

In the program analysis, Wiseman and Stefanovic (2009) found a number of graduate level environment and health-focused programs offered at Canadian universities. However, they were unable to identify a single course that solely focuses on children’s health and environment. Rather, the topic of children’s health and environment is typically the focus of one or two modules at the most in a general course in environment and health.
Overall, the topic of vulnerable populations appears to be largely neglected in current programs of study. (p. 411)

The curricula of medicine and nursing were found to contain little or no health and environmental content at all. From the 86 web-based surveys of key informants, Wiseman and Stefanovic (2009) reported that there was general agreement among survey respondents of the need to improve educational opportunities in the field of environment and health, especially as it relates to children. (p. 411)

Specifically, when they were asked about the current state of education in environment and health in Canada, 25 respondents (29%) believed that there was very little or nothing being offered. A large proportion (19%) felt that the available course offerings were not focused or adequate in scope. Compared to offerings in the US, three respondents (3%) pointed out that the current state of education in this field was poor. Only two respondents (2%) believed that current education in this field remains fairly comprehensive although no concrete information was provided as evidence for their beliefs. One professor was quoted to say that “sitting on the curriculum committee of a major medical school in this country, I am not aware of any curriculum that touches this area at all” (Wiseman & Stefanovic, 2009, p. 412). All nurse participants reported being unaware of environment and health education, including topics on children’s health. The same was true for key informants from pediatric programs. When key informants were asked to identify challenges in providing education in children’s environmental health in Canada, themes were: lack of available expertise, lack of perceived importance of the topic, and lack of financial and institutional support. Informants pointed out that Canada has lost expertise in this area, since academics have been lured to other countries with better work and research opportunities. Another aspect of “unavailable” (p. 412) expertise is related to the interdisciplinary nature and breadth of the field. The study of children’s environmental health necessitates understanding of a wide variety of issues in areas including medicine, toxicology, epidemiology, ecology, sociology, anthropology, economy, information technology, social justice, and politics. While noting this point, the authors did not explicitly theorize or identify the consequences of this fragmentation. In Chapter 8, I will explore these issues of knowledge production and their consequences in children’s environmental health.
In addition to the lack of available expertise in Canada, respondents of the Wiseman and Stefanovic (2009) survey also pointed out that children’s environmental health issues are not seen by faculty to be important enough to be incorporated into the curricula. The lack of acuteness of environmental health conditions was specifically indicated as part of the problem. The traditional medical paradigm focuses primarily on acute illness and its treatment, and the disorders related to environmental exposures, on the other hand, tend to be chronic, and the linkages between exposures and effects are less discernible and tangible. Wiseman and Stefanovic (2009) assert that the traditional biomedical model, therefore, is not well-suited to describe and address the complexity of environmentally-related illnesses and disorders which often require interdisciplinary collaborative efforts to be fully understood. The study quoted one key informant who stated that “the biggest problem is the biomedical model that encourages narrow thinking, and the silos that separate the many disciplines need to come together to work on these issues” (p. 414). The dynamics and consequences of these epistemological issues clearly require more investigation if realistic recommendations are to be made to raise the profile of children’s environmental health in these programs. These issues will be addressed in Chapter 8.

Lack of financial and institutional support was viewed to be the largest challenge facing children’s environmental health education and training in post-secondary curricula. To illustrate the lack of institutional support, Wiseman and Stefanovic pointed out that 54 out of the 190 people who were invited to participate in the survey and did not participate were people in higher ranking positions. They were deans, directors, or division heads of medical, nursing and related health programs. An additional eight non-respondents were presidents and chairs of major national and provincial medical and other health-related associations and societies. Since this accounted for one-third of the invited participants, they concluded “that the topic of child health and environment education and training is not viewed as a high priority by those in top-level positions across the country” (Wiseman & Stefanovic, 2009, p. 414).

Lack of support from higher ranking administrators was clearly related by Wiseman and Stefanovic’s (2009) respondents to the current lack of funding for environmental and health research and the absence of a central coordinating authority at the federal level to encourage research and education in this field. The researchers concluded that the “lack of funding for
research limits the production of new knowledge that could be transferred to young academics and professionals” (p. 413). The problem is circular, in that the funding shortage means universities have little incentive to hire individuals in this discipline. The lack of career opportunities in this field “deters students interested in studying environment and health” (p. 413) from continuing further studies in this area. Further, the lack of research infrastructure for this field in Canada is problematic. Specifically, informants pointed to the absence of an “Institute for Environmental Health” similar to the National Institute of Environmental Health Sciences (NIEHS) in the US, which supports education and research in this field, and called this a “serious problem” for Canada (Wiseman & Stefanovic, 2009, p. 413). The development of such national research and education infrastructure was identified as necessary to advance the study of the environment and health by encouraging related research and collaboration between health professionals and those from related disciplines.

Respondents also noted the “lack of a ‘champion’ with enough political strength and will to push children’s health and environment onto the political agenda” (Wiseman & Stefanovic, 2009, p. 413). Thus the Wiseman and Stefanovic research provides a good beginning for exploring power relations in knowledge production in children’s environmental health in Canada. For example, what are the power relations and discourses in children's environmental health in Canada that could be contributing to the lack of relevant knowledge production in the universities? These power relations and discourses will be mapped in my research, and the marginal position of children’s environmental health in the higher education sector will be discussed in detail in Chapter 8.

1.5.2.2 Equity-focused Research in Environmental Health in Canada

There is one article that has assessed the state of equity-based environmental health research specifically focusing on populations such as children in Canada. As there is no other study to date that describes the research landscape of children’s environmental health in the Canadian context, I will devote this section to reviewing its recommendations and highlighting the points that have guided my research direction. This is a jointly written article by four academics and community researchers from health promotion and public health, published in the *Canadian Geographer*, and entitled “Environmental Health and Vulnerable Populations in
Canada: Mapping an Integrated Equity-focused Research Agenda” (Masuda et al., 2008). In this literature review, the researchers assessed 308 studies focused on Canadian environmental health inequity in the past 30 years. While there has been considerable growth in Canadian research to document environmental hazards across locations and populations, the researchers concluded that there is “a lack of research aimed at integrating evidence-based and policy-relevant evaluation of environmental health inequities and how they are created and sustained” (Masuda et al., 2008, p. 428).

In the article, Masuda et al. (2008) reported a considerable drop in support for environmental health research in recent years compared to the 1990s in Canada. There has been “less fully funded” equity-based analysis taken up by the Institute of Population and Public Health of the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes of Health Research (CIHR). Indeed, SSHRC no longer funds proposals with a health focus (Macdonald, Feb. 1, 2011, personal communication). The study by Masuda and colleagues shows an uneven growth in research production according to epistemological and methodological approaches. Not surprisingly, they note a surging of descriptive (mainly quantitative) research and limited amount of reflective/transformative (mainly critical) research after 1998. For the researchers, the problem is

a strong ideological entrenchment within Canada in the ‘value-free’ research orientations at the expense of more critical and policy-engaged research aimed at uncovering the experiences and structural mechanisms involved in the production of environmental health inequity. (p. 446)

Masuda et al. (2008) therefore called on geographers and other researchers to conduct “more practical, policy-relevant research that brings together the multiple theoretical and methodological approaches” (p. 446) that would “exert more influence in the transformation towards a more equitable society” (p. 446).

In order to influence policy development, Masuda et al. (2008) made the following eight recommendations. The first is for future research to consider mixed methods research. The apparent lack of interdisciplinary and multi-method collaboration motivated the authors to state that

many researchers working under a positivist paradigm continue to operate within an outdated mode of scholarship that conflates notions of research objectivity and rigour
with an erroneous adherence to political neutrality. Researchers must become open to the reality that their work, especially when dealing with the health of vulnerable populations and its linkages to human activity in the environment is a political enterprise with national and global implications. (p. 446)

This important linkage between politics and knowledge production in children’s environmental health is central in my research. My goal is to show how the politics of regulating toxic chemicals have overarching local, national and international implications for children’s health, which I will detail in Chapters 4 to 6.

The second recommendation from Masuda and colleagues (2008) for future research in the area of environmental health equity is their call for the application of preventive and precautionary principles in research. Again, they specifically suggest “transformative interdisciplinary research that emphasizes the development of processes, procedures, institutions and other structures that can inform precautionary policies and promote environmental health equity” (p. 446). Their third recommendation is related to their observation that there is a severe shortage of research focusing on the health implications of environmental contamination relating to women outside central Canada. They speculate that the spatial patterns of many environmental health inequities may correspond to the social and geographic margins of society such as rural and remote areas.

The fourth recommendation for future research in the Masuda et al. (2008) article suggests different social determinants of health together to document the way these determinants interact for specific populations. Masuda and colleagues specifically draw attention to their observation of the under-emphasis on low-income, homeless, rural and immigrant/refugee populations in environmental health research. They suggest that current research priorities are driven by public appeal, political climate and Tri-Council funding as compared to concern about the health issues of poor ethno-racial minorities. To better fund and support the investigation of such complex intersectionality research, the authors recommend the creation of an Institute of Environment and Health under CIHR. Both Wiseman and Stefanovic (2009) and Masuda and colleagues (2008) call for such a research infrastructure. I sought views on their suggestions from my key informants.
Masuda et al.’s (2008) fifth recommendation for future research is related to the small scale of environmental health inequity studies to date. They called for more multiscalar and interlocal/translocal research which would that “demonstrate positive outcomes in one locality may contribute to the displacement of contamination into other, more vulnerable communities” (p. 447), giving examples of research emphasizing how transboundary resource exploitation does not know local or national boundaries. Exploration of how national and global politics set the local everyday activities of people’s lives would be useful using Dorothy Smith’s (1987) theoretical concept of the hooking together of the local to translocal ruling relations (to be discussed in the next chapter).

Masuda et al. (2008) encourage future researchers in the area of environmental health inequity to embrace holistic health outcomes in their sixth recommendation. They provide evidence to show that most of the research in this field has focused on physical health such as chronic disease and developmental health as the predominant health outcome of environmental contamination, with much less study into psycho-social effects of environmental health injustice. Masuda et al. (2008), again, call for

[m]ore interdisciplinary collaboration between health-informed epidemiologists and culturally informed social scientists [who] may help us to get past narrow conceptualizations of environmental distributions and toward more holistic assessments of everyday experiences of both biophysical and social ill-health. (p. 448)

Perhaps the mostly relevant recommendation for my research from Masuda et al. (2008) was their call for researchers to question power. They urged that

addressing disproportionate environmental burdens experienced by vulnerable populations requires a deepened understanding and critique of complex power relations built into systems of environmental governance. (p. 448)

but their review of the literature suggested

a reluctance to take on more critical analyses of Canadian environmental and health policy framework. For example, analysis of the health impacts of the current Canadian Environmental Protection Act (CEPA 1999) was notably absent. (p. 448)

This deficiency in current research has motivated me to take on research on the political sphere of environmental health inequity, interrogating the visible and exposing the power relations in the production of knowledge in children’s environmental health. The final recommendation of
the Masuda et al. (2008) study was a call for positive stories in environmental health, such as ways of improving access to environmental “goods” for marginalized populations.

In summary, although specific research in children’s environmental health is scarce, two articles exploring the wider landscapes framing children’s environmental health and environmental health and vulnerable populations provide some directions for my research.

1.5.3 Role of Non-Governmental Organizations in Knowledge Production

As both the Wiseman and Stefanovic (2009) as well as the Masuda’s et al. (2008) articles reviewed above indicate a shortage of knowledge production in children’s environmental health in universities, it is logical then to explore who else is producing knowledge in this area. This question leads to an examination of the role of NGOs. NGOs have been defined as private organizations that pursue activities to relieve suffering, promote the interests of the poor, protect the environment, provide basic social services, or undertake community development (Butler, 2000). In an article written by Delisle, Roberts, Munro, Jones & Gyorkos (2005), key roles NGOs play in the health research system are described and promoted. The article, much as those reviewed above, posits that research in health inequities requires trans-disciplinary teams with intersectoral approaches and methodologies. And building trans-disciplinary teams requires commitment from the research community to seek out colleagues from other disciplines, from funding agencies and community at large as partners and contributors, and from the policy arena to develop strategies for intersectoral policies and programs (Delisle et al. 2005).

Delisle et al. (2005) have pointed out that traditionally, many NGOs have undertaken activities that address health issues in resource-poor settings. These NGOs are typically service-orientated and usually concentrate their efforts on implementing “action” programs. However, these types of NGOs usually find it difficult to obtain resources that would allow them to conduct research, which is an evolving role (Iles, 2007). Delisle et al. highlighted the importance of the role of NGOs in knowledge production, asserting that

NGOs can provide stewardship in terms of the promotion and advocacy for relevant research, shaping research priorities, and the setting and interpretation of ethical frameworks for research. Further, NGOs can often play a more powerful role using the results of research than can the research community itself. Mobilizing communities, utilizing mechanisms for advocacy and acting as an interface between the research
community and its wider community will enhance a sense of strong governance and stewardship. (p. 5)

As helpful as the above idea appears, significant challenges for NGOs must be recognized when NGOs attempt to be part of the knowledge production community. Delisle et al. (2005) went on to point out that

the existing power structure in the research arena often works against NGOs because of a narrow view of research as merely producing new knowledge, with limited consideration of upstream operations (identification of research needs, questions, and priorities), downstream actions (knowledge management, dissemination, and translation), and the advocacy efforts required to connect research with policies, programs and training. (p. 6)

Silbergeld (2002) further suggests that because toxicology (a large part of children’s environmental health) is regarded as a technical area rather than as an area that should be transparent to citizens, it is therefore only toxicologists, regulators, and industry scientists who are regarded as most qualified to study and draw conclusions about chemicals. Consequently, lay people and NGOs have not been regarded as providing significant evidence about chemical risks, nor, arguably, have they been counted as more than social critics of regulatory processes or as proponents of political action. In my research on knowledge production in children’s environmental health, I include a detail exploration of the role of the Canadian ENGOs and non-ENGO coalitions in Chapter 7.

1.6 Conclusion

In this section, I have first established the importance of children's environmental health, and then delineated the various reasons why children's health requires special attention. Secondly, I reviewed the stories of BPA and phthalates as case studies in chemical regulation in Europe and the US to illustrate how politics is embedded in knowledge production in children's environmental health. Third, I reviewed literature critiquing the current Canadian laws and regulation and questioning their ability to protect children's health from harmful environmental exposures. Finally, literature in the Canadian context focusing on knowledge production in children’s environmental health both in the higher education institutions and the community (in the role of NGOs) was reviewed. Overall, the literature has indicated that education and training, and research generally are not adequate in the area of children’s environmental health in the Canadian context and that NGOs are having difficulty being seen as legitimate participants in
the landscape of knowledge production. In the next chapter, I turn to theoretical consideration focusing my review on knowledge production and power relations.
Chapter 2

TOWARDS A CRITICAL STUDY OF CHILDREN’S ENVIRONMENTAL HEALTH IN CANADA – UNPACKING POWER RELATIONS

2.0 Introduction

The previous chapter reviewed issues in children's environmental health framing intricate processes of knowledge production in this field as political, economic, and social relations. In this chapter, I will use various critical perspectives to theorize power relations in children’s environmental health, specifically the knowledge production process in this field. Critical perspectives are concerned with the construction of knowledge and the organization of power in society generally, and in institutions such as universities, hospitals and governments specifically, can lead to the subjugation or oppression of particular individuals, groups, or perspectives. Critical theorists especially position their studies to reveal inequity and injustices in relation to race, gender, socioeconomic status, religion, and sexuality (Kinchloe & McLaren, 2000).

Critical perspectives on knowledge production have converged in their critiques of the biomedical scientific paradigm. In introducing these perspectives, I will first problematize the conventional concept of knowledge production and its taxonomy and epistemology as presented in the mainstream literature. Then, I will trace four scholarly sources of critical theoretical writings on power and knowledge production, quoting critical theorists such as Foucault, critical feminists (Haraway and Harding), eco-feminists (Shiva and Warren), and Dorothy Smith. Other concepts and authors I will review are neo-liberalism (through Hyslo-Margison's writing); academic capitalism (Slaughter and colleagues); Foucault's power and knowledge; Haraway's situated knowledges, partiality, and agential realism; Harding's critique of science and its use as a colonization and political tool; some eco-feminists' concepts of poverty, children's environmental health, and oppressive conceptual frameworks; and finally, Dorothy Smith’s theorizing on ruling relations, explaining how the local “hooks into” the larger picture of the “translocal” via textually mediated discourses, and processes of ideological circles, institutional capture and downloading.
In order to identify the complex ruling relations in the multi-layered governance of children’s environmental health, I draw on Jacobsson and Sahlin-Andersson’s (2006) concepts of rule setting, monitoring and agenda setting modes of regulative activities. According to these authors, the mode of rule setting regulation pertains to formal laws, legislations, proposed acts, standards, codes, recommendations, and guidelines. Thus, rule setting regulative activities involve traditional hard forms of legislative regulation as well as soft rules. Monitoring regulation is often combined with rule setting activities to evaluate rule setting and rule following (regulation and compliance) activities. The monitoring mode of regulation is embodied in activities conducted by individuals and/or organizations such as auditors or other scrutinizing bodies such as the media. Although agenda setting regulatory activities may not have official governance or enforcement authority like rule setting and monitoring activities, they operate as platforms where all kinds of experiences can be transmitted and compared and where ideas are generated and shared. These include spaces where issues, ideas, recommendations and advocacy take place through discussion, probing and penetrating in such forums as conferences, summits and research studies – activities which are foundational for rule setting and monitoring. Such knowledges are considered “good” and “desirable” in both policy and practice. Agenda setting activities rely on “credible” “experts” to generate knowledge as the bases for frameworks and practices. The “credibility” of “experts” will be problematized in my research. These three modes of regulatory activities are very much intertwined and embedded in each other. Theoretically, these three types of activities complement each other, as they serve to pave the way and/or act as a means of authorizing and strengthening each other. Taking these concepts further, I suggest that these three modes of regulation are not limited to regulatory activities but could be extended to types of knowledge production activities. This research will use the concepts of rule setting, monitoring and agenda setting knowledges/activities to show the operation of ruling relations as shaped by the various texts, discourses, and actors in the field of children’s environmental health.

2.1 The Conventional Scientific Paradigm of Knowledge Production

The dominant scientific paradigm in current western health, education and economic systems is firmly placed in a binary discourse, as Foucault described in *The History of Sexuality* (1978). The binary system dictates how things are to be considered, as only one way or the
other: black or white; licit or illicit; permitted or forbidden etc. Knowledge production in conventional literature is also thought of in this binary way. For example, the classic Vannevar Bush’s (1945) basic and applied research; and Gibbons, Limoges, Norotny, Schwartzman, Scott and Trow’s (1994) Mode 1 and Mode 2 knowledge. Gibbons et al. (1994) has suggested that Mode 1 knowledge production is executed within the higher education system and is dominated by an academic agenda with little interest in application, while Mode 2 is done in intensive interaction with applications and is driven by a broad range of interests. Mode 1 is characterized as being discipline-based, normally produced by individuals and subject to quality control by peer review. Mode 2 is characterized by knowledge that is trans-disciplinary, heterogeneous in production, produced in diverse sites and by teams, and subject to social accountability and reflexivity. In addition, Mode 1 is labeled inherently local or localized while Mode 2 is global or non-localized. Gibbons’ distinction between Mode 1 and Mode 2 knowledge serves to classify knowledges; however, the epistemology of knowledge is unclear and most important, how they work to regulate people’s everyday activities, is not explained.

A more recent theory of knowledge production has been proposed by Donald Stokes (1997); which divides research into four quadrants. The first quadrant includes pure basic research with very little or no external applications (like the mapping of the structure of atoms), while the second quadrant includes pure applied research motivated by practical applied discovery such as the invention of the light bulb by Thomas Edison. The third quadrant consists of taxonomic and classificatory work where the motivation is neither to advance knowledge nor develop practical applications, such as the classifying of birds. The fourth quadrant, the main focus of Stokes’ book, is labelled “Pasteur’s quadrant,” inspired by the research of Louis Pasteur and his microbiological discoveries. According to Stokes, Pasteur was motivated by both the commitment to understand microbiological processes and the desire to control the effects of these processes in humans.

The above unproblematicized taxonomies of knowledge production found in the conventional scientific literature take for granted the power relations inherent in all knowledges and their production (Foucault, 1998). Similarly, epistemologically, what counts as knowledge, and issues of power and subjugation are effectively ignored in the mainstream literature. In the biomedical positivistic paradigm, which is the dominant epistemology in the current societal
narrative, scientific knowledge is the only legitimate knowledge and is assumed to be objective, value-neutral, and built with blocks of facts (Guba & Lincoln, 2005; Haraway, 1989; Harding, 1986; Hubbard, 1995; Warren, 2000). Furthermore, scientific knowledge is regarded as the truth. Quips Harding, “Neither God nor tradition is privileged with the same credibility as scientific enquiry in modern cultures” (Harding, 1986, p. 16). As these critical scholars argue, scientific knowledge is privileged over all other knowledges, being considered as the foundational knowledge for making important political, social, medical, and other life altering decisions and policies. In scientific epistemology, the “knowers” and the methods used to acquire the knowledge are presumed to be unbiased, detached, independent, and rational, and the knowledge produced as a result is assumed to be the truth/reality (Warren, 2000). Furthermore, this reality is assumed to be universal and singular. In naïve or probabilistic realism, any knowledge produced by any method deviating from scientific method therefore becomes false, witchcraft or myth and is thus silenced. The binary here is the scientific (the truth) and the "unscientific" (falsehood and myths). However, the flaws of the dominant scientific paradigm are well documented (Guba & Lincoln, 2005) and its overarching effects on policy and practice on children’s environmental health will be a theme of this research.

As I have suggested, conventional taxonomies of knowledge production and epistemology are problematic, as they do not address issues of social, political and economic power relations. In the sections below, I will examine literature from critical perspectives which examines knowledge production focusing on issues of power, interests and contingencies.

2.2 Knowledge Economy Approaches

A more critical approach to knowledge production can be found among the large and growing writings about the knowledge economy. Knowledge economy is a concept that originated with Fritz Machlup, a US economist. In 1962, he published an influential study, *The Production and Distribution of Knowledge in the United States*, which calculated rates of production and distribution of knowledge in the US. The study argued that in 1958 alone, what he called the knowledge economy accounted for $136.4 million or 29% of Gross National Product. Since then, there has been much written on the knowledge economy, which has included conventional data gathered as part of national governmental statistical activities such as
the System of National Accounts in the US and international data such as ones gathered by Organization for Economic Co-operation and Development (OECD).

Just as with the mainstream taxonomies and epistemologies reviewed above, the conventional mainstream knowledge economy literature does not account for issues of power and inequity. Knowledge economy (knowledge through the lens of monetary value), again, like scientific knowledge, is presented in the mainstream literature as neutral, the result of objective processes that mobilize modern development and progress. But more critical perspectives critique the neo-liberalism and academic capitalism inherent in the concept of knowledge economy, demonstrating that knowledge production in fact is value laden, a process that is filled with corporate, industrial, economic and governmental influences.

2.2.1 Neo-Liberalism and Academic Capitalism

Hyslop-Margison (2005) describes neo-liberalism as a political movement privileging the free market principles of capitalism. There are numerous scholars who describe, in their publications, the proliferation of neo-liberal and globalization ideology in the education system and the knowledge economy (Hyslop-Margison & Sears, 2006; Hyslop-Margison, 2005; Magnusson, 2005; Olssen & Peters, 2005). In this section, I will focus in on literature on knowledge production in higher education which argues that the dominant legitimate ways of knowing are not neutral or objective as claimed by the scientific paradigm; rather they are saturated with neo-liberal capitalist agendas (Haraway, 1991; Shiva 1993).

Under the current neo-liberal regime, Olssen and Peters (2005) provide concrete and theoretical evidence that higher education has lost its original ideal (expressed by Kant and Newman) of the university as an institutionally autonomous and politically insulated realm. As a result of its new market driven ideology, higher education is represented conventionally, they argue, as an input-output system which can be reduced to an economic productive function emphasizing efficiency and profitability. The effects of this reductionistic economic discourse can be seen in the erosion of academic freedom and in the declining ability of academic faculty to set autonomous teaching and research agendas. This assault on academic freedom is attributed by Olssen and Peter to the rising importance of “managed research,” pressures to obtain “funded research,” and increased competition and productivity in producing courses and
students that are relevant to labour market conditions and prospects. They argue that, under neo-liberalism, there has been a shift away from professional accountability among higher education academic faculty and staff towards consumer accountability, where achievements are measured according to the market.

Slaughter and Leslie (1997) term this phenomenon academic capitalism: “institutional and professorial market or market-like efforts to secure external moneys” (p. 8). In their book, Academic Capitalism, Policies and the Entrepreneurial University, Slaughter and Leslie trace the history of academic capitalism and its connection with globalization in four English-speaking industrialized countries: the United States, United Kingdom, Canada and Australia. According to them, the history of academic capitalism in these countries started in the 1980s, when multinational conglomerates began to dominate the world economy. These countries could not compete with the Pacific Rim countries. Responding to the loss of market share, they turned to research universities for new technologies and science-based products. At the same time as the corporate quest for new money-making innovations was initiated, faculty and institutions were also searching for funding because government spending on higher education was slowing down. As public money for universities was receding, institutions and professors began to be encouraged to “partner” with the markets to produce knowledge. These partnerships have since grown and proliferated within the social, economic and political systems of the societies.

Knowledge is now seen as a valuable commodity in the marketplace. In this view, the academics, as the “knowers” of knowledge are not detached, and disinterested, but are deeply invested. As faculty maneuver their academic capital through engagement in production, they are engaging in academic capitalism. In Slaughter and Leslie’s (1997) words, “their scarce and specialized knowledge and skills are being applied to productive work that yields a benefit to the individual academic, to the public university they serve, to the corporations with which they work, and to the larger society” (p. 11).

Within the realm of academic capitalism, not only is the individual “knower” vested in economic interests, but there are also far reaching coordinated organizational and systematic actors and regimes integrated to provide smooth circuits of knowledge to ensure economic benefits to corporate elites. In their book entitled Academic Capitalism and the New Economy, Slaughter and Rhoades (2004) detail components of the academic capitalist knowledge/learning
regime and how they “play out.” Within the higher education institutional system, they explain, there are interstitial organizations where staff are designated to seek out opportunities to partner with the market on behalf of the institutions and faculty. Externally, there are intermediating organizations, composed of high level administrators in various public, non-profit and for-profit institutions. They have come together to reshape the boundaries that divide them, redirect and revalue organizational purposes. The theory of academic capitalism as proposed by Slaughter and Rhoades (2004) is

[that] groups of actors within colleges and universities – faculty, students, administrators, and managerial professionals – are using a variety of state resources to intersect the new economy. These groups of actors are drawn from different institutional segments and do not always act together. However, their organized activity is directed toward the opportunity structures created by the new economy, which channels their efforts in similar directions. They create new circuits of knowledge that link the university to and bring it into the new economy. (p. 306)

Literally hundreds of books and articles critiquing academic capitalism have appeared in the past two decades. For example, Ann Clark (2000) has shown how industry agendas drive the life sciences; Lily Kay (1993) has linked the “new biology” with the Rockefeller Foundation; Newson (1992) has linked the decline of faculty influence to academic capitalism; Muzzin (2005) has studied how education of health professionals with the higher education system has come to reflect corporate interests, hence reproducing gender and class inequity; and Polster (2009) has done a recent review of these trends in Canada. Moving far beyond the universities, Slaughter and Rhoades (2004) further examine in-depth the evidence of academic capitalism as indicated in government policies, patenting, copyrighting, departmental entrepreneurial activities, administrator and trustee capitalism, and marketing in brands and to students.

Smith (1990) theorizes that the social organization of the everyday world is connected to and mediated by texts, and that these texts are produced via economic and social processes which are a part of political economy. They are aimed to structure, control, and predetermine social relations and social course of actions. More in-depth discussion of Smith's theories and methodology will be presented below. However, here, I wish to underline the importance of the concept of text in academic capitalism such ruling or “boss text” include government policies (e.g., the US neo-liberal policy whereby the federal government gives financial aid to students rather than to institutions, which produces students as consumers and competitiveness amongst
institutions); laws and regulations (e.g., patenting and copyrighting); course materials for distance education (Magnusson, 2005) as they relate to the concepts of Mode 2 knowledge production (Olssen & Peters, 2005); Mcdonalization, or fast knowledge transfer (Peters & Besley, 2006); and logos and brand names marketing to students (Klein, 2000; Tudiver, 1999). These texts act as mediums for power, privileging the ruling classes and corporate elites. From a critical perspective, then, neo-liberalism and academic capitalism are enmeshed in the knowledge economy.

2.3 Foucauldian Concepts of Knowledge and Power

For Foucault (1998), knowledge and power reinforce one another and are inextricably bound. Power as defined by Foucault (1982) is a positive and productive force. It is not centralized, but rather it is dispersed and embedded in every relation, like a net. It is fluid and circulating among and through bodies. Power acts upon individuals as they, in turn, act upon others (Foucault, 1980; Holmes & Gastaldo, 2002). The concept of bio-power emerged from Foucault’s analysis of power. Bio-power is power over life which situates biological life as a political event with a global character in economic, social and historical terms (Gastaldo, 1997). Following this line of thought, knowledge production in children’s environmental health can be seen to originate from many different actors across different sectors. The processes involved can be theorized as political in nature with multiple economic, social and historical discourses.

The purpose of bio-power, according to Foucault (1978), is to manage and administer individuals and, by extension, communities and populations. It is administered by competent authorities in order to promote, restore or maintain social order and global well-being. Knowledge, in bio-politics, allows for the governing of populations through management and regulation of their common characteristics such as demography (birth, mortality and fertility rates, longevity and health status) and any resources and contingencies that may play a part in the regulation of human life (Foucault, 1978). Knowledge such as economic predictions, demographic projections, epidemiological data, market studies and “scientific” research generate numbers that extract the “truth” about a population and serve to justify current governmental policies. By the collection of these data, different forms of power are disseminated throughout the various segments of populations including through the establishment of norms that act as
comparative elements for the bodies and their categorizations of what is normal and pathological. Further, these categories of normal and abnormal are created to maintain the various institutions of power (Foucault, 1978). An example of such interfacing of knowledge and power, is I will argue, the use of the concept of risk assessment in the regulation of chemical substances. Examining risk discourse and how they are used promises to point to relations of ruling in children’s environmental health.

Governmentality is another concept that could be useful in examining power relations in children’s environmental health. A multitude of processes which are internalized by individuals make up disciplines in governmentality; according to Foucault (1995), they are “methods, which made possible the meticulous control of the operations of the body, which assure the constant subjection of its forces and are imposed upon them as relation of docility-utility” (p.137).

Through disciplinary power, submissive, yet skillful, “docile bodies” are created. For Foucault, the concept of body can be interpreted as individual bodies or collective bodies. This form of disciplinary power, along with sovereignty and self-governing ethics, form the conception of governmentality. Dean (1999) further defines government as

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\text{any more or less calculated and rational activity, undertaken by a multiplicity of authorities and agencies, employing a variety of techniques and forms of knowledge, that seeks to shape conduct by working through our desires, aspirations, interests and beliefs, for definite but shifting ends and with a diverse set of relatively unpredictable effects, consequences and outcomes. (p. 11)}
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Thus, governing is any activity that aims to shape, mould or affect the conduct of an individual or group. The technologies (or means) of this activity are numerous, all with the objective of establishing conformity through normalization and punishment for deviations. I am interested in how this disciplinary power is exerted in the field of children’s environmental health through the politics of regulation of chemical substances. In order to overcome any possible resistance to the bio-political power of the normative, individuals must be convinced that what they are trying to attain within the norm is in fact desirable, moral and acceptable. To this end, experts and professionals who are deemed “authorities” (e.g., scientists) are employed to produce knowledge that refines and intensifies the exercise of power (Foucault, 1995).

Central to Foucault’s notion of knowledge and power is the process by which human beings are “made subjects.” For Foucault, there are two different but interconnected meanings of
the word “subject.” First, human beings are said to be “made subjects” in the sense that they are being ruled over and controlled. Second, human beings are said to be “made subjects” in terms of their sense of self and subjective identity, or who or what they understand themselves to be. They are “made” or produced by being “tied” to a specific identity through a “conscience or self-knowledge”. This process of turning human beings into “subjects” is explained by Foucault using the notion of panopticism (Foucault, 1995).

In the 18th century, Jeremy Bentham, the English philosopher and jurist, created plans for a new kind of prison that he called the panopticon (Foucault, 1995). It has a central observation tower encircled by an annular building divided into individual cells. The panopticon allows “the supervisor,” positioned in the centre tower, to continuously observe each prisoner within their cell. The prisoners, each partitioned within their individual cells, are unable to come into contact with other prisoners and are unable to see the supervisor in the central tower; each prisoner “is seen, but does not see” (Foucault, 1995). Therefore, the mechanism of the panopticon creates and maintains a “power relation.” It is an efficient, effective and productive form of power that enables control, coordination and surveillance of human activities (Foucault, 1995). Panopticism enables human beings to be “made subjects.” As they become aware that, at any moment, they may be observed and monitored, and that any “indiscretion” will lead to a period of “corrective” training, human beings are said to become subjects by regulating their own actions. Moreover, the knowledge of such power and control eventually produces specific classifications according to what people identify themselves to be, which then creates people’s subjectivity of themselves. Integral in making people “subjects” is the concept of “dividing practices” which involves exclusion of people or things that are deemed abnormal. In Foucault’s view, lepers, criminals, and insane individuals are excluded because they are threats to the society. They are dealt with in punitive ways while the “normal” is ruled over under the constant watch of the supervisor in the structure of the panopticon. Foucault’s concepts of dividing practices, panopticism and subjectivication may help to theorize the fragmentation of epistemic cultures and silo effects in higher education, among governmental departments and even ENGOs interested in children’s environmental health.

Another useful theoretical concept from Foucault (2003) is subjugated knowledges. As Foucault explained,
When I say 'subjugated knowledges', I mean two things. On the one hand, I am referring to historical contents that have been buried or masked in functional coherences or formal systemizations. [In other words, I am referring to] blocks of historical knowledges that were present in the functional and systematic ensembles, but which were masked, and the critique was able to reveal their existence by using, obviously enough, the tools of scholarship. Second, when I say 'subjugated knowledges' I am also referring to a whole series of knowledges that have been disqualified as...insufficiently elaborated knowledges: naive knowledges, hierarchically inferior knowledges, knowledges that are below the required level of erudition or scientificity. (p. 7)

The concept of subjugated knowledges could be used to see that some knowledges in children’s environmental health are privileged while others are silenced. In my research, I will specifically interrogate how discourses concerning knowledge production such as research conducted or funded by industry may be legitimized while other research studies are dismissed.

Just as power is dispersed, according to Foucault, the power to produce knowledge is also dispersed. Knowledge should not be thought of as produced only in formal higher education institutions but as being manufactured everywhere and by various players. Governmentality and its associated governing activities are similarly performed and activated by many actors. Although Foucault did not name specific activities in governmentality, I will suggest that the activities of governing toxic substances involve rule setting, monitoring and agenda setting regulatory activities.

2.4 Critical Feminist Perspectives on Knowledge Production

2.4.1 Haraway’s Concepts of Situated Knowledges and Agential Realism

As a leading contemporary and post-structural feminist theorist, Haraway (1991, 1997) has written many texts about scientific discourse and objectivity in knowledge production. In the process of dismantling scientific claims about truth, neutrality and objectivity in knowledge production, Haraway’s work (1991, 1997) contains concepts that are relevant for review here such as situated knowledges, partiality and agential realism.

2.4.1.1 Situated Knowledges and Partiality

Rejecting the conventional scientific notion of universality and claims of discovering absolute truths or facts about the world, Haraway (1991) proposes a deeper understanding of
scientific practices that privilege specificity, embeddedness, complexity, positionality, and locationality. For Haraway, epistemology and politics are intertwined, with both based on situating, location, and positioning. Furthermore, knowledge production is always partial and never universal or total. “Situated knowledges” are “marked knowledges” that produce “maps of consciousness” reflecting the locationality and positionality of the researcher (Haraway, 1991, p. 111). While locationality reflects the historical, national, and generational space we occupy, positionality represents our self-identified race, gender, class, nationality and sexuality. Our positionality is an element of constant mobility, so our constructed reality is experienced as fluid.

Using the metaphor of vision, Haraway (1991) posits that all knowledges are embodied, situated and partial. Embodiment means humans are not passive observers but part of what is seen – that is, that the one who sees makes a difference in what s/he sees. Haraway emphasizes that “knowledge does not come from above, from nowhere, or from simplicity, but from ground level, from somewhere and from complexity” (p. 195). In her theoretical formulation, the vision of the knowledge producer always comes from a particular standpoint, which includes hidden assumptions and uncertainties, but also contrary to received wisdom, has a partial validity because of this. Haraway continues that, contrary to conventional scientific assumptions, no one ever has full or objective knowledge or vision. Rather, there are only partial knowledges or partial visions and, most important, they are all (partially) valid in knowledge making. For Haraway, as for Foucault, the subject, object, and environment are all intricately associated and contingent upon one another. Knowledges are therefore, specific, and situated, not fixed or distanced. For Haraway (1997), an account of reality is an effect of an observing interaction, as opposed to a treasure awaiting discovery. ‘Reality’ is not ‘made up’ in scientific practice, but it is collectively, materially, and semiotically constructed – that is, put together, made to cohere, worked up for and by use in some ways and not others. (p. 301)

2.4.1.2 Agential Realism

The concept of agential realism is based on the theory of situated knowledges where these knowledges are envisaged as “sustain[ing] the possibility of webs of connections called solidarity in politics and shared conversations in epistemology” (Haraway, 1991, p. 191). For Haraway, the concept of agency is not about “subjectivity” being separated from “objectivity,” but is about knowledge and accountability for boundaries and objects. Knowledges are co-
produced by people such as trained scientists, Aboriginal communities, women working in service jobs, migrant laborers, artists, and common sense observers. They all participate in the production of “reliable, partially shareable, trope-laced, worldly, accountable, non-innocent knowledge rooted in ongoing articulatory activities that are always potentially open to critical scrutiny from disparate perspectives” (Haraway, 1997, p. 138).

Closely related to the concept of agential realism is bell hooks’ term “yearning” which Haraway has cited (1997). Yearning, for hooks, is “an affective political sensibility allowing cross-category ties that ‘would promote the recognition of common commitments and serve as a base for solidarity and coalition’” (hooks, 1990, p. 27). The concept of yearning suggests that knowledge projects should be considered as “freedom projects – in a polyglot, relentlessly troping, but practical and material way – coupled with a searing sense that all is not well with women, as well as billions of non-women, who remain incommensurable in the warped coordinated systems of the New World Order, Inc.” (Haraway, 1997, p. 269).

Haraway (1997, p.36) also supports Sandra Harding’s formulation of “strong objectivity,” which calls for a more inclusive science than is currently practiced. Strong objectivity requires that the ordinarily unscrutinized areas of knowledge production such as our subjectivity and reflexivity must be examined as routinely and as rigorously as the methods and results of any research investigation (Harding, 1993; Harding, 1998). In this expanded scope of science, “strong objectivity insists that both the objects and the subjects of knowledge-making practices must be located” (Harding, 1993, p. 18). Further, both theorists urge “systematically examining all of the social values shaping a particular research process, not just those that happen to differ between members of a scientific community” (Harding, 1993, p. 18). They would include the investigation of “culture wide beliefs that are not critically examined within scientific processes end up functioning as evidence for or against hypotheses” (Harding, 1993, p. 18). Following this lead, my research was planned to include sources of knowledge beyond scientists – for example, that which takes place in NGOs.

The concept of agential realism with the elements of yearning and strong objectivity effectively challenges the conventional assumptions of science, and at the same time provides an alternative way to construct “a more democratic science” (Haraway, 1997, p. 15). In her many
writings, earlier on primates and recently on technoscience, Haraway critiques past and present scientific processes, exposing the hidden agenda of such scientific assumptions in the claim for objectivity as a rhetorical front to hide and protect the interests of those who will benefit from it in patriarchal capitalist society.

According to Haraway (1997), this pursuit of justice has to begin with the understanding that science “is a political discourse, one in which we should engage at every level of the practice – technically, semiotically, morally, economically, institutionally” (p. 105). Taking Haraway’s point about science as a political discourse, what is its relevance for children’s environmental health? How does the conventional biomedical science model play out in chemical regulation and control and are there any traces of situated knowledges, partiality, and agential realism in the knowledge production of children’s environmental health? These are questions that guided my analyses in Chapters 4 to 8.

2.4.2 Harding’s Critique of Science

2.4.2.1 Science as a Tool of Colonization

In Harding’s 1998 article, she argues that modern science has been used as a powerful colonization tool since 1492. In fact, she develops the argument that Western science envisaged to meet the needs of European expansion, conquest and consumption. She theorizes that the plausibility of the epistemology of modern sciences has depended on the success of European expansion and the power of national or international state institutions to legitimize and conduct scientific work. Such science is neo-colonial in that

[the] expansionist state power makes it possible to forage in other cultures’ knowledge traditions, to test hypotheses in non-European environments around the globe, and to destroy, intentionally or unintentionally, those other traditions that could have created competition for modern scientific claims and practices. (p. 154)

Thus, Harding (1998) concludes that the “Voyages of Discovery and the subsequent colonial era, on the one hand, and the development of modern sciences in Europe, on the other, were conditions for each other’s success” (p. 155). In her analysis and interpretation, the synergy between colonialism and modern science did not stop but continue to nourish each other through development of policies as modernization/development and their scientific and technological ontology “continue to advance European expansion and not the societies that are the policies’
overtly intended beneficiaries” (p. 156). Furthermore, the universality of science where there was “only one world, one truth and one and only one science capable of capturing that truth,” (Harding, 1998, p. 158), also means that there was “one ‘class’ or group of humans capable of articulating that science and thus recognizing that truth – scientific experts” (p. 158).

Why is modern science’s claim on universal validity a problem? According to Harding, this monopoly in reductionistic knowledge production (with “weak objectivity”) by modern western science has overarching consequences. While it devalues and destroys knowledge traditions that are crucial to the survival for other cultures, it elevates a model of the admirably human that is defined “oppositional to and distance from the womanly, non-European, and economically vulnerable” (Harding, 1998, p. 159). In other words, through its monovocality and xenophobia, modern science has claimed their unearned “cognitive authoritarianism” (p. 159) with its elite group of experts who have the status of “chosen people” (p. 159), with protection from public scrutiny. In keeping with these insights, my research will examine children’s environmental health as a multivocal arena, with parents, ENGOs and non-ENGO coalitions assumed as having a contribution to make to the field as the scientific experts valued by governments and industry.

2.4.2.2 Entanglement of Politics and Science

In her 2006 book, Science and Social Inequality: Feminist and Postcolonial Issues, Harding investigates race, gender and science, examining how Western and non-Western concepts and practices are built into (and/or excluded from) scientific knowledges. For Harding (2006), science and politics are inescapably entangled, so that changing one inevitably involves changing the other. On the one hand, “science appropriates to itself as merely technical matters decisions that are actually social and political ones” (p. 25). On the other hand, policymakers often appeal to science to legitimize their own projects. She demonstrates “how culture and politics routinely enter labs and then escape into the everyday world through scientific practices” (p. 90). With technical, cognitive elements of scientific practices and the information they produce representing social and “political priorities, meanings and ideals as well as more or less accurate pictures of nature order” (p. 116). In short, Harding argues for the importance of understanding how the location of scientists influences the knowledge they produce. In
Harding’s reconstruction of a more inclusive science it is “always also social (not ‘nothing but’ social; only always also social)” (p. 161-2) as human material and symbolic practices change nature’s order. As an alternative methodology in knowledge production, Harding suggests that sciences, their philosophies and their orders, could be constituted as also “in nature…requiring explanation alongside the accounts they provide of sciences’ and nature’s order” (p. 162). That is, it is important, to determine not only what knowledge has been produced but how, why and for whose benefit? This is evident from the critique covered in Chapter 1 showing industrial sponsorship of key research on toxic chemicals.

For Harding (2006), as for Haraway, political and scientific entanglement does not mean that knowledge producers should attempt to be neutral; rather, scientists should strive to change science and scientific practices so that they represent more socially progressive priorities, meanings and ideals. This vision of “a world of sciences” necessitates abandoning the idea of a monoscience, as noted above. Similar to Haraway’s idea of partiality discussed earlier, in Harding’s “world of sciences,” the knowledges would “partially overlap with each other in various ways through borrowings and shared interests, yet also each retain the kind of distinctive cultural identity that has proved so fruitful for the growth of human knowledge in the past” (p. 132). Against the principle of simplicity in the conventional science, Harding and Haraway’s theorizing of partial knowledges leads to multiplicity and discordance. The objective of doing such science is not to discover universal truths but to achieve “more cognitively competent” science. Consistent with these arguments, my approach to knowledge production processes in children’s environmental health, will contribute multiple partial visions, each with their own valid grounding in experience. However, I will go one step further to explore how some of these knowledges are subjugated, as suggested by Foucault. This will require the use of Dorothy Smith’s methodology, described below. But first, I will briefly review some eco-feminist theorizing that is relevant to my theoretical perspective.

2.5 Eco-feminist Philosophy

Eco-feminist philosophy draws from feminism, ecology, environmentalism and philosophy through the lenses of gender, class and justice, starting from the standpoint of women and marginalized social groups, including non-human beings. While it is difficult to draw
generalization about this literature, it is an action-oriented philosophy that aims to deconstruct oppressive and exploitative social practices, and to re-construct more viable social and political realities (Lahar, 1996; Warren, 1996). Eco-feminists such as Warren (2000) and Shiva (1993) theorize and link issues of oppression and suffering of women and children to problems of the environment, ecology and nature. Mies and Shiva (1993) show how women and children are mostly the ones who are victimized in eco-environmental devastations and how their sufferings is effectively hidden. Warren (2000) maintains that health inequity is the underlying mechanism in environmental health, and sees the marginalized status of the environment and women as shared oppressions (see also Chircop, 2008). That is, women, people of colour, children, the poor and nature share oppressions within patriarchal social structures and societies (Warren, 1997). Eco-feminists connect together the physical environment/nature, oppressive social structures and women’s concrete, everyday experience (Chircop, 2008) arguing that these interrelated areas cannot be dealt with in isolation; rather they must be addressed simultaneously. Women’s responsibilities in all societies have always included the protection of their young; thus, the issues of children’s environmental health are very much intertwined with women’s health inequities and environmental destruction and contamination. Much eco-feminism also centre spirituality, which is missing from reductionist science (Eaton & Lorentsen, 2003). Therefore, in my research, it is important and relevant to include these subjugated experiences and voices.

Warren (2000) has constructed an eco-feminist ethic based on components of antisexism, antiracism, anticlassism, antinaturism and opposed to all process of marginalization that advance a logic of domination. Furthermore, eco-feminist ethics value the context of historical, social and cultural differences (Warren, 2000). As I have noted above, central to the moral thinking of eco-feminist ethics is the significance of narrative voices of difference and diversity. According to this line of theorizing, conceptual frameworks are oppressive if they explain, justify and maintain relationships of domination and subordination. Some candidates for the label of an “oppressive conceptual framework” firmly entrenched in our everyday living are discourses of neo-liberalism, as well as dismissive views of the importance of environmentally-related illnesses. What are some other oppressive conceptual frameworks in children’s environmental health? How do they work and who do they benefit? These questions will inform my research on the politics of children’s environmental health.
2.5.1 Feminism, Poverty and Children’s Environmental Health

As I have emphasized above, women’s responsibilities in all societies have always included the protection of their young. Thus, issues of children’s environmental health are very much intertwined with women’s health inequities. In this context, the health inequities are related to poverty and environmental conditions including residential exposures in low-income neighbourhoods and substandard housing (Wasylishn & Joshnson, 1998; Welch & Kneipp, 2005). In general, social determinants of health, including income, housing and social policy have a far stronger influence on health than individual lifestyle choices, and are rooted in circumstances beyond the control of most individuals (Hayward & Colman, 2003; Raphael, 2004; Toronto Public Health [TPH], 2008). In particular, ample evidence in the literature on children’s health and the environment points to the higher risk of environmental toxic exposures to children in low income families (CPCHE, 2005; TPH, 2005). Poverty is well established as a major determinant of health and is associated with greater exposures to harmful environments (CPCHE, 2005; TPH, 2005; Wigle, 2003). The majority of the children who live under the poverty line are from Aboriginal communities, visible minorities and/or newcomers to Canada (CPCHE, 2005; Toronto Campaign 2000, 2003).

Some connections between poverty and toxic environmental exposure are related to the locations of poor neighbourhoods, housing and nutrition. Poor neighbourhoods (including schools, playgrounds, and homes) are often located close to high traffic roads and industrialized zones. Children who live in these neighbourhoods are thus exposed to air pollutants which contribute to respiratory and other health effects. Poor families also are likely to be living in poorly maintained housing such as run down rental apartment buildings. Examples of environmental exposures include old peeling lead paints and pesticide use to control insects and rodents, accompanied by a high rate of tenant turnover. Excessive moisture and indoor dampness can cause respiratory allergens, such as dust mites and mould growth, and can encourage cockroach and rodent problems. Exposures to these toxic environments can cause serious illnesses in children (Chaudhuri, 1998; CPCHE, 2005).

Good nutrition can be hard to achieve in circumstances of poverty and poor nutrition is associated with greater uptake of contaminants. For instance, a diet low in calcium and iron will
cause increased absorption of lead (Bruening et al., 1999); a poor diet can compromise children’s immune systems and their ability to detoxify and excrete pesticides. In addition, some pesticides may have larger effects on the immune systems of children who lack iron. Conversely, good nutrition contributes to healthy beginnings for children. For example, in the first environment of a baby, mother’s womb, a well-nourished mother is more able to carry a pregnancy to term and a baby born to such a mother can function well and provide better protection from toxic substances and other health threats (Clarkson & Strain, 2003). Additional prenatal and postnatal supplements can also help to prevent or offset the impact of some toxic substances (CPCHE, 2005). Again, if families are living under the poverty line they may not be able to meet these basic nutritional needs which are necessary for healthy growth and development in children.

According to a recent report from the Children’s Aid Society of Toronto (2008), the Greater Toronto Area (GTA) is “now the child poverty capital of Ontario” (p. 2). In Toronto specifically, the child poverty rate increased from 24% in 2005 to 32% in 2008, which works out to be one in four children in the City who are now living in poverty. Child poverty is racialized, as seven out of 10 children in poverty in the GTA are non-European. Consistent with eco-feminist theories cited above, child poverty is thus very much a feminist issue as well as an environmental issue. The same report found that lone parent families are inordinately burdened with poverty and the most lone parent families are led by a mother. Toronto, for example, has the highest prevalence of children in lone parent families (29% of children); and fully one-half of its children living in poverty are in lone parent families. The Report further links child poverty with the lack of affordable housing, precisely a physical and environmental contingent in children’s environmental health as described above. The report revealed that “one half of female lone parent families (46%) and recent immigrant families (44%) cannot afford their housing” (p. 2). As feminism, poverty and children’s environmental health are entrenched into each other and the problem of child poverty is so prevalent in Toronto, it is unclear how these realities play out in the process of knowledge production for children’s environmental health.

2.5.2 Oppressive Conceptual Frameworks and Breast Cancer

Building on Warren’s (1996) concept of oppressive conceptual framework described above, Sherwin (1994) provides an example of how these concepts impact on women’s concrete
everyday experiences. This example identifies the context of an environmentally-linked illness – breast cancer – beyond the individual. Sherwin, a breast cancer survivor herself, describes her shame and fear about her diagnosis. She traces this extreme self-blame to the common societal view that breast cancer is a disease of individuals. This reductionist “lifestyle” model view can be observed in the way medical professionals address this disease and the way government funds research in this area (Lalonde, 1974; Pederson, O’Neill & Rootman, 1994). Sherwin maintains that the health care and political systems perpetuate the oppression of breast cancer victims – mostly women – in two ways. First, the health care system focuses primarily on breast cancer treatment instead of prevention. Sherwin contends that this emphasis on “downstream” treatment (McKinlay, 1974) is easier than effective prevention which would necessitate broad social and political action that would threaten entrenched and powerful special interests (e.g. pharmaceutical post-marketing surveillance instead of pre-marketing testing for safety). In the reductionist biomedical paradigm, treatment concentrates on discrete individuals in a standard biomedical regime. Sherwin points out that cancer treatment is also a profitable industry for businesses such as pharmaceutical companies, X-ray equipment manufacturers and other technologies. There are large financial interests at stake if cancer rates decrease. Where there is research to explore issues of prevention, the foci are on conditions over which patients are thought to have some degree of personal control, such as smoking, fat consumption and participation in screening programs. Sherwin points out that these prevention programs reinforce the view that cancer is largely an individual problem and responsibility.

The reductionist approach to breast cancer and other environmentally-linked diseases does not stop with diagnosis. Arguably, the research agenda in breast cancer largely ignores the

4 The concepts of “downstream” and “upstream” were taken from a story told by Irving Zola in McKinlay (1986): “I am standing by the shore of a swiftly flowing river and hear the cry of a drowning man. I jump into the cold waters. I fight against the strong current and force my way to the struggling man. I hold on hard and gradually pull him to shore. I lay him out on the bank and revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help. I jump into the cold waters. I fight against the strong current, and swim forcefully to the struggling woman. I grab hold and gradually pull her to shore. I lift her out onto the bank beside the man and work to revive her with artificial respiration. Just when she begins to breathe, I hear another cry for help. I jump into the cold waters. Fighting again against the strong current, I force my way to the struggling man. I am getting tired, so with great effort I eventually pull him to shore. I lay him out on the bank and try to revive him with artificial respiration. Just when he begins to breathe, I hear another cry for help. Near exhaustion, it occurs to me that I'm so busy jumping in, pulling them to shore, applying artificial respiration that I have no time to see who is upstream pushing them all in....” (p. 484)
environmental conditions widely implicated in the development of various cancers such as toxic chemicals, exposure to radiation, synthetic hormones fed to livestock, ozone depletion, and iatrogenic (medically induced) effects of radiation treatment, drugs or medical devices (Bolaria, 1988). Governments worldwide commit huge sums of money to cancer research focused on finding the human genes specifically making a person at high risk for the development of cancer. It is believed that by isolating the particular cancer genes BRCA1 and BRCA2, and subsequently the “at risk” individuals, these identified carriers of hereditary mutation can then take special precautions to avoid exposure to the triggering mechanisms such as by avoiding certain workplaces or food and/or cut off their breasts. This downstream approach arguably sacrifices the welfare of the women for the profit of corporations; rather than demanding that the polluting businesses clean up, the health care and the political systems are forcefully placing the responsibility for cancers and other environmentally-related illnesses on the shoulders of individuals (Bolaria, 1988; McKinay, 1974; Shewin, 1994). Sherwin (1994) argues that most diseases, particularly breast cancer, are as much a matter of social conditions as of hereditary genetic ones and many other reasons. Quoting research data that illustrates that 90 to 95 percent of breast cancer cases are not clearly associated with the genes in question, Sherwin urges all of us to bring these hidden social issues out for public discussion and ethical discernment instead of allowing corporations to dominate and hijack public policy development. Combining her personal experience with breast cancer and her feminist theoretical perspective, Sherwin reveals the oppressive knowledge producing conceptual framework at play in “how things work” in the field of breast cancer. Is there a similar oppressive conceptual framework in knowledge production around children’s environmental health? What are the societal and epistemological views on children’s environmentally-related illnesses? These are questions I plan to address in my research.

2.5.3 Oppressive Conceptual Framework on Biodiversity and Sustainability

The same conceptual framework described above has been critiqued on a global level by Mies and Shiva (1993), who argue that the Western paradigm of universalization of modernization, which promotes unlimited material or economic development for the globalized market and profit, has failed, as it does not speak to the experiences of non-European societies. They further critiqued this monocultural thinking has resulting and it is continuing to result in the
destruction of cultural and biological diversity, which ultimately will lead to unsustainable human existence. Both authors critique the reductionist practice of science that ignores the local and diversity; identify science as the cause of violence against the environment/nature, and impoverishment for women and children. Shiva described this kind of hegemony using the “cash crops” phenomenon whereby farmers in India and other developing countries are forced to grow only the particular kind of crops international agri-business want to buy. This global capitalism has resulted in the dying out of much biodiversity and indigenous knowledges, leading to widespread poverty in third world countries.

In particular, Shiva (1997) has written extensively about the grave threat to the survival of the indigenous communities in the South countries under the General Agreement on Tariffs and Trade (GATT) agreements \(^5\). Under the GATT/WTO agreements, biodiversity and knowledges, from being “commons,” now are in effect being “enclosed” as “commodities” (p.1). Shiva (1997) warns that

the ‘enclosure’ of biodiversity and knowledge is the final step in a series of enclosures that began with the rise of colonialism. Land and forests were the first resources to be ‘enclosed’ and converted from commons to commodities. Later on, water resources were ‘enclosed’ through dams, groundwater mining and privatization schemes. Now it is the turn of biodiversity and knowledge to be ‘enclosed’ through Intellectual Property Rights (IPRs).” (p. 1)

According to Shiva, then, international trade agreements have a powerful hold on biodiversity and knowledges, and ultimately, on the lives of people in the South. What effect do global trade agreements impact on children’s environmental health? Since I am focusing on Canada, this question may not be fully answered in my research. However, it is important to see that global and local politics of children’s environmental health map together, and that Shiva’s critique is intimately related to my research.

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\(^5\) The GATT, which was signed in 1947, is a multilateral agreement regulating trade among about 150 countries. Its goal was to liberalize world trade, specifically by reducing protective tariffs. This agreement also created the World Trade Organization (WTO), which came into being on January 1, 1995. The WTO implements the GATT agreements, provides a forum for negotiating additional reductions of trade barriers and for settling policy disputes, and enforces trade rules (J. Michael Goodson Law Library, Duke University School of Law Research Guide, “GATT/WTO,” n.d).
2.6 Feminist Methodology

To this point, I have been explaining how feminist and eco-feminist theorizings are useful for setting the stage for my research. But they are also useful in pointing to a methodology consistent with the science proposed by Harding which is informed by the critique reviewed above. Specifically, my research is methodologically informed by the work of Dorothy Smith (1987), who proposes a critical feminist research methodology that deconstructs power relations in the everyday world.

2.6.1 Ruling Relations, Texts, Ideological Circles and Institutional Capture

The goal of Smith’s methodology is to disclose how everyday activities are organized and articulated in social relations (McCoy, 2006). Smith shows how the practical activities of everyday life gear into, are called out by, shape and are shaped by, the extended translocal relations of large-scale coordination. The complex of translocal relations in any field (such as chemical regulation) is labelled ruling relations (Smith, 1987), which she describes as those forms that we know as bureaucracy, administration, management, professional organization, and the media. They include also the complex of discourses, scientific, technical, and cultural, that intersect, interpenetrate, and coordinate the multiple sites of ruling. (p. 6)

Smith (2005) theorizes that the concept of the ruling relations

directs attention to the distinctive translocal forms of social organization and social relations mediated by texts of all kinds that have emerged and become dominant in the last two hundred years. The objectified forms of consciousness and organization, constituted externally to particular people and places, creating and relying on textually based realities. (p. 227)

Ruling relations do not exist as theoretical entities but can be named, for example, in the field of children’s environmental health, where institutions such as university research institutes and programs, political parties and governing legislatures, as well as transnational corporations can be “mapped” as influencing the decision to buy a particular toy or other children’s products.

How does the translocal “rule” the local? For Smith (1990), the social organization of everyday world is connected in and mediated by privileged texts, in the form of words, numbers, and images on paper, in computers, or on TV and movie screens. She describes texts being activated at as part of economic and social processes, not just in theory, but materially as part of
political economy. The importance of texts such as legislation concerning toxicity is not restricted to their point of production and/or practice. The reading or viewing of texts, how people organize their activities in relation to texts, and the skills and practices involved, are also investigated. Consequently, these texts are seen as the primary medium of power. Through them, the work of administration, management, and government are coordinated and accomplished, forming “ideological apparatuses” of the society (Smith, 1987).

A text has been described as an assembly of “statements” arising in an ongoing “conversation,” mediated by texts, among speakers and hearers separated from one another in time and space (Foucault, 1972). Borrowing this Foucauldian conception of discourse, Smith explores the activation of texts to bring into view the social relations in which texts are embedded and in which they organize. She calls this textually-mediated discourse (Smith, 1990). As well, texts are hierarchically organized into higher and lower order texts. In my study, the textual data I will explore are primarily higher order texts – or what Smith terms “boss texts,” such as the Products Hazardous Act. Through different actors, these “boss texts” can be theorized to exert power on and shape the knowledges produced in rule setting, monitoring and agenda setting arenas of children’s environmental health. Through texts, actors are brought into what Smith (2005) calls “institutional capture” with the ruling relations.

Institutional capture, according to Smith (2005), “is that discursive practice, regulated by the institutional procedures of text-reader conversations, through which institutional discourse overrides and reconstructs experiential talk and writing” (p. 119). An example might be the official language of risk assessment. Pervasive as this discourse is, it can govern how parents, for example, come to perceive chemical safety and go about buying toys and other children’s products for their children.

Another useful concept from Smith (1990) is ideological circle which is a process invented by the ruling apparatus to force people to do what is required to enable the ruling apparatus to maintain its power over those who are being ruled. Ideological circles are visible when repeated terms can be traced through multiple texts. Ideological circles are then laid down in and inhabit organizational forms separating those who theorize, formulate, conceptualize, and make policy from the front-line workers who experience the actual ways in which the organization interrelates with its objects. Those in actual contact with
those who are the objects of action are not those who frame the policies, categories and concepts that govern their work. (Smith, 1990, p. 95)

Ideological circles are important in the discernment of the institution involved and their positions on the issues. It would be theoretically important to distinguish the various ideological circles in children’s environmental health and what political interests they represent.

In Dorothy Smith (1999) reworking of the Marxist concept of ideology, these dominant texts and discourses are not neutral but are created by specialists in the ruling relations. Thus, the relationship between the conception of ideology and the ruling class is a complementary one, in that a ruling class is an active organizing process, producing ideologies that serve to organize the class itself and its work of ruling, as well as ordering and legitimizing its domination. Ideologies in turn build the internal social organization of the ruling class as well as its domination over others who do not participate in the process of ruling, and who are outside it by silencing and excluding them. “Translocal” ideologies, informed by the interests, aims, and perspectives of the ruling class, serve to organize and order the expression of the “local.” In this way, the experiences, concerns, needs, aims, interests, arising among people in the everyday and working contexts of their living, are articulated in the forms consistent with the ideologies (Smith, 1999). An example of how ideologies work in coordination of people’s everyday activity can found be in Smith’s concept of downloading.

2.6.2 Downloading of the Education System to Single Parents

In an early demonstration of her methodology works, Smith (1987) exposed the various ideologies and ruling relations in a study she conducted about single parents and the education system. Problematizing a list of suggestions of what parents should do to encourage their child to read created by the board of education, Smith pointed to how the author of this list made many assumptions such as availability of time, effort, material, space, and special skills of parents to support these suggestions. In Smith’s analysis, the list makes all the other work of mothering disappear or appear insignificant. Not only that, but the ability of the mothers to fulfill these suggestions and consequently able to teach their children to be better readers contributes to the decrease of teachers’ overall workload in the classroom. Beyond the parent-teacher relation is the political and bureaucratic organization of education. Smith suggests that because a portion of
teachers’ work has been downloaded onto parents, this, therefore, legitimizes cutbacks the government has made in education. However, Smith finds that this downloading only works in the middle class neighbourhoods where mothers may be able to “invest considerable time and skills in the development of children” (1987, p. 171). She further states that this is a transgenerational phenomena in that the middle class mothers have acquired the skills, knowledges, time and material wealth through prior investments (both from the government and private) to be able to in turn invest in their children. This interpretation of the actualities of mothering and teaching extends to the level of governing. Smith maintains that the social organizations of the different economic classes are physically visible, and economically and politically reinforced by the local governments. As such, we have “high priority” neighbourhoods which are made up of the poor areas of the “inner city” schools. This is in contrast to the wealthy, middle class neighbourhoods. The boundaries between these neighbourhoods are clearly drawn. The allocation and availability of resources for these schools and hence these neighbourhoods differ immensely. Therefore, Smith concludes that the wealthy neighbourhoods get richer with better academic outcomes in their schools because of much better availabilities of resources both through private investment (e.g.: mothering) as well as governmental allocation (e.g.: wealthier local tax revenue). Is downloading of responsibilities happening in the knowledge production process of children’s environmental health as well? If so, where, when and for what purpose does it occur? My review suggests that NGOs serve this purpose, and so their work will be a focus of my investigation.

2.7 Conclusion

In this chapter, I have reviewed the relevant feminist and eco-feminist theories and bodies of theoretical studies contextualizing processes of knowledge production. Critical feminists and eco-feminists are all critical of the conventional scientific paradigm and all have asserted the need for a different, a more democratic process of knowledge production. The last section of the chapter introduces the methodology of Dorothy Smith, which informs my work. And the next chapter discusses the research method of my study that incorporates these various ideas proposed by feminist critical theorists.
Chapter 3
RESEARCH METHODS

3.0 Introduction

Dorothy Smith’s work provides both a theory and research methodology intertwined together, and the theory component was discussed in the previous chapter. In this chapter, I will start where Smith suggests starting – with what she calls the “problematic.” Using her methodology, institutional ethnography (IE), one starts from a particular standpoint and questions point to relations to be mapped, not all of which are known when the research begins. The standpoint is that of an actual person performing a material activity. I will provide details about the research including describing how I entered the field of children's environmental health in my data collection process. I will then discuss my standpoint and introduce the key informants and their associated texts and discourses.

The methodology of IE starts at the “fault-line” (Smith, 1987) between the subjective experience of everyday life and the ideological or the official discourses perpetuated in and through the official texts of the institution. These contradictions, which are also termed “disjunctures,” serve as the means in developing the problematic for the inquiry. The problematic is defined as the property of the social organization of the everyday world. This concept serves as the focal point in explicating the social by directing attention to a possible set of questions latent in the actualities of the experienced world (Smith, 1999). These questions then guide data collection and analysis.

3.1 The Problematic and Landscape of My Research

My problematic emerges out of parent key informants’ – as well as my own – experiences with trying to purchase environmentally safer toys and products for children. Taking the standpoint of parents who are increasingly concerned about the threat of environmental contamination on the health of their children, my research explores the power relations inherent in the knowledge production process in the field of children’s environmental health. Beginning with interviewing parents about how they make purchasing decisions on toys and other products for their children, I recognized a disjuncture: although parents were expected
to exercise care in purchasing children’s toys, the lack of labelling on the children's toys and products made this difficult. What are we to gather from this lack of labelling? Are we to assume that these products are safe? The pursuing of this “fault-line” between consumer responsibility and the unavailability of information on toxicity acted like a thread leading me to discover the complex ruling relations within the knowledge production process of children’s environmental health.

As I have outlined in Chapter 1, while there are many different contexts, histories, and exposures to pollutants, this study aims to explore knowledge production in children’s environmental health focusing on the case of plastics in children’s toys and other products. There are at least three sites of knowledge production in which I am interested. The first site of knowledge production already noted, is with the parents of young children. I am mainly interested in what are the actual material practices parents engage in when purchasing a toy or a product for their child. The second site of knowledge production which Smith’s theory points to, are ruling texts governing children’s environmental health. Here, I am interested in learning how issues of children’s environmental health are articulated in order to communicate institutional ideologies. The third and final site of knowledge production is with various professionals in relation to children’s environmental health. Here, I selected knowledge producers such as higher education faculty, government officials, NGO representatives, politicians, and industry representatives to be interviewed. Through their everyday activities of knowledge making, I hoped to gain a glimpse of the power relations and governmentality in children’s environmental health, and its discourses and practices.

3.2 Standpoint

Standpoint of this study is based on the standpoint of parents of young children who have had experiences in buying a children’s toy or product and their concern with providing a safer environment for children. The standpoint of parents is chosen because of their invisibility within the knowledge production process. Although parents have the ultimate responsibility in taking care of children, they are not normally considered to be knowledge producers and therefore not included in the knowledge production processes. Taking the standpoint from “below” (Harding, 2006, p. 1), from “people at the bottom” (Smith, 1987, p. 25), or from the margins (Haraway,
is a requirement of IE and is encouraged by various critical feminist theorists. It is only through the view from below that inequity and oppression become visible. As such, the view from parents is an important starting. I conducted one in-depth interview and two focus groups with 24 parents in total. The data collected from the parents provided directions for my textual archival and other interviews.

According to DeVault and McCoy (2006), the purpose of interviewing in IE is to provide an opportunity for the researcher to learn about a particular piece of the extended relational chain, to check the developing picture of the coordinative process, and to become aware of additional questions that need attention. Without standard sets of questions, the interview questions are based on what the researcher has learned from the previous interviews. As explained by Dorothy Smith herself,

you have a sense of what you’re after, although you sometimes don’t know what you’re after until you hear people telling you things… Discovering what you don’t know – and you don’t know what you don’t know – is an important aspect of the process. (Smith in DeVault & McCoy, 2006)

DeVault and McCoy in their chapter “Institutional ethnography: Using interviews to Investigate ruling relations,” suggest that interviews in IE often revolve around people’s everyday practices. In conversations with key informants, the researcher is to listen for the naming of texts that organize these activities and how each informant’s account builds a view of an extended organizational process “piece by piece.” This is consistent with Haraway’s concept of situated knowledges and partiality where the objective of the researcher is not to discover the “truth” but to listen for experiences (Haraway, 1989). It is in the parents’ stories that I recognized the issue of the deficiencies of labelling on children’s toys and products.

In IE, informants are viewed as “experts” in understanding and negotiating the everyday practices required to make sense of the setting. Informants’ knowledge is considered as socially organized and hence provides the entry point into the social. In any feminist methodology, the researcher’s goal is not to occupy a superior position as an objective truth-finder (as feminists describe positivistic knowledge production). Rather, the researcher’s position is a reflexive one where she is constantly aware of her location in the world, and how this impacts on the research itself. The work of the ethnographer is to elicit and put together pieces of data which form an account of social relations and processes. As the researcher engages in a reflective relationship
with the information collected from her informants, the aim is to produce a “map” that reveals the linkage of practices and ruling relations.

3.3 Entering the Field

Entry to the field of children’s environmental health was not difficult for me, as I have a longstanding relationship both professionally and personally with the content as well as with actors involved, as I have declared in Chapter 1. My prior knowledge and work in children’s environmental health as well as my prior rapport with potential key informants are seen as important components in a critical feminist research study. This prior knowledge of the institutions allowed me to raise questions about the everyday workings of the research sites which might easily escape an outsider, and to probe beneath the level of the obvious through questions derived from substantial knowledge about the issues and practices. Existing relationships with key informants facilitated the process of recruitment and data collection, including getting feedback from key informants which enhanced the reflexivity component of the research design.

My prior connection with the players in the field both strengthened and limited the research. It provided me with extensive knowledge and experience of the actors and context, which enhanced my connections with key informants. It allowed me to identify key informants and to develop a list of key issues for interviews fairly quickly. Going into the field as an expert in the area of child health, health promotion and environmental health, I was able to create a comfort zone for many of my key informants to engage with me because they knew I could understand what they were talking about. However, my previous work in the field also set constraints on my research. My recruitment method involved approaching my potential key informants through word of mouth. And since the majority of my connections in children’s health and the environment are with activists, their reputations created somewhat of a barrier for me to gain access to potential participants who did not share our social convictions, such as people from industry and business sectors. When I approached people referred to me, in general, if they were activists, they would be very eager to speak to me and help me in any way they could. However, when I approached the industry and business contacts referred to me, I received some polite declines to my invitation for an interview. Not surprisingly, some just did not reply
to my email invitations. While I received very good responses from parents, higher education faculty members, NGO representatives and governmental official key informants, I was not successful in obtaining any interview with industry or business representatives. This interesting phenomenon could mean that industry and businesses people are exceptionally busy. However, it could also be that when they saw that I was referred by an activist in the field, they immediately associated me with being an environmentalist, which would put them in a defensive position about their work. I compensated my lack of interviews with industry and businesses representatives with textual mediated discourse analysis of their material taken from their websites.

3.4 Data Collection

Three types of data were collected: transcription of individual in-depth interviews and focus groups, field notes, and texts. The section below is an introduction of the key informants and the discourses and texts they activated.

3.4.1 Introduction of Key Informants and Associated Discourses and Texts

Table 3.1 below introduces the key informants. They were from five main categories: 24 parents, six government officials (three from the federal government and three from the municipal level), three ENGO representatives, one politician and six higher education faculty members.

Just as important in my analysis are key informants who had refused to participate, including: 1) representatives from industry – specifically representatives from the chemical producers’ associations and the Green Chemicals Association; 2) representatives from alternative “green” businesses; 3) reporters from the media, specifically the three major newspapers in Canada and Toronto; 4) representatives from the major political parties at the federal level; 5) federal employees who are responsible for developing federal environmental and consumer products legislations; federal policy analysts and administrators; 6) federal employees from the Consumer Products Safety branch; and 7) faculty members from the faculty of pharmacy. In the absence of interviewing the above individuals, I searched the relevant websites and used the information obtained in my analysis as appropriate. For example, I selected the two
“boss texts” – the websites of Chemistry Industry Association of Canada (CIAC) and American Chemistry Council (ACC) to represent industry interests in order to map out the power relations.

### Table 3.1: Key Informants

<table>
<thead>
<tr>
<th>Category</th>
<th>Pseudonyms</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>Ming</td>
<td>Parent, seven months pregnant with a six year old daughter.</td>
</tr>
<tr>
<td></td>
<td>Focus group #1</td>
<td>11 parents at an Immigrant Resource Centre.</td>
</tr>
<tr>
<td></td>
<td>Focus group #2</td>
<td>12 parents-to-be attending a prenatal class.</td>
</tr>
<tr>
<td>Federal Government</td>
<td>Bailey, Cullen, Jan</td>
<td>Federal employees</td>
</tr>
<tr>
<td>Officials</td>
<td>Leslie, Drew, Lee</td>
<td>Health promotion consultant, Policy advisor, Administrator</td>
</tr>
<tr>
<td>Municipal Government</td>
<td>Lucian, Jess, Zane</td>
<td>Health promoter, Retired policy advisor relate to neurological development, Spokesperson, ENGO for children’s health and the environment.</td>
</tr>
<tr>
<td>Officials</td>
<td>Sage</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>NGOs</td>
<td>Noel, Ashley, Hayden</td>
<td>Professor, health discipline, Medical doctor, Geography Professor</td>
</tr>
<tr>
<td>Higher Education</td>
<td>Storm, Alex</td>
<td>ECE faculty member, Nursing faculty member</td>
</tr>
</tbody>
</table>

### 3.4.1.1 Parents and Discourses Activated

I started the research with an interview with a parent, Ming, a young pregnant Chinese speaking mother with a six year-old daughter. She described in detail for me the struggles she has in trying to buy a safer toy and product for her children. Among many issues, she talked about the lack of labelling on the products and toys for her to make good decisions at the point of purchase. I picked up this problematic in the everyday activity of parenting and entered into the investigation. After speaking with Ming, I confirmed this problematic with two parent focus groups. One of the focus group consisted of Chinese speaking parents attending a free parenting
class at an Immigrant Resource Centre. The other focus group was made up of parents-to-be who were English-speaking attending a fee-for-service prenatal class at a large Jewish Community Centre. Data from these two very different groups of parents further developed the problematic described by Ming. The problematic of lack of labelling on children's toys and products led me to question why government of Canada does not legislate labelling on children's toys and products. This question led me to the “boss texts” that govern the activities of rule setting in chemical regulation. They are the *Hazardous Products Act*, Bill C-6, *Accelerated Reduction/Elimination of Toxics* (ARET), Memorandum of Understanding (MOU), and the Chemicals Management Plan (CMP) in the context of the *Canadian Environmental Protection Act* (CEPA). The question also led me to conduct interviews with government officials who are part of the bureaucracy in rule setting.

**3.4.1.2 Government Officials, the Chemicals Management Plan and Related Auditor’s Reports**

There were two main groups of government officials interviewed at the municipal and federal level. As part of municipal level government, I consulted raw data I gathered previously for my masters’ major research project from seven public health nurses who represent front line public health workers. These key informants revealed that they did not integrate the knowledge they have of children’s environmental health in their work with their high risk families (Seto, 2007). Building on this finding, in this study, I have added data from an administrator whom I have called Lee (all names here are pseudonyms), who revealed the challenges of “making children’s environmental health content main-stream.” In addition, I interviewed a health promotion consultant in the area of children’s environmental health, Leslie, who works with the public health nurses and the communities they serve. Finally, I interviewed a policy developer, Drew, at the municipal level who is responsible for writing of reports that would set the course for the work of the local health unit in this area. Together, these key informants identified major difficulties in pushing the agenda of children’s environmental health forward despite good evidence for doing so. In the course of his work, Drew liaises with the various levels of government officials and is involved with advocacy groups and networks. As I will show in Chapter 4, he activated the Chemicals Management Plan (CMP) initiated by the federal government, and revealed the difficulty in participating in the program’s consultation process.
On the federal government level, I was fortunate enough to be able to interview three key informants. All three activated the CMP, which they saw as a very progressive and effective program to manage chemicals. One of the federal key informants pointed me to information that revealed the “trickiness” of the business of regulating chemicals at the federal level. Chapters 4 to 6 are devoted to analyzing the politics of regulation at the federal level. Jan took up the issue of labelling on consumer products and activated the Hazardous Products Act, the law that is supposed to protect Canadian from hazardous exposures from consumer products including children’s products and toys. One federal key informant offered data about monitoring knowledge. She activated several reports from the Office of the Auditor General of Canada, Commissioner of the Environment and Sustainable Development (CESD). These reports were developed and made public over a decade from 1999 to 2009. In analyzing the four reports, in Chapter 5, I will pick up repeated issues that were identified as challenges in chemical regulation and follow them throughout these reports. In mapping out the issues and discourses, important ruling relations become visible.

In the process of interviewing my federal employee key informants, I became aware of the difficulty they have in trying to balance being honest in answering my questions on one hand and trying to portray the best image of their employer on the other hand. As a result of their avoidance of being critical of the federal government, what they said was not directly useful in my analysis. However, what they did not say or what they could not say under the political regime became useful in my analysis and is captured in Chapter 6. What they could not say activated the Message Event Proposal (MEP), the Open Letter and the discussion paper by the Commissioner of the Environment and Sustainable Development (CESD), all discussed in that chapter.

3.4.1.3 NGO Representatives and Texts

I interviewed three NGO representatives: Lucian is a health promoter who works at the front line of children’s environmental health. He works with individuals and community groups aiming to increase awareness and thus facilitate positive changes both individually and collectively as a community. The second NGO representative, Jess, is a policy advisor of a NGO related to children’s neurological developmental issues. She has worked, for decades, on issues
of environmental exposure and children’s health in an advocacy role. The third NGO representative, Zane, is a paid staff member of a national network for children’s environmental health. He is instrumental in mobilizing the network of several large and reputable agencies in promoting the children’s environmental health agenda. The network he works for produces literature and other resources aiming to increase public awareness, educate service providers, and urge governmental policy changes. Their work is highly respected nationally and internationally, even among the most critical professional associations and governmental organizations.

In addition to their professional work, all three NGO representatives are parents themselves who talk about their passionate interests in this area. From their points of view, I learned about the practical difficulties in trying to promote children’s environmental health to the public, the industries and government agencies. They expressed their frustration as well as their optimism in their decades of work and revealed some behind-the-scene politics in this area. Lucian shared with me the challenges of working at the front line particularly with the lower socio-economic status population. Jess and Zane revealed what I will call the “dirty” politics of regulating chemicals at the federal level. They described governmental and research organizations as “silos,” which contribute to the slow progression in the promotion of children’s environmental health. Most importantly, they exposed behind-the-scenes lobbying by industry which almost none of the other key informants mentioned. The only other two key informants who identified industrial influences on the governmental regulations of harmful substances were two higher education informants whose comments I will discuss in the next section.

The retired key informant, Jess, had been in her role as a children’s advocate for so long that she was able to provide the details of legal battles between the government and multinational corporations in the 1980s. She specifically referenced a 1989 lawsuit in which Ethyl Corporation sued the Canadian government under a section of the North American Free Trade Agreement (NAFTA) for banning an environmental hazardous material, Methylcyclopentadienyle Manganese Tricarbonyl (MMT). The details of this legal incident and its long shadows over any government trying to regulate toxic material from then forward are documented in Chapter 6. All NGO representatives activated the global discourses about what Europe and USA are doing to protect human health in chemical regulation. Zane further pointed
me to the various work of ENGOs such as CPCHE, Environmental Defence, Environmental Working Group (EWG) and Rachel’s Network.

3.4.1.4 Politicians and Bill C-6

I was fortunate to be able to interview a federal politician in this study, Sage, one of several I contacted and the only one who granted me an interview. Like the NGO representatives, Sage was also very direct. She pointed me to Bill C-6 or Canadian Consumer Product Safety Act (CCPSA) which was thought to be able to “fix” the many loop holes in the Hazardous Products Act. Although not perfect, Bill C-6 received the support of the three major political parties and passed the third reading at the House of Commons over two years ago but it did not get passed into law until recently (the same Bill is now referred to as CCPSA or Bill C-36). I will explain why in Chapter 4. Sage activated the speech of a Member of Parliament, Judy Wasylaysia-Leis, recently retired, at the third reading of Bill C-6. In this speech, I was able to see the role of the ENGOs in supporting politicians that are strong advocates for environmental health issues: thus the role of ENGOs in producing knowledge, engaging the public, and the politicians. The ENGOs, as I will detail in Chapter 7, are a part of various international and/or sectoral coalitions working towards the goal of protecting children’s health and the environment. Although Sage could not spend longer than 20 minutes with me, whereas the other key informants all had spent at least 60 to 90 minutes, still, she provided a critical perspective at the centre of the political struggles over protecting children’s health and the environment. She is a cancer survivor and is passionate about the subject; in fact, at the time of my visit with her, her assistant was in the middle of mailing out one of her regular newsletters to her constituents which addressed toxicity in toys.

3.4.1.5 Higher Education Faculty Members and Texts Activated

I interviewed six higher education faculty members representing the faculties and schools of medicine, public health, nursing, early childhood education and arts/geography. Out of these six faculty members, three have currently or had, at one time, immersed themselves in the topic of children’s environmental health either through their research, teaching or advocacy activities. These three have in-depth knowledge about the content area and its intricacies; they talked in detail about the challenges in building one’s career as an academic in this area. They also talked
about their everyday struggles in trying to integrate children's environmental health material in their present teaching and research activities. Most provided me with their course syllabus and research work to help me understand their perspectives. Ashley, a lifelong activist for environmental health in medicine, activated the works he does being a part of coalitions such as Health Care Without Harm (HCWH) and Canadian Association of Physicians for the Environment (CAPE). I will present the agenda setting work of these coalitions in Chapter 7.

In the vivid stories of the higher education informants, I was able to sketch out the current landscape of children's environmental health teaching and research in Canadian higher education and the main discourses of children's environmental health. The faculty key informants were open and easy to talk to in contrast with the federal government officials. They freely express a sense of worry in regard to the lack of children’s environmental health content in the higher education system both in research and curriculum. This lack of serious attention to the topic, I will argue, will ultimately have serious consequence to the health of Canadian children.

3.5 Data Analysis

Data analysis in this study was inspired by feminist theorists in two ways. First, Smith (1987) and others emphasize the standpoint of the oppressed and the marginalized – children's health and the environment in this case. The interview with a parent followed by two focus groups proved to be an effective entry point for my research. Second, critical feminists tend to reject the use of coding, categorization, or themes. Rather, they call data analysis storytelling, where meaning and interpretation are told within historic contexts (Haraway, 1991; Smith, 1987). In IE, the goal of data analysis is relating specific experiences told as stories to their embeddedness of the social organization of institutions. This study works on linking the specific stories (e.g. parents’ experience in buying a toy) to general social relations (e.g. why are toys and other children's products not labelled? What is behind product safety regulation?). By examining the problematic (lack of informative labelling on toys and other children's products) in their different contexts (at the federal level in producing rule setting knowledge and monitoring knowledge; and at the global and epistemological levels with agenda setting knowledge), the stories are understood as socially organized according to the key informants'
social locations against the backdrop of the broader social, economical, political and historical backgrounds. As such, data Chapters 4 to 8 can be read as stories, rich with historical and social contexts and interpretations. A map at the beginning of Chapters 4 to 7 identifies “boss texts,” key actors and knowledge production activities involved.

By contextualizing the key informant stories, a “map” (or series of maps in this case) of ruling relations and ideological practices is made visible. This knowledge production is aimed at assisting the future struggles of the studied group; it also aims to inspire other groups to trace the patterns of social relations in their own experiences (Smith, 1990). Thus, with its political goal of liberation, the purpose of IE moves beyond a universal claim for "what is" to providing hope for "what may be" and "what could be.” By providing specific details of how actual practices and texts are organized and articulated, I attempt to expose and interrogate pattern of ruling relations that translocally organize and coordinate local practices. This pattern of social processes links local parental purchasing activities to the knowledge production processes of national, international, social and economic politics.

In IE, a vital research goal is to identify and describe relevant sets of social relations through documenting local practices. Each key informant was provided with an opportunity to read the transcript of their interview and edit the contents as per their discretion. Most key informants took the opportunity to edit their transcripts and my data analysis derived from the edited versions of the data. During my data collection and analysis, there were times when I had further questions and points of clarification, and I was able to contact my key informants subsequently and conduct brief interviews over the phone with them. This continual conversation with the participants is useful in ensuring the enrichment of the data by uncovering further embedded social relations.

For positivistic researchers, reflexivity – the process of reflecting – is strictly prohibited because of its interference to objectivity and rigor (Guba & Lincoln, 2005). For feminist thinkers, however, reflexivity or the practice of interrogating ourselves as researchers about the ways in which research efforts are shaped and staged around situations, binaries, contradictions, and paradoxes, is necessary to give rise to more dynamic, problematic, open-ended, and complex forms of representing our research. In my own experience as a researcher, reflexivity helped me
in finding meanings along my journey and transformed me. Without the opportunity to pause and wonder, researchers do not have the conscious capacity to question status quo, see the invisible inequities and initiate praxis for change and transformation. In my focus groups with the parents, I was able to talk to them about the importance of children’s environmental health, including offering some practical advice regarding how to reduce harmful environmental exposures. There were parents who stayed after the focus groups to talk to me in details about their concerns and I was able to direct them to the appropriate resources.

As part of my interpretation and analysis, I supplemented my documentary analysis of texts with interviews of key informants and autoethnography (my experience as a public health nurse and a mother) (see Kerr, 2006). This is what McCoy calls a two-stage model of IE (2006). The research starts with an interview with a parent and focus groups which were transcribed and analyzed. Further research questions were generated and specific institutional processes were identified as important for further study. The second stage of the research addresses these questions through interviews and examination of key institutional texts. The notion of stages may cast a false sense of sequence and distinction. In fact, these activities of research can work back and forth, in parallel, or happen together. In general, the crucial element is the raising of questions that will open an exploration of institutional processes (McCoy, 2006). In my research, informants and texts were purposefully selected according to their locations within my emerging “map” to ensure multiple sources of information. Research analyses ultimately focused on participant interview and focus groups data, textual analysis as well as fieldnotes, government and agency reports, legislations, newspaper articles and NGO position papers. These diverse data sources offered continuous cross-referencing of different perspectives that allowed me to consider competing points of view, make contextualized interpretations and formulate further research questions.

This methodology stands in sharp contrast to the discourses I critiqued. Conventional texts outlining scientific methods are linear, reductionistic, and neatly categorized, organized and presented as reality. The danger, as suggested by Guba and Lincoln (2005), is that “they may lead us to believe the world is rather simpler than it is, and that they may reinscribe enduring forms of historical oppression” (p. 210). In contrast, for critical theorists the call for action and advocacy for change and transformation are the goals of doing research in the first place. For
these scholars, reality is constructed historically by social, political, cultural, economic, ethnic, and gender values thought is open to challenge (Guba & Lincoln, 2005). Research studies are motivated by wishing to address unjust and oppressive societal practices, and therefore, the aim of feminist research is to overturn these oppressions. Rather than a hindrance, praxis is therefore the ultimate goal of the researchers.

3.6 Conclusion

In this chapter, I have described the details of my research methods. Using an approach inspired by Smith’s institutional ethnography and other feminist insights, I have delineated my problematic, clarified how I entered the field of children’s environmental health, who I have collected data from and their associated texts and discourses. In closing, I have contrasted my approach with the research feminists critique in the conventional positivistic research paradigm. I now turn to the first data chapter, which uses the issue of labelling as a way in to examine the rule setting texts and discourses in children's environmental health.
Chapter 4
RULE SETTING TEXTS AND DISCOURSES:
ISSUES OF LABELLING

4.0 Introduction

A parent shared the following story with me:

I was trying to get a flexible ball for my 4 year old son who has got some motor challenges. The Occupational Therapist said to try to get an 8 inch ball that is squeezy. So I was checking out those Gerdie balls. I was researching, trying to find out what they are made of. There was one website that was marketing them that says “gerdie balls – non toxic, PVC plastics.” I thought, non toxic is totally meaningless. No, it’s not going to cause an explosion or burn your skin but that term doesn’t really mean anything, but people keep using that term, it’s an unregulated term. But anyways, as I continue my web tour, every distributor had them on sale and for sale, trying to get rid of them. They are trying to pass it to kids’ hands, off of their inventory because they know that phthalates are on the chopping block in the US and in Canada. That’s shockingly immoral to me. That’s like saying giving all the BPA baby bottles to the newborns so we don’t have them in our inventory when the law comes through. So they don’t have to have an economic loss. I think it’s shocking how hard it is to find out what toys are made out of. It’s ridiculous. And the retailers don’t know either. I was trying to get the same son of mine an exercise ball, the ones you use in pilates. I called an exercise company and said I don’t want one that is made out of vinyl. Well, he said, “these are top of the line. The department of defence buys these for their guys. I’m sure they are not made out of vinyl.” So I asked him for the trade name and I went on the site, and sure enough, 100% PVC. So he actually assured me that they are not PVC but he didn’t know. Not that that’s a toy but same sort of thing happens in the world of toys. You see some improvement in the world of toys. You see some advertising that they are PVC free or phthalate free - whether they always are, I don’t know.

This story, depicting how lack of labelling contributing to the everyday struggles of parents when purchasing items for their children, sets the stage for my research. This everyday activity of buying a child’s toy or product, I argue, is coordinated and regulated by the rule setting texts and discourses in the complex of ruling relations – a web of various texts, actors and knowledge production activities (see Fig. 4.1.). These ruling relations are mediated by “boss texts” that govern the labelling on children’s toys and products, which in turn coordinate parent’s purchasing activities described above. Using labelling on consumer products, especially on children’s toys and products as an example, I will identify power relations that influence the different players on issues of labelling in Canada. Starting from the texts found on labels on
some of children’s toys and products and a part of the 
\textit{Hazardous Products Act}, I will foreground some of the connections between the relevant “boss texts” and the problematic of a parent buying a toy. The “boss texts” that were activated and made visible as influential on the issue of labelling are the \textit{Hazardous Products Act}, the \textit{Proposed Canada Consumer Product Safety Act} (Bill C-36), ARET, the various MOUs between Canadian government and industry, and the Chemicals Management Plan (CMP) including the \textit{Canadian Environmental Protection Act} (CEPA) (1999). These texts, officially coordinated by the federal government but hidden from the public’s view, are the outcome of the push and pull “regulation games.” Their articulation with industry and ENGOs will be discussed in this chapter.

In other words, starting from the experiences of parents buying children’s toys or other products, I will examine the inadequacies of the “boss texts” or laws and regulation that are intended to protect children’s health from environmental harm. I will report on the efforts by the governments to enhance and strengthen the current laws and regulation, as evident by the relentless work on getting Bill C-36 passed as a law, and the resistance to these efforts. As
labelling is a strategy in chemical management, I will examine the essence of the Chemicals Management Plan (CMP) and critique its shortfalls in the context of CEPA (1999).

4.1 Lack of Labelling on Children's Products

4.1.1 Experiences of Parents

As the experience of the parent described above shows, there is a problem for the public in making purchasing decisions on children’s toys and other products, which begins with an observation about the lack of adequate labelling. In my conversations with parents, they have all expressed a desire for the government to implement policy to have manufacturers’ labels on children’s products, including toys. Ming, another parent, expressed her frustration that we don’t have a lot of money so we have to buy [toys] from [the dollar store]. I tried to read everything we buy to make sure they are safe. But toys don’t have labels about what they are made of. So, that’s hard.

Acting on comments like these from my parent informants, I went to Walmart and conducted a mini-survey of labelling on children’s products, looking to see what products are available and what information is communicated to the consumers at the point of purchase. Table 4.1 summarizes my local Walmart’s inventory on baby bottles and drinking cups according to the brand names and their associated information and Table 4.2 has the same information on children’s toys.

Table 4.1: Walmart Inventory on Baby Bottles and Drinking Cups

<table>
<thead>
<tr>
<th>Brand</th>
<th>Type</th>
<th>Labelling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gerber – baby bottles</td>
<td>Plastic</td>
<td>Absent</td>
</tr>
<tr>
<td>Evenflo-baby bottles</td>
<td>Glass Bottle</td>
<td>Absent</td>
</tr>
<tr>
<td>Evenflo-baby bottles</td>
<td>Plastic</td>
<td>Classic without BPA</td>
</tr>
<tr>
<td>Playtex Drop-in Systems-baby bottles</td>
<td>Plastic</td>
<td>Phthalate and BPA free</td>
</tr>
<tr>
<td>Playtex #1Spill-Proof Cup</td>
<td>Plastic Cups</td>
<td>BPA Free</td>
</tr>
<tr>
<td>Heinz Cup</td>
<td>Plastic Cups</td>
<td>BPA Free</td>
</tr>
<tr>
<td>Nuby Cup</td>
<td>Plastic Cups</td>
<td>BPA Free</td>
</tr>
</tbody>
</table>

As illustrated in Table 4.1 above, not all the products carried by the store were labelled. Most of the baby bottles and drinking cups were labelled as BPA-free, consistent with reports by
my parent informants. BPA is now prohibited by law in baby bottles. One of the Playtex products went one step further by labelling its bottles phthalate-free as well. A Gerber product did not even have the label BPA-free. Can the consumer assume that the baby bottle from Gerber is BPA free because of the ban? One interesting point to note from this survey of the baby bottles and drinking cups is that although the manufacturers labelled them as BPA- or phthalate-free, they did not label the substitute ingredient or indicate what material the bottle was made of. Thus consumers are still in the dark about the safety of the products.

Table 4.2: Walmart Inventory Data on Children’s Toys

<table>
<thead>
<tr>
<th>Brand</th>
<th>Name of the Toy</th>
<th>Labeling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mega Bloks</td>
<td>Blocks</td>
<td>“This toy conforms to: Voluntary Products Standards F963US, Canadian Hazardous Products Acts.”</td>
</tr>
<tr>
<td>Mega Bloks</td>
<td>Blocks</td>
<td>Absent</td>
</tr>
<tr>
<td>Kidconnection</td>
<td>Musical Tractor and Trailer for kids (18months)</td>
<td>Absent</td>
</tr>
<tr>
<td>Kidconnection</td>
<td>Wooden Alphabet Train Set</td>
<td>Absent</td>
</tr>
<tr>
<td>Kidconnection</td>
<td>Sand Fun</td>
<td>Absent</td>
</tr>
<tr>
<td>Vtech</td>
<td>Trucks, 6months +</td>
<td>“This product conforms to Safety Requirements of ASTM F963 and the safety requirements of Canadian Hazardous Products (Toys) regulations.”</td>
</tr>
<tr>
<td>Fisher-Price</td>
<td>Sesame Street Hide Inside Bath Friends</td>
<td>“conforms to F963” and the rest of the information was in French</td>
</tr>
<tr>
<td>Fisher-Price</td>
<td>Nickelodeon Dora (1-4 years)</td>
<td>Absent</td>
</tr>
<tr>
<td>Tonka</td>
<td>Truck (12 months)</td>
<td>Absent</td>
</tr>
<tr>
<td>Playskool</td>
<td>Truck (12 months)</td>
<td>Absent</td>
</tr>
<tr>
<td>Playskool</td>
<td>Busy Poppin’Pals</td>
<td>Absent</td>
</tr>
<tr>
<td>Little tikes</td>
<td>Truck</td>
<td>Absent</td>
</tr>
</tbody>
</table>

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At the time of this survey the law banning phthalates in children’s products was not yet passed. For more details on the ban, see chapter 9.
As shown in Table 4.2, there was very little labelling on the toys. The most progressive information on the packaging of the toys were statements on Mega Bloks, Vtech and Fisher-Price products, but this appeared on only one of their many items. That statement read: “this product conforms to Safety Requirements of ASTM F963 and the safety requirements of Canadian Hazardous Products (Toys) regulations.” What does this statement actually mean? What do the Canadian Hazardous Products (Toys) regulations say? To answer these questions, let us turn to the Hazardous Products Act.

4.1.2 Labelling - The Hazardous Products Act, ARET and Government MOUs

Smith’s concept of textually mediated discourses (reviewed in Chapter 2) would indicate that texts such as the Hazardous Products Act are activated as economic and social processes that make up the political economy. These discourses organize and coordinate people’s everyday activity. For example, the Hazardous Products (Toys) Act outlines requirements in addressing packaging, electrical, mechanical, thermal, and toxicological hazards. The following are the requirements listed under toxicological hazards:

**TOXICOLOGICAL HAZARDS**

10. Every product described in paragraph 13(p) of Part II of Schedule I to the Act shall meet at least one of the following requirements:

(a) the product, by reason of its nature, physical form, size or any other characteristic, shall be such that the toxic substance or the substance or part containing the toxic substance cannot be ingested, inhaled or absorbed through the skin;

(b) the total quantity of the available toxic substance shall not exceed one-hundredth of the acute oral or dermal median lethal dose, whichever is the lesser, calculated for a child having a body weight of 10 kg; or

(c) the toxicity of the toxic substance does not exceed the limits prescribed by Schedule I.

11. Every product described in paragraph 13(q) of Part II of Schedule I to the Act shall meet at least one of the following requirements:

(a) the product, by reason of its nature or any characteristic, shall be such that the corrosive substance, irritant or sensitizer cannot come in contact with the skin; or
(b) the corrosive substance, irritant or sensitizer shall not be excessively corrosive or irritant or an excessively strong sensitizer as determined in accordance with the tests prescribed by Schedule II.

12. (1) Subject to subsection (2), resins, plasticizers, antioxidants, dyes, pigments and other substances and the grade, quality, quantity and proportions thereof used in manufacturing any plastic material used in any product included in paragraph 13(r) of Part II of Schedule I to the Act shall be those considered acceptable for use in the manufacture of food packaging materials and food containers.

(2) A substance, other than a heavy metal, a compound of a heavy metal or a substance set out in item 8 or 9 of Part I of Schedule I to the Act, may, subject to sections 10 and 11, be present in a plastic material referred to in subsection (1) in the amount of one per cent or less (Department of Justice, Canada, n.d.)

These three provisions, as examples of the rest of the other provisions in the Act, contain many apparent loopholes. One potentially dangerous defect is contained in provision number 10 (b), which assumes that every child who will come in contact with any toy will weigh at least 10 kilograms and that it is acceptable to expose children to low dose poison. It is apparent that this Act was written based on the myth that low dose exposures do not harm anyone. However, as indicated in Chapter 1, it has been shown for many years that exposure to toxic substances at any amount could be harmful, especially in the cases of BPA and phthalates. Other than these specific faults of this Act, there are also general loopholes. My politician and federal government informants pointed out three specific issues with the Act that makes it “toothless.” The three issues are that it is voluntary; recall is passive; and there is a lack of enforcement requirements.

During the 1990s, voluntary programs began to be the primary basis for toxic chemical management. The use of such initiatives instead of mandatory regulations is controversial. According to the 1999 Commissioner of the Environment and Sustainable Development (CESD) Report (CESD, 1999, Chapter 4), voluntary initiatives (soft laws) can achieve reductions in emissions more quickly and cost-effectively than regulations (hard laws) can. The Report pointed to Industry Canada and Natural Resources Canada as two specific federal government agencies as well as industry as strong supporters for voluntary initiatives. Critics of the voluntary programs, on the other hand, are concerned about voluntary initiatives because of the displacement of government regulations. They fear that industry will selectively reduce their
emissions, and inaccurately measure their reductions because under the voluntary initiatives, industry will not suffer any consequence for failing to meet the targets they have agreed upon. Critics also fear that, under the voluntary program, there is a lack of incentive to participate. From the industry’s perspective, those who do participate in the program to reduce emissions may be at a competitive disadvantage, as there is not a “level playing field in the marketplace” (CESD, 1999, Chapter 4, p. 4). These polarized perspectives illustrate the importance of the concept of standpoint, which can then accommodate the differences in views between government, industry and critics fearing industry failure to comply with “soft laws:” industry interest can be glimpsed in their wish to avoid regulation, and critics’ concern about holding industry accountable.

The Hazardous Products Act is “harder” than other regulatory efforts, but there is some evidence supporting the view that regulation overall is too “soft.” For example, Accelerated Reduction/Elimination of Toxics (ARET) is the government’s widely publicized voluntary challenge program for 117 toxic substances and is an example of collaboration among federal departments and industry. In addition, Environment Canada, the lead federal authority for voluntary agreements, has entered into nine major Memorandum of Understandings (MOUs) with industry sectors in which the Ontario government was among the partners (CESD, 1999, Chapter 4). In examining the MOUs, the federal Auditor has found that while each MOU deals with one industry sector and its specific pollution issues, the participating sectors who signed on may withdraw from the MOU at any time. In addition, most of the MOUs are found to be without targets or timelines, and the baseline use for release of a substance is often unknown. Reduction statistics are typically reported through annual case studies submitted voluntarily by industry signatories. According to the Auditor General, even Environment Canada has found that the claims of more than 75% reductions in emissions reported by businesses under one MOU were misleading (CESD, 1999, Chapter 4).

The voluntary program currently in place for industrial chemical production also applies to product recalls. According to my politician and federal informants, voluntary recalls of products are not effective in protecting consumers from toxic exposures. First, because it is voluntary, whether a corporation even issues a recall becomes a decision based on companies’ good will and the level of commitment towards consumer safety. As one federal informant said,
“there is no real incentive for companies to be diligent to make sure that all their toxic products are off the shelves.” Second, even if the manufacturers or the importers of the products do issue a recall, it will still be up to the retail sector to pull products off the shelves. This is when the product in question is still in stores. What about after the product is purchased? As one government informants pointed out, once the item is purchased and the packaging of the products has been removed, then the recall is even less useful. She explained these attempts to have retailers voluntarily put signs up about the lead issue:

From 1999 to 2001, the government asked the retailers to post signs saying that “jewelry may contain lead.” It was voluntary and they found that it didn’t work. Either they didn’t put up the signs or as soon as the consumer purchased the product, they’ve brought it home and they no longer have the sign to tell them about it. It’s separated from the product.

Despite the severe limitations of voluntary programs in toxic chemical regulation, the MOUs of these programs have continued to be renewed (CESD, 1999, Chapter 4). As my politician informant emphasized, chemical management “cannot be voluntary!”

In addition to problems with the voluntarily nature of chemical management including product recalls, another deficiency of the Hazardous Products Act is the lack of enforcement. According to my key informants, under the current legislation, inspectors are not allowed to do unannounced visits to businesses. As my politician informant said, “if you tell businesses that you’re coming to check on them, they’ll do everything to comply for that moment. What good is a law when you can’t enforce it?!” She continued, pointing out that “there are not enough inspectors to inspect [products].” Indeed, the 2009 CESD Report reported there are only 193 enforcement officers nationwide responsible for pollution-related issues in Environment Canada. The politician key informant pointed out that inspections are needed at customs when goods are imported, at the point of production when products are being manufactured, and at the retail sector level when the goods are being distributed. She insisted that the current system doesn’t work – specifically the voluntary initiatives and the current limited power of enforcement

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7 The Canada Consumer Product Safety Act (CCPSA) or Bill C-36 has recently passed into law. According to the government website, under this legislation, the government now has the right to issue product recalls. More details of this law will be presented in the next section.
officers. In her words, “[it] shouldn’t be the case; it should be the other way around. The Canadian government should have officials to inspect the toxicity level.” And she added that “the fines [for toxicity] are not very high, which adds to the inconsequentiality of the law.” Thus politician, government officials, and NGO key informants all agreed that “Canada has one of the weakest laws and Canadian kids are not protected much.”

These various hard and soft laws are obvious ideological circles theorized by Dorothy Smith as reviewed in Chapter 2. Featured in these ideological circles are texts that separate the rule setting knowledge producers such as the policy developers from the front-line knowledge end-users such as the parents in my study. This separation helps to maintain the power of the ruling elites over those who are being ruled such as the parents who are trying to buy a safer toy and products for their child.

4.1.3 Canada Consumer Product Safety Act – Bills C-51, C-6 and C-36

The Canada Consumer Product Safety Act (CCPSA), Bill C-36, was passed by the Senate on December 14, 2010. According to Health Canada, the CCPSA will protect consumers by

- prohibiting the manufacture, importation, advertisement or sale of any consumer products that pose an unreasonable danger to human health or safety;
- requiring industry to report when they know about a serious incident, or death, related to their product to provide government with timely information about important product safety issues;
- requiring manufacturers or importers to provide test/study results on products when asked;
- allowing Health Canada to recall dangerous consumer products; and
- raising fines and penalties for non-compliance. (Health Canada, 2010, December 14)

The passage of CCPSA is a major step forward in the promotion of children’s environmental health agenda as the need for enforceable laws was upper most in the minds of the participants in my study, as reported in the section above. Critics emphasized that the Hazardous Products Act has been in place without revision for 40 years until now. In this section, I will provide a

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8 According to the government website, fines and penalties for violation will increase under CCPSA.
detailed account of the history of this Act and investigate whether it will serve to protect Canadians from environmental toxicity in consumer products.

Ever since the mid-1990s, both the Liberal government then and the Conservatives had been trying to pass a bill that would replace the Act to “modernize” and “strengthen” Canadian legislation (Health Canada, 2010a). The CCPSA was known as Bill C-36, which was reintroduced on June 9\textsuperscript{th}, 2010 by the Minister of Health, Leona Aglukkaq (Health Canada, June 9, 2010). This marked the government’s third attempt to pass this Bill. C-36 is better known as Bill C-6, which was tabled on January 29, 2009 (Health Canada, December 7, 2009). Before it was known as C-6, the Bill was first introduced as C-52 in April 2008 (Minsky, June 8, 2010). C-52 died when a federal election was called in the Fall of 2008 and C-6 suffered the same fate when the Conservative government called a prorogation of Parliament in December of 2009.

Although this Bill as the website describes, will enabled the government to take action if serious problems are identified, there are still loopholes in it, as pointed out by Judy Wasylycia-Leis, who was the former NDP Member of Parliament, Winnipeg North. She had been one of the major supporters of this Bill along with various NGOs. But in her speech on June 10, 2009, as the Bill was entering the third reading, she pointed out a major flaw:

This legislation is not perfect. We wish it had much more in terms of teeth and much more emphasis on the precautionary principle. We are pleased that the government has provided for a way to ensure that once we have identified serious problems, action can be taken. [However,] it is not readily apparent how action will be taken and [how] products that are problematic in the first place are identified. (Wasylycia-Leis, June 10, 2009)

A related issue identified by Wasylycia-Leis is that the legislation does not list hazardous products despite lobbying for this by NGOs such as Environmental Defence, the David Suzuki Foundation and the Canadian Cancer Society. Although the Act has a list of chemical substances that have been declared toxic, a list of products that contain these substances are not available to consumers. Pointing to the possibilities for citizen action that a listing of hazardous products would enable, she suggested that

if the provision was included, there would be some certainty for all Canadians that even if the government did not take steps to ban a product, remove a product, or recall a product, at least consumers would know what substances were in that particular product. If they believed that there was enough science to be of concern for usage of that product, then they could at least take personal responsibility. (Wasylycia-Leis, June 10, 2009)
Although the CCPSA has passed Parliament and is expected to receive Royal Assent in the next few months, it is not expected to be fully in force until several years from now. The lengthy process of implementing the CCPSA is described this way by Health Canada:

Typically, when bringing into force new or modernized legislation with significant changes, including new industry requirements and authorities for officials, the Government prepares a coming-into-force strategy that may extend over several years. In some cases, the time period could be as long as five years. (Health Canada, January 10, 2011)

As I will argue in next chapter regarding the slowness of risk assessment and management of toxic substances, CCPSA has taken a long time to be recognized as law and now it will take even longer to have the law come into effect. This snail’s pace in rule setting is consistent with the enactment of legislation on other toxic chemicals such as phthalates, as I will describe in Chapter 5. I will argue that this foot dragging process serves to benefit industry. While the government is preparing “coming-into-force strategy” over the next several years, industry is allowed to continue to pollute without penalty.

Also the government prohibits “the manufacture, importation, advertisement or sale of any consumer products that pose an unreasonable danger to human health or safety,” (Health Canada, 2010, December 14) the definition of reasonable danger to human health or safety is unclear. In the next section, I will describe the “push and pull” politics of labeling chronic hazardous products. I suspect that “reasonable danger” may not include the harmful low dose effects such as ones I described in Chapter 1 regarding BPA and phthalates. It is laudable that the government can now require “industry to report when they know about a serious incident, or death, related to their product” (Health Canada, 2010, December 14). However, does the “serious incident” include slow death in children exposed to chronic toxicity? These are interesting questions that are left unaddressed as the government develops and implements its chemical management strategies, which I will describe below.

Despite the imperfections, my politician informant insisted that CCPSA is still an important piece of legislation. In 2009, it went through three readings in the House of Commons. When it arrived at the Senate, the Senate decided to amend it. In the process of approving the Bill, my informant explained that the “teeth” of the Bill were being pulled: “the
Liberal senators were amending it so that the inspectors [would] have no right to come and investigate.” And because the Liberal senators held it up, the Bill died for the second time when the Prime Minister asked for prorogation.⁹

Why did the government keep reintroducing Bill C-36? Does it serve the same purpose as banning BPA back in April 2009? According to one of my higher education informants, the Conservative government used the banning of BPA in baby bottles as a “quick fix” to their publicity problem. It allowed them to frame themselves as a government that wanted to improve the environment in the face of the critique that they are doing “nothing” around climate change, as perceived in Copenhagen. At Copenhagen, the Canadian government was criticized as failing the Canadian people and the environment (Polaris Institute’s Energy Program, December 21, 2009). Following this line of reasoning, perhaps, with CCPSA, “they want to show themselves to be environmentally-friendly government,” commented one higher education informant.

Could the passing of Bill-C36 have been another opportunity for the government to smooth out its tarnished publicity image? In the face of the most recent recalls of 12 million Shrek-themed drinking glasses from McDonald’s over toxic paint concerns (Toxic paint blamed as “Shrek” glass recall extends to Canada. 2010, June 4) and many other recent recalls such as children’s Tylenol and Motrin, perhaps the government sees the opportunity to restore its questionable reputation in the area of health and environment. In 2009 alone, Health Canada posted over 300 voluntary recall notices, approximately one-third of which involved children's products. Before she tabled the Bill, Minister Aglukkaq toured part of Health Canada’s product safety laboratory in Ottawa, where she looked through recently recalled baby walkers, playpens and jewelry containing high levels of lead (Health Canada, June 7, 2010). Reintroducing the legislation, as she did on June 9th, 2010, was perhaps a calculated strategy for the Minister to be able to claim that the “safety and well-being of Canadian families and children remain a top priority for our government.” And claim this she did. This story of Bill C-36 demonstrates the

⁹ What is a Prorogation? According to a Canadian government website, (House of Common, Canada, n.d.), prorogation of Parliament is when the Parliament ends its session, which is called by the Governor General, on the advice of the Prime Minister. The principal effect of ending a session by prorogation is to end business. All government bills that have not received Royal Assent prior to prorogation cease to exist; committee activity also ceases. As such Bill C-6 did not get passed and was reintroduced as Bill C-36.
theoretical assumption by critical feminist scholars such as Harding, Haraway and Smith that there is no neutral position and that knowledge production is always political. It is clear that the passing of Bill C-36 depended not only on “evidence” (such as the toxicity of the chemicals) but also on the political will to face an industry that minimizes the danger of toxicity in children's products.

Visible for all to see is that rule setting knowledge in protecting children’s health from harmful consumer products is, despite CCPSA, inadequate. The current laws are out of date and apparently toothlessly inconsequential for businesses; and the new and upcoming law will not be in force several years from now. And the government is impotently relying predominantly on voluntary regulations to govern chemical production, importation and distribution. Furthermore, as I have illustrated with the case of CCPSA, it is extremely difficult and time consuming to change existing rule setting knowledge. Why is rule setting so difficult to influence for children’s environmental health in Canada? Let us take a glimpse into the “push and pull” game of regulation.

4.1.4 Labelling – the Push and Pull of “Regulation Games”

The efforts by government, politicians and NGOs to ensure product safety have been quite public and documented in various official websites. However, what was happening behind the scene on this issue? Some glimpse of the politics of regulation came through one of my federal informants. The information she shared suggests that the previous federal governments had agreed, for many years now, that labelling and/or warnings are essential to protect consumers. However, there continues to be the lack of labelling on consumer products, especially on children's products. She specifically critiqued the Canadian government’s lack of labelling on chronic hazards:

There is a substance in paint stripper that the studies have indicated may cause cancer. There is no labelling on the case when you purchase it. The government has brought in legislation on acute hazards – poisoning, inhalation of fumes, [and] acute shorter term hazards but the longer term chronic hazards aren’t addressed.

This is clearly a “dividing practice” in Foucault’s (1996) sense, an effective tool used to rule over individuals, as discussed in Chapter 2. In this case, separating the acute and chronic hazards labelling consumer products, the acute hazards are classified as a threat to human health while
dividing off and normalizing the chronic hazards. The practice creates an illusion that chronic hazards are acceptable. This unfounded acceptance of chronic hazards carries heavy consequences in children’s environmental health knowledge production (to be discussed in detail in Chapter 8).

The informant cited above continues commenting on the usefulness of labelling on consumer products in general:

If you look at the US, for example, they do label these products as “they do cause cancer in lab animals.” At least the consumers are informed to certain extent. That’s what we’ve always asserted. With the information, consumers could make a choice about how to use the product. Why should I use it in a well ventilated area? Well because if you are chronically exposed to it, like you’re using this stuff every weekend, it could cause cancer. It’d be a little clearer for the consumers.

Resisting this dividing practice was at least one government official who pointed out the fact that the government has brought in regulations to label chemical products for acute hazards but not chronic hazards – long term exposures. We also pointed out the fact that as part of the 1992 Earth Summit, we had committed, along with all the other countries that signed on, to bring in a regime to label all consumer products. We are half way there; we have now labelled the acute hazards but we haven’t done the chronic.

How does the Canadian government rationalize its lack of labelling on chronic hazards? The same key informant provided a clue:

The federal government has stated that they want to be harmonized with their major trading partners including the US and Mexico. Neither of them has gone the chronic labelling route, whereas Europe has. I believe they have gone last year labelling the chronic hazards. I think it’s a matter of time before it comes to Canada.

In this excerpt, the link between legislation of labelling and the national and global economy is made. Canada is presented as “choosing” (much as individuals are supposed to do in neo-liberal discourse) between its trading partners. Notably, the precautionary principle that underlies the Earth Summit text is not activated but instead the economic consequences of the choice\(^\text{10}\). Here

\(^{10}\) Ironically the definition of the precautionary principle developed at the Earth Summit was criticized because it included economic considerations. It was defined as “in order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.” (The United Nations Environment Programme. 1992, June 3-14)
again can be seen another illustration of the political and economic entanglement of knowledge production as with economic considerations in capitalist relations as pointed to by critical feminist and eco-feminist scholars. In the oppressive conceptual framework, theorized by Warren (1996) and reviewed in Chapter 2, the prevailing neo-liberal framework of privileging economic interests over health interests acts to explain, justify and maintain the ruling relations of domination and subordination. But these oppressive linkages may be hidden from the public eye. What, then, were some of the “official” arguments against labelling?

Key informants directed me to the work of Health Canada Committees on the issue of labelling, the Globally Harmonized System of Classification and Labelling of Chemicals General Issues Committees (Health Canada, 2010b). An informant described how “stakeholders” are essentially divided into two camps:

You basically have labour and some environmental groups vs. industry. It’s very clear that industry will never support the types of labelling that labour and the environmental groups want. The industry will argue very strongly that to label a product that will possibly cause cancer would cause hardship to the manufacturers. It is unnecessary [they say] because the science just doesn’t say that – [but I say] it’s a significant enough risk. It’s unfortunate. It’s one of those classic impasses. They have been on this impasse for six or seven years now.

These polarized positions illustrate Harding’s weak and strong objectivity, respectively, with industry advocating labeling only with “hard” evidence and environmental groups advocating a precautionary approach. The same informant went on to explain how this “impasse” played out when the Health committee that looks at labelling chronic hazards was deliberating from April to June 2009 before the House of Commons. In these deliberations, she outlined the position of the Canadian Cancer Society, which was representative of many NGOs and some members of the public:

People and organizations like the Canadian Cancer Society say, “if there is a substance that even poses a potential for it to cause cancer, it should be labelled regardless of how great or minimal the exposures are.” As a consumer, we all would like to see that.

She contrasted the society's position with industry and other opponents from higher education:

The industry and others like researchers and academics [are] saying "if you take that route you’ll have to label so many things." [The argument goes that] there are so many labels that they become irrelevant [and] people become desensitized to the whole issue. So the labelling doesn’t achieve anything [they say].
This informant identified a third rationale advocating that according to the precautionary principle, there should not be any labelling. As she put it,

there are some environmental NGOs who believe that we shouldn’t have to label. These products should be banned outright. Why should we label? Lead in children’s toys is a good example: prohibit it. Then the risk isn’t there.

This last argument is a true prevention strategy which would effectively remove the threat to human health completely and the issue of labelling would become a non-issue. But just as in Sherwin’s (1994) analysis of the consequences of focusing primarily on breast cancer treatment instead of prevention, prevention is not the dominant discourse on the table in the regulation of chemicals. Sherwin (1994) points out, cancer treatment strategies benefit industry. Cancer prevention strategies that favour women’s health, on the other hand, would force governments to confront chemical corporations to clean up their pollution emissions. The same problem is with labelling. Arguably, the lack of attention to prevention strategy is a form of “institutional capture” serving industry and "the economy"(Smith, 2005). That is, the consequences of precaution are imagined as harming the economy privileging neo-liberal logic and an oppressive conceptual framework that sacrifices the welfare of the people to the profit of corporations.

Instead of demanding that businesses label and/or remove toxic substances from products, the political system places the responsibility for buying a safer toy or product on the shoulders of individuals who have very little information to make this decision.

This argument over labelling also reveals a process of “downloading” (see the discussion in Chapter 2, p. 60). Smith (1987) problematizes a list of suggestions of what a parent should do to encourage a child to read created by the board of education; showing how by “downloading” these responsibilities, teachers’ overall workload in the classroom is decreased and cutbacks in education are legitimized. In the case of labelling, the government has downloaded the responsibility for children’s exposure and toxicity to consumers (parents). And similar to the assumptions identified by Smith regarding the parent's ability to do the teachers' work the lack of or minimal labelling of products for children assumes that these parents have the ability to determine chemical toxicity and apply the precautionary principle without any assistance in sorting through the science.
As illustrated in this section, labelling is a complex process influenced by various texts and actors. However, it is only a part of a bigger territory that encompasses the Canadian government’s effort to manage chemicals. In the next section, I will introduce and interrogate the current chemical management regime, specifically the Chemicals Management Plan.

4.2 The Chemicals Management Plan

Before 1988, chemical substances were produced or imported into Canada without a systemic assessment of their health or environmental effects on humans. With the introduction of the Canadian Environmental Protection Act (CEPA) in 1988, all new chemical substances must pass a process called risk assessment by Environment Canada and Health Canada to determine if they are toxic or potentially toxic prior to giving them permission to enter the Canadian market. Accumulatively, there are about 23,000 chemical substances in the Canadian market that have not undergone this assessment as these substances were in use before 1988. These substances were listed on the Domestic Substances List published in 1994 (Environment Canada, n.d.).

There are two distinct phases in the process of addressing the problem of health and environmental risks from chemical substances. One is risk assessment and the other is called risk management. The goal of conducting risk assessment is to determine whether a substance is “toxic” or capable of becoming toxic under the revised CEPA (1999). When a substance is found to be toxic according to the criteria outlined in the Act, a recommendation is made to add it to the List of Toxic Substances in Schedule 1 of the Act by the ministers of Health and Environment. The authority to add the substance to Schedule 1 rests with the Governor in Council. Decisions of the Governor in Council take into account the advice of the Privy Council, as the formal executive body that gives legal effect to the decisions of Cabinet that is to have the force of law. When a substance is added to Schedule 1, this sanctions the government to develop and implement risk management measures that aim to reduce or eliminate harmful effects that the toxic substance poses to human health or the environment throughout its life cycle. This is the chemical management stage of the second phase in the process of managing health and environmental risks from chemical substances. The timeline for the government to implement risk management measures is within five years from the date that the substance is added to
Schedule 1 (CESD, 2008). As of May 2009, 22 of 51 assessed substances had been determined to be toxic under CEPA (1999) and they are in the process of being added to Schedule 1 of the Act (CESD, 2009). The processes of chemical management in Canada are illustrated on Fig. 4.2 below.

**Fig. 4.2 Processes of Chemical Management**

All 23,000 chemicals went through a process of categorization depending on their known risks on human health. The chemicals are thus prioritized and ranked accordingly in waiting to undergo the processes of CMP. The higher the risk a chemical poses on human health, the more quickly it will be put through the CMP. When the time comes for a chemical to go through the process, it first undergoes the risk assessment process. The definition of risk assessment will be presented and critiqued below. If the chemical is found to be non-toxic, it will forever be considered as such because there is no predetermined review of the decisions made as a result of CMP. If, however, the chemical is found to be toxic, a recommendation will be made to Governor in Council to have it added to Schedule 1 of CEPA (1999). While the chemical is waiting for the decision by the Governor in Council to reject or accept the recommendation, the
chemical continues to be considered non-toxic. If the Governor in Council rejects the recommendation to add it to Schedule 1 of CEPA (1999), the chemical, again, will be deemed non-toxic forever. However, if the Governor in Council accepts the recommendation made by the scientists and deems the chemical as toxic under CEPA (1999), the government then will have the authority to initiate and implement the process of chemical management, which may take up to five years to complete. The bureaucracy created by this process confirms Weber's (1947) well-known description of bureaucracy involving rules, hierarchical structure and decision making according to the rules. Whether intentionally or unintentionally, while the bureaucratic process runs its course, which in the case of implementing rules regarding toxicity, may take decades. Or alternately, as will be suggested in the next section decisions can be rushed to meet timelines.

In September 2006, Environment Canada and Health Canada, as required under the CEPA (1999), completed an initial review of 23,000 chemical substances and identified 4,300 substances needing further assessment to determine their actual and potential toxicity. In order to address these 4,300 chemical substances, on December 8, 2006, the government unveiled its CMP which aims to complete the risk assessments on these substances by 2020 (CESD, 2008). As a result of the categorization of the 4,300 chemicals, approximately 200 chemicals were found to be in the high priority ranking. Currently, the government is collecting information on the properties and uses of these 200 chemicals as part of the risk assessment process of CMP. This process of risk assessment is called the "Challenge.”

Under the Challenge, these 200 highest priority substances are divided into a number of smaller groups, and the risk assessment of each group is being addressed sequentially. In February 2007, the government began releasing notices in the Canada Gazette on the groups of substances identified. Industry and interested stakeholders were invited to submit additional information that may be used to inform risk assessment and to develop and benchmark for best practices for risk management and product stewardship. Assessments of a new group of substances are released every three months (Government of Canada, 2010a). In the two sections below, I will present data from government websites and my key informants about the risk assessment and management processes.
4.2.1 Risk Assessment

According to a Canadian government website, risk assessment is a scientific evaluation of a chemical substance. This evaluation determines the potential harm or danger a chemical substance can cause to human health and/or the environment, and the ways in which humans or the environment can be exposed to the substance. This allows the government to identify whether or not control is needed, and if so, what type of control is best suited for avoiding, reducing or preventing the potential harm. (Government of Canada, 2010b)

Risk assessment is defined as an evaluation and its process is said to be conducted this way:

To conduct risk assessment, scientists conduct research and look at the existing studies from around the world, and if they are missing something important, they will use computer models or compare the chemical substance to others with similar characteristics. Specific information on the hazardous properties and the exposure possibilities for people and the environment helps the Government of Canada to find the right tools for controlling a chemical substance. (Government of Canada, 2010b)

In the above description by the federal government, it is not clear what kind of research and existing studies the scientists would be looking at and who has funded the studies. It is of theoretical interest that the process of risk assessment is defined quite differently and more specifically in the March 2008 CESD Report. According to this Report, risk assessment is an investigation of environmental and human health risks that involves the analysis of data on a substance’s life cycle: entry into the environment; the concentration to which humans, animals, and plants are exposed; and the substance’s effects on organisms and ecosystems. A risk assessment compares exposure concentrations with concentrations causing effects to determine if adverse effects are likely. (p. 10)

The emphasis on the “concentration” or the dosage of toxicity was critiqued in Chapter 1 and I will not repeat the critique here. Despite its many limitations, risk assessment, continues to be the basis for CMP, which is hailed by my federal informants as a “very progressive” way to protect Canadians from harmful chemical exposures as compared to what they were doing before the implementation of CMP. One informant commented:

In 2002, they had thousands of substances to be assessed and they were taking a very long time just to assess one substance – in some cases, 10 to 15 years just to assess one substance. [Now] they have changed their processes. They tried to streamline the process which gave us a better sense that they are trying to address these concerns.

From the administrative point of view, the CMP did very well and, as will be described in the next chapter, the Auditor found that Environment Canada, the lead federal agency for the
initiative, outlined its goals, objectives, and timelines clearly for the program. However, the quality of information on which the government was basing toxicity decisions on was not examined. One federal informant explained that

the Auditor [only] looked whether they have a plan in place to assess [chemicals] – timelines, objectives etc… [and the] findings were that yes, they did have a timeline, and resources in place. Now what [wasn’t looked at] was the quality of information going into the process: how robust is the information that they are basing their decisions on…? Those aspects weren’t examined.

At the same time as the CMP was being hailed as the government’s progressive cutting edge initiative to assess and manage chemical substances, there were some indications in my interviews that there were voices that were silenced during these lengthy assessments. A policy developer at the municipal level, a strong advocate for children’s environmental health, was invited to submit comments in CMP and here is what he had to say: "we were invited to comment on the batches of chemicals released by [Health Canada] through the Chemicals Management Plan. We couldn’t keep up and we had to stop." My NGO informants explained that the government had provided some money to help organizations to prepare comments on draft risk assessments and management proposals. However, their frustrations also came through loud and clear. One told me:

I served on that [committee] for two and half years but got burned out. Draft decisions on 10 to 15 chemicals at a time are released every three months, and maybe five of them are health hazards. We have to search databases and the academic literature to find out what they say about them, e.g. whether they have considered all the data, whether they have any developmental data.

She chose to review the developmental toxins, preparing references and comments on nine chemicals which, in her words, “was considerable [volunteer] work.” The same sense of being overwhelmed was shared by another key informant from a larger NGO. As he put it,

NGOs are having an extremely hard time keeping up with the analysis, and being able to counter industry’s participation in CMP. To have an equal voice, you need a lot of expertise and human power to evaluate all these substances and make comments to the government about how these issues should be addressed.

He predicted that the sense of being overwhelmed will continue for a while yet because

this is just the 200 at the top slice, tip of the iceberg. And then they are looking at the medium priority which is a chunk of a few thousands. I don’t know how they are going about that.
Two of my NGO informants were disappointed by the outcome of the government’s deliberations. One of them protested that it seemed that my work did not change anything, or affect the final decision. For one chemical I found 40 studies about its developmental and reproductive toxicity, but it was not considered toxic under provisions of CEPA.

This led her to conclude that she was “wasting [her] time, that consulting NGOs was just a token.” The knowledge produced by the NGO and the policy developer (an activist for children’s environmental health) clearly are being viewed as “subjugated knowledges” in Foucauldian sense (see Chapter 2), and the voices of these activists are effectively silenced.

The NGO informant quoted above further emphasized that if “a chemical has gone through the CMP and [is] found to be non-toxic under CEPA – that does not mean that it is not toxic.” The same NGO informant went on to point out a major flaw in this process:

I worry about the government’s Chemicals Management Plan, because decisions on hazards are being made without adequate toxicity data. It doesn’t even require missing data. The challenge to industry for information is how much are you producing and how and where is it being used? So action is based primarily on exposure data that may be insufficient, and decisions on these substances need to be based on adequate toxicity data as well.

Her worries were shared by another NGO representative who said:

I think there is a rush to make decisions, in some cases based on very little information – in some cases virtually no information on neurodevelopmental impacts. So with very little data, a lot of the decisions are being made. I think there will be complacency. You know, once everything is in their little tidy categories, nobody is going to look at them for a long, long time. So I have concerns about that, that we are making decisions based on very little evidence and treating them as if they are very good solid decisions.

This comment addresses the problem of evidence, including “what counts as evidence” in the production of knowledge about toxicity. While Harding and Haraway describe knowledges as always partial, multiple and discordant (see Chapter 2), the conventional biomedical scientific paradigm insists upon orderly and neat classification and categorization of knowledge that is the “truth” which does not change. This positivistic desire to have efficiency, predictability and rules fits well with the structure of the rational bureaucracy that Weber (1947) described. Thus, the bureaucracy that is responsible in producing rule setting knowledge in chemical management complements the epistemology of the conventional scientific paradigm, which is privileged knowledge. As privileged knowledge, it is considered as the universal “truth” and reality for all,
it is therefore, not subject to regular public scrutiny. The NGO informant above suggests that government

should be required to revisit [listed substance toxicity] on a regular basis the same way pesticides are. So I do have concerns on their expediency based on very little evidence on child health effects. The Domestic Substance List has 23,000 substances on it. They sifted it through from the environment and health standpoint and say that here are the 200 we think are possibly “bad apples” that we should probably get rid of or severely restrict unless the industry convinces us otherwise. It doesn’t seem like that is happening. Since its launch until now, a lot of these chemicals are surviving the assessment process.

The main point to be noted from this series of comments is that the process of risk assessment collects minimal information and thus favours industry over data from NGOs working through a democratic system. Despite the apparent good intentions of the government to appear to try to regulate toxic chemicals through CMP, there are major problems in obtaining evidence and in what kinds of data are being considered, was identified and problematized by informants. When I was talking to these key informants, I detected a sense of anger and worry about the feasibility of CMP. Specifically, my key informants problematized the process of risk management which is integral to CMP, and on which I focus below.

4.2.2 Risk Management

Risk management is a negotiated process in which “cost effectiveness” and/or other legal and political factors are considered against the potential for harm to human health (Waring, 1988). According to the Auditor General (CESD, Chapter 4, 1999), there are three steps in the risk management process. The first step is to develop a risk management strategy for directing and coordinating multiple risk management actions, which should have clear objectives, performance expectations and timelines. The second step is to implement control measures identified in step one. Control measures include mandatory actions (such as putting in place regulation and pollution prevention plan notices) or voluntary actions (such as establishing codes of practice and environmental performance agreements). Promotion and enforcement of compliance to the control measures are important elements in the process of risk management. The third step in risk management is the evaluation of the strategies implemented based on the performance of control measures, new scientific information and knowledge, and environmental and bio-monitoring data. When found necessary, the predetermined risk management strategies
or actions can be changed, to help reduce risks to human health and the environment (CESD, 2009).

The report of the Auditor General about risk management as summarized above is more specific than government documents, though it is unclear whether there is any accountability if the timelines set out by the government in the chemical management strategies are not met. As one informant commented,

I’m not sure what the accountability [structure] is. The government sets the objectives. I don’t know if there are any penalties if they don’t get to all the substances. Maybe they will readjust their timelines in a few years.

Without clear accountabilities or consequences if objectives are unmet, it is not surprising that the process of risk management is taking such a long time to be developed and implemented. In 2009, the Auditor conducted a study on risk management of seven substances, three of which are related to children’s health, namely lead, mercury and phthalates. My federal informant summarized the situation with respect to lead this way. Since lead has been around for so long they have certainly put in control measures to decrease exposures. Probably the biggest policy tool that they used in terms of lead has been taking lead out of gasoline.

But in spite of this control measure, there is no overarching strategy that guides the risk management exercise. In the words of an informant,

that measure was effective in terms of reducing exposures but they don’t have a strategy in place to say that “ok, this is what our objectives are, this is what we want to achieve.” That was one of [the Auditor’s] recommendations. Yes, at the end of the day, there are some measures they are taking. But they still lack a national strategy for lead and mercury.

The 2009 Auditor's study noted a “new bio-monitoring survey” launched by Statistics Canada on environmental exposures. While it excludes children younger than five years of age, the preliminary result of the study shows that the exposure of lead for the population has declined significantly (also see Wang, Pizzolato, Demshar & Smith, 1997).

What about phthalates? This was the third substance examined in the Auditor’s report that was related to children’s environmental health. As I have noted, regarding phthalates, an informant revealed that the government’s original approach was to do nothing because “the information they had didn’t demonstrate that there was any evidence of harm to human health.”
However, in 2009, the government proposed regulation of certain kinds of phthalates. (The details of phthalate regulation and management in the U.S. and the intricacies of knowledge production around the toxicity of phthalates were covered in Chapter 1). While the Canadian government originally claimed (before their January 2011 ban) that there was no evidence of human harm attributing to exposure of phthalates, there actually was convincing evidence in animal studies and other types of studies that linked phthalates as endocrine disruptors. In fact, the production of evidence on the harm of phthalates was documented a full decade before action was taken by the Canadian government and countries in Europe had already implemented ban.¹¹ This significant delay in regulation demonstrates a lack of respect for the precautionary principle.

Arguably, while the government struggles over the management of these toxic chemicals, engaging in processes which may last decades, as in the case of lead and tobacco in the past, and now with BPA and phthalates, exposure to chemical contaminants are allowed to continue. As I have argued in Chapter 1, the hidden benefactors of the prolonged processes of risk assessment and management are industry who have a longer window escaping regulation. While people are engrossed in the process of finding the "safe" level of exposure, as in the current risk assessment process, and the "appropriate" strategy on risk management of toxic chemicals, the attention is directed away from the industry that is responsible for producing the chemicals. Arguably, this official language of risk assessment and management is an example of institutional capture, since it acts as an overriding frame governing how people come to perceive chemical safety and go about buying toys and products (Smith, 2005). The obsession of government committees in setting a precise safe level for these toxins leaves the impression that there really is a “safe” level of exposure. But of course this ignores the possibility of accumulative effects of low dose chronic contact with the toxins and the timing of exposure as explained in Chapter 1.

4.3 Conclusion

In this chapter, I have examined the “boss texts” that direct and coordinate the activities (or the lack of activities) in labelling. They are the Hazardous Products Act, the Canadian Consumer Product Safety Act (CPSA) or Bill C-36, Accelerated Reduction/Elimination of Toxics

¹¹ The story of phthalate regulation in Canada will continue in chapter 9.
(ARET), the various MOUs between the Canadian government and industrial sector, and the CMP in the context of the Canadian Environmental Protection Act (CEPA). I have argued that these texts are activated integral to political strategies, dividing practices, downloading technologies, institutional capture, reductionist conceptual knowledge frameworks, and delaying tactics by actors in government and industry. These long delays show a hesitation to regulate or specifically label any product with a warning that it may contain toxic chemicals until vigorous evidence is available and has been repeatedly confirmed, that is the availability of evidence itself does not seem to be enough to activate the precautionary principle to shape rule setting activities. But I did find some evidence of downstream activity suggesting that the CMP needs revision. Downstream activity, I have argued earlier, is not as effective as upstream or preventive approaches to public health. However, they are better than nothing. I now turn to monitoring texts and discourses, which, I argue, have some positive influence on shaping the rule setting discourses.
Chapter 5

MONITORING TEXTS AND DISCOURSES: THE ROLE OF CESD

5.0 Introduction

In this chapter, the work of the Commissioner of the Environment and Sustainable Development (CESD) from the Office of the Auditor General of Canada (OAG) will be analyzed as an example of monitoring knowledge production that provides, at least partially, some of the missing feedback loop on rule setting knowledge that has been identified in the last chapter. Analyzing four CESD reports spanning over 10 years, I will make visible the flaws detected by the OAG in the Canadian regulatory process. In my analyses, I will explore how the CESD can influence the rule setting processes of chemicals management.

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<thead>
<tr>
<th>Fig. 5.1 Monitoring Texts and Discourses on Chemicals Management</th>
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<td><strong>Boss Texts</strong></td>
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Political Control of CESD evident by the dismissal of the previous CESD commissioner and the tight control and secrecy of the government (see chapter 6)
5.1 CESD on Chemicals Management

Since 1995, through an amendment of the Auditor General Act, the role of the CESD has been established as part of the OAG. For the past 15 years, the CESD has been active in monitoring and auditing the activities of various federal departments and agencies involved in managing toxic substances. One federal informant directed me to the various audits that she identified as significant in influencing the work in children’s environmental health, specifically in terms of managing toxic substances. While in the critical literature on higher education, accountability discourse is often critiqued, a Foucauldian approach to discourses sees them as “productive.” In this context, for example, there are possibilities or opportunities around the concept of accountability – particularly in the auditing system that is in place that demands for accountability from the federal government. In the course of my interviews with federal officials, the work of CESD emerged as a fertile site for oppositional discourses to industry control of rule setting in chemicals management.

Although, the Commissioner of the Environment and Sustainable Development (CESD) does not have any legal authority over any of the federal departments or agencies, it does have strong political influence and presence. It works on behalf of the Auditor General who leads a group of auditors specializing in environment and sustainable development (as well as other areas). The OAG is responsible for providing parliamentarians with objective, independent analysis and recommendations on the federal government’s efforts to protect the environment and foster sustainable development. The CESD group conducts performance audits, and is responsible for assessing whether federal government departments and agencies are meeting their sustainable development objectives. Because the CESD reports to the Auditor General who reports directly to the House of Commons, the CESD is considered to be an arm’s length advisory group that can provide “objective” opinions on the performance of the governmental departments and agencies. CESD is obligated by law to provide information as required by the Auditor General Act. When the CESD makes recommendations, they name specific departments and agencies, and the heads of these departments and agencies must respond to their recommendations within specific timelines. Every few years, the CESD follows up on previous audits and reports on the status of the departments and agencies’ actions on the previous recommendations. The work of CESD is transparent – they publish their reports and the
responses and subsequent actions of the named departments and agencies on their website, readily available for public inspection. In this chapter, I will discuss the particular reports the CESD has submitted to the House of Commons aimed at holding the government accountable for their action or inaction on the subject of chemical substances management.

As indicated in Fig. 5.1, I will review CESD texts published in 1999, 2002, 2008 and 2009. Reading them chronologically, it can be seen that a series of critical issues were identified, described in detail and that recommendations specific to the various federal departments and agencies were made. Consistent with Smith’s theoretical assumptions about textually mediated discourses reviewed in Chapter 2, I will argue that the ruling relations of chemical management at the federal level can be glimpsed through these texts. How these texts name and are activated by various actors will be reported here. Table 5.1 lists 10 issues identified and the specific reports where each issue is discussed. Five issues are discussed in Chapter 3 of the 1999 Report: limited funding and other resources; lack of research (specifically bio-monitoring data); conflicts between departments and various pieces of legislations; slowness in risk assessment and management of toxic substances; and a lack of application of the precautionary principle. In Chapter 4 of the 1999 Report, discussion of the lack of a formal procedure for risk assessment is replaced with discussion about the voluntarily nature of risk management. In the 2002 and 2008 Reports, the same five issues reappear. But in the 2009 Report, only limited funding and other resources and slowness in risk assessment and management of toxic substances reappear while lack of labelling for chronic hazards, lack of periodic re-evaluation, and lack of consolidated risk management strategy appear for the first time.

Out of the 10 issues listed above, I have selected five for analysis below to illustrate how these issues were addressed according to the CESD reports (lack of funding and other resources, lack of research, conflicts between departments and legislations, slowness in risk assessment and management of toxic substances, and lack of application of the precautionary principle). I will argue that these discussions point to how ideological circles have worked together to stall initiatives to move towards regulation within the field of chemicals management.
Table 5.1: Selected Issues from the CESD Reports

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<tr>
<th>Issues</th>
<th>1999 Ch. 3</th>
<th>1999 Ch. 4</th>
<th>2002</th>
<th>2008</th>
<th>Fall 2009</th>
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<td>Limited Funding and Other Resources</td>
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<td>Lack Research (Bio-monitoring Data)</td>
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<td>Conflicts between Departments and Legislation</td>
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<tr>
<td>Slowness in Risk Assessment and Management of Toxic Substances</td>
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<td>Lack of Application of Precautionary Principle</td>
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<td>Lack of Formal Procedure to Risk Assessment</td>
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<td>Problem with the Voluntarily Nature to Risk Management</td>
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<td>Lack Of Labelling For Chronic Hazards</td>
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<td>Lack of Consolidated Risk Management Strategy</td>
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5.1.1 Lack of Funding and Other Resources for Researching Environmental Issues

On the issue of resources for chemical management, the 1999 CESD Report found that there is a growing gap between the demands placed on federal departments to provide scientific information on toxic substances and their ability to meet existing obligations and respond to emerging issues. (Chapter 3, p. 3)

The Report further provided specific examples of funding reductions in four departments:

From 1994 to 1998, four science-based departments – Environment, Fisheries and Oceans, Health and Natural Resources – reduced their total scientific personnel by 17 percent. (Chapter 3, p. 12)

Corresponding to the period when Ontario and other provinces implemented deep cuts to social programs, then, not only did the federal departments see reductions in funding and other
resources, but research organizations outside the federal government also experienced the same budget cuts. Because of the reduction in funding from the federal government, the 1999 CESD Report raised the alarm with regards to the threat to independent research for the public good:

Budget reductions have necessitated an emphasis on partnership and have led federal departments to augment their research budgets from the private sector and other outside sources. As a result, departmental projects have become more aligned with the priorities of the funders. These priorities may differ from those established by [Name of Department]. Senior scientists expressed concern to us about the impact these new priorities may have on the ability of departments to undertake research for the public good. (Chapter 3, p. 13)

In their 1999 Chapter 4 review, CESD found that the available resources to do chemicals management continued to shrink, and departments consistently cited the lack of resources as a major impediment to effective risk management programs. Through program reviews and expenditure reduction, some departments lost 30 percent or more of their budgets. [As a result] some of the risk management initiatives begun in the late 1980s and early 1990s remain uncompleted. (p. 8)

After an approximate hiatus of a decade, in the 2008 Report, there was an indication of increased resources going into chemicals management. The Report recounted that, in 2007, Health Canada and Environment Canada had formalized their intention to work together on the development of a “human resources management strategy” (p. 12). The strategy included the recruitment of about 350 scientists over the subsequent four years. The same Report also detailed the announcement of CMP in 2006. Attached to CMP was $40 million over four years for Health Canada and Environment Canada to conduct risk assessments on chemicals. The 2008 report indicated that the officials from the departments were satisfied that this initial funding would be sufficient to “build capacity” and put them on a path to complete the assessment of 4,300 substances identified from the Domestic Substances List (out of 23,000 chemicals) by 2020. But in the 2009 Report, the issue of resources and funding became lost in vague wording. Budget figures for activities specific to the toxic substances were unavailable. In terms of human resources, the Report stated that Environment Canada employed approximately 290 “enforcement officers” (p. 13), 193 of whom were responsible for enforcing measures related to pollution, with the balance dedicated to wildlife enforcement. Leaving readers to draw their own conclusions regarding the sufficiency of human resources in enforcement alone, the 2009 report noted that
the number of control measures the department is responsible for has increased in the last decade. This growth will likely continue due to additional substances being added to the List of Toxic Substances in Schedule 1 of CEPA 1999 as a result of the 4,300 risk assessments currently being undertaken as part of the Chemicals Management Plan. (p. 20)

That is, the 2009 Report hints (consistent with previous CESD Reports and my politician informant’s opinion cited in Chapter 4) that human resource allotment to chemicals management with 193 enforcement officers nationwide is insufficient. Enforcement is an essential aspect of chemicals management for the process to have “teeth.” But as all five reports suggest, federal level cutbacks beginning in the 1990s have compromised these efforts. In the 1999 Report, resource scarcity was clearly articulated and presented as percentage reductions from the previous year while the subsequent reports merely reported the actual amount of money the departments received making comparisons difficulty. In the 2009 Report, the figures are not even presented. This makes it impossible to determine whether resources have increased or decreased from previous years and by how much. In terms of human resources devoted to doing the work of managing toxic substances, the 2009 Report provided the number of enforcement officers responsible for doing this work, but it is unclear as to whether the number had increased or decreased from previous years and by how much. A related phenomenon is the ‘disappearance’ of a number of departments whose names were identified as needing “major improvement”. In the 1999 and the 2002 reports, several departments were specifically named to be “uncollaborative,” such as Environment, Health, Fisheries and Oceans, Natural Resources, and Industry. By 2008 and 2009, only Environment and Health were named. It is again unclear why the names of the other departments were dropped from the audits, and the missing data raises red flags about the situation.

Lack of funding continues to be a major concern in promoting children’s environmental health according to my participants and the same problem plagues research by scientists at postsecondary institutions, as I will discuss in Chapter 8. Let us now take a closer look at the lack of research and knowledge production in children’s environmental health in Canadian context.
5.1.2 Lack of Research (Bio-monitoring Data)

As noted above, in Chapter 3 of their 1999 Report, the CESD reported substantial gaps in research on toxic chemicals that all but precluded decisions on chemical assessment. They also noted that there was no new research commissioned. Their audit identified many weaknesses in the federal government's collection and use of scientific information on toxic substances, which cumulatively, they argued, threatened the federal government's ability to detect, understand and prevent the harmful effects of toxic substances on the health of Canadians and their environment. The Auditor’s office had been so concerned with the issue of inactivity that in 1994, a Notice of Objection was filed under the Canadian Environmental Protection Act demanding that the departments involved reach a conclusion on the toxicity of the substances that had been studied. When the government took the position that it was not legally obliged under the Act to reach a conclusion, in the 1999 Report, CESD disagreed. In their words,

we believe that given the substantial public funds that were spent to conduct these assessments, the federal government is accountable for "closing the files" and providing Canadians with a clear rationale for the listing of these substances as non-toxic. (p. 21)

Perhaps it was because of these serious charges outlined in the 1999 Report that, in the 2002 Report, some movement was noted. Shortly after the release of the 1999 Report, the Minister of the Environment created the Task Force on the Canadian Information System for the Environment (CISE) to provide advice on the design and implementation of an environmental information system. In 2001, the Task Force released its first report, which found significant gaps in environmental information and rated Canada's performance in this regard below that of many other countries. The CISE Task Force also made many recommendations. During the time that the 2002 Report was written, the CESD also saw some – in their words – “marginal” improvements in interdepartmental discussion about information on each of their monitoring programs. In this Report, the CESD discussed an urgent need to do national bio-monitoring studies, stating that

our current review raised a new concern: the lack of knowledge about levels of toxic substances found in the bodies of Canadians (for example, in human fat tissue, breast milk, blood, urine, and hair). This information could assist officials, physicians, policy makers, and regulators in identifying opportunities to reduce exposure and health risks. Currently, Health Canada has no program to evaluate this kind of information nationally, though it has done some regional studies of a few specific substances. (p. 11-12)
In the 2008 the CESD Report, the CESD indicated a commitment by the federal government to “close the files” on the risk assessments of the thousands of outstanding substances to be assessed. Through the Chemicals Management Plan (CMP), it had promised to evaluate all 4,300 substances by 2020 with an interim report on their progress to be filed by Environment Canada and Health Canada in the 2010–11 fiscal year. The Report found that the government was planning to use available data and “conservative assumptions” (p. 3) as well as “critical studies” (p. 4) to make decisions on toxicity. This is confusing as it is not delineated what assumptions they will adopt and who will decide what are the “most critical studies.” Further, it is unclear what is meant by “critical.” However, as discussed in Chapter 2, the reductionist conventional biomedical model continues to be the dominant narrative in mainstream knowledge production, and knowledge production on toxicity is no exception (e.g. see Masuda et al, 2008, reviewed in Chapter 1). Thus the pool of “critical” studies that the Canadian government might use to evaluate the chemical substances is extremely limited.

A case in point can be found in the CESD 2009 Report, where an upswing in research activities was noted. The focus of these studies was narrowly on bio-monitoring. While bio-monitoring studies are important to gather base-line data, it alone can not shape rule setting knowledge production because industry can easily argue that just because the chemicals are found in humans, it doesn’t necessarily mean that they are causing harm to health. In the words of industry,

data from bio-monitoring studies alone do not provide information about (1) the source(s) of exposure, (2) how long a substance has been in the body, or (3) what effect, if any, a substance may have on human health. Answering these important questions requires separate and additional research. (American Chemistry Council, 2005c)

According to this argument, current scientific data is limited in detecting the exact source and duration of a substance in human bodies because chemical substances are everywhere around us. However, harmful environmental substances usually do not dissolve in human bodies and therefore will accumulate in them. There are some toxic substances that humans are exposed to naturally (Deboer Consulting, 2010); however, the precautionary principle emphasizing erring on the side of caution when regulation is possible still holds in these cases. A precautionary principle approach, in contrast to the approach suggested by industry (above) is that we must eliminate or at least limit human production of harmful substances in order to reduce the load
human bodies must take on in addition to the natural sources. A NGO informant questioned the government’s approach, pointing out the problem with waiting longer for human health impact data to supplement bio-monitoring data. As suggested by the NGO informant,

the regulatory system doesn’t feel that that it is enough to have something showing up in people’s bodies. They need to show that it is linked to some sort of harm or potential harm. So again, it’s waiting for the evidence to inform. Animal studies should be sufficient to see the health effects in humans.

Since bio-monitoring data cannot stand on its own according to government and industry, they have effectively “subjugated” this knowledge in Foucauldian sense. In other words, not admitting them to stand alone as “evidence” effectively limits the activation of these studies to support policy development. Specifically, animal and epidemiological data is dismissed in favour of “scientific certainty.” But as I have argued earlier, such certainty is almost impossible to obtain in the case of children’s environmental health. This demand for the near impossible is an effective strategy for the industry to “buy more time” to continue to produce questionable substances. Knowing these limits with bio-monitoring studies, why does the government conduct this kind of research (as indicated by the CESD 2009 Report)? Is this also a strategy by the government “walk between” the environmentalists on one hand and economic threats to industry on the other?

After the CESD pointed out the problem of the slowness in making decisions regarding toxicity and implementing relevant actions in children’s environmental health in 1999, the government took three years to create a task force to look at the problem. Four years later, in 2006, they developed the CMP to streamline risk assessment and management processes. By 2007, the departments involved launched several bio-monitoring studies. As the majority of these studies are longitudinal in nature, it will then take at least a decade or two to get results. It should also be noted that the MIREC\(^\text{12}\) study in particular was only funded for five years and was designed to be a much longer term study. But the long term fate of this study beyond 2012 when the five year term is up is unclear. Is it, as a higher education informant remarked, that the party in power is not interested in thinking long term – but only within their term of governance?

\(^\text{12}\) Maternal-Infant Research on Environmental Chemicals (MIREC) is a Canadian biomonitoring study funded by the federal government and the government of Ontario aiming to profile in utero and lactational exposure to environmental contaminants (MIREC, n.d.).
It is important to note that ENGOs are concurrently producing bio-monitoring data. In Chapter 7, I will discuss bio-monitoring from the perspective of ENGOs, contrasting their research with that being conducted by the US government. Compared to governmental studies, I will argue, ENGO-conducted studies are more equity-based involving more toxic substances, using independent laboratories and testing specific populations such as the marginalized and the newborn.\(^\text{13}\)

5.1.3 Internal Conflicts

In the CESD Reports reviewed above, a third theme that kept resurfacing was conflict identified among the responsible federal departments and contradictions among different pieces of national legislation. For example, the 1999 Report pointed out that “[f]ederal activities and responsibilities to assess and make decisions about the risks posed by toxic substances are highly fragmented” (Chapter 3, p.10). Involved are several different pieces of legislation, research institutions and programs, environmental monitoring networks, international agreements, and major regional programs. They involve many different departments, each with its own mandate, interests and areas of expertise. (Chapter 3, p.10)

These divisions became conflicting when legislation governing toxic substances are interpreted and implemented differently and in some cases, in contradiction to one another. An example was analyzed in Chapter 3 of the 1999 CESD Report, which cited conflicting thresholds of acceptable risk appearing in the *Pest Control Products Act (PCPA)* and the *Fisheries Act*. As the Report indicated,

*the Fisheries Act*, for example, is based on “zero tolerance.” No deleterious substance may be deposited in waters frequented by fish unless under conditions authorized by regulation. The *PCPA*, however, allows for some level of acceptable risk associated with the use of pesticides. Even though a pesticide may be legally registered for use under the *PCPA*, its use in waters frequented by fish could be in contravention of the *Fisheries Act*. The herbicidal use of acrolein in irrigation canals presents one example of the conflict between the *PCPA* and the *Fisheries Act*. (p. 11)

\(^\text{13}\) Since the CESD only audits government activities, the 2009 CESD report cites several major studies done by the Canadian government, but none of those done by the ENGOs, thus avoiding embarrassing the state.
Presumably, here, the *Fisheries Act* in this case uses the precautionary principle approach to a valuable resource, fish.

Contradictions occur even within the same piece of legislation. The 1999 CESD Report went on to give an example of how a substance can be treated differently depending on who uses it. Since *CEPA*’s powers are “residual,” they do not apply to the use of substances that are covered by another piece of legislation. For example, if a particular substance has both industrial and pesticidal uses, *CEPA* provides for assessment of only the effects of the industrial use. (Chapter 3, p. 11)

Serious scientific disagreements were noted between different departments within the federal government which were specifically labelled “polarized” (p. 11) by CESD in 1999. Not surprisingly, CESD noted differences over industrial chemicals are most marked between Environment Canada, Fisheries and Oceans and Health Canada on the one hand and Industry Canada and Natural Resources Canada on the other. Differences over pesticides are most marked between Environment Canada and Fisheries and Oceans on the one hand and the Pest Management Regulatory Agency on the other. (Chapter 3, p. 11)

Specifically, these conflicts relate to long-standing scientific disagreements about the specific risks posed by some individual toxic substances, differences in the interpretation and application of legislation and the nature of departmental roles and authority. The conflicts and the divide between departments are so deep that the 1999 Report used very strong words to describe it:

[CESD] observed cases of interdepartmental relationships marked by acrimony and combativeness that, in our view, surpassed a healthy and constructive level of debate…[and we believe that] the conflicts we observed have impeded the development of risk management actions; if the same energy were to be invested in positive action, the environment, our health and industry would benefit. (Chapter 4, p. 15)

CESD had such a pessimistic outlook that they predicted “with no arbitrator, it remains unclear how or when departments will work together to manage the risks posed by toxic substances” (Chapter 4, p. 11).

The CESD Reports hinted that the conflicts could be traced to political and/or epistemological differences on the appropriate scientific and management of the research agenda on toxic substances at the strategic level, and that these conflicts could be traced above the level of individual departments and research programs. Collectively, according to the 1999 Report, departments were not "managing the forest" (Chapter 4, p. 15), only the trees. The same report
expressed a concern that departments may be missing opportunities for sharing information, establishing government-wide priorities, or engaging in long-term planning that mobilizes their respective expertise and resources. They therefore saw the need for someone to be held accountable for the "big picture" and recommended that Environment Canada be the department to take on the lead role for this area. Environment Canada did eventually become the lead department for chemicals management for the federal government and interdepartmental conflicts were not discussed in detail in subsequent reports.

In Foucauldian sense, the federal departments, are being “made subjects” as described in Chapter 2. Subjectification process is concerned with the process of self-formation, self-understanding and the way in which conformity is achieved by problematizing activities and opening them up to observation and punishment in the structure of panoptican. The result of subjectification is a creation of an understanding of what it means to be a self and how we are pressured into creating this self understanding in a predetermined fashion (Foucault, 1978). Inherent in the interdepartmental conflicts are the differences or even polarization of each department’s given mandates, philosophy, strategic directions, service plans and work objectives. For instance, the mandates given to Industry Canada can be in direct conflict with the mandates given to Environment Canada and Health Canada when three are compared together. Industry Canada’s mandate is “to help make Canadian industry more productive and competitive in the global economy” (Industry Canada, n.d.) while Environment Canada’s mandate is to “preserve and enhance the quality of the environment for the benefit of present and future generations of Canadians” (Environment Canada, n.d.). Finally, Health Canada’s mandate is to “help Canadians maintain and improve their health … [and] to reduce health and safety risks to Canadians” (Health Canada, n.d.). These mandates make perfect sense when they are understood separately (or in a silo) given the nature of bureaucratic work as Weber (1947) described, rules must be applied, any deviation from these mandates would have been “punishable,” using Foucault’s (1978) terminology. With such conflicting loyalties, contradictions with each other could be predicted when they are put together and forced to collaborate. That is, even on the face of it, it is virtually impossible to fulfill Health Canada's mandate of reducing "health and safety risks" and Environment Canada's mandate of preserving and enhancing the "quality of the environment" while also helping industry to be more productive and competitive in the world economy as Industry Canada is charged to do. When
there is no lateral communication between them, they are kept in their individual places, just like
the prison cells in Foucault's panopticon, where in this case bureaucrats are "firmly harnessed" in
their places. These apparatuses as Foucault would call them form a net of power relations in
governmentality. So productive taking up of power can be observed in recent chemical
regulation accomplishments. However, the dominant theme overall is continued failure to “get
the job done” to everyone’s satisfaction. To specify how this works, I will examine the operation
of risk assessment in the next section, and raise a small red flag about how “progress” has been
accomplished.

5.1.4 Slowness in Risk Assessment and Management of Toxic Substances

The CESD Reports reviewed above revealed that both the government’s risk assessment
and management processes are extremely slow. In the 1999 Report, it was stated:

To date, only 31 substances or groups of substances [out of 4,300] have been
conclusively assessed for toxicity and risk under the Canadian Environmental Protection
Act. Risk assessments have taken five years to complete. Assessments of 13 substances
identified in 1989 as priorities are still inconclusive; assessments of 25 additional
substances identified in 1995 as priorities are expected to conclude in 2000. (Chapter 3,
p. 3)

Arguably, this delay in chemical assessment has compromised the health of Canadians and has
benefited industry that produces the chemicals. CESD (1999, Chapter 3) concluded that “the
federal Toxic Substances Management Policy is not being implemented as intended” (p. 5). In
addition to the slowness in risk assessment, there is also foot-dragging in the chemical
management side even when a substance has been declared toxic. The 1999 CESD Report noted
that

the federal government has been slow to take action on some substances assessed and
declared toxic under the Canadian Environmental Protection Act. The current programs
are insufficient to ensure that risks will be adequately addressed in the future. Objectives
for the protection of human health and the environment have not been specified, and
agreed upon. Reductions in the release of toxic substances are not assured. (Chapter 4, p.
3)

The slowness issue did not improve by 2002, as the CESD Report of that year indicated:

[T]he federal government has not published a final conclusion on the toxicity of 13 of
those 44 substances that were put on the first Priority Substances List in 1989. It has
committed few additional resources to measuring the presence of toxic substances in the
environment or their effects on plants, animals, and human beings. There has been
limited progress on developing and implementing management controls to mitigate the release of toxic substances. (p. 23)

By 2008, however, there was some movement as indicated by the statement that “Environment Canada and Health Canada have reached conclusions on toxicity for 66 out of 69 priority substances” (p. 13).

As mentioned earlier, the start of the process of risk management requires the completion of the risk assessment of chemical substances. The substance must be deemed toxic and be added to the Schedule 1 of the CEPA, 1999 in order for the risk management process to begin. In the 2009 Report, CESD acknowledged the intent of CMP, which was designed to “streamline” the risk assessment and management processes on toxic substances. The report also recognized the challenges facing CMP in terms of

risk assessment of 4,300 chemical substances to be completed by 2020 [out of the 23,000 chemicals] and the risk management of those substances considered to be toxic as a result of the assessment process. (p. 6)

The Report provided an update of the risk assessment status under CMP that “as of May 2009, 22 of the 51 assessed substances had been determined to be toxic under CEPA 1999 and are in the process of being added to Schedule 1 of the Act” (p. 6).

The CESD’s concern with the snail’s pace of chemicals management corresponds with comments from my informants who criticized the government being too slow to respond to the protection of children’s health from the harmful exposures of environment. And the delay in chemicals management only benefits industry as I have illustrated earlier. And as the 2009 Report summarizes, although some substances have been determined by the risk assessment process to be toxic, they have yet to be added to Schedule 1 of CEPA 1999. Arguably, the persistent demand by the CESD for progress in chemical management is promising. Some positive pressure has been exerted on the government to produce results and make decisions. CESD therefore becomes a productive site of power that is addressing the children’s

14 It is unclear, however, whether this 51 assessed substances in the 2009 Report belong among the 69 listed in the 2008 Report, and how these two numbers relate to the 44 quoted in the 2002 Report and the 25 in the 1999 Report. Pursuing the answer to this question, I conducted a second telephone interview with my academic, NGO and federal key informants. None of them was able to give me clear definite answers to this question. Both the academic and the NGO representatives stated, separately, that the confusion might be intentional.
environmental health agenda to move forward – albeit slow – but a positive power embedded in the ruling relation between the government and the Auditor General. There remain concerns, however, about the “progress” being made recently. In view of the documented bureaucratic gridlock, will it continue? And are these marks of progress, such as the passing of the CCPSA and the banning of phthalates with respect to children’s products, really “progress” in view of the deficiencies identified in the legislation? In the next section, I explore how the precautionary principle is activated at the level of rule making.

5.1.5 Activation of the Precautionary Principle

The issue of scientific certainty and evidence-based decision making in policy development is consistent theme throughout the CESD Reports reviewed here. This contentious issue was identified as a central theme in the deep divide between departments described above. As a result, the 1999 CESD Report concluded that the federal government had been unable to make a clear and consistent interpretation and application of the precautionary principle as it relates to toxic substances. The Report states that

the economic importance of many modern chemicals – let alone the potential costs of reducing or eliminating the risks associated with their emission or use – causes all departments to strive for scientific certainty. Those who will bear the costs want proof of cause and effect, and evidence that the risks are real and significant. (Chapter 3, p. 11)

Although not naming industry or the private sector as the group demanding scientific proof of cause and effect, the discourse about who would have to “bear the economic impact” of toxicity suggests an industry concern. The conflict between the economic importance of the chemicals and the impact of the chemicals on human health is also named in the 1999 CESD Report. Further, the writers of the 1999 Report fully understand that in the area of environmental health, it is often not possible to achieve scientific certainty. The Report goes on to note that the federal government usually compromises the precautionary principle in managing chemical substances because

in the face of uncertainty, the substances were treated as non-toxic under CEPA and were thus not formally targeted for any risk management activity. Yet over half of these substances were identified as "substances of concern." (Chapter 3, p. 23)

Chapter 4 of the 1999 CESD Report also linked the lack of risk management activities on substances that are already declared toxic to this anti-precautionary approach. They concluded
that not only was there lack of activity in chemicals management, but there was not even any plan in development to achieve this objective. Chapter 4 of the 1999 Report pointed out that

[t]he current programs are insufficient to ensure that risks will be adequately addressed in the future. Substance-specific objectives for the protection of human health and the environment have not been adequately defined, and agreed. Reductions in the release of toxic substances are not assured. (Chapter 4, p. 22)

In contrast, the 2002 CESD Report documented the introduction of the CEPA, which came into force in 1999 and which

entrenches the precautionary principle in the preamble to the Act and imposes a general duty on the Government of Canada to administer the Act in a way that applies the precautionary principle. The Act also specifically requires in section 76.1 that the principle and a “weight of evidence approach” be applied when conducting and interpreting the results of activities carried out under that section, such as screening assessment. (p. 18)

In addition to writing the precautionary principle into the CEPA, 1999 legislation, where it could be activated, in Smith’s (2005) sense, the government also made some progress by providing specific directions as to how the precautionary principle should be applied across the board by the federal government. The 2002 CESD Report noted that

Environment Canada has started to develop guidance to implement these CEPA, 1999 obligations. In addition, under the direction of the Privy Council Office, the government has been developing a common view of the precautionary approach/principle and how it will be applied. This exercise is intended to apply to all federal legislation and programs, not just those under CEPA, 1999. (p. 18)

Although there was no timeframe attached to this process, the 1999 CESD Report noted that federal departments “have consulted with the public, and the government intends to finalize the federal framework for applying the precautionary approach/principle” (CESD, 1999, Chapter 4, p. 24). It all sounded good on paper. However, as the 2002 CESD Report pointed out, there was still no concrete procedure or guidelines on the application of precautionary principle in the enactment of CEPA, three years later. In their words,

we are concerned that even though the precautionary principle is a key element of assessing and managing toxic substances, there are still no guidelines on its use under CEPA, 1999. In our opinion, given the 23,000 or more substances that will have to be assessed to varying degrees under CEPA, 1999 and the lack of information on many of them, the lack of concrete operational guidance governing the precautionary principle is worrisome. We urge the federal government to complete both exercises soon. (p. 18)
It was not until the 2008 Report that CESD was able to note that Environment Canada and Health Canada had clarified the use of a “weight-of-evidence” approach for risk assessments, as well as the precautionary principle in making decisions about toxicity, with details about how the scientific research and risk assessment practices are to support the precautionary principle. According to the CESD, it was clear that the precautionary principle was activated in the practice guidelines of the two departments; however, it was not clear whether these guidelines were adhered to when decisions are made. It is important to emphasize that a guidance document is to guide practice rather than dictate practice such as a standards document would. It is therefore not as strong a document as it could be. A guidance document essentially has “no teeth” because it would not have any consequence if it was not followed. Also, there is no mention of the precautionary principle in the 2009 report. This is a very large red flag as it is unclear whether the precautionary principle was not considered at all or whether it was implicit in the issues that were raised in the new report such as the lack of labelling, lack of periodic re-evaluation and lack of risk management strategies on chemical substances. Presumably, applying the precautionary principle remains a very contentious point for the government to put into practice. Again, the ruling relations and the competition of between the discourses of economics and human health can be clearly seen in the hesitation of the government in applying the precautionary principle in chemicals management policies. Will a reductionist interpretation of the precautionary principle end up enshrined in legislation as a kind of compromise?

5.2 Conclusion

In this chapter, four CESD Reports were analyzed focusing on chemical management by the Canadian government. The analysis has made visible the various flaws in rule setting processes, and hence the difficulties in attaining the goal of protecting children’s health from toxicity in consumer products. The Reports themselves stand as a positive and productive example of monitoring knowledge at work and arguably, shaping, to some extent, rule setting activities, as the goal of the CESD Reports is to shape the rule setting knowledge and/or compliance to achieve better governance. Issues that were brought forward by the CESD Reports were lack of designated funding and other resources, lack of research supporting bio-monitoring data, deep internal conflicts between governmental departments and legislations, slowness in risk assessment and management of toxic substances, and lapses in considering the
precautionary principles on environmental issues. Thus, despite some significant issues continue to be central in the government’s struggle to regulate toxic chemical substances. This chapter demonstrates the contested nature of making and interpreting government regulations where ideologies and ruling relations work together to privilege economic over human health. The issues raised in the CESD Reports and various concerns about the fate of the precautionary principle in this contested territory led me to examine how related texts such as the *Auditor General Act* and NAFTA have been activated as part of governmentality. In the process of reporting my findings in the next chapter, I will endeavour to shed more light on state ruling relations.
Chapter 6

STATE RULING RELATIONS

6.0 Introduction

A federal informant who participated in my study critiques the accountability of governance on chemicals regulation by Canadian parliamentarians this way:

My sense is that parliamentary committees probably should play the role of holding departments accountable, looking at something like lead and asking the program officials “what are your plans, what have you achieved today and where are you going?” But I don’t see them playing that role…. In the last seven or eight years or even 10 years, they have played a much different role. They’ve focused on legislative reviews. They looked at the Environmental Protection Act as a whole and made changes to it. But they don’t necessarily get into the individual substances and try and work with departments to try to understand the process, or hold them accountable or at least be informed.

This excerpt problematizes the relationship between parliamentarians and individual governmental departments over chemical regulation. How do these relations work? There are numerous textually mediated ruling relations in state governance that are hidden and, in this chapter, I will provide three examples. First, I will show how the Message Event Proposal (MEP) operates as a “boss text” to exercise tight control by the Prime Minister’s Office (PMO) over every communication activity proposed by government officials or requested by the public. This control is illustrated by the disciplining through the dismissal of four whistle blowers against the federal government, the former Commissioner of Environment and three Health Canada scientists. The ruling relation here is exercised by the politicians in power over the bureaucrats at the federal level. The second ruling relation identified here is between the CESD and the individual federal government departments on sustainable development. Empowered by the Auditor General Act and Federal Sustainable Development Act, the CESD has produced texts such as an open letter by a former Commissioner of the Environment and a discussion paper by the current Commissioner which set guidelines for various different federal departments to adhere to the sustainable development strategies. A third example explored here has played a significant role in federal politics, championed by industry. These three examples provide some context for understanding how things work in knowledge production in children’s environmental health in Canada. (see Fig. 6.1)
6.1 The Promise of Democracy and Transparency

While media may sometimes represent Canada as a democratic country with transparency in governance, a different picture was revealed in the course of my research around environmental health issues. In a recent Toronto Star article entitled *PM’s tight grip exposed*, Blanchfield and Bronskill (2010, June 7) discussed the “Harper government’s fixation on control” (p. A11) in all federal events, announcements and requests for information. The authors of the article found a tool in use throughout the federal government: the MEP, an application to obtain approval from the PMO. This form provides details about every single communication between the government (both politicians and public servants) and the public. A MEP template typically includes the following headings to be filled out by the applicant: event, event type, desired headline, key messages, media lines, strategic objectives, desired soundbite, ideal speaking backdrop, ideal event photograph, tone, attire, rollout materials, background, and strategic considerations. A review of hundreds of MEPs over several years revealed the unprecedented exertion of control by the current Conservative government to orchestrate almost
everything from the rollout of billion-dollar purchases of military aircraft to a journalism student’s innocuous query about Africa.

This article suggested to me why many federal employees were cautious about granting interviews to me. I have, in total, approached eight federal government officials and only three agreed to my interview. In these interviews, the federal officials revealed that as federal employees, they “cannot express their own individual opinions,” and that anything they say has to be “approved by senior management and beyond.” In my conversation with them, I felt their pain in trying to avoid questions that might blemish the image of the federal government. In one case, out of the 15 questions I proposed for our interview only three were addressed initially. And these answers were carefully crafted, and written out on paper in preparation for our interview. During the interview, when I asked about opposing views such as critiques of the government by ENGOs, the federal informants became defensive and terminated our interview for the day. When the interview resumed within a few days after the initial one, my intentions were repeatedly questioned, suggesting that the interviewees were afraid that answers would be used to paint an unfavourable image of their organization. As a result, the actual answers they gave me were not helpful in my analysis; however, their nervousness and the sense of secrecy around how things work in the federal governance became a focal point of the investigation for me. This links well with the article cited above, that examines the tight control by the current Conservative federal government.

Why are federal employees so afraid? After all, aren’t being transparent and accountable the two core campaign promises introduced by the ruling party? To answer these questions, it is useful to investigate what happens to whistle blowers against the federal government. There are two such examples that I will cite here to illustrate the ugliness of Canadian environmental politics. These two examples both involved dismissals of “insubordinate” public servants. First was the firing of Environment Commissioner Johanne Gélinas for speaking up against the government on environmental issues. This firing was reported in the Globe and Mail on January 30, 2007 (Curry, 2007). The announcement was that

the Environment Commissioner Johanne Gélinas has been replaced over concerns that her calls for urgent action on climate change took her away from her role as auditor into the realm of advocacy. (Curry, 2007, Jan. 30)
The reporter went on and described the text that could have caused her dismissal. The incident in question was:

Ms. Gélinas's report last September [which] caused a major stir because it not only criticized the record of the previous Liberal government but also outlined measures the new government should take to address climate change. (Curry, 2007, Jan. 30)

The second example of what can happen to whistleblowers can be found in the case of Dr. Shiv Chopra, who was a vaccine and drug regulator for Health Canada for nearly 40 years. He was fired by the government in 2004. In 2008, he published a book entitled *Corrupt to the Core – Memoirs of a Health Canada Whistleblower*. In it, Dr. Chopra exposed corruption and corporate influence within Health Canada that he argues has systematically compromised the safety and health of Canadians. Chopra writes that over the years, he tried (sometimes successfully) to stop the government from allowing Canadians to be exposed to ineffective and harmful vaccines, genetically modified foods, pesticides, carcinogenic antibiotics and hormones used in food-producing animals, and agricultural practices that promote Mad Cow Disease. Supported by Canada’s public service union, he went public with his findings, which resulted in legal battles initiated by the government against him. He and his fellow scientists at Health Canada have been supported by the courts, various tribunals, and Senate committee hearings and Health Canada has been ordered to make changes to its policies based on his writing. Irritated by these events, which were highly unfavourable to corporate interests, the government, led by Prime Minister Paul Martin at the time (2004) fired Drs. Chopra, Margaret Haydon, and Gerard Lambert from Health Canada for “insubordination” (Chopra, 2008).

The dismissal of Commissioner Gélinas and Dr. Chopra and his colleagues serve as chilling examples of the consequences of resistance to the ruling regime. These examples can act as an effective scare tactic for would-be resisters. Commenting on the functions of Message Event Proposals (MEPs) described above, political scientist Jonathan Rose of Queen’s University was quoted by Blanchfield and Bronskill (2010, June 7) as saying that the MEP

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15 Another example of whistle blowing is the case of Dr. Michelle Brill-Edwards who worked with the Health Protection Branch of Health Canada for 15 years as a prescription drug expert, and was the Senior Physician responsible for prescription drug approval in Canada from 1988 to 1992. She resigned in 1996 to bring attention to what she saw as a “slack” regulatory environment that is overly influenced by the pharmaceutical industry and puts the health of the public at risk (Healthymindbodyplanet.org, May 20, 2006).
process “got bureaucrats doing the government’s partisan work and political staffers doing bureaucrats’ work” (p. A11). The effect of the MEPs according to the media then, is a blurring of traditional lines separating public servants and politicians. Unidentified senior officials were quoted in the article as saying that “it wasn’t like a benign dictatorship as it was under Chrétien” but was “hyper-extreme control, complete with threats and everything else.” The reporter concluded that the MEPs’ tight control is puts “shackles on everyone” and worried that when “the political wing of government needs to have control over what is said prior to it being said, I think that’s not good for democracy” (pA11). To the extent that the PMO controls every single communication coming from the federal government, it is no wonder that the sudden announcement made to ban BPA from baby bottles was seen as a calculated move by the government in attempt to repair its damaged image in the area of environmental health, as discussed previously.

6.2 The Promise of Accountability through Sustainable Development

Sustainable development is the name of an approach that Canada has adopted in order to integrate environmental, economic and social priorities into policies, programs and operations of its federal departments and agencies. At the 1992 Earth Summit in Rio de Janeiro, Canada and numerous other participating countries committed to developing national strategies for sustainable development. Canada chose to make selected federal departments and agencies responsible for sustainable development within the sphere of their mandates. The aim was to ensure that environmental, economic and social considerations would be systematically taken into account in their decision-making. As participants in my study agreed, this is vitally important to the health of our children. The definition of sustainable development itself, which was written into both the Auditor General Act and the Federal Sustainable Development Act, points to the importance of children’s health in this concept. The definition adopted in these texts is based on the 1987 Report of the World Commission on Environment and Development, commonly referred to as the Brundtland Report, which states that sustainable development “meets the needs of the present without compromising the ability of future generations to meet their own needs” (Commissioner of Environment and Sustainable Development, 2010a).
The *Federal Sustainable Development Act*, passed in 2008, requires the Minister of the Environment to develop an overarching Federal Sustainable Development Strategy with sustainable development goals and targets, as well as an implementation plan for meeting each target. The strategy must also identify the minister responsible for meeting each target. Departments’ and agencies’ sustainable development strategies must have plans and objectives that comply with and contribute to the new Federal Sustainable Development Strategy (Commissioner of the Environment and Sustainable Development, 2010b). Although Environment Canada has the lead for environmental and sustainable development issues at the federal level, the CESD, is charged with providing overall expectations and guidance for the auditing of these strategies and the reporting back of the progress made by each federal department and agency to the Parliament. Because of the powerful political influence of the Auditor General, the real leader in issues of sustainable development in recent years appeared to be CESD rather than Environment Canada. In an open letter dated April 11, 2006 to all deputy ministers and departmental heads, the Commissioner at the time, Johanne Gélinas (whose firing was described above) outlined her expectations and guidance for sustainable development strategies. In that letter, she said she saw only one fundamental requirement, "an expectation that organizations be able to clearly demonstrate how their strategy is designed to go *beyond* 'business as usual' measures and commitments of marginal significance" (Commissioner of the Environment and Sustainable Development, April 11, 2006). Gélinas reiterated that “it was her job” to urge parliamentarians to examine the above focus in their scrutiny of federal organizations; she also emphasized the importance of collaboration in the process of advancing sustainable development. She wrote that

organizations with an important role to play on key [sustainable development] horizontal issues *must* collaboratively define how they propose to ensure co-ordinated progress.  
(Commissioner of the Environment and Sustainable Development, April 11, 2006)

The Commissioner delineated her expectations about how sustainable development strategies were to be monitored in her 2003 report. The focus of the audits was to be results-driven objectives in relation to the strategies. Questions the CESD group was to be asking when doing audits with federal governments units were: have departments and agencies established a sustainable development plan with objectives that represent a clear statement of the results to be accomplished? Have they established clear and sufficient performance expectations (including targets) and indicators for their sustainable development objectives? To what extent are they
meeting their performance expectations? Are they measuring the results they are achieving with respect to their sustainable development objectives (including the achievement of targets, short-term outcomes, and intermediate and longer-term outcomes)? Are they using results or outcome measurements to improve performance; and are they effectively reporting performance related to their sustainable development objectives? (Commissioner of the Environment and Sustainable Development, 2003).

In addition to the above expectations, the CESD group took on monitoring the effectiveness of interdepartmental [coordination]. For horizontal sustainable development objectives [said Gélinas], CESD will be addressing whether the objectives have been defined and agreed to by the various organizations involved and whether these objectives are being pursued in a co-ordinated manner. (Commissioner of the Environment and Sustainable Development, 2003)

In all the above documentations about expectations of governmental departments and agencies authored by Gélinas, the tone is direct and firm. After Gélinas’ firing and under a new Commissioner, CESD texts have continued to put the emphasis on collaboration in assessing how governmental departments and agencies achieve their objectives. Most recently (March 2010), the current Commissioner released a discussion paper entitled Managing Sustainable Development: A discussion paper by the Commissioner of the Environment and Sustainable Development (Commissioner of Environment and Sustainable Development, 2010a). The main objective of this study was to identify “challenging aspects” of managing sustainable development and to provide managers with examples of the types of practices and analytical techniques that will help them address these particular challenges. It also committed to build awareness and support a dialogue with senior federal government officials on how such sustainable development practices and techniques can be put into practice. This discussion paper has a more supportive and softer tone than the 2003 report and the 2006 open letter by Commissioner Johanne Gélinas, in its emphasis on collaboration, dialogue and negotiation.

Whether this change of discourse by the current Commissioner is a response to the dismissal is uncertain. However, the Gélinas incident could be seen as a warning response disciplining the Auditor and demonstrating who is “boss.” However, in day to day governance, such disciplining is more subtle. In the next section, I will discuss a neo-liberal agenda of the
government together with industry ideology resists being pressured by “partisan activists” by pursuing “business as usual.”

6.3 Domination of Industry Ideologies

Chapter 2 summarizes neo-liberal thinking and discourses, and its relation to children’s environmental health. Briefly, I have argued that a neo-liberal political framework is characterized by corporate domination and government promotion of the economic well-being of the financial ruling class at the expense of the economically disadvantaged. Under the neo-liberal regime of creating optimal conditions for economic growth, economic globalization comes naturally. The ideological construct of globalization helps to justify and legitimize the neo-liberal global project – that is, the creation of a global “free market” and the consolidation of crisis-ridden Anglo-American capitalism within the world’s major economic regions (Held & McGrew, 2003). Starting from the story of a legal case in which a powerful multi-national corporation sued the Canadian government, I will move on to examine how the industry ideology influences federal governance thus interlocking ruling relations.

6.3.1 The Case of Ethyl Corporation vs. Canadian Government

Since the objective of neo-liberalism is to remove all barriers to trade and to promote development of a global market, there are multilateral, bilateral, and regional free trade agreements governing trade in, for example, pharmaceuticals, health services and so on. The area of environment and health is no exception. My NGO informants pinpointed just why the Canadian government is so slow to implement regulation as described in the previous chapters. One of my NGO informants said:

Regulation is avoided because it is going to put a burden on industry and possibly affect our economy, and international trade agreements. The fact that Ethyl Corporation won a NAFTA challenge about a bill to ban a neurotoxicant – MMT in gasoline – left a chill on regulation in Canada.

What happened there? In my investigations, I found an evidence and a storyline which illustrates how the local is hooked into the translocal (Smith, 1990) and how economic and neo-liberal discourses play a part in shaping the legislation and policy around product toxicity. Here, I quote the story from an old newsletter clipping written by West Coast Environmental Law (1998). The same story appears in other sources as well and the story line is consistent. In the newsletter, the
story was that

Ethyl Corporation was a US-based manufacturer of a manganese-based fuel additive call MMT. Because of serious concerns about the impact of MMT on human health, and MMT’s potential to interfere with automobile emission controls, the federal government banned the importation and interprovincial trade of MMT in 1996. Ethyl Corporation reacted quickly by suing the Canadian government for approximately $350 million under the investor-state suit provisions of Chapter 11 of NAFTA. Ethyl’s claim asserted that federal MMT regulations violated several provisions of NAFTA and effectively expropriated Ethyl’s business of manufacturing the controversial substance. (p. 1)

The Newsletter continued reporting the outcome of the lawsuit:

On July 20, 1998, under the front page headlines, “Threat of NAFTA Case Kills Canada’s MMT Ban,” The Globe & Mail reported that Canada had agreed to rescind the MMT ban, paying Ethyl in excess of $19 million, and taking the unprecedented step of issuing a statement that MMT was neither an environmental nor a health risk. (p. 2)

According to the article, this victory for a US-based transnational corporation has set an international precedent and, as a result, other corporations have since followed suit in challenging the Canadian government in similar cases. For example,

Canada was recently served with another NAFTA-based claim for damages by a US-based corporation, SD Myers. This claim arises from a ban (since removed) on international PCB waste trade. (p. 2)

It is even more unsettling to learn from the article that government officials had refused to disclose how many other claims have been made under NAFTA’s investment rules. In the discourse of industry and government, it is the NAFTA texts, not the Earth Summit, which is activated. From an equity perspective, NAFTA is consistent with a governmental hands-off agenda of appeasing industry and big companies. That is, by removing barriers to international and global trade and businesses through NAFTA, the government is also forced to withdraw legislation in the Canadian public interest, including policy affecting health of children.

Arguably, the MMT incident serves as an example to national governments about the costs of taking on multinational corporations. It is theoretically interesting that all 15 of my key informants talked about “lack of evidence” as the key “barrier” to advancing the promotion of children’s environmental health. However, is the “lack of evidence” just a visible covering for government’s complicity with industry? My argument thus far has suggested that evidence-based discourses are used to justify foot-dragging industry-unfriendly policy, as with the Chemicals Management Plan (CMP), but they are suppressed and ignored in order to privilege
industry as in the case of Ethyl Corporation. I have reviewed Shiva’s description of “enclosure” of the “commons” such as water, land, forests, biodiversity and knowledges into private “commodities” under the GATT. Could the same thing be happening here under NAFTA where the human right to reject toxicity is robbed by multinational corporations? In the next section, I will demonstrate how the industry position on toxicity works to shape the process of federal governance, thus creating a strong bond between the industry and government.

6.3.2 Toxicity According to Industry

As I have stated above, despite numerous attempts to secure interviews with industry representatives, I was not successful. Failing that, I went to their websites to analyze their claims, starting with CIAC (Chemistry Industry Association of Canada, 2010a). They describe themselves as “the voice of Canada's business of chemistry,” with over 50 member companies. Economic discourses were prominently taken up in their statement of identity, which claimed that the companies of the Chemistry Industry Association of Canada generate revenues of more than $26 billion annually, accounting for the majority of operations in Canada. (Chemistry Industry Association of Canada, 2010a)

The website also establishes the importance of the chemical industry to the Canadian economy by claiming that they provide not only essential chemical materials but also technology, services, marketing, and research and development for chemical products to Canada’s resource-based industries and manufacturers. They state their goal to “be competitive, be responsible, be credible,” openly claiming that they “represent their members' interests” and that they “work cooperatively with governments and other groups to find solutions that benefit both Canadian society and the nation's chemical industry.” Canadian people are not referred to (which might imply health); instead Canadian society is involved (implying a more infrastructure type of benefit). Their website is linked to the website of the American Chemistry Council (ACC) – their counterpart in the US. This website is even more direct about their industry advocacy in saying that their objectives are to “restore public confidence, ensure the business of chemistry remains at the forefront of innovation, and protect U.S. jobs.” They elaborate on this economic rationale by pointing out that the chemical industry
creates good jobs for more than five million Americans who, in turn, contribute to their communities in countless ways. Good jobs today and a prosperous future for our country—chemistry means business for America. (American Chemistry Council, 2010a)

The threat used by the industry is clearly that these five million jobs would be in jeopardy should the industry be challenged. With this kind of normalized discourse, we tend to forget that there are jobs – good jobs – that could be created in a sustainable economy as well.

From a critical perspective, it is easy to see that both of these Canadian and US organizations aim to advance and promote chemical corporations and research, with their profits justified through the economic rhetoric of “benefits for society.” Suggesting that they are model citizens, the industry websites cast themselves as supportive to the laws and the government. In Canada, this impression is made tangible in the claim that the CIAC fully supports the government’s approach to chemical management. They state that they

work with governments (through the Chemicals Management Plan, for example) to meet and exceed the letter and spirit of the law. The Association also promotes sound science and risk-based decision making as ways to improve the health and safety of Canadians. (Chemistry Industry Association of Canada, 2010b)

The ACC is even more specific about their compliance in their statement that says:

ACC supports tiered (phased) testing approaches that use results-based prioritization to focus testing on chemicals of greatest concern to public health, thus reducing the total amount of testing and animal research necessary to protect public health. To this end, ACC supports using hazard and exposure data to prioritize substances for further evaluation, which provides more efficient use of resources, including laboratory animals. (American Chemistry Council, 2010b)

Why does industry align itself with the CMP in Canada and the tiered testing approach in the US? As discussed earlier, it is beneficial for industry to have the regulation process delayed as long as possible because chemicals are treated as non-toxic as long as they have not been added to the Schedule 1 of CEPA 1999, and chemicals management processes have not begun. During delays, as I have repeatedly emphasized, industry can continue to use the chemicals as per the letter of the law even if new toxicity data becomes available. Invisible in these claimed compliances are concerns about data and regulatory timelines. Another reason why industry favours the current governmental processes (namely the CMP), as my key informants pointed out, is that industry is advantaged in the processes of CMP because they have “deeper pockets” to prepare their arguments to government committees compared to NGOs. This uneven playing
field results in the silencing of some NGO concerns (see Chapter 4) while privileging industry's arguments on toxicity. Finally, when a known toxic substance passes the risk assessment process, the CMP in fact allows industry to say that all were consulted in the chemicals management processes. The CMP then becomes a vehicle providing a “worry free space” in producing harmful chemicals which can be cited in advertising, because there is no provision in the Plan to review the data in the future. As one NGO informant pointed out, the problem is giving credence to these lasting decisions. There is a real danger in going through this exercise without being clear about its limitations, [and] the result could be misleading. If a chemical has gone through the CMP and it’s not found to be toxic under provisions of CEPA – that does not mean that it is not toxic.

Also noteworthy is the industry’s support for “hazard and exposure” data being used in the process of risk assessment rather than developmental toxicity data. But developmental data would be more pertinent to children’s health and would demonstrate adherence to the precautionary principle. As mentioned in Chapter 1, even with convincing evidence from animal and/or epidemiological studies indicating toxicity, industry’s argument consistent with the position of the government against banning harmful substances, is based on an outdated toxicology principle that said “dose equals poison.” This maxim is used to support the idea of government regulation based on having ‘safe’ levels of exposures (critiqued in Chapters 1 and 4).

Even when evidence is presented against substances that they are producing, the strategy of the chemical industry has been to critique the data, disputing it and questioning the motives of environmentalists. For example, in their attempt to combat the Canadian ban on BPA in plastic baby bottles, the ACC used an article published in The Wall Street Journal (January 30, 2010) to argue that “BPA does not pose risk at low levels of human exposure.” The article had characterized the U.S. Food and Drug Administration’s (FDA) plan to seek further public comment and external input on the science around BPA as “a giant fishing expedition.” It also charged that “environmentalists hope that if researchers run more tests, they’ll come up with more links.” Furthermore, they claimed that “the more studies and tests that are run, the more likely that positive – and false positive – results will turn up,” so that, the environmentalists will “ask for tests unto eternity.” The article concludes by saying “if the FDA wants to further investigate BPA for health effects, then the agency should make sure that it evaluates real
science.” But what is “real science?” In Chapter 2, the biomedical model in the conventional science paradigm has been critiqued from different theoretical perspectives. Industry rhetoric of “real science,” or “evidence-based” science together with accounting logic and their economic agenda leaves the government to struggle with issues of chronic and low dose exposure data and combinations of the chemical toxic soup. As stated by two of my federal informants (interviewed together), “it’s very difficult and challenging to find enough evidence to support certain low dose exposures to environmental contaminants and its impact on kids’ health.”

My analysis of this situation shows that discourses of evidence, economics, efficiency and safety are intertwined and used in very different ways to argue according to the perspectives and interests of the actors. The chemical industry protects their economic interests by arguing that their financial well-being is directly linked to people’s jobs and the country’s economic structure, implying that this must be weighed against health concerns. At the same time, they downplay the health concerns raised in scientific studies, and in many cases demand absolute proof of harm in human health before supporting government regulation. The positions of industry and the government in cases such as the CMP and long term bio-monitoring are complementary to each other, thus serving the interests of industry. Even though, the government’s websites have claimed that their policies such as the CMP are developed and implemented based only on science, compromises are clearly made based on economic reasons such as the example of Ethyl Corporation above.

The argument that the country’s economic wellbeing and jobs is dependent upon the wellbeing of industry implies that there is no alternative but to make concessions to their interests. Industry arguments are clever in that they first position themselves as a main pillar of the country’s economic system and then make the association between industry’s well being and employment. As I have argued, this discourse activates economic considerations which can then be used to force governments to make concessions. Industry also relies on the perception of compliance with the government’s policy on chemicals management while at the same time critiquing existing research studies. Thus economic ideology works together with political ideology to marginalize precautionary discourses which in turn harm children’s health.
6.4 Conclusion

In this chapter, I have examined three sets of state ruling relations: control over federal civil servants by the party in power, compliance requirements of the federal departments on sustainable development by the CESD, and the operation of industry ideologies in federal chemical regulation. Through the use of MEP and the firing of federal whistle blowers, relations of ruling are demonstrated between the politicians in power and government bureaucrats. It is ironic that the same government is promising democracy and transparency in its political platform while tightly controlling communication between government officials and the public. The second set of ruling relations investigated here is based on the promise of accountability through CESD monitoring the work of federal departments. However, there was no outcry about the dismissal of the watchdogs, former Commissioner of Environment Johanne Gélinas, suggesting this move worked as a scare tactic silencing voices that challenge the government. Has the promise of accountability in the role of CESD been compromised by the dismissal? Finally, in this chapter, I have used the case of Ethyl Corporation vs. Canadian government to illustrate the tight hold industry has on federal governance under NAFTA, arguing that this case effectively has cast a chill on the Canadian government’s autonomy and authority in regulating toxic chemical substances. This case suggests how industry’s position in toxicity affects governance of toxicity. Further analysis of the information on the websites of industry organizations CIAC and ACC draws attention to how the chemical industry’s economic arguments fit well with the neo-liberal agenda of the current Conservative government as well as the previous Liberal government. This set of ruling relations between industry and federal government, of course, plays out negatively in the daily struggle of parents trying to purchase environmentally healthier products for their children. This is not the whole story, however, since community-based NGOs push back against the neo-liberal ideologies, a process that will be explored in the next chapter.
Chapter 7
AGENDA SETTING TEXTS AND DISCOURSES:
THE ROLE OF ENGOS AND NON-ENGO COALITIONS

7.0 Introduction

Pushing against the extralocal ruling relations discussed in the previous chapter, there are also local agenda setting institutions specific to children’s environmental health. There are at least three of such influential sets of institutions in Canada. Their texts actors and knowledge production activities are mapped in Fig. 7.1. First is the international influence of EU and the US environmental groups and policy. Second are local ENGO knowledge production, political engagement and public education. The third are non-NGO coalitions aiming to advance environmental health. In this chapter, I will provide examples of how these three groups of actors contribute to setting agenda for the betterment of children’s environmental health, arguing that they are (yearning) knowledge projects advocating for our children.

7.1 Global Trends and Influences

In the course of my interviews with NGO representatives, governmental officials and higher education faculty, it was clear that they did not see the Canadian government leading positive change in children's environmental health. They talked about Canada being reactive to the leads of the other developed countries in changing its policies and legislation. An NGO informant put it this way:

to be realistic, the thing that needs to happen is for the Obama administration to revamp the chemicals management and product regulation policies and Canada will follow. I think that’s the quickest way to change. I think the Obama administration is trying to steer in a positive direction and that’s hopeful. Europe has already done amazing things. They have revamped the way that they manage chemicals. We are just initiating chemicals management [now in Canada].

Is this a fair assessment? I asked my informants about the BPA ban in which the Canadian government moved very quickly and became the first country to ban BPA in baby bottles. This move was seen as a “random move” and “a symbolic act” – as an attempt to restore the government’s tarnished image of being unfriendly to the environment. However, it could also be seen as an aspect of reactivity – or what two government informants saw as the unproblematized
“democratic process.” So what do legal discourse and texts from Europe and the US have to offer to Canada in terms of positive policy and legislative changes? From Europe, I will highlight the uptake of the precautionary principle in their policies; and from the US, I will underscore their infrastructure supporting research in the area of children’s environmental health.

Fig. 7.1 Agenda Setting Texts and Discourses

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7.1.1 Application of Precautionary Principle

Canada needs to get more serious about the precautionary principle. Right now chemicals are assumed to be innocent until proven guilty. The onus is on the public sector to show that there is a problem which in layman’s terms is that we need to show that children have been damaged. That means we need to show kids’ damaged brains or birth defects. That’s not the way it should be done. Other countries, like ones in Europe, they are way ahead of us. They are saying to industries, “look, if you want to put a product out there you need to do the research to show that it won’t cause harm.”
The above comment was made by an NGO informant assessing possibilities for change, given Canada’s current political context. He was calling on the Canadian government to follow what the European countries are doing – to employ the precautionary approach to chemicals management.

Have there been opportunities for the Canadian government to apply the precautionary principle in the past? They could have done it in regards to regulating phthalates 10 years ago, according to one federal informant, who said:

In retrospect, [the auditor] didn’t look at the application of the precautionary principle. If [it had been] looked at that, [phthalate] would have been a good candidate for taking action because the assessment [of phthalate] came out 10 years ago, in the early ‘90s, and it wasn’t until 2000 that they declared it toxic. So they could have taken action if they had adopted the precautionary principle then. They could have passed the regulation back then [10 years ago] instead of now. Instead, their approach back then was to do nothing. This is really unfortunate.

Because the government did not take action 10 years ago based on the precautionary principle, it is still struggling with finalizing the current legislation to control phthalates. There are numerous toxic substances that are still out on the market such as flame retardant that could be banned based on the precautionary principle as well. According to one federal informant,

Europe has banned the use of flame retardant and the bio-monitoring studies revealed that the chemicals are decreasing in people’s bodies, which is demonstrating the success of the policy.

With local activists pointing to European regulation of chemicals, a door is opened for Canada to follow their lead and ban the substances of concern.

7.1.2 Provision of Research Infrastructure

The US situation reveals the central importance of independent research in agenda setting for environmental concerns. An NGO informant suggested that part of the problem in assessing toxicity and acting on it had to do with the subjugation of public interest media. She commented that

because the Science Council of Canada was disbanded, it’s hard to get independent scientific messages out that are precautionary, and in the public interest….We have very few universities that are training toxicologists. When you look at the MIREC – they were doing the bio-monitoring on mothers and on newborn’s cord blood. It’s a Canadian study to investigate children’s health and development from prenatal to age six to connect the
dots between exposure and outcome. That was not funded! Instead, they funded a much shorter-term study, five year study, only following newborns until eight weeks old. It was such a wasted, lost opportunity! That almost says to me the underlying message is that they don’t want to know.

The same informant compared what she sees in Canada with what she sees in the US in the field of children’s environmental health research, arguing that

the US is doing much more than we are. They have Centres of Excellence for Children’s Health and Environment. They have a lot of research going on. There is a researcher in New York City who had pregnant women wearing monitors measuring their exposures, and evaluating development of the children. There is a whole group looking at endocrine disruptors and determining who should be tested and so on. And there is a National Children’s Study by the National Institute for Children’s Health and Development. The only way to uncover the causes of learning and developmental disabilities is to follow [children] from preconception to adulthood and actually they are going ahead [monitoring] 100,000 pregnancies. That’s huge.

She went on to emphasize that:

we have to have independent scientists. And these are the people who will be able to find out what’s happening out there like the endocrine disruptors. It’s happening in the US. There is much more money in the US for independent science.

The importance of having independent knowledge production in this area was demonstrated in Chapter 1 in the case of plastics, where researchers were found to be in conflicts of interest. Arguably, Canada is not investing enough resources in this area of research. This means that government departments such as Health Canada are thus forced to rely on the research results from the US and other countries to make its decisions on toxicity.

7.2 Role of ENGOs

Disappointed with a lack of timely actions from the government agencies, ENGOs are engaging in knowledge production, politics and public education, which contribute to shaping rule setting.

7.2.1 Local Production of Knowledge about Environmental Toxicity

As the literature reviewed in Chapter 1 reveals, the role of ENGOs has effectively extended from traditional “implementing action” oriented work to knowledge production. One example that was talked about repeatedly and positively by my key informants across sectors is
the work of Environmental Defence, particularly with regards to their bio-monitoring studies. Environmental Defence is a Canadian environmental action organization that “challenges and inspires change in government, business and people” (Environmental Defence, n.d.). Since 2005, it has been conducting its own bio-monitoring studies. In their first study released in 2005, out of 88 chemicals, they found 60 toxic substances present in 11 adults tested across Canada. In the following year, they released similar report entitled, *Toxic Children, Toxic Nation: A Report on Pollution in Canadian Families* (2006), based on testing five families from British Columbia, Ontario, Quebec and New Brunswick for 68 toxic chemicals in their blood and urine. The family members included seven children (aged 10 to 15 years), five parents and one grandparent (aged 33 to 66 years). In general, Environmental Defence found that child volunteers were less polluted than their parents for PCBs and organochlorine pesticides, as many of these 'older' chemicals were banned before the children in the study were born. It is alarming, however, that there were several cases where the children in the study were more polluted than their parents for chemicals that are still in use. The decreased presence of PCBs and organochlorine pesticides in the children suggests that when governments take action to eliminate toxic chemicals, people's toxic load decreases, even if it takes several decades. In 2007, Environmental Defence released two similar reports on politicians which I will return to in the following section.

Another example of knowledge production by ENGOs is the latest groundbreaking research work by the Environmental Working Group (EWG) and Rachel’s Network, both based in Washington DC. They conducted a bio-monitoring study focusing on children of African, Hispanic and Asian heritage entitled *Pollution in People: Cord Blood Contaminants in Minority Newborns* (Environmental Working Group, 2009). Involving five independent laboratories in the US, Canada and Europe, they examined the umbilical cord blood collected from 10 infants born in various U.S. cities from 2007 to 2008 and detected 232 chemical contaminants. While these ENGOs are doing their research, the Centre for Disease Control and Prevention (CDC) in the US has published bio-monitoring study results involving thousands of people nationwide over the past decade. Its next report, the fourth in a series, is expected to assess more than 200 pollutants found in representative samples of the US population. If there are such large bio-monitoring studies commissioned by government, why do ENGOs need to produce its own research? EWG explains that their bio-monitoring research program has three unique aspects compared to the CDC’s. First, EWG looks for more chemicals in smaller and usually specific
sample cohorts, while the CDC looks for fewer chemicals but in larger, statistically representative samples. So far, EWG has detected more than 414 chemicals in people, compared to 203 reported by the CDC. In addition to testing for chemicals, EWG relies on specialized laboratories around the world to maximize the scope of its analyses and to avoid potential conflict of interest. The second unique aspect of EWG’s research compared to the CDC studies is the EWG’s focus on the mixtures of chemicals in each participant of their studies. CDC reports its results chemical by chemical, estimating how many Americans are exposed to each chemical under investigation, while the EWG publishes the full list of chemicals found in each person tested to convey the scope and complexity of each person’s body burden. This method of testing allows scientists to more accurately gauge the harmful effects of bioaccumulation on human health. The harmful effects of chemicals may be activated by the presence of other chemicals in the body and CDC’s method of testing each chemical alone obfuscates this phenomenon. The third point of difference between bio-monitoring studies produced by EWG and CDC is EWG’s focus on early life exposures. CDC tests adults and children aged six and up, and it rarely tests cord blood or infants. EWG studies include cord blood, infants and toddlers to help document exposures during the most vulnerable periods of development. These critical “windows of susceptibility”, of course, as I have explained in Chapter 1, are critical for not the individual child’s own health, but also health of the generations to come (Environmental Working Group, 2009).

When I compared ENGO and governmental agency texts and discourses, I found marked differences between the two in research methodology and epistemology. What might be termed the official “knowledge” on toxicity produced by the CDC represents a reductionist quantitative approach to research from the conventional biomedical scientific paradigm whereas knowledge production from the EWG represents a more “situated” knowledge (Haraway, 1991; see Chapter 2) using research methodology from perspectives that value specificity, inclusivity and local knowledges. In Chapter 2, I have critiqued the paradigm of conventional science and exposed its marginalizing nature. Specifically, it is well documented in the literature that marginalized populations and communities bear the majority of environmental burden (CPCHE, 2005); however, the state sanctioned studies do not select their samples specifically to focus on the very young, socioeconomic classes or ethnicities. Further, ENGOs (e.g. the EWG) uses independent technical support to analyze the samples which reduces the potential for conflict of interest and
industry influences. Consistent with their community based philosophy, the results of studies such as these commissioned by ENGOs are publicized and used to educate the public and engage decision makers. And what is useful in engaging the public is ultimately attended to by politicians.

7.2.2 Political Engagement

Going beyond public education, ENGOs have used their bio-monitoring findings to engage politicians in setting the “rules.” For example, early in 2007, Environmental Defence released another report named *Toxic Nation on Parliament Hill: A Report on Pollution in Four Canadian Politicians* (Environmental Defence, 2007a). The four politicians were sitting Environment Minister Rona Ambrose, NDP Leader Jack Layton, then Health Minister Tony Clement and then Liberal environment critic John Godfrey. In the course of their engagement of the politicians, Environmental Defence, also engaged the media, and the detailed accounts of their findings of harmful substances in these four politicians were widely reported. CTV, for example, started their story by saying: “four top Canadian politicians have a combined cocktail of toxic chemicals in their bodies that would make a smokestack shudder” (CTV News, Jan. 3, 2007). The news article went on to give details about the numbers and types of toxins found in the politicians. It noted that

combined, [the politicians] blood contained a chilling mix of 61 nasty substances, including 54 carcinogens, 37 hormone disruptors, 16 respiratory toxins, 54 reproductive or developmental toxins and 33 neurotoxins. (CTV, Jan. 3, 2007)

The politicians were interviewed and quoted, and their pictures were included in the news article as well. Capitalizing on the media opportunity, each politician used the findings to support their own political position, thus revealing the political landscape. The two incumbent ministers, Ambrose and Clement, used the opportunity to give high praises to the government’s new initiative at the time – the Chemicals Management Plan (CMP). Ambrose applauded her government by saying that “the federal government is moving in the right direction with groundbreaking action against harmful pollutants.” The other two politicians, Godfrey and Layton, representing the opposition parties at the time, first showcased work they have done over the years and expressed the need for the government to do more on this issue. Layton, for example, later diagnosed with prostate cancer himself, promised that his party “will double its
efforts because this toxic shocker reinforces our commitment to be tough on companies that pollute and governments that don't act” (CTV, Jan. 3, 2007).

Rick Smith, executive director of Environmental Defence, also took the opportunity to broadcast some conclusions on the study. As he put it,

it doesn't matter where you live in Canada. It doesn't matter what you do for a living, it doesn't matter how old you are, and in the case of these four politicians, it doesn't matter how powerful you are. Even if you're the people running the country, your body is polluted, your family is polluted with these known toxic pollutants.

He placed the blame squarely on “the government of Canada,” charging that “by allowing this to happen, [it] is letting Canadians down.” The news article quoted Smith as saying that “the timing of the study's release was strategic. The federal government is set to review the Environmental Protection Act in 2007 – [a] legislation [that is] flawed and feeble.” Finally, Smith challenged “all federal parties to work together to make an improvement on the [current] flawed law.”

Around the same time as the release of the above report, a similar report was released on three politicians of the Ontario government entitled Toxic Nation at Queen's Park: A Report on Pollution in Three Ontario Politicians (Environmental Defence, 2007b). The participating politicians were Premier Dalton McGuinty, then NDP Leader Howard Hampton, and then Progressive Conservative Leader John Tory. In these provincial politicians, Environmental Defence detected in total, “33 carcinogens, 24 hormone disruptors, 9 respiratory toxins, 39 reproductive/developmental toxins, and 12 neurotoxins” (2007).

In addition to engaging the politicians personally and politically, Environmental Defense used the findings to educate and move the public towards political activism. They collected signatures for various petitions; organized “baby rallies;” and submitted their positions to the government for consideration (Environmental Defence, n.d.). Since, as I have argued, this approach is missing in state documents, the presence of ENGOs in knowledge making is therefore very important. They are powerful voices of which industries are fearful that my participants said influenced government. Are they influential in shaping rule setting knowledge and activities? I have suggested earlier that industry discourse is dominant, but the role of
ENGOs in the political arena was described this way by Judy Wasylycia-Leis, a then NDP member of parliament in her speech on the third reading of Bill C-6:

Environmenal Defence, the David Suzuki Foundation, and the Canadian Cancer Society [are] three groups that worked tirelessly on [Bill C-6] and worked with all members of the health committee. These groups informed us, taught us, proposed amendments, made suggestions, and educated us. We learned a great deal from them. I am very grateful for the major role that they played throughout the legislative process. (Wasylycia-Leis, 2009)

The ENGOs activate, like the CESD, the discourse of accountability to set the agenda, question the legislation itself, the science produced, and the political process for protecting children’s health.

7.2.3 Public Education

In addition to knowledge production and political activism, many ENGOs are also involved in translating scientific knowledge into practical and meaningful information to educate the public, including health professionals. There is a great deal of evidence that ENGOs strategically influence the public and professionals through the production and dissemination of credible and accessible information. For example, using pictures and simple language, Environmental Defence produced a sheet that informs people about how they are exposed to toxic chemicals (see Fig. 7.2) that can be understood by most consumers of products and services. These materials produced by ENGOs are easily taken up by the public and by professionals in the field. In producing these texts, activists know that, in order to be taken seriously, their material has to be "credible." But how do they produce "credible" information that will be accepted and be adopted by mainstream health professionals such as the Canadian Pediatric Society?
One strategy has been to develop coalitions and working groups involving a wide range of sectors, working together to co-produce materials. This way of producing and applying knowledge is consistent with science as advocated by Haraway (1991), specifically applying the concept of “strong objectivity” through inclusive processes of science as described in Chapter 2. However, as much as ENGOs are firm believers of collaboration and partial knowledges, they are also aware of the tendency of mainstream health care providers to only accept knowledge production filtered through the biomedical model. Thus they take extensive measures to build credibility in the material they publish. For each piece of information they produce, ENGOs such as Environmental Defence go through the slow and onerous process of having all their partners agree and support the contents before they publish. This way, they know that the
content will be widely validated. A good example of such a coalition is CPCHE – the Canadian Partnership for Children’s Health and the Environment. The process of approval for their information resources is complex, as described to me by one of my key informants who is also a participant in the network:

All CPCHE materials are signed off by all our partners; it is an incredibly onerous process. But it’s a very good and healthy one because at the end of the day everything that we published has been checked out and verified by all our 12 partners. Each partner also has their departments of folk that they check with. It’s a lot of work to produce health promotion materials or policy statements. But it’s all for the good. I believe in that process. Knowing it’s not an easy one. It’s challenging because it’s time consuming and resource intensive.

It is well worth the effort because, as she says, “we are very well respected by our government folks, community stakeholders and private sector folks”.

What are some of CPCHE’s strategy in gaining credibility? The same informant described the process of garnering scientific respect:

[W]e are very careful. We base our positions on factual evidence and how we portray things. We are not alarmists. We also have a wide range of sectoral representatives included in our partnerships. We’ve got the child care sector, we’ve got clinical health including paediatric, we’ve got public health and we have environmental groups.

It is interesting to note that activists of these big ENGOs are seemingly trying to use the "master's tools” to dismantle the master's house. They are activating the conventional scientific paradigm using "factual evidence" to substantiate their position. Further appearing to be conventional, they are also concerned with being “neutral,” and trying to avoid being called "alarmists." It would appeared that the ENGO activists are well aware of the inner workings of the biomedical model and are trying to observe its principles to gain credibility in order to advocate for children's environmental health. Andre Lorde (1984) argued that the master’s tools will never dismantle the master’s house. She wrote, “what does it mean when the tools of a racist patriarchy are used to examine the fruits of that same patriarchy? It means that only the most narrow perimeters of change are possible and allowable” (p. 1). Lorde’s statement was made fighting the racism, sexism and homophobia of the 1960s. Does the same principle apply in the context of the ENGOs’ current epistemological struggle against the conventional scientific paradigm?
On the surface, the answer to the above question might be no. The strategy employed by the above mentioned ENGOs to apply strong objectivity and then mimic the powerful and dominating scientific paradigm is apparently working, as CPCHE’s material is readily taken up by liberal institutions established for this purpose: public health departments, child care centres, doctors’ offices, community health centres, and public schools. The locally-produced materials are well used for both educating health care providers as well as the public, which in effect sets the agenda for developing the field of children’s environmental health. One such document is CPCHE’s *First Steps in Lifelong Health – A vision and strategies for children’s health and Environment in Canada* (CPCHE, 2008). In it, CPCHE describes its vision for children’s environmental health as an equitable society that recognizes that critical links between the physical environment and human health, so all children breathe clean air, both indoors and out, and consume safe food and drinking water. (p. 2)

CPCHE’s vision includes the application of the precautionary principle in policies and programs that prevent environmental exposures, in recognition of the fact that exposures during the earliest stages of life are powerful determinants of health in later years. Specifically, the document talks about the protection of children from the risks posed by environmental contaminants, including toxic substances associated with the production, use and disposal of consumer products. Ultimately, CPCHE advocates for action so that “the body burdens of environmental contaminants in each subsequent generation of children born in Canada are progressively reduced” (CPCHE, 2008, p. 2). In this document, CPCHE paints the current picture of children’s environmental health in Canada to underscore the need for immediate and protective action. It also clearly identifies three priority areas and enumerates specific actions required under each. The three priority areas are research, law and policy, with on-the-ground protection with a specific focus on chemicals management and consumer product safety.

It was interesting and revealing that this particular document was not only supported by the existing partners of CPCHE, which included the municipal government, but was also funded by the Ontario government and Health Canada. This mix of support for such a document for children’s environmental health speaks to the desire by all levels of government in Canada to appear to be stepping forward and making positive changes to the existing situation. The full list of what CPCHE is calling the Canadian government to do is documented in Appendix A. This
text was mentioned by my key informants from all the sectors as a “groundbreaking” document that “sets the course” for the study of children’s environmental health. CPCHE spokespeople emphasize that it was written as much for the public as for the government, educating people from all sectors about the importance of children’s environmental health, the danger of the current situation, and what we can do to improve it.

What does it mean when governments sign onto such a document but then carry on “business as usual?” It is instructive that the CPCHE materials are not specifically challenging neo-conservative arguments that industry and jobs trump all other concerns, including health (so as not to provoke industry?). Instead the document diplomatically refers to evidence, precaution, and “saving the future,” however, has the material made any difference in rule setting? Arguably, the governing arena has not yet been markedly influenced by ENGO material, as I have already described in Chapter 4. However, more ENGO and non-ENGO local initiatives are also operating at the grassroots, suggesting that more pressure is being brought to bear all the time from the community. An example of a critical feminist anti-racist approach can be found in the making of a film in Ontario, Toxic Trespass which features whistleblowers and First Nations victims of chemical pollution telling their stories. The film, has been widely publicized, including on TVO; has won recognition through several awards; and is being used as a tool for education in many schools and other institutions (Goldin Rosenberg, personal communication, 2011). I turn now to several other non-ENGO local efforts advocating for prevention in children’s environmental health.

7.3 Non-ENGO Coalitions

I have thus far discussed global trends and influences from Europe and the US, and the role of ENGOs in setting a progressive agenda for addressing children’s environmental health. In addition, I have discovered the potential of non-NGO coalitions in effectively setting agendas in children's environmental health. To illustrate this potential, I will move beyond the examples of CPCHE and Environmental Defence to draw on my experience involved in a local coalition for children’s environmental health in the childcare sector and a global coalition that my key informants revealed to me.
In the course of my interviewing, an administrative key informant connected me to a coalition headed by a children’s advocacy group based in the child care sector. After a long chat with the chair of the committee, I was impressed by their objectives and was recruited as a permanent member of the coalition. The coalition is called Growing up Green: the Greening of Toronto’s Early Learning and Child Care (ELCC) program. Their goal is to engage 12 early learning and child care programs in pilot projects to develop (in albeit evidence-based language) “best practices.” This initiative focuses on incorporating “green practices” and aligning them with the regulations of the various levels of government. Specifically, the Growing Up Green group targets four areas: food, waste, consumer products, and environmental health. Their objectives in the area of food consumption include “eliminating transfat, buying locally, using fresh whole foods and organic wherever possible;” in the area of waste, they are to “set up all areas of child care operations to include ways of reducing, recycling, reusing and eliminating – using green bins, wormy bins, diaper disposal, recycling papers, cans, electronics, etc” and in the area of consumer products, their objectives are to “eliminate disposables wherever possible, reducing plastics, and eliminating BPA products.” Their objectives in the area of general environment are to “develop ‘best practices’ for cleaning supplies and how to reduce smog, heat and UV to enhance the health and safety of children. The overall goal of this project is to create safe and healthy alternatives and practices for children and their families within the child care community and broader communities outside of child care programs. This coalition involves not only members of childcare sector but also various levels of government and other key partners to participate in this project at the Steering Committee level (Toronto Coalition for Better Child Care [TCBCC], n.d.).

The TCBCC is not considered an ENGO but it has married the messages of children’s environmental health with implementing “green” practices and policies in the childcare sector in the municipal level. The chair of the coalition explained the benefits of this work:

Besides their homes, children do spend a lot of time in child care centres and community programs. Creating a healthy environment for the children not only will benefit their physical health, the practices and policies will also educate the children themselves as well as their parents about health and the environment. The parents will be more likely to implement the practices in their own home such as buying and eating locally produced foods and eliminating and/or reducing trans-fats in their diets. In addition, the parents might also expect and demand for the same practices when their children enter the school
system. As more people practice these principles and strategies, the messages will spread far and wide.

This groundbreaking application of “green” messages in the policies and practices of a sector, the childcare sector in this case, is agenda setting. Not only will it benefit the children and parents affiliated with the childcare, the evidence-based “best practices” will be shared and endorsed and adopted in other settings. The coalition chair’s hope is that environmentally healthy practices modeled in the daycare setting will eventually be downloaded to individual homes, and be carried out by parents. Furthermore, the work of lobbying the schools to adopt the same will also be downloaded to parents. I have critiqued this approach in Chapter 2 since it assumes parents are able to become activists. However, the organization is acting locally to increase knowledge and activity to enhance children’s health.

Another coalition that is also producing agenda setting knowledge is the Canadian Coalition for Green Health Care. The coalition was established in 2000 by Canadian Association of Physicians for the Environment (CAPE). Its goal was to have a significant impact upon the greening of the Canadian health care landscape in institutions such as hospitals and other health care facilities. The Coalition is affiliated with the Ontario Hospital Association (OHA) and the Canadian Healthcare Engineering Society (The Canadian Coalition for Green Health Care, 2010). Since its inception, this coalition has been involved in a wide variety of local and national initiatives. They have held mercury thermometer exchange events, and publish resources such as "Doing Less Harm: Assessing and Reducing the Environmental and Health Impact of Canada's Health Care System," "Coalition Notes" Newsletters, and the "Building Green Hospitals Checklist," to support health care workers to “green” their facilities. They also provide a listserv for all member facilities to answer questions and assist with their problem solving. They establish Green Health Care Awards to motivate and benchmark best greening practices in health care settings. They also hold Green Education Sessions – such as The Green Lane, as part of the OHA’s annual HealthAchieve conference (The Canadian Coalition for Green Health Care, 2010).

The Coalition has been struggling, like many ENGOs, with lack of funding and scarce staffing. One of my informants recounts how the Coalition got started and adopted by the OHA as part of their annual conferences. In his words,
The Canadian Coalition for Green Health Care started in 2000. It’s been going along pretty slowly with some successes. We had a couple of conferences for hospital workers at Sick Kids – that was 2001 and 2002. We then got adopted by the OHA who thought it would be a good idea to have a “Green Lane” at their annual conference. So there has been a Green Lane ever since.

The key informant continued to describe the benefits of enlisting mainstream organizations such as the OHA. He said,

we were given a booth with all the Coalition members. It’s great, it helped people to know who the individual members are. Then members said, what about doing a half day green health care seminar? So every year there has been a half day seminar [at the OHA conference]. It has been really good.

But as my key informant and his colleagues realized, annual exposure at an OHA conference is not enough. The promotion of children’s environmental health, she argued, was going so slowly because it’s all volunteers. There was a fellow who has been running this Coalition since it started from his little village. It was really frustrating because it wasn’t going anywhere, so he organized monthly meetings, in which everyone would take turns paying for teleconferences. And that got us going, got a listserv going.

Through the use of information technology, the Coalition was able to connect individuals across the country, since the questions and responses that come up from the listserv are remarkable – e.g., from different hospitals, they might ask things about children, “what’s happening with glutaraldehyde, are we able to substitute?” People would answer back from all over the country. It’s amazing.

The Coalition appears to be an ENGO in the making, since my key informant commented with pride that “we now have a governance structure and have a Stewardship Council of which I’m a member. And we’ve also got a Trillium grant.” With great pleasure, he shared what the funding allowed the Coalition to do:

We were able to hire the fellow who was forever volunteering now as our part time Communications Director, and a Program Coordinator in an executive director role. It also allowed us to get our governance structure going, keep the listserv going, and now we have some travel budget so we can speak at more conferences.

The funding also has allowed the Coalition to expand their work. For example, they are currently embarking on several projects such as establishing a Fragrance-Free Policy in health care facilities, obtaining cleaner and local foods for hospitals, and reducing toxic substance use in health care. As indicated by the key informant above, coalitions like these usually start with a
few deeply committed, enthusiastic and passionate individuals. A critical view of this process is that after “forever” volunteering, a funding agency might come along and give them a little bit of money. And these volunteers would try to work “miracles” by addressing a huge gap in public funding and policy “making the funding stretch and managed to work 10 years out of a five year fund.” Such organization seems to be a permanent feature in areas valued but not fully supported by the state/industry in capitalist society. See Alford’s (1975) early description of health care efforts in New York, which he called, “dynamics without change.”

The Canadian Coalition for Green Health Care, however, is part of a much larger international coalition of hospitals and health care systems, which also involves medical professionals, community groups, health-affected constituencies, labor unions, environmental and environmental health organizations and religious groups called Health Care Without Harm (HCWH). This Coalition’s mission is to “implement ecologically sound and healthy alternatives to health care practices that pollute the environment and contribute to disease.” Membership in HCWH is based on an organizational commitment to the mission and goals of the campaign, and a desire by individuals to participate fully in helping to achieve them. Groups that join the campaign do not need to contribute dues and HCWH does not accept financial support from manufacturers or endorse specific products (Health Care Without Harm, n.d.). This international coalition declares on its website that the health care sector can play a leading role in helping to solve environmental health problems. Because of its buying power, and its mission-driven interest in preventing disease, the Coalition argues that the health care sector can help shift the entire economy toward sustainable, safer products and practices. As such, HCWH endeavours to transform the health care sector worldwide, without compromising patient safety or care, so that it is ecologically sustainable and no longer a source of harm to public health and the environment (HCWH, 2010). On their website, HCWH gives examples of problems that they are helping to solve in the health care sector:

For example, the incineration of medical waste is a leading source of dangerous air pollutants such as dioxin and mercury, and the use of hazardous chemicals indoors may contribute to the high rates of asthma among health care workers. The huge scale of the health care sector worldwide means that unhealthy practices – such as poor waste management, use of toxic chemicals, unhealthy food choices and reliance on polluting technologies – have a major negative impact on the health of humans and the environment. (Health Care Without Harm, n.d.)
Thus, despite the precarious nature of such programs and coalitions, the actions pursued are widespread. The HCWH, for example, has wide affiliations and partnerships in various countries around the world. In the US, HCWH has created Hospitals for a Healthy Environment (H2E) with the U.S. Environmental Protection Agency (EPA), the American Hospital Association and the American Nurses Association. HCWH and the World Health Organization (WHO) are co-leading a global initiative to virtually eliminate mercury-based medical devices around the world by 2017. HCWH is also working in collaboration with the United Nations Development Program and the WHO to implement a Global Environment Facility project to demonstrate sustainable health care waste management in Argentina, Latvia, Lebanon, India, the Philippines, Senegal, Vietnam and Tanzania. In Europe, HCWH is working with doctors, nurses, governments and hospitals to promote “environmentally sound” health care in dozens of countries, while advocating for European Union-wide safer chemical policies and climate-friendly health care. For instance, HCWH worked in collaboration with several organizations to achieve an EU-wide ban on mercury thermometers in 2007 (HCWH, n.d.). Thus the affiliation of the Canadian for Green Health Care with the global Health Care Without Harm coalition links local activism with global reach.

7.4 Conclusion

In this chapter, three examples of agenda setting in the area of children’s environmental health are presented. First, influences from Europe and the US on the application of precautionary principle and the provision of research were highlighted. Second, I have demonstrated how some ENGOs interface with the political process to produce agenda setting knowledge, engage politicians and educate the public. Finally, I have pointed to the importance of coalitions in the production of agenda setting in children’s environmental health, highlighting the coalitions in the child care sector and the health care sector, including those that are international. While the work of these coalitions is not directly aimed at changing the political rules such as the work of ENGOs, they are aimed at changing organizational and professional rules such as institutional policies and practices. Thus, coalitions attempt to apply what is done locally translocally, agenda setting and aiming to shape rule setting on a global scale. There remains one last sector to interrogate – what is happening within the traditional site of knowledge production – higher education institutions in Canada? In the next chapter, I will
examine the complex epistemological terrain of children’s environmental health in Canadian postsecondary institutions, focusing on the interplay among higher education, government and industry.
Chapter 8
STATE-HIGHER EDUCATION FRAGMENTATION AND REDUCTIONISM

8.0 Introduction

In the previous chapter, I have shown how rule development can be influenced positively by global activities as well as local ENGOs and non-ENGO coalitions engaging in setting an agenda of protecting children’s health and environment. In this chapter, beginning with a focus on the traditional sites of knowledge production, higher education institutions, I will explore how neo-liberal normalizing discourses set the agenda for knowledge production in teaching and research in Canadian higher education systems. In my interviews with faculty members from medicine, public health, nursing, geography and early childhood education, I discussed two main issues – curriculum and research in the area of children’s environmental health. Consistently, children’s environmental health was described as being on the margins of these curricula if present at all. In analyzing the various curricula and the relevant interview transcripts, I discovered three interrelated themes: that children’s environmental health is associated with the discourse of poverty; that the topic lays outside traditional disciplines; and that there is a lack of funding in this area of research. I will argue that all these academic considerations articulate the objective of “hands-off-industry” neo-liberalism which in turn shapes the production of knowledge right at the traditional source – the universities and colleges, as well the careers of scientists who work in this area. The decline of traditional knowledge production in children’s environmental health corresponds to the retrenchement of the welfare state beginning in the 1990s, as I detail in this chapter.

8.1 Sitting on the Margins

Consistent with the findings in the literature summarized in Chapter 1, I heard from my key informants that the presence of children’s environmental health content in the health professional curriculum is minimal at best. However, although this content in itself was not considered mainstream in the curricula, I did find that these academics incorporated it actively or touched on it passively when convering other major health issues. The idea of “integration” was put forward (as it is in literature reviewed in Chapter 1), even though there was no apparent
disciplinary home for the subject of children’s environmental health in higher education institutions.

In my first interviews, academics claimed that the content of children’s environmental health was completely absent in health professional education and training. For example, according to my key informant in medicine, there was complete absence of any coverage of children’s environmental health content in her program, even in the pediatric unit of the curriculum. Our conversation went like this:

So-Yan: So you mean that in medical schools, they don’t cover any content on environmental health, no children’s environmental health, not even in the pediatric rotation? Informant: No. Nope! There is nothing in the curriculum.
So-Yan: No? Not even when they are talking about developmental delays, and learning disabilities?
Informant: Nope!

But more detailed investigation showed some coverage under topics such as general environment and health. According to my key informant who teaches in a related health discipline, she was invited to do a three-hour lecture on the determinants of community health course for medical students. She suggested that

medical students get [some children’s environmental health] in the [course on] determinants of community health that runs through the entire curriculum which is a real mix of stuff. I have done a session with them around environment and health.

She also shared with me the responses of her students, and she remembered that

there were a lot of medical students who were quite interested and asked questions. I just do one session but they do their readings and some of them pick this topic to do projects on with environmental NGOs.

In another case, children’s environmental health content was very slowly being incorporated into the health curriculum as part of other more mainstream courses or topics. Here was how one key informant described her experience:

You have to kind of slowly integrate it in. I was assigned a module on musculoskeletal disorders for first year medical students. I did put some environmental health content in there.

As the informant quoted above is a self identified lifelong activist in the area of environmental health, she actively and intentionally integrates the content into the courses she teaches. But other key informants who were not as keen on children’s environmental health would still
integrate the material into their curriculum passively. For example, the key informant from nursing admitted:

I have to say it’s very much peripheral. It’s not in the plan. We talk a lot about social determinants of health – you know – where you live and so environmental health comes up that way. Probably not children’s health necessarily but for sure we talk about it when we talk about people’s housing status.

This participant admitted that he did not know very much about the content area and that he has not been thinking about it at all. However, he saw plenty of potential in integrating this content into an undergraduate community nursing course. As he said:

When we talk about social determinants of health, environment is one of the very important ones. Health is about, for example, whether you have enough money to buy nutritious food. Environment, such as if there is any chemical that has leaked into the ground that might affect your health. And when it comes to children, they are of course in their formative years, so chemicals and things like that would have a lot of impact. If their health is affected you’re talking about their whole life and their children after that. So it’s very important. For me, it’s not about bringing in new stuff into the curriculum. I just have to incorporate it.

The idea of integrating children’s environmental health content was also very apparent in the curriculum of early childhood education (ECE). Although they are often not considered health professionals, ECE workers have opportunities to promote children’s environmental health in their workplaces. And their integration of children’s environmental content into their curriculum appeared a better fit and less of an add-on compared to the other academic curricula investigated. In their course syllabus on health and safety, for example, there were several sessions on environment and health. Out of the 12 sessions, my key informant from ECE reported that she included children’s environmental health content five times. She integrated the topic into sessions such as health promotion, occupational health, nutrition, safety, illness prevention and health management. First she described her integration of the relevant content as an occupational issue for ECE workers:

It’s a required component of our program to have the health and safety course. In class, we do activities and integrate the messages into whatever I do, like nutrition. I keep coming back to environmental health. We basically talk about healthy environments for ourselves and our kids. We talk about the value of it and the impacts of an unhealthy environment from an occupational point of view.

The ECE teacher integrated environmental content into the work setting as well, by relating it to the daycare and asking students “what are some things you need to think about in the
environment that would impact on health in a daycare setting?” The ECE teacher, after establishing the importance of environment to health from the students’ point of view, moved on to show how students could use their knowledge to inform parents to protect the health of their children. As a parent herself, she tried to emphasize the health needs of children to their parents through her students, by

encouraging the students to educate the parents on the kinds of toys parents to buy for children, what to buy, where to buy, being aware of what’s going on out there and what information is out there around specific toys. [Also] how they are made, etc., like the issue of lead, and toys from China a couple of years ago.

This excerpt again demonstrates the unconscious “downloading” of responsibility to parents as did the chair of the Coalition in the childcare sector described in the previous chapter. Although it seems helpful to educate parents to protect their own children’s health from environmental harm, downloading from various sources are impossible or difficult to heed, as my parent informants expressed above. There is no labelling, no information and very little alternatives for safer consumer products. From the perspective of parents, if there happens to be safer alternatives available, the products could be so expensive that they are mostly out of reach for most families. What are parents to do? Obviously both individual and group efforts can be made. But it is interesting that none of my key informants talked about political activism as part of their activities to protect children collectively. I would argue that, similar to Sherwin’s (1994) insight about individualizing social problems as a way to keep resistance at bay, the systematic practice of educating parents to protect their individual child at the point of purchase is also a way to discourage collective action. By promoting the concept that the only way to protect their children is to be extra diligent in making purchases, attention is directed away from seeing the bigger picture and joining activism to influence it, such as lobbying the government for regulating toxic chemical substances or businesses to produce more accessible safer products.

Finally, the ECE teacher indicated that she encouraged students to use the CPCHE website discussed in the last chapter as well as other websites:

We also use Health Canada and Safe Kids Canada. The foci of these are obviously for parents but I really [have] stressed that [students] must know this information so when parents come to them, they can give them information and try to help them.

The ECE teacher is a breath of fresh air in the relative vacuum of children’s environmental health teaching in higher education. Being a parent of a special needs child helped this ECE
teacher to emphasize the importance of supporting parents in her teaching of students. This inclusiveness can be seen as an example of Harding’s strong objectivity. Unfortunately, none of the parents I interviewed were aware of the importance of children’s environmental health and the websites from which they could obtain useful information. For most of the programs training health professionals, the information about children’s environmental health was not considered a priority to educate the parents on – a “frill” or an “add on.” Living with toxicity is considered to be “normal,” as I will explain in the following section.

8.2 The Normalization of Poverty and Living with Toxicity

In Foucauldian theory, normalization is a key tool in the process of objectification of the subject through which individuals are classified either as “normal” or “abnormal.” “Normal” people can legitimately see themselves as members of society while the “abnormal” are excluded and viewed as a threat to the community. This process of categorization is called a “dividing practice” by Foucault (1996). While the excluded needed to be managed and controlled, the “normal” must continue to be perceived as the “normal” subjectivity in order to be allowed to continue owning the status of being considered normal. The constant surveillance and threat of punishment operates as a panopticon (discussed in Chapter 2). Foucault theorized that this is the power relation that locks people in their space with no consciousness of agency or resistance. Here, when an individual’s subjectivity includes living with toxicity and being poor, the chances of resistance is greatly reduced if not completely eliminated. As I have reviewed in Chapter 2, the issues of gender and class are part and parcel of power relations. How are these issues playing out in the knowledge production in children’s environmental health in universities and colleagues?

With the exception of ECE, the academics I interviewed presented the teaching or promoting of children’s environmental health material as a “frill” rather than an urgent matter that needed to be addressed immediately (just as did the public health administrator). It is theoretically important that the theme of children’s environmental health is consistently marginalized throughout all the professional education programs in which I interviewed (a finding consistent with the literature). Could this be related to the fact that government officials even at the municipal level where it is being produced do not integrate this area of knowledge
into their work? The approach at the federal level also takes this slow unhurried approach to management of hazardous substances such as lead, mercury and phthalates. Many products that are linked to chronic health hazards have not been legislated to be labelled, and I detected no urgency except among environmental activists for legislation to cover these non-acute hazards. Is the same scenario playing out in the higher education system? My key informant from the geography department expressed what might be taken for complacency in this way:

In my opinion, Canada is a pretty clean place for the most part. I think any of the environmental risks that we face are fairly limited. If you’ve ever been to Thailand, New Delhi or any major city in South America, there are some major air pollution issues. I don’t think in Canada we see nearly the kind of level as they have it. I keep that perspective. I don’t know if I should [say this] or not. It [suggests] that I don’t take things as seriously as I should. But I think from a global perspective, I think Canada is doing pretty well.

Another academic key informant echoed the same sentiment that, comparatively speaking, Canada is doing much better and therefore she is choosing to focus in other parts of the world. This informant described her experience this way:

I look at the level of exposures here compared to other places. [Elsewhere] I see an adolescent boy becoming sick within a couple of hours in backpack spraying of pesticides with completely inadequate conditions; and watch him get sick, watch him and his sister who accidentally took the stuff who ended up with learning difficulties and coordination difficulties…. When I see that kind of acute exposure situation, I have to turn my attention there. So then I continue on global work in Ecuador and Peru rather than focus here. And then that gets me more involved in global health.

What is worrisome is the assumption, without evidence, that the levels of exposure in Canada are safe. The informant above even cites “evidence” that the Canadian situation is “safer:”

Some of the stuff we did on farms here, showed that absolutely there are residues and there is exposure occurring. But they weren’t as large [as in other countries], so I made a choice in terms of where [I would do research], based on the magnitude of exposure.

The complacency demonstrated in the above excerpts is problematic, as even activists are thinking that “Canada is doing pretty well.” This is remarkable given the results of studies cited in this thesis. And the activists are essentially saying, “it is ok for Canadians to be exposed to that little bit of toxicity, it’s nothing compared to the toxicity people are exposed to overseas.” The self-satisfied constructions of these academics resonate nicely with industry’s position that problems of children’s environmental health occur only in the developing countries, not here in Canada, and therefore, we should not worry about these issues in Canada. Without activists such
as my grassroots NGO informants producing knowledge in this area in Canada, as we’ve seen in Chapter 1, there would be little equity-based research in Canada. I worry that the academic complacency focused on the global and blind to the local will kill our children – slowly and surely.

I also encountered the argument that the burden of illness in children’s environmental health does not warrant urgent implementation of policy. But a key informant from a health discipline critiqued this position, arguing that:

We haven’t done as good a job in the implication of burden of illness in this area. Look at autism. There were some efforts towards it in the 1990s. It’s harder. It’s a projected fraction [of the problem]. It’s not like HIV/AIDS where you see death. It’s not immediate or in epidemiologic terms, not robust.

Here we see the acute/chronic dividing practice again, where an epidemic such as HIV/AIDS gets attention while a creeping epidemic such as children's environmentally-linked illnesses or disorders such as autism does not. Texts that favour labelling for acute hazards but not exposure to chronically hazardous materials are also part of this dividing practice. In essence, while it is illegal to kill someone in the moment, killing someone slowly is quite acceptable. From this view, living with toxicity is effective normalized. The same informant further elaborated this rationalization:

It’s not that the environment is not important when you look at lead. The research showed absolutely there is lead exposure. But if I was to look at a kid who has HIV, it would make some sense [to argue that] the burden on society is higher, the likelihood of death is higher.

Lastly, my academic informant attributed this issue to the complexities of the science of toxicity, embedded as it is in the larger context of diversity and vulnerability. In her words,

it’s also multi-factorial as well – exposure might be one thing, mixed with a lot of other factors, like language, poverty. That’s part of the reason why we did the article on joint risks – multiple vulnerabilities.

These ways of using “evidence” to suggest that molecular toxicity is not the whole story are repeated at several levels but are not attributed to what Harding would call the “weak objectivity” of molecular science evidence. For example, one of my NGO key informants shared with me that he and his organization was accused, by industry, of “chasing after molecules while every minute kids are dying of diarrheal diseases and starvation [in other parts of the world].” A
similar justification was given by the public health department representatives who do not integrate children’s environmental health into their work (Seto, 2007). My health promotion consultant key informant explained it this way:

How do you integrate, and bring the concerns and messages of children’s environmental health into what I would call mainstream programming in public health? It’s not an easy sell…. I think because, especially in public health, the staff, the professionals, are dealing with so many multiple risks with families, that when you are comparing, hunger, or just getting food on the table is a challenge. So eating organic food becomes secondary. So I think there are so many critical issues. When people, when families are in crisis, that takes precedence over the messages we’re trying to deliver.

Part of the rationale for ignoring chronic exposures, then, is that “with children’s environmental health, many of our health concerns are over a long period of time, and not immediate.” The health promotion consultant argued that the immediateness of the acute competing issues in the families' lives would prompt public health professionals to deal with them first as top priority. And he gave some examples of the immediate needs of many families that use public health services. In his words, “feeding your family is more immediate; dealing with chronic health conditions that debilitate you, that’s more immediate.” The administrative key informant from public health also noted that implementing children’s environmental health as a priority for the populations his program serves would also be a “little tricky” to justify economically, illustrating this point with a story:

I accompanied a nurse to a home visit a while back. It was a time when the BPA exploded in the media. She was devastated that she couldn’t afford a glass bottle and it was ten bucks a bottle. I remembered talking to this woman who desperately wanted to save enough money so that she might be able to buy one glass bottle a week and have a couple of bottles to use. In the meantime, she couldn’t afford to do it. She was so upset.

This administrator, caught between his poor clients and the economic discourse of funding priorities, argued that the truth of the situation of poor parents should be hidden from them so that they are not distressed. How to do that? His suggestion was that service providers and policy makers shouldn’t make clients feel guilty for not being able to provide the “best” for their children, as

the communities we serve are high risk and generally, they live in poverty. I think we’ve got to be careful about our messaging to our clients. Parents, fundamentally, no matter what socioeconomic status they are in, want to be the best parents they can be and how do you know that we don’t put layer upon layers of guilt about the risk that they are putting their children in?
While this is a good critique of the impossible-to-deal-with "downloading" to parents that I have noted, on the other hand, not making parents aware of these inconvenient truths would just sweep them under the rug. The administrator then applied the same principle to the middle class population whenever there is an economic choice between protecting the environment and affordability, such as in considering buying a hybrid vehicle. In his words,

So sure, hybrids are much better to drive but the poorest of the poor are probably driving 10-year old cars that barely pass the Drive Clean Emissions test. Most of us can’t afford to buy a hybrid car, [though] we all want to do our part and buy one. But we can’t afford it. Because, unfortunately, a lot of the environmental solutions have a price tag attached to them.

Again, the common theme in these two stories is that children’s environmental health is an area that is a “frill” or at least not the top priority to work on, to promote, to teach or to do research on. And because Canada is “better off” compared to poorer countries, globally our efforts should not be spent “here.” But “here” is a place that excludes Aboriginal communities, new Canadians, the homeless, the mentally ill, the poor and so on. There is no talk of the health of the poor living among us in Canada. In our visions of our prosperity, do we pay attention to the fact that the child poverty rate in Toronto has grown from 24% in 2005 to 32% in 2008, as I have reviewed in Chapter 2? How has this normalization of a large proportion of our children living with toxicity been nurtured? One NGO representative suggested an answer. First she gave a brief background of how many toxic chemicals became everyday household products. They

were developed after the war. We, meaning us, in western society. We have developed all these modern chemicals post-war and started applying them everywhere and to everything and started to create all these products including some that are completely useless but [which] are still posing risks like some of the air fresheners. They are quite harmful for people who are sensitive to them and maybe for other people as well.

In this normalization of everyday toxicity, the responsibility is placed on “we” (not specifically industry or government) who should take responsibility for the situation. Later in the interview, though, this informant switched gears and blamed the economically powerful state that has “opened up Pandora box. So it’s up to the industrialized countries to do it properly – to figure out where the risks are, and to take responsibility and manage it.” In addition to being accountable for what we’ve created, she also rationalized that by redressing the wrong, “we”
could lead the way for the rest of the world and prevent the spread of toxicity as poor countries “develop.” In her words,

because of the things we do, in North America, in Europe, in Japan and everywhere else, those things will be adopted by other countries who are even less well equipped than we are to deal with the impacts. I mean, if you think about countries in Africa that are really struggling with things like AIDS, they don’t have resources to get their kids through schooling and all. So can you imagine how difficult it is to pull the country up out of its situation if its young people are suffering from lead poisoning? And they find it difficult to learn and it becomes a vicious cycle.

Without seeing that Aboriginal communities, the poor and other marginalized communities in Canada face the same situation, she concluded that the global responsibility for prevention rests on “our” society, concluding that “preventing that kind of harm for everybody is incumbent upon those who have some resources or R&D for people who are developing them.” There is a hint here that industry might be accountable, though the idea is not elaborated.

The above informant was the only person I talked to who spoke about disrupting the normalization of living with toxicity and “our” responsibility for addressing this situation. It is a “salvation narrative” (Haraway, 2006) that is reminiscent of the civilizing mission of colonialism. Also it lacks specific strategies. But it was a welcome relief from the “normalization narratives” offered by other participants, in that it troubled or interrupted the normalizing discourse that we should not talk about the topic of children’s environmental health to poor people lest they feel guilty. The same rationale offered by this ENGO activist could be applied globally to disrupt academic discourses locating the problem of toxicity as “outside” western society. And to resist the TINA (there-is-no-alternative) syndrome that suggests the dominant monoculture. In order to redress this problem, Haraway (1997) asserts that we need to develop true situated knowledges and strong objectivity – to take into account all of those involved and the consequences of their actions or inaction.

8.3 Fragmentation of Knowledge Production in Academic and Government Institutions

The normalization of living with toxicity and the marginalization of children’s environmental health in mainstream health curricula are related to the fragmentation of the knowledge within the higher education system as well as across the sectors that were investigated. A silo effect can be seen across all the professional interviews; with employees of
the federal government; at the municipal level; and finally, among faculty in the higher education system including health professionals in teaching hospitals and other health institutions. This academic and governmental siloing is easily related to Foucauldian panopticism, and brings to mind academics and government bureaucrats locked in cells with the knowledge of being watched but no knowledge of others who are located beside themselves.

My federal informant talked eloquently about these silos and levels of bureaucracy and tried to explain how things worked. From his perspective,

it’s confusing even for those who have worked in it for a while. Basically how it goes is that you’ve got your scientists. They conduct all the experiments and all the research on how things are going to affect whatever part of the population. Then you’ve got the individuals who do the regulating. They’re like policy people but their complete focus is on creating and writing up the regulations, and getting them passed through the approval processes and governmental approvals. Connected with that is another group of individuals called policy analysts …. They kind of do research but not research from the standpoint of an academic or research through the standpoint of a scientist.

He went on to describe in detail how federal government work has been broken down into an assembly line-like process that was confusing to listen to and understand. First, he said,

[Policy analysts] take a look at what’s out there. So they read what CPCHE is doing or communicate with Environmental Defence to find out what they’re doing. And when someone from, say, Consumer Product Safety comes to them and says, “we’re doing research on x, have you heard anything about this or can you assist us,” what they do is to pull in as much information as they can that is already available and provide that. [Their responses would be to] analyze [the literature] down, instead of sending them 500 pages of documents. Maybe they’ll send them a 10-page summary. Within that summary, there may be areas where they say, here is what’s being done. Here is what’s not being done. This is where we’re being told research is needed in this area.

Further, they would provide some interesting thoughts for further investigation. As the informant explained:

In some cases, this is what I personally would call science-based research, [policy analysts] would say to the people doing the science research, “have you guys thought of doing this and this?” At the same time, there may be things that are missing from an information policy perspective. So maybe [policy analysts] would contract somebody to write papers on one issue.

Of course, this is a sanitized, evidence-based, non-politicized account of how the “toxicity bureaucracy” works except for the last comment in the storyline, acknowledging that “these carefully-researched suggestions don’t always get implemented because we can’t dictate. It
depends on what their priorities are, where the funding is, the timing and that kind of thing.”

Ironically, Weber’s idea that the scientist needs to be “neutral” here ensures that toxicity policy becomes entirely a political affair.

Although the long list of different government officials being responsible for different tasks was baffling, it was clear that knowledge production was divided into several sites within the federal bureaucratic structure. The informant described three groups of people: the scientists who do the experiments, the regulators who are responsible for writing the laws and getting them passed, and the policy analysts who are responsible for gathering information to inform anyone and everyone in the structure. This specific division of labour is a familiar one to those who know how bureaucrats break down their work within each of their many departments of the federal government. There are also divisions of labour between each ministerial sector. Responsibility for issues of children’s environmental health, as the informant indicated, is fragmented among the many different departments and agencies within the federal government, just as it is in academia.

Curious about which federal departments and agencies have mandates related to any aspects of children’s environmental health, I went on the internet and searched the sites of 215 federal departments and agencies, which produced at least 25 departments and agencies that have direct links to children’s environmental health. I have summarized and delineated their functions on Appendix B. On the list, there are departments and agencies that look after issues of environment, health, trade, industry, research, and enforcement of audits, and they all have something to do with children’s environmental health. It is beyond the scope of this research to sort out what each of them do, and it is likely that even they don’t know about what each other is doing about a specific issue, in spite of the “coordinated” approach to address the issues of children’s environmental health that the informants cited above discussed. Curiously, in my interview data with 15 professional key informants, only two federal departments were mentioned – Health Canada and Statistics Canada – so opaque are the inner workings of the federal government.

The problems of fragmentation and silos in government are also quite apparent at the municipal level, as shared by my administrator key informant there:
Like the lead in drinking water issue, every once in a while something pops up that suddenly becomes, at this moment, an issue and we need to act. And then it disappears again. We are missing a concerted effort to address environmental issues across the board. It has to do with our structure. It’s fairly silo-like. We don’t have environmental issues integrated into Family Health teams from Policy and Planning. We have the Family Health teams here and we have the Policy and Planning teams there, and sometimes they come together on an issue. But there is no overarching environmental plan to carry this forward.

The issue of bureaucratic fragmentation occurs within each level of government, then, as well as in the higher education system where children’s environmental health is divided into several different departments within the university. It was pointed out to me by one of my academic informants that this multidisciplinary fragmentation of the field is part of the reason why environmental health has not been a strong focus for his faculty. In his words:

At my faculty, we are not as strong in environmental health as we should be. Why? The university historically has been training industrial hygienists and not the environmental health officers who went to [university name]. And the other thing is that we are split among many departments in the university, from geography departments to people in toxicology. So we are split across departments -- we are not within [name of faculty].

A second faculty informant also pointed out this silo effect and wondered who else is teaching children’s environmental health in her university. As she put it,

Health geography within the department is pretty unique and I’m the only one who teaches this. Nobody else deals with these things. But I think if you went to health sciences or population health or even human kinetics or other departments you’ll find people there who might focus on these issues a bit more. I’m not aware of any courses specifically addressing child health issues but I think if you took a course in epidemiology in population, I’m sure these issues would be discussed to some extent. But again, I can’t say for sure.

Curious about whether the same silo effect is happening among ENGOs, I collected some evidence that there is a clear division of labour there as well. One NGO key informant, in particular, was very clear that her ENGO is not a political lobbying organization because other ENGOs are doing that. But she described this division of labour in a positive way:

Political lobbying is not a big focus for us. Some of the other NGOs are better or more equipped to do that. Like direct mailing, or sending an email to your MP. Our organization hasn’t gotten into that. It doesn’t mean that we won’t necessarily, [but] quite frankly, we’re not equipped with enough staffing and the finances to do that kind of stuff. But what we’re trying to do is to build awareness and active information and [suggest] policy changes.
This informant saw no problem with this division of labour; she validated everyone’s role by saying that

there is a role for everybody and we happen to occupy a certain niche, and I think it’s a useful and valid niche that we occupy. And others are doing other parts of the spectrum. You need all sorts to do different parts.

Missing the inconvenient truth that perhaps no one has the funding to influence policy, she expressed her contentment in her organization’s role in the promotion of children’s environmental health. As she put it,

I think we’re pretty happy in our role. So I don’t think we’ll be the [ones] knocking on doors to try to rally a groundswell of support. [Our role involves] a process of working through existing channels to get information out to people and the result of that is that knowledge empowerment may well be the basis for policy changes.

The details of this epistemological and structural fragmentation of knowledge production and policy implementation in children’s environmental health could be empirically worked out but this discussion sufficed to make the point that responsibility for children’s environmental health is split among many different departments and agencies both in governmental and higher education structures, as well as, to some extent, the ENGO networks. This observation raises the important question, what are some of the consequences of this chaotic set-up?

8.3.1 Consequences of Divided Jurisdictions in Children’s Environmental Health

Why is the issue of what I will call “epistemological and structural fragmentation” an important concern for the promotion of children’s environmental health? The answer is that the fragmentation, when foregrounded against the clear and simple rationales put forward by industry, inhibits a strong concerted collaboration to make change. Epistemological problems (such as those documented in Chapter 5) are widespread and occurring across not only government but academic settings. For example, my health promotion consultant key informant shared a struggle she saw between public health nurses and physicians:

Higher education for professionals definitely needs to have more [environmental health] content. That is one of our challenges too. When we work with the public health nurses, they were telling us that when they were trying to deliver these messages to the families, they came up against the roadblock of the doctors. There they are discussing the issues with the family – lead in drinking water or mercury in fish. And when the family goes to see their family doctor and the family doctor says “what are you talking about? There is
no problem here.” How does a professional nurse then deal with that? That’s a real source of conflict and tension for her.

As a public health nurse myself, I have experienced the same clash of epistemologies. Because of the valuing of biomedical reductionism and the status of the doctor, in this case, generally the family would believe the doctor over a nurse and possibly not implement the preventive strategy that nurses could provide. When experiences like these happen repeatedly, it is not hard to imagine how nurses get tired and discouraged, start to doubt ourselves – and eventually stop actively promoting children’s environmental health for their clients.

Another consequence of epistemological and functional fragmentation is that government and other sectors of society can avoid discourse of prevention. For example, my NGO informant explained her struggle in the field of learning disability this way:

This whole area of children at risk for learning disability has been thrown into the social educational system and not the health system. And it has never been considered as a health issue with environmental exposures until the lead issue came along.

In the case of chemical toxicity, once a substance has been categorized or fitted into a box (deemed either toxic or non-toxic), there may be no simple moving its location out of the box. Never revising decisions means no flexibility and therefore no possibility of negotiating for prevention for long periods of time, as shared by the same NGO informant. As she put it,

As you know, the federal government has no role in education; it’s strictly a provincial responsibility. Learning disability has been considered primarily an education problem, unfortunately. It should [also] be considered a neurological condition.

She explained why that is a problem. Once a child is diagnosed with having a learning disability, the priority quickly becomes

getting special education services that work, and employment – not what caused it. The teachers and the professionals are interested in new programs that can help kids with learning disabilities – for example, new educational research in our conferences. Environmental health and prevention is just a side issue.

Treating the fragmentation in this area as epistemological issue changes what is possible. A positivistic discourse would say that issues of children’s environmental health are “falling through the cracks” or that there are “gaps” in the system. Putting it that way, we might aim our efforts towards filling the gaps instead of looking at changing the whole system. The “gap” discourse leads people to believe that there is no alternative solution as illustrated by Shiva
(1993) in her description of mono-cultural discourse and the TINA syndrome (reviewed in Chapter 2). Similarly, in the context of children’s environmental health, each individual body (in a Foucauldian sense) is restricted to their own jurisdiction – encouraging the narrow thinking typical of biomedical paradigm. No one is there to look at the whole picture, identifying the root causes and finding sustainable solutions to address the issues. It is no surprise that progress on children’s environmental health inches forward at a snail’s pace. From this perspective, fragmentation of epistemology and knowledge production serves an industry-friendly neo-liberal purpose of hiding the root causes of the problems in children’s environmental health and therefore, the solutions, from view.

8.4 Funding Priorities

My research turned up much evidence to support the assertion that children’s environmental health is indeed not considered top priority, particularly since the last series of global economic crises of capitalism. For example, one higher education informant shared with me that his group received funding in 1996 to start an environmental clinic and do associated research in the subject and that they have not received any more money since then. He stated:

The problem, which is still a problem, is that environmental health is very poorly funded. We managed to get 10 years out of the funding – there was $1.5 million in total to do the research on environmental sensitivities. It was supposed to be only over a 5-year period but we ended up stretching it.

Another of my academic informants also reminisced about the 1990s when funding for this area existed. She shared the details of her research career in children’s environmental health with me:

There were periods in the past where I was more active in children’s environmental health – when I was in [University name] where I was a research fellow. Then, I was clearly looking at the reproductive and early childhood outcomes. I was designing a study to look at intrauterine contaminant levels with my colleague who was a reproductive biologist researcher, looking at the contaminant levels in the intrauterine fluid and subsequent neurodevelopment. We had to do a lot of thinking about neurodevelopment and the contaminants in the Great Lakes. So that was early to mid-1990s when I was most active.

There was a glow in her eyes when she remembered the progress and infrastructure of the field being put in place at that time. As she expressed it,

one of the things that struck me was that we were only really coming to grips with reproductive neurodevelopment. In fact, a lot of the neurodevelopment of kids was laid
down then and it’s not just exposures during childhood…. Teams were forming and I was working with biological people from very much the developmental psychological, mechanistic [approach] like my colleague who knows a lot about the mechanisms and modulation. In fact, the centre for environment both at [university name] and [university name] were quite active and there were a lot of interested students…. [T]here was a massive student interest at that time. We started a diploma in environmental health and we did a lot in continuing education with health ministry and all sorts of things. In particular around children’s health because they are one of the vulnerable populations.

But when Canada entered the era of retrenchment, she said, “[environmental health] hasn’t been strong and there hasn’t been much funding flowing as it was in the 1990s.” Looking at what she is researching and what his colleagues are studying, she complained, "I really haven’t been doing [active research in this area] since the previous decade. In terms of people who are looking at child outcomes, there certainly isn’t as much going on now." She surveyed what is done on the topic of children’s environmental health currently on the national scene, and concluded that "there is patchy work that’s going on across the country as we inventory. But I don’t think there is as much – we’ve never been successful in getting funding for this kind of research again.” Why did some funding exist before 1990s retrenchment, when it is perceived to have ceased now? The section below addresses this question.

In my analysis, I will refer to various rationales for scarce funding in the area of children’s environmental health. These include the change of government, costs of conducting basic research in this area, the dominance of evidence-based inquiry discourses and industrial pressure.

8.4.1 Changes of Government

When I asked informants what happened to the enthusiasm for funding children’s environmental health since the 1990s, one informant gave me a simple answer:

The government changed. That has been a pattern. It always happens like this – you would make some headway and have some momentum and people are in agreement to move ahead. Then the government changes or even [just] the priority changes for that government because of outside factors over which you have no control.

What has happened in federal politics during this period of time? The Canadian government was formed by the Progressive Conservatives under Brian Mulroney until 1993, who was followed briefly by Kim Campbell, followed by the Liberals under Jean Chretien. Jean Chretien, a long
time apologist for industry, led three consecutive majority governments from 1993 until December of 2003 when the leadership went to Paul Martin. During that period, the Liberals were under pressure because they were losing popularity, as the Progressive Conservative Party was gaining momentum. In preparation for the 2004 election, the Canadian Alliance, with their representation declining (formerly the Reform Party under the leadership of Preston Manning which was very popular in Western Canada) merged with the Progressive Conservative Party. In the 2004 election, the Liberals lost seats in parliament (from 172 of 301 parliamentary seats to 135 of 308 and from 40.9% to 36.7% of the popular vote). In the same election, the new combined Alliance-PC party gained seats (from 78 in 2000 to 99 in 2004). As the popularity of the Liberal Party continued to decrease, in 2006, the new Conservatives led by Stephen Harper won a minority government with 124 seats, increasing in the popular vote from 29.6% in 2004 to 36.3% in 2006 (Elections Canada, n.d.). The period of funding declines for environmental health research coincides with the increasing popularity of the Conservatives – Alliance parties federally. It is well documented that the Conservative Party was and is still heavily influenced by the oil industry in Western Canada. Thus environmental health in general and children’s environmental health in particular has not been a high priority for the federal government since the early 2000s. This was theorized by one of my academic key informants. She asserted:

    It’s about economics and politics. You don’t want the government as its core and its constituency all based in the west – Alberta with the tar sands – completely driving the politics in Ottawa. Ottawa doesn’t want to come up with strong anti-climate change or strong climate change policies because it’s going to affect the economy of Alberta, jobs and votes.

    The strong industry hold on federal governance as discussed in Chapter 6, is thus consistent with the current political climate in Ottawa and the funding slowdown for children’s environmental health in the early 2000s. It corresponds to the government’s neo-conservative and industry-friendly agenda at the federal level. Here, plain to see is political entanglement with knowledge production.

8.4.2 The Cost of Knowledge Production

    In an industry-friendly environment that champions reductionist science, it is not surprising to hear references to the apparently “expensive” nature of environmental health
studies. One academic informant shared her experience of costing out such a research study which ended up, in her words, being a “show stopper.” She said:

The cost involved is huge. When we tried to look at, perhaps, have we decreased childhood exposures or women of reproductive years’ exposures in Toronto with the Toronto Pesticide bylaw? We actually tried to cost out what it would cost to document exposures of the vulnerable groups. Just the cost was astronomical. And the amount that we actually can say that we will be able to demonstrate was [difficult to justify] given the variability, the episodic nature of the exposures and that sort of thing. So it’s hard to do the research in this area.

Part of the “cost” referred to by this scientist comes from the long term nature of the studies that environmental health research often requires in order to understand synergistic effects of the mix of chemical (as described in Chapter 1). As one NGO informant explained:

We need better research. So that we can understand not just chemical by chemical but the effects, including subtle effects, on development, endocrine functions, on learning and so forth from the multiple chemicals that we are exposed to at a low level on a daily basis – many of which come from consumer products. So understanding that better and doing that longer term research. So you follow the exposures and health outcomes over time to try to tease out the association.

Problematicizing the idea that such research “costs too much,” she recast the issue as how high children’s environmental health problem falls on the “priority” list. In her assessment, there is an important underinvestment in Canada in that. There is an underinvestment in the number of environmental specialists in this area. It’s difficult for our scientists and researchers in this area to [establish] sustainable funding and career paths. So those are some of the challenges on the research front.

Since vigorous studies could take up 20 years to see results, longitudinal studies of low level multiple exposures are not attractive for governments to fund. One academic key informant concluded from his experience that governments don’t deal with that kind of stuff. When you suggest changes that perhaps are going to require a decade to see any sort of [result or] improvement, they only think in four year terms. They don’t want to get their hands dirty with something that could take 10 years.

Thus the nature and structure of the Canadian state and government departments has been contingent with an industry-friendly environmentally-unfriendly marginalization of research in children’s environmental health. And out of sight in this "cost" rhetoric is Sherwin's assertion that environmental research agenda is not attractive for government to fund because it necessitates the confrontation with industry – demanding them to clean up.


8.4.3 Evidence-Based Inquiry and Industrial Pressures

According to one higher education informant:

this is often what you hear – that there is no evidence to suggest that this product or this compound could lead to that outcome or is leading to that outcome. There is no proof. You can throw your hands up and say that “Oh, there is no clear evidence here. That means we don’t have to do anything!” That fits into what they want. It’s convenient. Like the movie “An Inconvenient Truth.” It’s more convenient if you don’t have to look at it.

A critique of the claim that we do not have enough evidence about harmful exposures to develop policy was a theme echoed by participants in my study again and again. Further, without funding to obtain such unequivocal evidence, where are they going to obtain the evidence? And without evidence, operating as part of a vicious cycle, governments have a ready rationale for not addressing the issues – lack of evidence.

These discourses work together to support an industry-friendly climate. Since the results of any exposure or toxicity studies generally lead people to investigate the polluters, and they are generally big industries, therefore, environmental researchers or environmental activists who do environmental studies have always occupied the opposite end of the environmental health debates from industry and its supporters. Needless to say, industry funding to environmental research is non-existent despite the encouragement of the government to have industries fund as much university-based research as possible. This is a clear illustration of Slaughter and Leslie’s (1997) concept of academic capitalism, where private sector money is actively sought out to fund research as the public money for universities receded as reviewed in Chapter 2. Compared to funds supporting research on pharmaceuticals, engineering and information technology, environmental studies is a poor cousin. There is a positive aspect in this situation, as pointed out by one of informant:

We’re obviously not popular with industries, so that’s not an issue with us. Well, it’s an issue because we haven’t gotten funds. But it hasn’t been an issue for us having to worry about having research findings that are affected by companies.

However, environmental health researchers have endured harassment and personal attacks from industries. My informants gave many examples of such industry pressures. For example, one academic informant spoke in general about the experiences of her colleagues in field:
Is there pressure on people who do environmental health research? Certainly! My family physician colleagues experience that. [There are] lots of questions and harassment about the pure science of pesticides. And they are much more public. My colleagues at [university name] and others. There is certainly some of that pressure. They can certainly be critical of stuff. It’s open and debated.

She went on to describe the situation of a specific colleague who was experiencing pressure because of the nature of his research results and his conviction to stay true to his study results. In her words,

> [another colleague of mine is leading some exposure assessment research. [Will he have] plans that would tie his results to some kind of outcome linkage? Absolutely he would. Does he feel pressure from industry? I’ve been with him in multi-stakeholders [meetings]. Certainly, you have to face some critiques, there were some questions.

Despite the pressure, the researchers insisted in hearing from the industry. After hearing from industry lobbyists, these two researchers appreciated their stories but still were quite clear in their minds who paid their salary. In my informant’s words, “we actually brought a group together from the industry around pesticides and they actually had some good input. Clearly they are paid by who they are paid by.” Here is a good example of the application of Harding’s “strong objectivity” argument to doing science, where standpoint and locationality are vital in gaining situated knowledges and where history, context and situated specificity are all important to take into account.

A second researcher informant described an experience her colleague had to endure because she was the chair of the pesticide committee advocating for the ban on pesticide use. This researcher and her committee first conducted a literature review of the harmfulness of pesticides to human health and then publicized the results of their findings. The informant shared what happened when the committee went public with their research findings:

> The chair of the committee was reported to our regulatory college for speaking out. Fortunately there was enough back up and there was nothing done to her. It was terrible. It was such a time and money waster.

In summary, as both government and higher education institutions try to lure industry to fund university research, the area of children’s environmental health is logically not a popular choice for funding support. In the face of unfavourable evidence, as in the examples above, industry representatives attack the evidence-based nature of the research and occasionally even
the researchers themselves. I turn now briefly to some of the outcomes of not having sufficient funding for children’s environmental health research and education.

8.4.4 The Consequences of Deficient Funding in Children’s Environmental Health Research

Faced with funding shortages, unpopularity with industry funders and the slow uptake of research findings by governments, participants in my study expressed concern that new scientists will not take on this area of research as a career. One academic informant understood that if there is no sustained funding, then you can’t expect young people, even if they are really interested in this field [to enter it]. How can they make a living in doing this work? They have to have some security.

In contrast to the lack of funding in the area of children’s environmental health, young researchers are enticed by the abundance of funds in industry-friendly areas. The result could be the abandonment of environmental research for the industry-friendly research. This happened with one informant and her colleague. As she explained it:

My colleague and I were both involved in environmental health in the 1990s and then he found that there was a lot more funding around bioethics around H1N1 or pandemic influenza – that kind of thing – than around the things he was interested in [such as the] Aral Sea index. At some point you have to go to where the funding is coming through. In my own case, I was asked to be the research director in an institute. It pays more. I can be closer to my family.

An NGO informant summed up the consequences for scientist in children’s environmental health:

It’s slow research. It’s not a sexy field, you don’t get a quick response. That’s what I heard from researchers. We’ve had a whole session on research issues back in 2007 during our national policy consultation. It was really interesting. They said, “it’s extremely hard to get a career path out of this area.” You don’t get a quick hit. You don’t get to be a rising star early in your career. It’s really hard work, it takes a long time and it’s really hard to get money.

Again, the outcome of scarce funding is ultimately a lack of knowledge production from the perspective of the precautionary principle, which means lack of evidence. And lack of evidence then can be used as an excuse for not developing policy to protect human health and particularly children’s health.
8.5 Conclusion

This chapter contrasts with the previous chapter beginning by exploring the ways in which children’s environmental health is marginalized rather than centred in health professional curricula and pedagogy. This is consistent with the literature reviewed in Chapter 2 which shows that children’s environmental health content is not actively integrated into health professional training and education. At the same time, resistance to this subjugation was found in ECE curricula. Using Foucauldian concepts, I analyzed the discourses around this oversight and found three: (1) the normalization of living with toxicity in various discourses such as the unsubstantiated academic assumption that there are more serious problems outside of Canada that must be addressed; (2) the fragmentation of knowledge production and governmental responsibility into silos around children’s environmental health; and (3) the lack of funding in this area of research and its consequences for scientific careers and the collection of evidence on toxicity. This was followed by a contextualization of these discourses and dividing practices within an industry-friendly climate for research in other areas which disadvantages precautionary principle based environmental research. This works together with the slow-moving politics of regulation to benefit industry as described in the previous chapter.
Chapter 9

CONCLUSION

9.0 Introduction

Writing is a continuous journey of discovery. As I write the final chapter of this thesis, I continue to discover new insights about my methodology, my data, my topic of choice, my sense of agency and activism, and ultimately myself. In this chapter, I first reflect back on my research journey and review some of the important turning points within it. Then I identify some of the contributions this thesis has made and their implications for policy and practice. I end on a personal note with a discussion about this journey.

9.1 Turning Points in My Research Journey

My theoretical approach, in contrast to the conventional biomedical paradigm present in so-called objective research, takes into account the vision of the “one who sees” as proposed by Donna Haraway (1991). Unlike the conventional paradigm of research where the path of investigation is mapped out and the conclusion is hypothesized at the proposal stage, feminist methodology emphasizes the unfolding nature of the research. When I first began my interviews, I did not know where all my data would come from or where I would end up epistemologically. I was following the leads of what I had at the moment with each interview, text, and focus group informing my next move. It has been an adventure. In keeping with critical feminist theorizing, my experience and perspective as the researcher have to be accounted for as part of the study. Thus, in this section, I will detail some of the turning points in my research journey. The three turning points highlighted here are the point of what I will call "breaking the code" at the local, understanding "how things work" both at the federal and then the local level. While the presentation and the organization of this thesis are based on logical and epistemological flow, the writing of this section will be based on chronology, highlighting how my experiences throughout the journey have guided the direction of this research and its subsequent findings and revelations.
9.1.1 “Breaking the Code” at the Local Level

My account of knowledge production in children’s environmental health through a critical feminist lens started with a challenge identified by a parent in purchasing children’s toys and products – lack of labelling on these items. As a concerned parent, I have also personally encountered this problem. Without proper labelling of what the products consist, parents like us are finding it difficult to make informed decisions about their purchases. Starting with this particular problematic, I decided to go into my local Walmart to experience this problem again, this time with my lens as a researcher. While examining each toy and children’s product and recording their information, I was also paying attention to the activities of my fellow shoppers. There was a Chinese couple there standing beside me trying to decide which product to buy for their unborn baby. Their final purchasing decision was based on the labelling – the product that was labelled “BPA and Phthalates Free.” This was an important turning point in my thinking as it confirmed my previous suspicion that the majority of parents’ purchasing decisions may largely be contingent on the labelling of the product. Following this initial insight, the research eventually turned to chemical management and regulation at the federal level.

9.1.2 Understanding “How Things Work” at the Federal Level

As I was trying to understand the policy development and regulatory processes involved in chemical management, I knew I had to interview federal bureaucrats and politicians. Through an ENGO activist, also one of my key informants, I contacted several referrals in the federal government. The federal employees who were in management positions almost all declined my request except one, while the federal employees who were in non-management positions granted me interviews. However, interviews with the non-management federal employees were tense, which I attributed to their fear of saying the wrong thing though there were also epistemological overtones to our conversation. This, I sensed, kept them from being candid with me as I described in Chapter 6. The situation of these federal employees seemed so incongruous, with their critique of my methodology, that they terminated my first interview with them abruptly. My interpretation of this was that they became suspicious of my intentions and perhaps even my competence. When they came back to the second rescheduled interview with me, they had only selected a few questions to answer from a list of questions I provided to them and they also had
written out their answers beforehand to ensure that they did not swerve from the answers they had prepared.

These two interviews were extremely difficult for me to conduct. During the interviews, the interviewees’ fear of their employer, I believed, turned into fierce interrogation of my research intent. Their tone of voice was high pitched and indicated irritability, fear and anger, which were transferred to me. I documented in my field notes that I was defensive in response to their interrogation. They made me feel as though I was trying to trick them to tell me something that would get them in trouble. I was very discouraged and felt defeated at the end of the two interviews. I thought I would never find any useful data to determine how things work at the federal level. As I was troubled by these two interviews, I read in the newspaper about the tight control maintained by the current government. I then became intrigued about how this played out in policy and have since reframed my thoughts about these two interviews. I understood, then, that these two federal employees had no choice but to play within the boundaries of reductionist scientific discourse or they might lose their jobs. This important realization helped me eventually construct Chapter 6, State Ruling Relations which in part documents the fate of whistleblowers.

Many theoretical concepts assisted in the contextualization of regulatory matters at the federal level, including feminist critiques of the conventional science, and economic globalization and the emphasis on local as opposed to extralocal knowledge production. Foucauldian concepts that reveal the nature of discipline, dividing practices and normalization also contributed to the analysis of the chaos that characterizes the Canadian chemicals regulatory scene.

9.1.3 Understanding “How Things Work” at the Local Level

As I was interviewing, to my dismay, I realized I was categorizing my key informants into two very distinct groups: environmental activists and non-environmental activists. What a dualistic process! I realized that I was creating a binary system, the very system I had critiqued in Chapter 2. Realizing this problem, I devoted a considerable amount of time exploring the standpoint of each of my key informants based on what they did. This is part of the materialist methodology proposed by Dorothy Smith (1997). After reviewing my interactions with each key
informant and the details of their activities, I realized that all of them were activists, albeit in their own unique ways – for example, the administrator who connected me to the coalition in the child care sector which eventually led to the discovery of other sectoral coalitions. These coalitions became one of the identified sites of local and inclusive knowledge construction in the field which are agenda setting, as described in Chapter 7.

Another example of individual activism came from an academic key informant who indicated to me that he has integrated the children’s environmental health content into his curriculum without formally stating it in his course syllabus. He said, “you need to, on the books, have courses that are sufficiently general. In reality, what actually goes on in the classroom can be much more specific.” On activism, he adopted a laidback approach by declaring: “I wouldn’t say I’m a real activist… but I do think a lot about the kind of work I do and the changes I want to instil.” While he does not think he is an activist for children’s environmental health, his CV shows prolific research and publishing for the promotion of children’s environmental health. However, this informant plays his activism down in his teaching and research career. This is, perhaps, I realized is a way to survive as one – to hide under the radar and be allowed to do the things that promote children’s health without media attention.

My awakening to what I call this “back door” activism was an important turning point for the research. I realized that these individual acts of agency were hidden because of power relations favouring what Foucault would call dominating discourse. I saw the same processes at work in ENGOs taking care to stick to conventional science in their knowledge production. Until the precautionary principle achieves wider legitimacy, concerned individuals working in mainstream organizations such as government agencies and higher education institutions will presumably continue to hide their environmental activism just as many of my key informants working in government and academia did. My first impulse was to critique pursuing such “fragmented” activism, and that a more effective agenda setting strategy would be to work towards societal transformation taking the lead from other progressive governments, ENGOs and non-ENGO coalitions such as I described in chapter 7. However, such movements risk becoming totalizing and not particularly addressing local concerns. Indeed, there are many
examples of outspoken activism in my research, and activism both inside and outside mainstream organizations is consistent with feminist, anti-racist and anti-colonial theorizing and praxis.

9.2 Contributions of the Thesis

This thesis contributes to the small research literature on knowledge production in children’s environmental health in the Canadian context through applying a critical feminist lens. This involves redefining knowledge production to include local knowledges such as those constructs by NGOs and ENGOs. In this study, I provide evidence of the influence of neo-liberalism, corporate power, and the Eurocentric logic of domination and reductionism prevailing in institutional knowledge production in the field of children’s environmental health. Key to understanding dominant public discourses about children’s environmental health is recognizing that assumptions about what is considered legitimate knowledge and who or what institution can produce it, is part and parcel of dominant knowledge production. Over the past two decades in Canada, globalizing political and socio-economic discourses have been activated together with reductionist biomedical knowledge on toxicity in the field of children’s environmental health while subjugating alternative knowledges such as ones produced by ENGOs and non-ENGO coalitions. These political and bureaucratic systems, working together with the chemical industry, have used reductionist science to create legitimacy. They have also used their status and the resources of capitalism to create prestige and advancement of biomedical knowledge as the only paradigm for understanding toxicity, hence contributing to various problems in the development of chemical regulatory policies. The historical, epistemological and political power relations mapped here work together to legitimize the biomedical paradigm and its pursuit of scientific certainty rather than the precautionary principle. My research brings everyday experiences of a variety of parents into the analysis, exposing power relations, and documenting effective activism in knowledge production of children’s environmental health. Although I did not investigate the involvement of oil, nuclear and other industries from the standpoint of the local, a full map of how conventional science discourses is used by these corporations would reveal the details of this centralizing knowledge construction.
9.2.1 Bringing People's Everyday Experiences to the Analysis

Feminist scholars have spoken about the need for research that contextualizes and accounts for how marginalized individual and group experiences come about and my research offered that perspective. My theoretical approach, in contrast to the “objective” paradigm that I critique, takes parent's accounts of their experiences as the starting point for analysis and connects them to extralocal texts in the social, economic and political world. Using parents’ experiences as a starting point rather than the academy is in line with feminist and eco-feminist thoughts that value multiple perspectives, contrary to the traditional scientific paradigm. Dorothy Smith (1987) directs us to research how the local is always hooked to the translocal, and this study demonstrated how a parent’s everyday difficulty in purchasing a children's toy or product is produced by a set of “boss” texts and ruling relations that make it difficult for them to protect their children from environmental harm. This difficulty is revealed in the snail’s pace in enacting legislation controlling and regulating chemicals in children's products and the pervasiveness of the neo-liberal discourses and capitalist industrial ideologies activated during this process.

9.2.2 Exposing Power Relations in Knowledge Production in Children’s Environmental Health

Dorothy Smith’s methodology for exposing extralocal power relations through analyzing the activation of texts was central to my analysis. Examining government texts and local texts activated by participants led to the discovery that knowledge production processes are organized into three major categories of activities: rule setting, monitoring, and agenda setting. Mapping their inter-relationships revealed how these three modes of activities discipline each other and, at the same time, complement each other. For example, the monitoring activities led by the Auditor General were identified as shaping the rule setting activities spearheaded by various federal governmental departments. This point was demonstrated in Chapter 5 through an analysis of four Commissioner of the Environment and Sustainable Development (CESD) reports. As part of a backlash, however, in Chapter 6, I suggested how ruling procedures have a hand in muting and otherwise controlling monitoring activities. This was demonstrated by the dismissal of the former Commissioner of Environment because of what was interpreted as “advocacy” for health
and environment. A good illustration of how a ruling international text, NAFTA, coordinates the government’s attempts to regulate toxic chemicals was found in the legal battle of Ethyl Corporation vs. the Canadian government. In Chapters 7 and 8, I examined the world of agenda setting activities where local knowledges are being produced and are intended to be used as evidence for policy development and practices and showed how precautionary policies and practices developed and implemented by other governments could influence rule setting, along with the knowledges produced by ENGOs and non-ENGO coalitions. Although they are not visible at the state level, ENGOs and non-ENGO coalitions can be effective and powerful sites of knowledge production at the local level as well as sites of optimism and activism. However, it was clear in the details of events described by my participants that these knowledges are generally being subjugated and ignored in rule setting and even in monitoring activities. In contrast to the productivity of ENGOs in children’s environmental health, in higher education institutions, I found that agenda setting activities in the field of children’s environmental health in both education and research are almost non-existent. Neo-liberal cutbacks in funding and industry influence on what counts as knowledge could be traced within individual academic careers. There were some examples of “backdoor activism” in academia, but like the federal governmental level, knowledge production was negatively affected by dividing practices and a tendency to normalize living with toxicity in Canada and when living with toxicity is normalized, I have argued, poor women and children are victimized. These normalizing power relations are not well recognized because they are obfuscated by reliance on only evidence based research.

9.2.3 Documenting Effective Activism

Documenting how different sites of activism have affected change in the field of children’s environmental health has been inspirational. My findings resonate with Haraway’s (1991) concept of agential realism, according to which she describes webs of connections forming in solidarity in politics and epistemology. In Chapter 7, I described what I called agenda setting knowledge generated from other governments, namely European Union (EU) and United States (US), ENGOs and non-ENGO coalitions. From the EU, the application of the precautionary principle stands as a model, as they have implemented many progressive policies to control and regulate chemicals such as phthalates. From the US, the importance of research
was underlined, especially the infrastructure that must be in place to support research in children’s environmental health. I argued that the role of ENGOs is central in the production of knowledge about environmental toxicity, and that we are utilizing this knowledge to engage politicians and the public, in Canada. Although, in rule setting, the knowledge produced by the ENGOs is unfortunately subjugated to the influences of powerful chemical industry, it does reach sections of the public through various routes (e.g. CESD reports and websites). There is also evidence of resistance to industrial influence from front line service providers such as non-ENGO coalitions from the child care and health care sectors. These collaborative organizational collectives are forming powerful global networks, aiming to protect human health and the environment, and counteract neo-liberal discourses and harmful business-friendly activities.

Making the conscious effort to look for, collect and document praxis is important in feminist and eco-feminist writing. Collaboration and community building are also important features in feminist resistance against domination, as illustrated, for example, in the work of Shiva (1993). One measure of the effectiveness of this combined activism is the recent success in the implementation of the first ban on phthalates in Canada. As of Jan. 18, 2011, during the writing of this chapter, Canada finally passed a law to restrict the levels of six commonly used phthalates in toys and child-care products to less than 0.1%. This decision by the Canadian government was made more than a decade after these chemicals were banned in the EU and two years later than the US (Weeks, Jan. 18, 2011). It was interesting to note that Mark Badger, president and CEO of the Canadian Plastics Industry Association, was quoted in the news article to say that

while the group doesn't believe there is credible evidence the chemicals cause harm, the changes [of the law] will ensure Canada doesn't become a dumping ground for imports of toys containing phthalates.

Mr. Badger's "blessing" on this new law is based on economic interests rather than evidence of toxicity to human health. His idea of "credible evidence" is consistent with my arguments from Chapter 6 that analyzed state and industry ideologies. There I argued that the scales of credibility on chemical toxicity tips unevenly towards industry's position as industry argues for absolute certainty of evidence while ENGOs argue for using the precautionary principle. In the enactment of the 2011 phthalate ban, the latter made some headway, though industry still shows a disregard for the accumulating evidence on the toxicity of phthalates. What was the crucial
“evidence” or “rationale” cited for the change? Recognizing this and many other articles on this news, I would theorize that the consideration that finally pushed Canada to ban phthalates was not the overwhelming evidence from research regarding toxicity but the pressure of other governments (trading partners) which have long implemented a similar policy. This is “globalization for good,” even if the rationale remains reductionist.

9.3 Implications for Policy and Practice

As the philosophies of feminists in general and eco-feminists in particular are action-oriented, it is important to delineate in this concluding chapter some implications of my findings for policy and practice. I will discuss the power of collectives, upstream public health strategies and science as if the world mattered. These policies and practices are implicitly linked and contingent upon each other.

9.3.1 Recognizing the Power of Collectives

As I was writing this chapter, a news piece caught my attention which demonstrates the power of collectives in promoting health. On Jan. 20, 2011. The US first lady Michelle Obama teamed up with a big corporation, Walmart, to “fight childhood obesity” (Bradley, 2011, Jan. 20). A year ago, Michelle Obama launched the “Let’s Move” initiative aiming to end childhood obesity in one generation (Ferran, 2010, Feb. 9). Today, Walmart said they would join her, and pledged a five-year plan to lower salts, fats and sugars in thousands of its products, dropping prices for healthy items such as fresh produce. This announcement has surprised many people, as the Obamas and big American corporations such as Walmart historically have occupied different political positions. President Obama, in his 2008 presidential campaign, openly criticized Walmart for not paying its employees “living wages.” During his two years in office, President Obama has called the many business practices of big corporations such as Walmart “obscene,” “shameful,” “the height of irresponsibility” and a “violation to our fundamental values.” In the past few years, Walmart has been struggling to open more stores nationwide in the US and Canada. Could this joint venture with the first lady be a marketing ploy for Walmart? The rationale for this unlikely union is that Walmart sells more groceries than any other company in the US and that changes made by its suppliers could have a big impact on America's access to healthy food. There is some cause for hope in that in the past, Walmart has successfully used its
massive buying power to force its suppliers to go “green” in their packaging (Kianpour & Montanaro, 2011, Jan. 21). Will this unlikely union bear any fruit in the long run for children’s health? Only time will tell. However, the point I want to make here is that Michelle Obama, in her push to end childhood obesity, seems to understand the power of collectives. Even with very different politics, Michelle Obama took on Walmart, aiming to influence the marketplace for the good of our children.

Local collectives to promote children’s environmental health can be formed with the most unlikely partners, such as corporations, consumers’ rights groups and even financial institutions. For example, financial institutions could promote and sell stocks *not* based on companies that make the most money but ones that are most environmentally responsible. From talking with my financial advisor, I know that there is a group of mutual funds that are categorized as ethically responsible companies. They are not well known because financial advisors typically do not promote them unless a client asks for them. They are normally not the ones which pay out the biggest dividends. Individuals supporting the companies which are ethically sound arguably would strengthen the current efforts exerted by ENGOs to lobby the government to fight companies who pollute. Partnering with consumer rights groups would also be logical as they are concerned about consumers’ rights to healthy products as well as the right to obtain the most value for their money. As Foucault (1982) pointed out, power is productive, and influence on corporate thinking could come from coalitions already involved in activism for children’s environmental health. Could a political campaign call “respecting children’s health” partnering with famous celebrities, businesses and ENGOs for example be as effective?

9.3.2 Establishing Upstream Public Health Strategies

For practicing public health workers like myself, specifically in the areas of health protection and promotion in the field of children's environmental health, my study pointed to the importance of upstream strategies such as policy advocacy, political activism, community development and capacity building. The importance of the concept of “upstream” policymaking cannot be overstated. While it is good to teach parents about how to purchase a safer product for their children (downstream from the production of toxic toys), the upstream approach would also be to mobilize communities such as sectoral coalitions to advocate for more health and
precautionary-based regulatory policies. While it is good to ban phthalates in children's products, the upstream method would be to ban it from all products, and if toxic chemicals are banned from ever being manufactured, they, then, would not be used in consumer products and become a threat to children's or adults’ health. While it is good to develop and implement policies in Canada to regulate and eliminate harmful environmental chemical exposures, the upstream strategy would also be to do the same globally as part of a “globalization for good” movement. It is perhaps inappropriate at this moment to speculate about a unified global strategy to protect children’s health when more local initiatives are needed to address current health inequity and disparity all over the world. However, it would be reasonable to insist on an integrated, supportive, comprehensive national, provincial and municipal strategy on children’s environmental health that is based on precautionary principle in Canada to go along with local initiatives addressing inequities within our borders.

Historically, many public health strategies such as ones used in smoking cessation and pesticide use control have begun with public awareness as their first order of business, progressing eventually to regulatory control measures. Could chemical regulation and elimination follow a similar path? Public awareness could lead to demand for change and reform. When public demand is strong and fierce enough, change follows very quickly. Two cases in point are the 1991 rapid disintegration of the USSR, with people protesting in the street. And as I am writing, the world is watching the public demand to overthrow President Hosni Mubarak, who has been in power in Egypt for 30 years (The Associated Press, 2011, Jan. 30). The point I want to draw from this important event, as it unfolds, is that public demand is powerful and unstoppable once it is started.

In order to protect children’s health from environmental harm, as health professionals, we must continue to press to increase public awareness and work with the public to demand changes and reform. However, as I have repeatedly pointed out, there is a danger of downloading responsibilities in children's environmental health onto parents (including poor parents) when they do not have the resources to carry out these responsibilities. Even if they had the resources, it is unrealistic to expect these parents to influence these largely hidden government and academic processes. Rather, I would propose activism that is more localized and community based such as partnering with existing initiatives or programs that would promote both their
agenda as well as the messages of children’s environmental health. Logical programs to partner with are public toy exchange programs such as ones that are run by local libraries and/or community centres. Working with service providers in these types of programs, health professionals can explore ways to reduce harmful chemical exposures to children through the toys they purchase or encourage home-made toys that are simple and healthy for children to use. If there is no existing toy exchange program in the area, organizers of different parent groups may be encouraged to start one. Existing groups such as parent support groups that are run by public health, community centres and/or faith groups are good starting points.

9.3.3 Practicing Science As If the World Mattered

Donna Haraway uses the metaphor of visioning to describe the concept of partiality in knowledge production, described in Chapter 2. This would translate into inclusiveness when knowledges are produced and evaluated for the purposes of policy development and practices. This thesis has made visible the numerous flaws in what we currently called an evidence-based approach, produced within the scientific paradigm. Inclusion of alternate knowledges (or what Sandra Harding calls “strong objectivity” (1997) is clearly necessary in policy development and practice to centre children’s environmental health. But how to lure researchers toward this new paradigm of research? It is worth reiterating the recommendation of Masuda et al. (2008) in Chapter 1, that researchers should conduct more equity-based and policy-relevant research with implications in national and global politics. But how to make this happen? As children’s environmental health begins to catch the attention of the public and ENGOs and NGOs continue to work on the issues, perhaps the social and political conditions for conducting this type of research may strengthen the hand of academic activists in higher education. Perhaps the NGOs should approach academics themselves, recruiting them as participants in their knowledge production.

How to address the pervasive normalizing of living with toxicity? What would draw the attention of scientists, policy makers and academics to focus on environmental health issues in general and children’s environmental health issues at the local level in particular? For example, at my own university, University of Toronto, perhaps answers to these questions could be found in programs such as professional development activities offer by the Centre for Environment.
The Centre for Environment at the University of Toronto offers both traditional degree programs as well as series of professional development programs which provide opportunity for networking. These professional development programs gear their time and locations to working professionals who might not be able to attend during working hours. Their speaking series takes place at 4:15pm during weekdays, and their summer institute is offered Monday to Friday for two weeks. They feature ongoing cutting edge research studies that include children’s health and the environment. They offer presentations that are relevant to children's environmental health such as “Risk Management,” and “Pollution and Poverty” (Centre for Environment, University of Toronto, 2009/2010). These oral presentations are free of charge and I have attended a few myself. There were many people in attendance and they were clearly engaged judging by the questions they posed to the speaker. When the audience introduced themselves, I was impressed with the wide range of backgrounds they represented. There were government officials, NGO representatives, university students, academics and members of the public. These speaking series are clearly successful as the Centre continues to offer them. Presumably, the Centre is raising consciousness about children's environmental health, and can serve as a model for other post-secondary institutions to follow. The ECE program described in my research could also serve as a model for other professional program.

As a practitioner, I use research as evidence to inform my practice and to help develop policy in a public health organization. Research studies used in my work setting are often selected based on the proverbial gold standard of evidence. For example, peer reviewed journals published in English are most valued. Research such as that conducted by Environmental Defence or the Environmental Working Group, described in Chapter 7, have never yet made it into my organization as valid or relevant pieces of evidence for policy development or practice. I remember showing Drew, one of my key informants, a study by Environmental Defence that showed the extent of pollution in people’s bodies. He dismissed these studies and cautioned me not to use them as they are considered to be “too radical,” “biased,” and “politically motivated.” I am not sure what his reaction will be when I show him my findings which clearly indicate political and economic motivations in the “legitimate” mainstream scientific studies that we use (such as the ones presented in Chapter 1 about BPA and phthalates).
I wonder if Drew, as a public health worker will eventually be influenced by feminist research such as that of nursing professors Marie Campbell (now retired) and Janet Rankin. Following the leads of Campbell and Rankin in using institutional ethnography in nursing, there has been numerous scholars in nursing and other health disciplines who have published using this critical approach in research and education and they have been widely accepted into mainstream scholarship. For example, Malinsky, DuBois and Jacquest (2010) of the University of British Columbia published an article entitled "Building scholarship capacity and transforming nurse educators' practice through institutional ethnography" in the International Journal of Nursing Education Scholarship; Winkelman and Halifax (2007) of the University of Toronto published their research paper on the Journal of Medical Systems entitled, "Power is only skin deep: An institutional ethnography of nurse-driven outpatient psoriasis treatment in the era of clinic web sites." The list goes on with accomplished scholars using IE. Perhaps this is a beginning of an epistemological shift towards critical thinking in health professional training and education.

9.4 Conclusion

In this concluding chapter, I have reflected back on the critical turning points in my thinking as I conducted this research. I have also identified some of the contributions of this thesis and implications for policy and practice with examples of current practices that may have further developmental potential in the field of children's environmental health.
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Appendix A: Canadian Partnership for Children’s Health and the Environment

Vision and Strategies

Call for the federal government to:

- Pursue a **precautionary approach** to chemicals management and consumer product safety.
- **Reverse the “burden of proof”** so that the producer or importer of a chemical has to provide governmental evaluators with sufficient data to support a claim of acceptable risk before gaining or retaining access to the marketplace.
- Require that **chemicals be tested for potential effects on fetal/child development**, including neurodevelopment.
- Adopt the **substitution principle**, to ensure that hazardous chemicals are replaced with safer alternatives whenever possible.
- Ensure **transparency** in regulatory decision making including public access to the information used to inform governmental priority setting and decision making.
- Ensure comprehensive, coordinated and **timely implementation and enforcement of all federal laws** that are of relevance to children’s environmental health.
- Position Canada as a **global leader** and collaborator on children’s environmental health protection, including toxics use/release reduction and action on climate change (Canadian Partnership for Children’s Health and the Environment, originals bolded, 2008, p4).
**Appendix B: Summary of Federal Departments and Agencies related to Children’s Environmental Health**

<table>
<thead>
<tr>
<th>Name</th>
<th>Mandate and Services that are Related to Children’s Environmental Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture and Agri-Food Canada</td>
<td>It provides information, research and technology, and policies and programs to achieve security of the food system, health of the environment and innovation for growth.</td>
</tr>
<tr>
<td>The Canadian Centre for Occupational Health and Safety</td>
<td>It provides tools and resources to improve workplace health and safety.</td>
</tr>
<tr>
<td>Canadian Environmental Assessment Agency</td>
<td>It provides environmental assessments that contribute to informed decision making, in support of sustainable development.</td>
</tr>
<tr>
<td>Canadian Food Inspection Agency</td>
<td>It provides services to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.</td>
</tr>
<tr>
<td>Canadian Institutes of Health Research</td>
<td>It is responsible for funding health research in Canada.</td>
</tr>
<tr>
<td>Canada Industrial Relations Board</td>
<td>It promotes effective industrial relations in any work, undertaking or business that falls within the authority of the Parliament of Canada.</td>
</tr>
<tr>
<td>Canadian International Trade Tribunal</td>
<td>The Tribunal's mission is to render sound, transparent and timely decisions in trade, customs and procurement cases for Canadian and international businesses and to provide the Government with sound, transparent and timely advice in tariff, trade, commercial and economic matters.</td>
</tr>
<tr>
<td>Canadian Northern Economic Development Agency</td>
<td>It focuses on northern economic development, integrating the Northern Strategies which include sovereignty, environment, development, and governance.</td>
</tr>
<tr>
<td>Commissioner of the Environment and Sustainable Development</td>
<td>The Commissioner, on behalf of the Auditor General of Canada conducts performance audits, and is responsible for assessing whether federal government departments are meeting their sustainable development objectives, and overseeing the environmental petitions process.</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>Its programs, services, and people lead the way in implementing the federal government's environmental agenda.</td>
</tr>
<tr>
<td>Environmental Protection Review Canada</td>
<td>It consists of a group of expert adjudicators that conducts reviews of Environmental Protection Compliance Orders (&quot;EPCOs&quot;).</td>
</tr>
<tr>
<td>Organization</td>
<td>Description</td>
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<td>---------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Fisheries and Oceans Canada</td>
<td>It delivers programs and services that support sustainable use and development of Canada’s waterways and aquatic resources.</td>
</tr>
<tr>
<td>Foreign Affairs and International Trade Canada</td>
<td>It advances trade and investment liberalization and market access interests, bilaterally and in the Doha Round; develops Canada-EU economic partnership; concludes and implements free trade agreements with new strategic partners; focuses on air service arrangements, foreign investment promotion and protection negotiations.</td>
</tr>
<tr>
<td>Hazardous Materials Information Review Commission (HMIRC)</td>
<td>HMIRC works with industry, labour and governments to help safeguard both workers and trade secrets in Canada's chemical industry.</td>
</tr>
<tr>
<td>Health Canada</td>
<td>It communicates information about disease prevention from avoidable risks.</td>
</tr>
<tr>
<td>Industry Canada</td>
<td>It works to improve conditions for investment, improve Canada's innovation performance, increase Canada's share of global trade and build a fair, efficient and competitive marketplace.</td>
</tr>
<tr>
<td>NAFTA Secretariat, Canadian Section</td>
<td>It is responsible for the administration of the dispute settlement provisions of the North American Free Trade Agreement. The Canadian Section also carries responsibility for similar provisions under the Canada-Chile, Canada-Israel and Canada-Costa Rica free trade agreements.</td>
</tr>
<tr>
<td>National Research Council (NRC)</td>
<td>NRC is the Government of Canada's premier organization for research and development.</td>
</tr>
<tr>
<td>National Round Table on the Environment and the Economy</td>
<td>Its mission is to generate and promote sustainable development solutions; to advance Canada’s national environmental and economic interests simultaneously through the development of innovative policy research and advice.</td>
</tr>
<tr>
<td>Natural Sciences and Engineering Research Council of Canada (NSERC)</td>
<td>NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector. It encouraged about 1,500 Canadian companies to invest in university research and training.</td>
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<tr>
<td>Networks of Centres of Excellence of Canada (NCE)</td>
<td>NCE Secretariat funds partnership research between universities, industry, government and not-for-profit organizations.</td>
</tr>
<tr>
<td>Office of the Commissioner of Lobbying of Canada</td>
<td>It enables lobbyists to register as required under the federal <em>Lobbying Act</em> and the related regulations, to allow members of the public to carry out searches of the Registry of Lobbyists and to provide information about the system for registration of individuals who are paid to carry out lobbying activities involving the Government of Canada.</td>
</tr>
<tr>
<td><strong>Policy Research Initiative (PRI)</strong></td>
<td>PRI is a policy research organization for the whole of the federal government specialized in early stage work on issues involving several federal departments.</td>
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<tr>
<td><strong>Public Health Agency of Canada (PHAC)</strong></td>
<td>It promotes health for different populations including children. It has specific divisions such as Division of Childhood and Adolescence, Health Surveillance and Epidemiology and Healthy Communities.</td>
</tr>
<tr>
<td><strong>Statistics Canada</strong></td>
<td>It conducts a Census every five years and about 350 active surveys on virtually all aspects of Canadian life. It conducts studies like Human Activities and the Environment.</td>
</tr>
</tbody>
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