FRAMING AND POLICY DEVELOPMENT FOR CHILDREN'S ENVIRONMENTAL HEALTH IN THE UNITED STATES AND CANADA: THE INFLUENCE OF INSTITUTIONS

by

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ABSRACT

The influence of American environmental policy on Canada has long been a topic of interest to scholars concerned with the diffusion of knowledge and policy across national borders. This research seeks to contribute to this work by examining a relatively new direction in environmental policy, children's environmental health, and asking why a movement to frame and develop policies to address children's unique vulnerabilities to environmental risks has been an important component of US environmental policy for more than a decade, but until recently, has been almost entirely absent in Canada. I choose to focus on changes to pesticide policy that take children's health into account, and I find that Canada's slow adoption of children's environmental health frames and policy is not merely a matter of lagging behind the United States, but may be attributed to significant institutional barriers to the development of parallel policies.

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LIST OF ABBREVIATIONS

CAPE	Canadian Association of Physicians for the Environment
CCHE	Center for Children's Health and the Environment (Mount Sinai)
CEHN	Children's Environmental Health Network
CELA	Canadian Environmental Law Association
CPCHE	Canadian Partnership for Children's Health and the Environment
ENGO	Environmental Non-Governmental Organization
EPA	Environmental Protection Agency
EWG	Environmental Working Group
FDA	Food and Drug Administration
FFDCA	Federal Food, Drug and Cosmetics Act
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FQPA	Food Quality Protection Act
IPM	Integrated Pest Management
NAS	National Academies of Sciences
NIEHS	National Institute of Environmental Health Sciences
NICHD	National Institute of Child Health and Human Development
NRDC	Natural Resources Defence Council
OCHP	Office of Children's Health Protection
PCPA	Pest Control Products Act
PMRA	Pest Management Regulatory Agency
TSCA	Toxic Substances Control Act
USDA	United States Department of Agriculture
WHO	World Health Organization
WHO	World Wildlife Fund

CHAPTER I

Introduction: What is children's environmental health?

A new area of environmental and public health policy has been gradually gaining prominence in the last decade and a half. It is evident in the concerns of international organizations, national and subnational governments, and professional and community groups. It deals with the world's most precious resource and perennially attractive target population, children, and it focuses on a previously neglected threat to their health and well-being: exposure to contaminants and other risks in their environments.

Children's environmental health combines traditional environmental policy approaches (particularly regulation of specific risks) with approaches often more characteristic of population health policies (particularly community-based programs and education). The policy area focuses on children's unique vulnerability to environmental risks, including a broad range of contaminants, safety hazards, and environmental conditions. A variety of definitions of the issue exist; for example, the World Health Organization defines environmental health as

> those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations.[1]

The WHO notes that "children are exposed to serious health risks from environmental hazards," and supports a number of programs aimed at defining indicators, building policy capacity in terms of prevention, diagnosis and management of children's environmental illness, and furthering research.[2] Other organizations define the issue more narrowly; the Minnesota Department of Health includes a children's environmental health program that notes, "in contrast to the broad use of 'environmental health,' 'children's environmental health' (as commonly used)

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[1] World Health Organization, *Protection of the Human Environment* [webpage] (2005 [cited June 10 2005]); available from <http://www.who.int/phe/en/>.

[2] World Health Organization, *Children's Environmental Health* [webpage] (2005 [cited June 10 2005]); available from <http://www.who.int/ceh/en/>.

focuses on chemical contaminants and the health effects resulting from exposure during childhood",[3] and it is this usage that generally prevails in the United States. Practically all definitions note children's unique vulnerability to environmental hazards based on three main groups of factors: the sensitivity of children's developing systems; their smaller body mass, which means they ingest proportionally more contaminants than adults; and their behaviors, such as "playing close to the ground and engaging in hand-to-mouth activities" that may increase their exposure to contaminants.[4]

The fact that the environment impacts people's health is not new, but the insight regarding children's special vulnerability to environmental risks has had significant implications for the policy area. Indeed, Dr. Philip Landrigan, director of the Mount Sinai Center for Children's Health and the Environment and a leading children's environmental health expert and advocate, argues that the "most important new insight in children's environmental health is the formal recognition in national and international policy circles of the vulnerability of children",[5] and it may be argued that this recognition was the first step the creation of children's environmental health as a policy field.

Although other jurisdictions, particularly the European Union, have shown an interest in children's environmental health policy in recent years, through policies such as the Children's Environment and Health Action Plan for Europe and the European Ministerial Conferences on Environment and Health,[6] the United States is currently unique in its reasonably comprehensive children's environmental health policy regime. The US has made the most progress in its move

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[3] Minnesota Department of Health, *Children's Environmental Health: Background* [webpage] (2005 [cited June 10 2005]); available from <http://www.health.state.mn.us/divs/eh/children/background.html>.
[4] U.S. Environmental Protection Agency, *Children's Environmental Health Yearbook Supplement* (Washington: EPA - OCHP, 2000).
[5] Philip J. Landrigan, "Children's Environmental Health," *PRB On-Line* July-September (2001).
[6] European Health and Environment Ministers, "Children's Environment and Health Action Plan for Europe," in *Fourth Ministerial Conference on Environment and Health* (Budapest: World Health Organization Europe, 2004).

to institutionalize protection of children's environmental health, and Dr. Landrigan has noted that "in a lot of ways, the notion of children's environmental health was an American invention".[7]

Children's environmental health in the United States

In the 1990's, the United States began to build a comprehensive policy regime to address children's environmental health. Various departments and agencies of the federal government have developed separate branches to deal with environmental health, children's environmental health, or particular children's environmental health issues. The Environmental Protection Agency (EPA) has a major role, with children's environmental health programs in a number of its branches and offices, and an Office of Children's Health Protection (OCHP) to provide coordination and leadership. A wide variety of other departments and agencies have jurisdiction for various other policies and programs.[8] The Department of Health and Human Services is one of the more significant bodies, and houses a number of important bodies, including the Centers for Disease Prevention and Control, Food and Drug Administration, Agency for Toxic Substances and Disease Registry, and the National Institutes of Health, including the National Institute of Environmental Health Sciences. There is also a significant children's environmental health presence in state governments, as many have children's environmental health branches or programs.

The protection of children from environmental risks is mentioned in a variety of federal statues, regulations and policy directives. The earliest and most significant of these are the Food Quality Protection Act of 1996, which was the first U.S environmental statue to include explicit provisions for the protection of children,[9] and an overarching directive, Executive Order 13045,

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[7] Philip J. Landrigan, "Interview with Author," (June 9, 2005).

[8] Bernard J. Turnock, *Public Health: What It Is and How It Works*, 3rd ed. (Sudbury, Mass.: Jones and Bartlett, 2004). lists Transportation, Labor, Health and Human Services, Commerce, Energy, Defense, EPA, Homeland Security, Interior, Consumer Product Safety Commission, Agriculture, Nuclear Regulatory Commission, and Housing and Urban Development as having environmental health roles, though not all are of interest in this thesis as not all will have programs specifically relevant to children.

[9] Landrigan, "Interview with Author."

signed by President Clinton in 1997. Among other things, the Executive Order, "Protection of Children from Environmental Health Risks and Safety Risks", directs all federal agencies to take children's unique vulnerabilities to environmental risks into account in their standard-setting and policy making.[10] A number of initiatives flowed from these two starting points: a national network of Centers of Excellence in Children's Environmental Health Research (at eight universities' schools of medicine or public health) and a network of clinical Pediatric Environmental Health Specialty Units, which also includes clinics in Canada, Mexico, and Spain.[11] Also created under the terms of the Executive Order were the President's Task Force on Environmental Health Risks and Safety Risks to Children, co-chaired by the Secretary of the Department of Health and Human Services and the Administrator of the EPA, the new Office of Children's Health Protection within the EPA, and the National Children's Study, which, if it receives sufficient funding, will "examine the effects of environmental influences on the health and development of more than 100,000 children across the United States, following them from before birth until age 21".[12]

The institutionalization of children's environmental health in government policy in the US has both prompted and been prompted by significant growth in children's environmental health as a field of health sciences. Major professional groups such as the American Academy of Pediatrics and the Ambulatory Pediatric Association provide training programs and sponsor research on children's environmental health. The National Institute of Environmental Health Sciences' *Environmental Health Perspectives*, the leading journal in the field, regularly publishes articles on children's environmental health, and provides an important forum for academics and experts. Children's environmental health is also a policy area that has produced a

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[10] Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," (Federal Register, 1997).
[11] Landrigan, "Interview with Author."
[12] National Children's Study, [Webpage] (Undated [cited June 11 2005]); available from <http://nationalchildrensstudy.gov/>.

range of interest group activities, with inputs from both major US environmental non-governmental organizations (ENGOs), such as the National Resource Defence Council (NRDC) and the Environmental Working Group (EWG), and child-specific organizations, such as the Children's Environmental Health Network (CEHN) and the Center for Children's Health and the Environment (CCHE), which is a research and advocacy group associated with the Mount Sinai School of Medicine.

Children's environmental health in Canada

In contrast to the situation in the US, children's environmental health policy actions in Canada have been comparatively isolated and rare, and have not resulted in a similar level of institutionalization of children's environmental health protection on the public policy agenda.[13] Health Canada does have an Office of Children's Environmental Health, under the Healthy Environments and Consumer Safety Branch, but at this time the Office does not seem to have a significant policy role in the federal government.[14] The federal government has expressed an interest in children's environmental health through some funding of research, but this has been limited, especially compared to the major investments made through the National Institute of Environmental Health Sciences (NIEHS) and National Institute of Child Health and Human Development (NICHD) in the US. Some federal agencies (including the Pest Management Regulatory Agency, as will be discussed below) consider children and other vulnerable populations in their work, but there is currently no legislation that specifically considers children's environmental health in force. Various provincial governments have public or

[13] For examples of the disparity between the two countries, see Appendix A: Federal Children's Environmental Health Policies and Activities, US and Canada.

[14] For example, one interviewee noted that, as far as he knew, the Office had no dedicated budget or program status in the federal government. See Ken Ogilvie, "Interview with Author," (June 30, 2005).

environmental health information services which are relevant to children's environmental health issues, but none are specifically directed towards children.[15]

This is not to say that Canada does not have any policies or programs that are relevant to children's environmental health, but rather that, at this time, these policies are not framed as children's environmental health issues. For example, both the Public Health Agency of Canada and provincial health ministries have undertaken major asthma initiatives in recent years,[16] and asthma is often identified as a priority children's environmental health issue.[17] However, at least to date, asthma initiatives in Canada have not been identified as part of a broader movement to address environmental contaminants to children's health, in keeping with the lack of children's environmental health framing within the Canadian government.

There has been some interest in children's environmental health issues from Canadian non-governmental organizations. The Canadian Partnership for Children's Health and the Environment (CPCHE) enables the coordination of a number of non-governmental organizations with children's environmental health activities, including ENGOs such as Pollution Probe and the Canadian Environmental Law Association (CELA), health-focused groups such as the Canadian Association of Physicians for the Environment (CAPE) and the Canadian Institute of Child Health, and professional organizations such as the Ontario College of Family Physicians and the Ontario Public Health Association. Some groups, such as Pollution Probe, which has

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[15] See for example, Manitoba Public Health, *Environmental Health Risk Assessment* ([Undated] [cited April 2 2005]); available from <http://www.gov.mb.ca/health/publichealth/environmentalhealth/risk.html>.

[16] See the National Asthma Control Task Force, "The Prevention and Management of Asthma in Canada: A Major Challenge Now and in the Future," (Public Health Agency of Canada, 2000).

[17] See for example Natural Resources Defence Council, "Our Children at Risk: The 5 Worst Environmental Threats to Their Health," (1997)., which cites air pollution as one the "5 worst" children's environmental health threats and discusses rising asthma rates in children. Also, asthma was identified as one of the four initial priority areas for the US Presidential Task Force on Environmental Health Risks and Safety Risks to Children (see U.S. Environmental Protection Agency-Office of Children's Health Protection, *Us Presidential Task Force on Environmental Health Risks and Safety Risks to Children* [Webpage] (March 1 2005 [cited July 26 2005]); available from <http://yosemite.epa.gov/ochp/ochpweb.nsf/content/Whatwe_fedtask.htm>.) and allergies and asthma have been identified by the WHO Regional Office for Europe as "particularly relevant [to children's environmental health], as they are associated with several environmental hazards" (see World Health Organization-Regional Office for Europe, *The Future for Our Children: At Risk from Unhealthy Environments* [Press release] (April 4 2003 [cited July 26 2005]); available from <http://www.euro.who.int/mediacentre/PR/2003/20030404_1>.

had a broad and longstanding interest in children's environmental health,[18] have pointed to the lack of children's environmental health programs, agencies, and funding in the federal government as major impediments to their children's environmental health activities.[19] Others, such as CAPE, have chosen a specific children's environmental health issue on which to focus their attention (in CAPE's case, pesticides) but have directed their activities to local levels of government, where they have enjoyed some important successes, and which they believe is more effective than lobbying for changes to federal legislation, regulations, or programs.[20]

Research questions

I have demonstrated that there is a fairly significant discrepancy between Canada and the United States in policy development regarding children's environmental health. Explaining this discrepancy is somewhat more difficult, however, as there are at least three obvious hypotheses that can be readily dismissed. Firstly, there is nothing to suggest that environmental threats to children's health are substantially different or less serious in Canada than in the United States. The two societies are very similar, with comparable or identical consumer products and industrial processes that produce the same types of pollution. In fact, in a work comparing toxic releases inventories in Canada and the US, Harrison and Antweiler find that "releases of criteria air contaminants are dramatically higher in Canada relative to the size of the economy" and "releases of toxic substances to air and water are somewhat higher relative to GDP in Canada, but the differences were less pronounced than for criteria air contaminants."[21] Certain children's

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[18] For example, this group organized a 2-day conference entitled "The Air Children Breathe: The Effects on Their Health" in January 1998, produced a report and an indoor environment management plan for school as part of their Healthy Schools Project in 2000, and in 2004 release "Toxic Substances — Focus on Children Project: Developing a Canadian List of Substances of Concern to Children's Health" with the CELA. See Pollution Probe, *Publications - Children's Health* [Webpage] (Undated [cited July 26 2005]); available from <http://www.pollutionprobe.org/Publications/Childrens.htm>.

[19] Ogilvie, "Interview with Author."

[20] Advocacy group representative, "Interview with Author," (July 5, 2005).

[21] Kathryn Harrison, and Werner Antweiler, "Do National Styles of Regulation Matter? Evidence from Canada and the United States," (University of British Columbia, 2005).

environmental health indicators, such as the estimated prevalence of elevated blood lead levels in children, have been found to be comparable in recent years.[22] Furthermore, in terms of this thesis' case study (pesticides) Hoberg has found that "Canadian regulation is strongly influenced by the United States" and that "the much larger scientific and administrative capacity in the US makes reliance on regulatory activities there inevitable,"[23] suggesting that with similar regulations, Canadian children should be expected to be exposed to the same sorts of pesticides as Americans.

Secondly and relatedly, although the main advances in children's environmental health research have occurred in the United States, both the past experience with the diffusion of scientific knowledge across the border,[24] and the comments of Canadian NGO and government officials in interviews conducted for this study seem to indicate that Canadian policy experts should be, and are, aware of US research into children's environmental health. It should be noted, however, that this does not necessarily mean that Canadian actors are using this research as a basis for their actions, an issue that will be returned to in greater detail in the next chapters.

Thirdly and finally, it is highly unlikely that Canadians value children's health less than their American counterparts, or that the Canadian public is less likely to be supportive of policies directed towards children's environmental health. Moreover, Kathryn Harrison has noted that, in terms of other aspects of environmental policy, "mass public opinion has followed similar trends in both countries and thus cannot explain the observed differences."[25] These three points lead one to expect that actors in Canada and the US would have the same incentives to frame and

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[22] Margaret D. Sanborn et al., "Identifying and Managing Adverse Environmental Health Effects: 3. Lead Exposure," *Canadian Medical Association Journal* 116, no. 10 (2002).
[23] George Hoberg, "Sleeping with an Elephant: The American Influence on Canadian Environmental Regulation," *Journal of Public Policy* 2, no. 1 (1991).
[24] Ibid.
[25] Kathryn Harrison, "The Origins of National Standards: Comparing Federal Government Involvement in Environmental Policy in Canada and the United States," in *Managing the Environmental Union: Intergovernmental Relations and Environmental Policy in Canada*, ed. Patrick C. Fafard and Kathryn Harrison (Kingston: Institute of Intergovernmental Relations and Saskatchewan Institute of Public Policy, 2000).

enact policies in terms of children's environmental health, but as demonstrated above, that has not been the case.

In order to address the nature of the children's environmental health policy discrepancy between the two countries, I have narrowed the scope of inquiry to pesticide policy directed towards children's environmental health (the choice of case study will be discussed below), and rely on a variety of primary and secondary documentary sources as well as interviews I conducted with a small sample of government officials, academics, and activists in both countries.[26]

I focus mainly on federal regulation of pesticides as it pertains to children. There is a specific instance of relevant legislation in each country: the US passed the Food Quality Protection Act (FQPA) in 1996, and it has had far-reaching consequences in terms of how pesticides are registered and reevaluated, as well as the way broader children's environmental health issues were dealt with by policy makers. Canada passed a very similar amendment to its main pesticide law, the Pest Control Products Act (PCPA), in 2002, and this Act has not yet come into force. It will be proclaimed when new regulations are in place, a process that was expected to take up to two years from 2002. On June 13, 2005, the first public step in implementing new regulations was taken, with the publication of a Notice of Intent to "provide all stakeholders with information on the proposed revision to the Pest Control Product Regulations in advance of Canada Gazette I".[27] Certainly in the almost ten years since the passage of the FQPA, the development of pesticide policy for children's health has been different in the US. Regulation has been a more important issue for US interest groups, who

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[26] Note that this sample is not necessarily representative. In the US, I interviewed 2 legislative staff persons (one a former staffer now involved in an NGO), 5 agency officials, and 5 advocates, academics, or members of interest groups. In Canada, I interviewed 1 agency official and 3 interest group representatives. The format of the interviews was open-ended, and interviewees could choose to be identified by their name and organization, by their organization only, or to remain completely confidential. See Appendix B for more details.

[27] See Association of Municipalities of Ontario, "AMO Pesticide Brief," (Toronto: 2003). and Canadian government official, "Interview with Author," (June 27 & July 11, 2005).

have been active in scrutinizing the government and raising public awareness. The federal government has become involved in a range of non-regulatory programs related to pesticides and children's health. And perhaps most importantly, as I will demonstrate in the subsequent chapters, the presence of a law that specifically addresses the risks pesticides pose to children has been a motivator for other children's environmental health policies in the US, by acting as a "tipping point" for the concept in policy-making, and prompting specific initiatives such as the move underway to expand FQPA-style regulations from pesticides to other toxic substances by amending the Toxic Substances Control Act (TSCA).[28] This allows me to address my overarching question of why there has been more children's environmental health policy in the US than in Canada to date by answering two more specific research questions: given that the United States and Canada developed similar children's environmental health-oriented pesticide legislation six years apart, how can differences in the development and timing of these two laws be explained? And, what difference did this legislation make in US policy, i.e. why have there been impacts from the codification of children's environmental health concerns in the US that have not (so far) occurred in Canada? The answers to these questions allow me to advance an explanation for why there has been more children's environmental health framing and policy in the United States than in Canada thus far.

Pesticides and children's environmental health

Before turning to a description of the study's variables and theoretical framework, it will be useful to provide some explanation of my choice of case study, particularly since in the United States pesticides were preceded by another major children's environmental health issue:

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[28] Kenneth A. Cook, "Interview with Author," (June 20, 2005). Cook, president of the US NGO Environmental Working Group, stated that Senators Jeffords and Lautenberg were leading this effort and they, along with four other senators, put forward the "Kid Safe Chemical Act" on July 13, 2005. See Thomas, *Bill Summary & Status for the 109th Congress: S.1391* (2005 [cited July 23 2005]); available from <http://thomas.loc.gov/cgi-bin/bdquery/z?d109:s.01391:>.

lead poisoning. The first piece of lead legislation, the Lead-Based Paint Poisoning Prevention Act, was passed in 1971 and "primarily addressed lead-based paint in federally-funded housing and established definitions for lead-based paint and lead poisoning"[29]. Since then lead has been the subject of a large body of research and policy in the United States, all of which is concerned with children because in terms of the potential harm caused by lead, they are the only relevant population.[30]

In Canada, there was no comparable research, surveillance, and range of policies related to lead, although lead was phased out of gasoline and paint as it was in the United States. The importance of this difference should not be understated, and its role as an element of the policy contexts in the two countries is highlighted below. However, I have chosen to limit the present inquiry to pesticides because, as discussed in chapter three, it was this issue that provided a turning point for children's environmental health in the United States, directly preceding and contributing to significant government actions to address children's environmental health more broadly, such as Executive Order 13045.

Moreover, although not the earliest children's environmental health issue, pesticides are an important risk to children's environmental health. They have been identified as a priority area in a variety of scientific inquiries into the nature of environmental risks posed to children.[31] The history of how pesticides developed into a health concern is interesting, as in both countries pesticides were initially an "agriculture and progress" issue focused on the need to increase farm

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[29] U.S. Department of Housing and Urban Development, *History of Lead-Based Paint Legislation* (June 18 2004 [cited July 8 2005]); available from <http://www.hud.gov/offices/cpd/affordablehousing/training/leadsafe/ruleoverview/legislationhistory.cfm>.

[30] Lead is toxic to adults as well as children, but children tend to be more exposed, to absorb more of the lead they are exposed to, and to suffer irreversible central nervous system effects, rather than reversible peripheral nervous system effects more common in adults. See David C. Bellinger, "Lead," *Pediatrics* 113 (2004).

[31] See for example Donald T. Wigle, *Child Health and the Environment* (New York: Oxford University Press, 2003).; and Tracey J. Woodruff et al., "Trends in Environmentally Related Childhood Illness," *Pediatrics* 113, no. 4 (2004).

production.[32] Also, the public connection between pesticides and children's health began relatively early, with the Alar controversy in US in 1989. This pesticide was widely used on apples, and a massive campaign to ban the chemical, spearheaded by an American environmental interest group (the NRDC) focused on the potential harm to children.[33] This early start has provided an opportunity for governmental and non-governmental institutional development in both countries, and has allowed some base level of public awareness to develop, although pesticides and children's' health has had varying levels of salience at different times and in different situations.

Studying pesticides also has advantages in terms of ease of use of information. In Canada and the United States, pesticide policy is contained in a manageable number of agencies and departments, and unlike many children's environmental health issue areas, is regulated by a comparatively small number of statutes. I also choose to focus on federal legislation, with complementary information as necessary concerning various programs run by state/provincial and local governments because of the need to maintain a reasonable scope, but more importantly because it is where the most significant children's environmental health framing is occurring in the United States, and it provides a clear contrast with the situation in Canada.

It is important to recognize that there may be varying explanations for policy differences between the two countries depending on the sub-area under study, but pesticides have the advantage of being closely related to other areas and issues, such as the regulation of toxic substances generally, which may give insights developed here greater applicability to the field as a whole. By using this relatively straightforward sub-area as my focus, I hope to be able to succinctly advance arguments for why there is a difference in children's environmental health

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[32]Christopher J. Bosso, *Pesticides and Politics: The Life Cycle of a Public Issue* (Pittsburgh: University of Pittsburgh Press, 1987).; and Standing Committee on Environment and Sustainable Development, "Pesticides: Making the Right Choice for the Protection of Health and the Environment," (Ottawa: House of Commons Canada, 2000).

[33] Kathryn Harrison and George Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States* (Montreal & Kingston: McGill-Queen's University Press, 1994).

policy in Canada and the United States, and from this gain insight into the nature of policy differences in the two countries more generally.

Theoretical framework

The outcome to be explained in this study are the differences in children's environmental health framing and policy in the two countries, examined through the difference in the development and timing of very similar changes to major pesticide legislation in Canada and the United States, and different impact of legislation or non-legislated regulatory changes in the two countries, respectively. My expectation is that the variation produced by the presence or absence of legislation can help explain the more general differences in the two countries' approaches to children's environmental health. Three types of variables are used to explain these differences: differences in the policy context of each country; differences in political institutions such as parliamentary versus separation of powers systems and regulatory styles; and differences in the nature and magnitude of interest group involvement.

Policy contexts

Explaining the origins of other policy differences (for example, the fact that the US has had a comprehensive program to deal with childhood lead poisoning for decades, while Canada has none) is beyond the scope of this study, but these differences have an important influence on how each country has confronted the pesticide issue.[34] I will examine the influence of two elements of the policy contexts: differences in how Canada and the United States responded to earlier children's environmental health issues, namely, lead poisoning; and differences in how Canada and the United States responded to earlier pesticide issues, mainly concerns about possible food contamination.

[34] For literature on this subject, see Paul Pierson, "Increasing Returns, Path Dependence, and the Study of Politics," *American Political Science Review* 94 (2000). Pierson notes that, in its broader definition, path dependence "refers to the causal relevance of preceding stages in a temporal sequence and claims that "we cannot understand the significance of a particular social variable without understanding 'how it got there'."

The differences in policies to address childhood lead poisoning were outlined above. The US has had legislation and has conducted extensive monitoring since the 1970s, and continues to conduct research on lead's effect on children's development and health, and to revise policies and provide new programs. A major development in this area was the 1991 Federal Strategy to Eliminate Childhood Lead Poisoning, which made elimination, rather than mitigation, of lead poisoning an explicit policy goal for all federal agencies.[35] The situation in Canada is summarized in a recent article from the Canadian Medical Association Journal: in this country, "neither universal nor targeted screening for lead exposure has been practised, even though the estimated prevalence of elevated lead levels among children is comparable to that among children in the United States (4%–5%)".[36]

One interviewee, lead researcher Dr. Ellen Silbergeld, suggested that the United States took the approach it did to lead poisoning because the US has a unique system of national statistics and population studies of exposure that made the problem apparent. She noted that these national-based exposure studies also helped drive the pesticide issue.[37] The question of why this US research and policy did not spill over to Canada remains an issue for further inquiry, but it will be argued that past experience with lead and children's health had an effect on the US approach to pesticides, priming the issue for a child-specific frame.

The second element of policy contexts in the two countries is the different ways Canada and the United States have dealt with past pesticide issues, particularly the possible contamination of food supplies. The best illustration of these differences is the Alar incident of 1989, which in addition to being a significant event in the history of US pesticide "scares", was

[35] Lynn Goldman, "Interview with Author," (June 21, 2005).
[36] Sanborn et al., "Identifying and Managing Adverse Environmental Health Effects: 3. Lead Exposure."
[37] Ellen Silbergeld, "Interview with Author," (June 22, 2005).

the first prominent instance of framing pesticide contamination as a particular risk to children.[38] Harrison and Hoberg describe how concerns about Alar and its breakdown product, UDMH, leaving carcinogenic residues on crops lead to "an extraordinarily effective publicity campaign by a US environmental group"[39] highlighting the risks Alar residues on apples posed to children. The campaign and ensuring media attention prompted major drops in sales of apples and apple products, including the removal of apples from lunch programs in a number of school systems, and regulatory action by the US EPA to cancel the product's regulation. This action was preempted by the manufacturer's voluntary withdrawal of Alar from both American and Canadian markets in the summer of 1989.[40] Although there was some spillover of the US Alar campaign to Canada, Canadian officials "downplayed the concerns, stating that the existing data did not warrant regulatory action".[41] For example, a Canadian newspaper article in the spring of 1989 cited a federal health official as saying that "claims that Alar causes a major risk of cancer to children were 'fear-mongering'".[42] Even after Alar was withdrawn from North American markets and banned in the US, Canadian federal officials noted "that as far as Agriculture Canada is concerned, Alar is still registered for use" and "the Health Protection Branch feels that a children would have to consume approximately 250,000 times more that their present daily intake of apples or apple products to be at risk".[43] In contrast, although the US EPA that also stated in the fall of 1989 that "it continues to believe, based on available data, that the short-term risk of eating apples or other food treated with diaminozide [Alar] are not significant" it announced a move to invoke a total ban of the chemical and said that its new studies "confirm

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[38] Other examples, such as EDB and the "killer muffin mixes" scare had a significant impact on the American (and, perhaps to a lesser extent, Canadian) consciousness as well, but were not framed in terms of children. The influence of these other incidents may be a subject for further inquiry.
[39] Harrison and Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States.*
[40] Ibid.
[41] Ibid.
[42] Tom Spears, "Fruit Spray Facing Ban over Links with Cancer," *Toronto Star*, March 1 1989.
[43] Karen Feig-Weisbrod, "Fear of Alar Lingers Despite Withdrawal," *Toronto Star*, May 3 1990.

the agency's initial findings regarding the carcinogenicity of daminozide's breakdown product, unsymmetrical dimethyl hydrazine".[44]

Although there were similar outcomes of the Alar incident in both Canada and the United States due to the voluntary withdrawal of the product, this episode affected the two countries quite differently: in Canada, there was never a sense of a "national emergency" regarding pesticides and food safety comparable to that in the United States. It should be noted that the Alar incident did not lead directly to policy changes in the US (i.e. methods of pesticide regulation were not changed to account for children) but it helped prime policy makers and the public in the US to be attentive when new research regarding pesticides and children's environmental health entered the debate. Harrison and Hoberg argue that important components of the variation between the two countries' reactions to the Alar case are the different systems of risk assessment and regulatory institutions in Canada and the United States, and persistent differences in these and other institutions makes up the next category of explanatory variables.

Institutional variables

The most significant differences between American and Canadian institutions, as far as this study is concerned, are those produced as a result of the contrast between the American separation of powers system and the Canadian Westminster parliamentary system. This difference influences the legislators' incentives and ability to undertake particular policy actions individually (acting as policy entrepreneurs) and collectively (especially the type of bargaining that occurs in order to pass legislation), the types of legislation produced, and the accessibility of the legislative process to outside interests.

Separation of powers systems tend to produce more, and more effective, policy entrepreneurs than parliamentary systems. Stronger party discipline and the centralization of power in the executive in parliamentary systems means that members of Parliament who are not

[44] Bill McAllister, "EPA Plans Total Ban on Alar Pesticide," *Washington Post*, September 2 1989.

cabinet ministers have a very limited ability to advance policy innovations independent of the government, whereas members of Congress are less constrained in their ability to "vote their constituency interests or beliefs" and champion causes that are not necessarily party priorities.[45] The role of entrepreneurs in the US system in the pesticides case, as will be discussed below, suggests that the entrepreneurs produced by a separation of powers may be particularly suited to engage in the type of reframing necessary for environmental issues to become children's environmental health issues. It is possible that, being less constrained by party discipline, it is easier for entrepreneurs to "raise the alarm" about a need to focus on children than it would be for members of a parliamentary government, who in the absence of a change of government, would be required to state that the policy for which they were collectively responsible before had been remiss in protecting children.

A second important result of the difference between a presidential and parliamentary system is the degree of open debate and bargaining within the legislature that must occur for policy to be made. In parliamentary systems like Canada, a combination of majority governments and the centralization of power in the prime minister's office and his/her cabinet means that, although bargaining may occur within cabinet (where all members belong to the same political party) any legislation the government introduces stands a very high likelihood of being passed, simply by requiring members of the governing party to support it. Conversely, the complicated system of separation of powers and checks and balances in the US system means that "it requires extraordinary majorities to accomplish any legislative change".[46] These extraordinary majorities require compromises across party lines and among different interests and, combined with individual members of Congress' autonomy to logroll legislation, mean that

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[45] R. Kent Weaver and Bert A. Rockman, "Assessing the Effects of Institutions," in *Do Institutions Matter? Government Capabilities in the United States and Abroad*, ed. R. Kent Weaver and Bert A. Rockman (Washington, D.C.: Brookings Institution, 1993).

[46] George Hoberg, "Canadian-American Environmental Relations," in *Canadian Environmental Policy*, ed. Debora L. VanNijnatten and Robert Broadman (Toronto: Oxford University Press, 2002).

open and cross-party bargaining among legislators and groups of legislators is an essential part of a separation of powers system. Although a parliamentary system provides a focused opportunity for critique of the government in Question Period, it is not well suited to complex, technical debates, and the more closed system of parliamentary bargaining means that there may be less opportunities for the legislature to make issues such as pesticides and children's health a matter of general public debate. This will affect the prominence of the issue in the two countries, and therefore its ability to spillover to other policy areas.

The next institutional factor to be addressed is the type of regulation that tends to arise from a separation of powers system versus a parliamentary system. There is an extensive body of literature on this subject, and authors conclude that formalization of policy (in legislation) is particularly attractive in a separation of powers system, where legislation tends to be very durable, and that "pressures for formalization are intensified by the independent roles of president and Congress," as each attempt to protect their policy initiatives from interference by the other.[47] Separation of powers systems are also have a greater tendency to pass detailed, restrictive legislation and regulations than parliamentary systems. Hoberg notes that

> The separation of powers between the branches creates an institutional distrust that means Congress is not willing to delegate much discretionary authority to the executive branch. In Canada, legislation generally provides broad grants of authority, but almost never binds the Crown to perform any particular task.[48]

The different processes of rule-making and styles of regulatory science in the two countries is closely related to types of regulations, and therefore affected by the presidential versus parliamentary system difference, but is also impacted by different roles for the judiciary and interest groups. Harrison and Hoberg discuss this in detail in their book, "Risk, Science, and Politics," saying that "the regulatory process in Canada tended to be closed, informal, and

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[47] Terry M. Moe and Michael Caldwell, "The Institutional Foundations of Democratic Government: A Comparison of Presidential and Parliamentary Systems," *Journal of Institutional and Theoretical Economics* 150, no. 1 (1994).
[48] Hoberg, "Canadian-American Environmental Relations."

consensual, in comparison with the open, legalistic, and adversarial style of the U.S.".[49] They note differences in how agencies in the two countries document their processes of risk assessment and communicate risks to the public: the frequency of legal challenges to EPA actions results in the publication of more "detailed scientific rationales for regulatory decisions" than are produced by Canadian agencies,[50] and this same need for transparency may prompt the US EPA to acknowledge risks they do not believe require additional regulation more often than Canadian agencies, resulting in different types of public engagement with the issues. The difference in regulatory styles is influenced by the degree of control Congress (which can act as a channel for interest group pressure, and whose individual members have more power than the average parliamentarian) has over the functioning of regulatory agencies in the US, and by the importance of litigation in the US system, which will be discussed below. Hoberg notes elsewhere that "the combination of [the] greater role of Congress and the courts means that the [environmental] policy process is far more open and accessible" in the US than in Canada.[51]

Interest group pressures

There is significant overlap between institutional and interest group or advocacy factors. For example, differences in access to policy processes in Canada and the United States may be considered an institutional factor, since they are influenced by opportunities for interest groups to pressure legislators, the style of regulation practiced by the bureaucracy, and the level of involvement from non-legislative bodies such as the courts. However, since the main theoretical concern here is how interest groups and policy advocates outside government take advantage of these access points, the access issue will be discussed in this section. Other issues include the resources of interest groups that allow them to take part in the policy process, and the types of strategies they use to maximize their influence.

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[49] Harrison and Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States.*
[50] Ibid.
[51] Hoberg, "Canadian-American Environmental Relations."

Access is a key component of the type of influence interest groups have in each country. In "Canadian-American Environmental Relations," Hoberg states that "interest groups play a more important role in the US, in part because the institutional process gives them a large number of access points."[52] In fact, Clyde Wilcox and Dong-Young Kim argue that "if political scientists were charged to design a national legislature to maximize interest group influence, they would be hard-pressed to improve on the U.S. Congress",[53] citing the ability of any member to introduce legislation and vote how he or she chooses; the many opportunities to amend legislation in subcommittees, committees, and on the floor; and the fact that "majorities must be assembled at many points during the legislative process" as evidence of the multiple access points that interest groups may use to influence policy making.[54] This is not the case in parliamentary systems such as Canada, where the centralization of power in the executive, noted above, limits access points, and "party discipline makes appeals to individual legislators an almost hopeless strategy in terms of changing policy outcomes".[55] Weaver and Rockman note that the main access points for interest groups in a parliamentary system are the bureaucracy and cabinet ministers.[56]

Another important access point in the American system not mentioned by Wilcox and Kim results from the non-discretionary statutes that characterize US legislation, particularly environmental laws and regulations. Non-discretionary legislation, along with 'citizen suit provisions' "authorizing citizens to sue the agency (and sometimes polluters) for non-compliance"[57] mean that litigation is a natural and effective method for interest groups to access the policy process. In Canada, however, interest groups "generally do not have formidable legal

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[52] Ibid.
[53] Clyde Wilcox and Dong-Young Kim, "Continuity and Change in the Congressional Connection," in *The Interest Group Connection: Electioneering, Lobbying, and Policymaking in Washington*, ed. Paul S. Herrnson, Ronald G. Shaiko, and Clyde Wilcox (Washington, D.C.: CQ Press, 2004).
[54] Ibid.
[55] Weaver and Rockman, "Assessing the Effects of Institutions."
[56] Ibid.
[57] Hoberg, "Canadian-American Environmental Relations."

weapons",[58] and although there are exceptions, with groups such as Sierra Legal Defence, there is less of a tradition of successfully suing government agencies or polluters. Discretionary statutes make it very difficult for groups to make a legal case against a particular government action (or inaction) since the language of the legislation refers to actions taken as the relevant Minister sees fit. Thus, US NGOs concerned with children's environmental health are expected to have more, and more effective, methods of accessing the policy process than their Canadian counterparts

Other issues of interest group influence are resources and strategies. American interest groups tend to be more active in a wider range of activities than Canadian groups, which may be expected given their superior resources. For example, NRDC is one of the larger US ENGOs working on children's environmental health issues, and in FY 2004 it spent $52 812 094 (on all programs) and had 123 program staff, not including executives and institutional/support staff. A smaller US ENGO that is entirely focused on issues related to children's environmental health is EWG, which spent $2 412 054 in FY 2003 and had a staff of 20 in its Washington, D.C. office, with an additional office in California. EWG has a budget comparable to one of the larger Canadian ENGOs, Pollution Probe, which spent $2 717 298 on its entire range of programs (child-oriented and otherwise) in FY 2004, but other Canadian ENGOS that have been involved in pesticides and children's health are much smaller -- CAPE's charitable foundation, CHEER, spent only $85 469 in FY 2004.[59] The greater resources of US ENGOs are at least in part a scale effect: Hoberg notes that, "drawing from a much wider base of population and financial support (much of it from philanthropic foundations, which are uncommon north of the border), US

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[58] Ibid.

[59] For US ENGO finances, see <www.charitynavigator.org> For Canadian groups, see <www.cra-arc.gc.ca/tax/charities/menu-e.html>.

environmental groups have much more formidable analytical capacities than their Canadian counterparts".[60]

Strategies include not only where groups choose or are able to make their influence felt, but also the types of arguments groups choose or are able to make, and this is another potentially significant difference between the United States and Canada. Perhaps due to greater financial and human resources, and likely as a result of their different points of access, US groups tend to involve themselves more closely in the scientific details of regulation, both in terms of what aspects of government action they target and how they communicate with the public. For instance, when comparing interest representation in Canadian and American regulation of toxic substances (including pesticides), Harrison and Hoberg note that "only in the U.S. does interest group conflict typically penetrate beyond risk management to regulatory science".[61] They cite Alar as a prime example of this tendency, as the issue was sparked by an interest group-authored risk assessment that took issue with the US EPA's assessment.

The strategy of taking an explicitly scientific approach to children's environmental health issues (engaging in the regulatory science, including academic researchers and scientists at the forefront of advocacy efforts, and so on) may be a particularly effective one, according to Deborah Stone's theory of causal stories. Stone seeks to describe "how situations come to be seen as caused by human actions and amenable to human intervention."[62] She provides a typology of causes, based on type of action (unguided or purposeful) and consequences (intended or unintended), and argues that undesirable situations become policy problems when their framing changes from unpredictable or unintentional causes to intentional. The change in framing is generally prompted by some actor, who may be inside or outside government. Stone argues that many factors can affect which causal stories "work", or prompt an intentional

[60] Hoberg, "Canadian-American Environmental Relations."
[61] Harrison and Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States.*
[62] Deborah A. Stone, "Causal Stories and the Formation of Policy Agendas," *Political Science Quarterly* 104, no. 2 (1989).

understanding of the causes of a problem. Some of these factors are the influence of the media, the visibility and influence of the story's supporters, or its congruence with some "national mood", but Stone's note of the legitimating power of science will have the greatest impact on my analysis. Stone says "proponents of causal theories...appeal to scientific studies and the canons of scientific inquiry in their quest for political support", and that, along with law, science is one of "two powerful social institutions for determining cause and legitimating claims about harm".[63] Therefore, to the extent US groups use a more explicitly scientific approach to the regulation of pesticides and children's health than Canadian groups, they are expected to be more successful.

Summary

Children's environmental health was codified in pesticide legislation earlier in the United States than in Canada. I will demonstrate that this has affected the approach to children's environmental health and pesticides, and by extension the approach to children's environmental health more generally in the two countries, due to a combination of reasons relating to my explanatory variables. First, the presence of different policy contexts (lead and previous pesticide "scares") primed politicians and bureaucrats to be sensitive to children's environmental health issues. Second, institutional factors such as the willingness and ability of members of Congress to act as policy entrepreneurs has been very important in the development of pesticide policy related to children's health in the US, but could not occur under Canada's parliamentary system. The type of open debate and bargaining between groups that occurs in the US was also crucial. It helped bring the issue of pesticides' risk to children to the forefront of public debate in the US for a time, and helped spread children's environmental health frame to other policy areas. Differences in the regulatory system in the two countries matter: Harrison and Hoberg conclude that "there is no simple and direct relationship between regulatory processes and their

[63] Ibid.

outcomes"[64] but the analysis of how the scientific bureaucracy in each country deals with risks is crucial to understanding how particular decisions relevant to the case study here came about. Finally, the influence of interest groups and non-governmental advocates had a significant effect on the timing of legislation and the impact legislation or the lack thereof had on the two countries' policy regimes for pesticides and children's environmental health. The greater resources and opportunities for access, particularly the ability to pursue litigation, of US groups made them more effective advocates in getting children's environmental health legislation passed, and affected their actions once legislation was in place. Also, Stone's theory highlights the effectiveness of an explicitly scientific approach to causal stories used by interest groups, and thus to the extent that there is a difference between Canadian and US group in this respect, it will be an important one. It should be emphasized, however, that interest groups in the two countries have similar incentives to employ a children's environmental health frame, even if US groups are likely to be more effective in achieving policy results, and the fact that interest group framing has been more limited in Canada suggests the importance of other factors, particularly institutional variables.

The next chapters will compare the development of children's environmental health-oriented pesticide legislation in each country, and provide evidence to support my findings.

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[64] Harrison and Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States.*

CHAPTER II

Introduction

The central puzzle this thesis addresses, the greater extent of children's environmental health framing and policy in the United States than in Canada, is viewed through the development of children's environmental health-oriented pesticide policies in the two countries. As outlined in chapter one, I focus on pesticides because they are a key issue in the broader adoption of children's environmental health framing in the US, but did not have this effect in Canada, and the following two chapters present evidence for and explanation of why this is the case. Chapter two will examine differences in the timing and development of pesticide legislation for children's environmental health in the two countries, particularly the nature of the debate in the US, and how US legislation affected Canadian regulatory agencies and legislation. Chapter three will examine the post-FQPA period in the two countries (because after 1996 Canada adopted similar policies and later similar legislation), and explain why has there has not been a similar development of policy regimes for children's environmental health, both within pesticide policy and more broadly.

Comparison of current pesticide policies

Before turning to the development of children's environmental health-oriented pesticide legislation, however, it will be useful to provide some background on the current state of pesticide policies in the two countries. A comparison of the US and Canada's essential similarities and differences in the policy area will allow for a better understanding of the discussion of policy development and implementation to follow. Accordingly, this section will

examine the basic structure for policy, the details of the legislation, and elements of the regulatory process in both Canada and the United States.

Basic structure: relevant agencies and statutes

In the U.S., all of federal, state, and local governments have a role in play in pesticide policy.[65] States are responsible for transportation, sale, use, storage, and disposal of pesticides (as are provinces in Canada) and municipalities may make pesticide policies but in most cases cannot separately regulate pesticides. In all but nine states and the District of Columbia, state pesticide laws preempt local ordinances, so that local governments may make policies concerning pesticide use on city land but may not regulate private use, sales, and distribution of pesticides.[66] Most states have their own pesticide agency and/or registration system, but under the FQPA, may not set standards more stringent that the federal government. Overall, as is the case with American environmental policy generally,[67] the federal government has a more prominent and important role in standard setting, oversight, and implementation.

The U.S Environmental Protection Agency is the main regulator, and is responsible for the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), which sets out requirements for registering, labeling, and reevaluating pesticides, and the Federal Food, Drug, and Cosmetic Act (FFDCA), which sets pesticide tolerances (defined as "the maximum level of pesticide residues allowed in or on human food and animal feed"[68]), and which the EPA administers with the Food and Drug Administration (FDA). The Food Quality Protection Act (FQPA), passed in 1996, amends both FIFRA and FFDCA. It represents significant changes in the way pesticides

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[65] See Congressional Quarterly, "Pesticide Regulation Provisions," (CQ Almanac, 1996), Tobi Jones, "Interview with Author," (June 15, 2005).

[66] Beyond Pesticides, *What Is State Preemption?* [Fact sheet] (Undated [cited July 26 2005]); available from <beyondpesticides.org/lawn/factsheets/Preemption%20Factsheet.pdf>.

[67] One author notes that, in environmental policy, the U.S. federal government has a "comprehensive catalogue of legislation...leaving the states in a clearly subordinate role", see Kenneth Holland, "Introduction," in *Federalism and the Environment: Environmental Policymaking in Australia, Canada, and the United States*, ed. K.M. Holland, F.L. Morton, and Westport B. Galligan (Westport, CT: Greenwood Press, 1996).

[68] U.S. Environmental Protection Agency, *Laws Affecting EPA's Pesticide Programs* [webpage] (August 1998 [cited May 9 2005]); available from <www.epa.gov/pesticides/factsheets/legisfac.htm>.

are assessed and regulated,[69] particularly in "its explicit protection of children,"[70] including an additional ten-fold uncertainty, or safety factor, when setting tolerances for pesticides.

The administration of FIFRA was transferred to the EPA when the agency was created in 1970;[71] previously, it was the domain of the U.S. Department of Agriculture (USDA). According to Christopher Bosso, FIFRA prior to 1972 could be characterized as "'self-regulatory,' or even symbolic in nature", referring to the "close cooperation among members of the House Committee on Agriculture, mid-level personnel within the [USDA], and those representing the major pesticides makers."[72] Moving FIFRA to the EPA "initiated a shift in federal policy toward greater emphasis on minimizing risks of pesticides to human health and the environment,"[73] and arguably, set the stage for the future consideration of the effects of pesticides on children's health. It should be noted that a parallel shift in Canada did not occur until 1995.

Besides its regulatory activities, the EPA has a range of other programs related to pesticides and children's health, related to strengthening standards and public information, supporting integrated pest management (IPM) programs[74] in schools, and expanding enforcement efforts relevant to children (for example, those related to household pesticides), as well as an extensive research program regarding pesticides and children.[75]

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[69] The EPA itself has noted that this amendment has "fundamentally changed the way in which the U.S. EPA regulates pesticides," cited in Christopher Oleskey et al., "Pesticide Testing in Humans: Ethics and Public Policy," *Environmental Health Perspectives* 112, no. 8 (2004).

[70] Lynn R. Goldman, and Sudha Koduru, "Chemicals in the Environment and Developmental Toxicity to Children: A Public Health and Policy Perspective," *Environmental Health Perspectives* 108, no. 3 (2000).

[71] Oleskey et al., "Pesticide Testing in Humans: Ethics and Public Policy."

[72] Bosso, *Pesticides and Politics: The Life Cycle of a Public Issue.*

[73] Oleskey et al., "Pesticide Testing in Humans: Ethics and Public Policy."

[74] IPM is defined as "a mixture of chemical and other, non-pesticide, methods to control pests" (see U.S. Environmental Protection Agency, *Terms of the Environment* [webpage] (January 6 2004 [cited April 6 2005]); available from <http://www.epa.gov/OCEPAterms/iterms.html>.) It is an important tool focused on reducing the use of unnecessary pesticides, and is used by governments in both countries, as well as community groups and private/semi-private institutions (such as universities). Note that some ENGOs may employ a more stringent definition of IPM that excludes chemical pesticides except as a last resort. Beyond Pesticides representative, "Interview with Author," (June 23, 2005).

[75] U.S. Environmental Protection Agency, *Children's Environmental Health Yearbook Supplement.*

Other federal agencies also have roles in pesticide policy. The FDA monitors food for pesticides residue and enforces EPA regulations. The USDA is less important than at previous times, but it also collects information on pesticides residue, and through its Cooperative State Research, Education, and Extension Service, administers an IPM program, Pesticide Safety Education Program, and various research activities. None of these are child-specific.

In Canada, like the United States, responsibility for pesticide policy is shared between the three levels of government. The federal government is responsible for the main piece of legislation, the Pest Control Products Act (PCPA), and has the principal responsibility for human health and safety.[76] Provinces and territories are involved in regulating the transportation, sale, use, storage, and disposal of pesticides, while municipalities may set bylaws for pesticide use on "municipal (and, in some cases, private and residential) lands."[77] Note that in practice municipalities in Canada generally have greater power to enact pesticide policies than local governments in the US. For example, Toronto (along with a number of other Canadian municipalities) has a bylaw banning the use of outdoor pesticides (for lawns and so on) on public and private property. As noted above, the US situation varies by state, but local jurisdiction are generally more restricted: an interviewee in the California Department of Pesticide Regulation noted that in that state local governments may pass ordinances governing the use of pesticides on city property, but they cannot regulate "outside of their sphere of influence".[78] Currently, the limits of this restriction are being challenged in a small number of counties in the US, as local governments pass ordinances and industry sues under state preemption laws.[79]

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[76] Pest Management Regulatory Agency, "Fact Sheet on the Regulation of Pesticides in Canada," ed. Health Canada (2003).
[77] Ibid.
[78] Jones, "Interview with Author."
[79] For example, Dane County, Wisconsin recently "passed a local county-wide ban on the use of synthetic lawn fertilizers that contain phosphorus due to its pollution of local lakes", and it currently being sued by an industry group (Responsible Industry for a Sound Environment) under preemption laws. See Beyond Pesticides, *What Is State Preemption?* ([cited).

The PCPA was enacted in 1969, and although the first calls for its amendment came in 1987,[80] it was not until 2002 that significant changes were made. The 2002 amendments (which although passed by Parliament have not yet come into force) address a number of issues, such as updating risk management techniques, improving public access to information about pesticide regulation, and toughening enforcement mechanisms. Most importantly for this case, they instruct that "the variability of the sensitivities of major identifiable groups, including infants and children, must be considered" and that "an additional margin of safety must be applied to protect infants and children from risks posed by pesticide residues in food and when pesticides are used in and around homes and schools".[81]

The PCPA and the Food and Drugs Act (which sets pesticide tolerances, similar to the FFDCA in the US) are administered by the Pest Management Regulatory Agency (PMRA), the main federal agency for pesticide policy. The PMRA was created as a division of Health Canada in April 1995; prior to this, the PMRA's various responsibilities were shared between Health Canada, Environment Canada, Natural Resources Canada, Fisheries and Oceans Canada, and Agriculture and Agri-Food Canada, whose Minister was primarily responsible for administering the PCPA.[82] Note how much later the move from agricultural to health/environment administration of pesticides was in Canada than the U.S. – a difference of about twenty-five years.

The PMRA's role is supported by other federal agencies, such Agriculture and Agri-Food Canada's Canadian Food Inspection Agency. Unlike their American counterparts, Canadian federal agencies are not involved in significant non-regulatory policies. Health Canada and the

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[80] Standing Committee on Environment and Sustainable Development, "Pesticides: Making the Right Choice for the Protection of Health and the Environment."

[81] Health Canada, *The Proposed New Pest Control Products Act – Pest Management Regulation in the 21st Century* [Information bulletin] (21 March 2002 [cited April 2 2005]); available from <http://www.hc-sc.gc.ca/english/media/releases/2002/2002_17bk1.htm>.

[82] Standing Committee on Environment and Sustainable Development, "Pesticides: Making the Right Choice for the Protection of Health and the Environment."

PMRA produce some public information web pages, and those relevant to children focus on the use of personal insect repellents and cosmetic (lawn) pesticide use in urban areas.[83]

Although the basic structure of agencies and legislation involved in regulating pesticides in the two countries are similar, then, there are some important differences: in Canada there was a later shift to a health and environment versus purely agricultural focus for policies, there are fewer non-regulatory programs for children's environmental health, and municipalities tend to have a greater role in pesticide policy than in the United States.

Major legislation: the FQPA versus the PCPA

A side-by-side comparison of the main pesticide laws in Canada and the US shows that the texts are actually quite similar. Both the FQPA and the amended PCPA require risk assessments to consider aggregate exposure (i.e. dietary exposure as well as pesticides in the home environment and drinking water), cumulative effects of pesticides that have a common mechanism of toxicity, and additional margins of safety for children. In some places, the language of the statutes is almost identical, for example, in describing how the additional tenfold safety factor is to be applied.[84] However, there are some pertinent differences. The FQPA is more detailed than the PCPA. For example, the US statute sets out requirements for the establishment of an estrogenic substances screening program (to test for endocrine disrupters that may be particularly harmful to children's developing systems) and new surveys to determine children's food consumption patterns (in order to evaluate dietary exposure to pesticides), neither of which are mentioned in the Canadian version.[85] The language of the PCPA allows some room for ministerial discretion: for example, in regards to applications for pesticide registration or

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[83] Urban pesticide use policies will be discussed below, but it should be noted that the non-agricultural sector only accounts for 10% of pesticides sales in Canada, so compared to the agricultural use of pesticides on food products, this is a much smaller policy area. See Monique Hébert, "Bill C-8: An Act to Protect Human Health and Safety and the Environment by Regulating Products Used for the Control of Pests," in *Legislative Summaries*, ed. Library of Parliament-Parliamentary Research Branch (Ottawa: 2002).

[84] See Appendix C: Comparison of statutes

[85] See Food Quality Protection Act, Public Law 104-170, Title III, sec. 301: Data collection activities to assure the health of infants and children, 110 STAT 1511.

amendment states that "the Minister shall, in accordance with the regulations, if, any, conduct *any evaluations that the Minister considers necessary* with respect to the health or environmental risks or the value of the pest control product" (emphasis added).[86]

Regulatory processes

Though the new PCPA has not yet come into force, both agency documents and interviewees state that the measures relevant to children's health have been implemented, and that the Canadian process of pesticide registration and reevaluation is very similar to that in the US. In fact, a PMRA official stated that child-specific risk assessments were strengthened in both Canada and the United States as a result of the FQPA, and that Canada's approach to risk assessment is essentially the same as that in the US, including the increased focus on children.[87] A 2002 PMRA Science Policy Notice, issued before the PCPA amendments were formally introduced in the House of Commons, states that additional safety factors are applied in risk assessments to address risks to children (and other "sensitive subpopulations"), and that this is "consistent with the practice established by the U.S. *Food Quality Protection Act* (FQPA) of 1996".[88] The PMRA official also stressed that the new PCPA was simply a codification of policies the agency already had in place, and noted that the FQPA pesticide reevaluation process directly influences the PMRA's program to review older pesticides.[89] This is borne out in a 1999 PMRA reevaluation document that discusses how the agency was reviewing organophosphate pesticides, a major class of food-use insecticides that was the EPA's initial focus for review under the FQPA requirements. The reevaluation document states that "the starting point for the Canadian reevaluation of organophosphate pesticides will be the reviews being carried out by the EPA under the FQPA" and "the PMRA will implement approaches (increased safety factors for

[86] See Pest Control Products Act, 2002, c.28 [Not in force], Applications for Registration or Amendment: Evaluation of pest control product, 7.3.
[87] Canadian government official, "Interview with Author."
[88] Pest Management Regulatory Agency, "Children's Health Priorities within the Pest Management Regulatory Agency," ed. Health Canada (Ottawa: Submission Coordination and Documentation Division, 2002).
[89] Canadian government official, "Interview with Author."

sensitive populations, aggregate exposure and cumulative risk assessment) taken by the EPA for tolerance reassessment under the FQPA where necessary and appropriate".[90]

The similar regulatory programs differ on a number of points. Firstly, as the PCPA is not yet in force, it lacks the enforcement mechanisms (such as legislated deadlines for completing pesticide reevaluation) that constrain the EPA's regulatory process. In fact, given how dependent Canada is on the US in this regard, the major constraint on the Canadian process is how quickly the US is completing its reevaluation, and what requirements they are setting for registration.[91] This would seem to severely limit the impact that non-governmental groups in Canada could have on the regulatory process, even if they chose to involve themselves. Other differences stem from the fact that while the PCPA is not in force, there are limits to the transparency of the regulatory process that might encourage greater public and interest group participation. A PMRA official states that the result of the new legislation "will not be a change in the approach at the PMRA" but that "codifying the risk assessment approach makes our process of scientifically evaluating pesticides before registration or as part of reevaluation more transparent".[92] Certain elements of the regulatory process that the new PCPA would alter, such as the move to greater public availability of pesticide test data and evaluation reports (as is standard in the US system), are not yet fully in place. Since these 'transparency amendments' are not yet required by law, it is unclear how or whether they are enforced: a 2002 Health Canada information bulletin states that detailed evaluation reports and test data regarding pesticide evaluations are not currently publicly available.[93] Finally, as outlined in chapter one, Canada has not experienced the policy spillover, from consideration of children in pesticide

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[90] Pest Management Regulatory Agency, "Re-Evaluation of Organophosphate Pesticides," ed. Health Canada (Submission Coordination and Documentation Division, 1999).

[91] The PMRA reevaluation document for organophosphates pesticides states this explicitly: "the progress of these re-evaluations is highly dependent on the availability of EPA reviews". See Ibid.

[92] Canadian government official, "Interview with Author."

[93] Health Canada, *A Comparison of the Proposed and Existing Pest Control Products Acts* [Information bulletin] (March 21 2002 [cited July 17 2005]); available from <http://www.hc-sc.gc.ca/english/media/releases/2002/2002_17bk2.htm>.

regulation to other aspects of pesticide policy or to other children's environmental health issues that has occurred in the US.

In order to understand how these differences came about, the remainder of this chapter will trace the development of the legislation and related policies in each country, focusing on the variables introduced in the first chapter. First, policy development up to and including the passage of the FQPA and PCPA, respectively, will be compared. In the next chapter, the impact of legislation or policies after that time will be examined.

The United States to the FQPA: 1970s to 1996

As was noted in chapter one, there has been lead legislation in the US since 1971 (when the Lead-Based Paint Poisoning Prevention Act was passed[94]) and research into lead's effect on children's health for some time before this. Other early issues that became context factors in the transformation of pesticide policy into a children's environmental health issue are the pesticide "scares" of the 1980s. The Alar incident of 1989 was key, and the intense media coverage of the issue[95] as well as the fact that the interest group spearheading the campaign chose to focus explicitly on children meant that this incident was very significant in raising public awareness about the potential dangers of pesticides. The controversy over the actual nature of the risks Alar posed to children and the tactics used by NGOs may have contributed to the fact that policy makers were unwilling to use Alar as an explicit frame for advancing policy proposals.[96]

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[94] This Act "established requirements for the detection and control of lead-based paint hazards in public and private housing" and "requires inspection of a random sample of dwellings and common areas in all public housing projects and in each dwelling of any public housing project in which at least one dwelling is determined to have LBP [lead-based paint] hazards." See Linda-Jo Schierow, "Lead-Based Paint Poisoning Prevention: Federal Mandates for Local Government," (CRS Report 97-22, 1998).

[95] One article notes that "in March and April of 1989, stories about the Alar were an almost daily feature in newspapers across the [US]". See Andrew J. Yates and Richard L. Stroup, "Media Coverage and EPA Pesticide Decisions," *Public Choice* 102 (2002).

[96] There is still debate over whether the steps taken by advocates to publicize concerns about Alar were justified by the severity of the risk or if they constituted "scare tactics". For two decidedly partisan views, see Kenneth Smith and Jack Raso, *An Unhappy Anniversary: The Alar 'Scare' Ten Years Later* (American Council On Science And Health, 1 February 1999 [cited April 8 2005]); available from

However, the incident likely raised policy makers' awareness of the potential public reaction to perceived threats to the food supply and children's health from pesticides.

The 1980s also saw the beginning of attempts at legislative reform for pesticides, aimed mainly at major amendments to FIFRA. The Congressional Quarterly Almanac noted in 1986 that "FIFRA has been overdue for reauthorization since 1981, but efforts to revamp the law have been stalled by bitter quarreling between environmentalists and chemical companies".[97] In 1988, a new FIFRA "core measure" was passed, which provided a new schedule for EPA reevaluation of pesticides[98] but, according to one interviewee, did not result in tougher pesticide standards,[99] and did not end the reform efforts.

A major issue in these efforts was the "Delaney paradox", or the two different standards for carcinogenic chemicals on processed and raw foods. The FFDCA contained the Delaney clause, which established a zero-tolerance approach to cancer-causing chemicals on processed foods, but allowed for "the same chemical...[to] be used on raw foods if it caused no more than one case in 1 million exposures over a lifetime".[100] This discrepancy was an administrative inconvenience as well as a scientific problem: since the Delaney clause was passed in 1958, testing methods had advanced significantly and were capable of detecting such small traces of chemicals that a zero-tolerance standard was impractical. Since at least 1988, when the National Academies of Sciences (NAS) published a report on the subject, the EPA had ignored the Delaney clause and adhered to a *de minimis,* or negligible risk policy, stating in a Federal Register notice that "EPA's position will be that the section 409's so-called Delaney Clause...is subject to a *de minimis* exception where the human dietary risk from residues of the pesticide is

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<http://www.acsh.org/publications/pubID.865/pub_detail.asp>. and Environmental Working Group, *Ten Years Later, Myth of 'Alar Scare' Persists* (Undated [cited April 8 2005]); available from <http://www.ewg.org/reports/alar/alar.html>. It should be noted that the Alar incident was not frequently invoked by children's environmental health advocates in later debates about pesticide legislation reform.

[97] Congressional Quarterly, "Pesticide Bill Stalls at Session's End," (CQ Almanac, 1986).

[98] Congressional Quarterly, "Congress Speeds up Pesticide Testing," (CQ Almanac, 1988).

[99] Goldman, "Interview with Author."

[100] Congressional Quarterly, "Pesticide Proposal," (CQ Almanac, 1989).

at most negligible."[101] However, environmental groups were concerned that replacing the Delaney clause with a negligible risk standard would "turn the clock back on food safety and environmental standards" and allow for more lax regulation,[102] and in 1992, the NRDC was successful in obtaining a US Court of Appeals ruling that the EPA must enforce the Delaney clause literally. This provided a significant impetus for legal reform, as strict enforcement of the Delaney clause would have required removing a number of pesticides from the market.

The 1988 NAS report on the Delaney paradox mentioned infants and children only once, in the chapter entitled "Methodology for Estimating Oncogenic Risks," but this mention proved to be an important step in the development of the FQPA's measures for children. The report stated that "it is clear that using the US average consumption estimate alone will inaccurately estimate food consumption for many population subgroups" and gave infants as an example of a group that might consume more of the mean consumption of a food product (and therefore more than the amount of pesticides than was expected).[103] This report prompted Senator Patrick Leahy, a Democrat from Vermont, to request a second report from the NAS in 1988, on pesticides and children, which became 1993's "Pesticides in the Diets of Infants and Children."[104] This landmark study, as will be discussed below, was instrumental in focusing attention on the need to regulate pesticides with children in mind, and ensuring that the proposed legislation to do so gained wide support.

The role of Senator Leahy in requesting this NAS report (which one of his former staff persons noted was meant to gather information and galvanize action "as a good NAS report can

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[101] Donna U. Vogt, "The Delaney Clause: The Dilemma of Regulating Health Risk for Pesticide Residues," (CRS Report, 1992)., quoting "Regulation of Pesticides in Food: Addressing the Delaney Paradox," 1988.
[102] Congressional Quarterly, "No Action Taken on Pesticide Regulation," (CQ Almanac, 1993).
[103] National Academies of Sciences (U.S.), "Regulating Pesticides in Food: The Delaney Paradox," (Washington, D.C.: National Academy Press, 1987).
[104] Committee on Agriculture, Nutrition, and Forestry, United States Senate, *National Academy of Sciences Report on Pesticides and Children: Hearing on National Academy of Sciences Report on the Health Risks Associated with Pesticide Residues Found in the Diets of Infants and Children, Focusing on Recommendations for a Health-Based Standard for Pesticide Tolerances*, 103rd Cong., 1st sess., June 29 1993.

do"[105]) is the first illustration of the crucial role of entrepreneurs in bringing about children's environmental health policy in the United States. At a hearing of the Senate Committee on Agriculture, Nutrition, and Forestry (which Senator Leahy chaired) after the NAS report was published, Senator Edward Kennedy commended Leahy for his role in the report, stating

> You were the originator and the driving force in Congress and the Senate of the United States for the development of this report and it is only because of your perseverance and persistence that all of us in Congress have the benefit of this particular information.[106]

This type of entrepreneurial action is possible in the US system of diffuse power, where members of the legislative branches (particularly those who hold committee chairs) are in a position to independently request government funding for research by a quasi-government institution. This type of action would be much more difficult without cabinet support in Canada's parliamentary system.

The importance of entrepreneurship is seen again in the introduction of the FQPA's precursors, a number of pesticide bills that aimed to reform the regulatory system to take children's health into account, and that were introduced by Senator Edward Kennedy and Congressman Henry Waxman starting in 1991. That year, Congressman Waxman chaired the House Subcommittee on Health and the Environment of the Committee on Energy and Commerce, and the hearing he held on H.R. 2342 (the Kennedy-Waxman bill to amend the FFDCA) demonstrates the role of certain members of Congress in framing pesticides as a children's environmental health issue. Waxman ensured that the issue of children's health was central to the debate, both by his own statements and in the experts he invited to testify. At one point, Waxman said "let me ask if there's any member of this panel who does not agree...that improvements need to be made in our efforts to protect children from exposure to pesticides?

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[105] Caroline Brickey, "Interview with Author," (June 16, 2005).
[106] *National Academy of Sciences Report on Pesticides and Children.*

Anyone disagree with that?"[107] No response was recorded. The fact that members of ENGOs and scientists concerned with pesticides and children's health, as well as pediatricians, were invited to testify is significant, because it shapes the kind of debate that occurs at a hearing, and is very much a matter of the chair's discretion. An EPA representative's testimony highlights the individual nature of these actions, noting that "food safety has also been a personal priority of yours [Congressman Waxman's] and we do appreciate your continued interest in improving these laws".[108]

After Congressman Waxman's initial hearing in June of 1991, other congressional hearings on pesticide bills began to touch on children's environmental health.[109] Dr. Herbert Needleman, a professor of psychiatry and pediatrics who is associated with the NRDC, testified on the need to reduce children's exposures to pesticides at a hearing of Senator Leahy's committee in September 1991. Dr. Needleman drew parallels from the current state of science about pesticides and children's health to the earlier situation with lead, which was by then well established as a neurotoxin that particularly harmed children, saying "I have heard arguments that I do not know enough about pesticides. I have heard the same statements about lead, starting 20, 25 year ago".[110] This is a good example of the importance of lead as a policy context, as Dr. Needleman went on to detail the evolution of science on lead hazards and emphasize that pesticides posed similar risks to children.

In 1992, the Children's Environmental Health Network (CEHN) was founded by pediatricians Lynn Goldman and Dick Jackson. This group has been crucial in advancing

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[107] Subcommittee on Health and the Environment of the Committee on Energy and Commerce, House of Representatives, *Safety of Pesticides in Food: Hearing on H.R. 2342, a Bill to Amend and Revise the Federal Food, Drug, and Cosmetic Act to Regulate Pesticide Chemical Residues in Food*, 102nd Cong., 1st sess., June 19 1991.

[108] Ibid.

[109] It is worth noting that from 1991 to the FQPA's passage in 1996, there were at least six different congressional hearings focusing on pesticides and children's health in the US, while in Canada the only comparable hearings are sessions held by the Standing Committee on Environmental and Sustainable Development from June 1999 to February 2000.

[110] Committee on Agriculture, Nutrition, and Forestry, Senate, *Circle of Poison: Impact on American Consumers: Hearing on Improving the Safety of Exported Pesticides, Focusing on the Health Impact of Certain Pesticides Manufactured in the U.S. On the American Consumer*, 102nd Cong., 1st sess., September 20 1991.

children's environmental health in the US, and also demonstrates the importance of childhood lead poisoning as an element of the US policy context. Dr. Goldman noted that in creating the CEHN, they had "put together the beginnings of probably a whole movement in children's environmental health",[111] and a representative of the EPA's Office of Children's Health Protection noted that, before the 1993 NAS report, the children's environmental health movement consisted of "a couple of pediatricians and a little NGO called CEHN", and that the group is still a key player.[112] Dr. Goldman had extensive experience with lead and children's health, conducting a key study on lead poisoning in California while working for the California Department of Health Services. She said that she and Dr. Jackson "realized we could generalize from our experiences with lead and hazardous waste sites and other issues to a broader understanding that children were often more vulnerable and often more exposed than adults".[113] This realization was key to beginning the children's environmental health movement generally, and also proved key to the pesticides issue, as Dr. Goldman was appointed to lead the EPA's Office of Pollution Prevention, Pesticides, and Toxic Substances by the Clinton transition team in 1993, just as the NAS report on pesticides and children was beginning to affect the policy process.

1993 was a crucial year for the development of the FQPA and for bringing children's environmental health to the attention of US policy makers. The much-anticipated NAS report "Pesticides in the Diets of Infants and Children" was released, after being delayed a number of years by problems coordinating data. The release of the report was widely covered in the US media (although not in Canada),[114] and widely expected to prompt some sort of government action on pesticides. A report making similar conclusions about the need to protect children

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[111] Goldman, "Interview with Author."
[112] Martha Berger, "Interview with Author," (June 20, 2005).
[113] Goldman, "Interview with Author."
[114] For the period May-September 1993, the New York Times contained eight articles concerning the report. For the same time period, all the Canadian newspapers in the Canadian Newsstand database contained only six articles, most of them two to three line "news in brief" items.

from exposures to pesticide was released by the ENGO Environmental Working Group the day before the NAS report,[115] and one article noted that these "two groundbreaking reports...will likely hasten overhaul of pesticide laws".[116] Senator Leahy told the New York Times that because of President Clinton's support for the issue, "Congress might pass a bill within the next year or so".[117]

The degree of anticipation the NAS report generated is also indicated by the fact that, days before it was released, the heads of the FDA, EPA, and USDA made an announcement regarding the Clinton administration's commitment to pesticide reduction. This "unusual joint announcement by three agencies that in the past have sparred over agriculture and food safety policy"[118] prompted speculation that the administration was making "an attempt to ease public fears that might arise when the NAS releases its report".[119] This announcement, then, may demonstrate a certain amount of learning on the part of the administration with regards to the potential impact of pesticide issues, especially those that concern children, on public opinion, and highlight the importance of past pesticide "scares" as an element of the American policy context.

The concurrent release of a pesticide report from the EWG is significant to explaining the development of children's environmental health pesticide policy in the US because it signals further interest group engagement in federal regulatory policy issues. The scientific approach of this involvement is also important. The EWG report, "Pesticides in Children's Foods", by Richard Wiles and Christopher Campbell, was the organization's first, and its coincidence with the NAS report was by no means an accident. EWG was founded by Richard Wiles and Kenneth

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[115] Richard Wiles and Christopher Campbell, "Pesticides in Children's Food," (Washington, D.C.: Environmental Working Group, 1993).
[116] Linda Kanamine, "The Food Fight over Pesticides: 2 New Reports Expected to Fuel Debate, Stir Fears," *USA Today*, June 24 1993.
[117] Philip J. Hilts, "Results of Study on Pesticide Encourage Effort to Cut Use," *New York Times*, July 5 1993.
[118] Tom Kentworthy, "3 U.S. Agencies Announce Joint Commitment to Cut Pesticide Use," *Washington Post*, June 26 1993.
[119] Scott Bronstein, "Administration Vows to Curb Pesticide Use; U.S. Food Is Safe, Government Insists," *Atlanta Journal and Constitution*, June 27 1993.

Cook when the former left a position with the NAS as project officer for the "Pesticides in the Diets of Infants and Children" report. Cook, who is EWG's current president, said in an interview that Wiles wanted to expand on the risk assessment techniques used in the NAS study and the group saw its report as "a way to renew the pesticide debate both from a scientific standpoint and a social awareness standpoint".[120] Therefore, EWG was taking the explicitly scientific approach to issue promotion discussed in the first chapter, by using the same scientific techniques as the government-sponsored research project and making a conscious decision to frame a causal story about children's health and pesticides in scientific (though publicly appealing) terms. Cook said that to take the approach of focusing on risks to children, "you have to have links that make sense in the independent scientific community, and eventually, of course, you hope that it has an effect on regulatory scientists," and that "it is pretty compelling when you talk to the public about it in that way, so it's one of those instances where the emerging science is the key to public awareness".[121]

As the pre-release pesticide reduction announcement may have indicated, both the NAS and EWG reports drew a positive response from the administration, although the latter report was of course less prominent. This response was important in promoting the use of the children's environmental health frame and eventually passing legislation. It seems likely that it was at least partly dependent on the fact that a Democrat administration was in place at this time, as this party is inclined to favour increased regulation. The same week the reports were released, EPA Administrator Carol Browner announced that the agency would "step up its program to eliminate older, riskier pesticides and move more quickly to approve safer ones amid concerns over the risks to children" and would study children's exposures to pesticides more closely, as the NAS report recommended.[122] Dr. Goldman led the EPA's response (she noted the agency

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[120] Cook, "Interview with Author."
[121] Ibid.
[122] "Fast Action Vowed on Pesticides," *St. Louis Post-Dispatch*, July 1 1993.

wanted leadership on pesticide issues from a pediatrician due to the impact of the NAS report), and she was able to implement some of the report's recommendations immediately through administrative means, for example, by changing the design of the food intake survey to better account for children's consumption patterns.[123] Another element of the administration's quick response to the report was its participation in an early scientific conference on children's environmental health, organized by the CEHN in 1994. Penelope Fenner-Crisp, of the EPA's Office of Pesticide Programs, contributed a report entitled "Pesticides—The NAS Report: How Can the Recommendations Be Implemented?" that detailed work underway in the agency to address the report.[124]

The fact that the administration made a substantial response to the report relatively quickly (including proposing a bill in 1994 that was very similar to the eventual FQPA) is important because it demonstrates that, after the issue was pushed to the forefront by policy entrepreneurs, a level of executive commitment to the problem of pesticides and children's health quickly developed. This was necessary to move the issue forward (recall Senator Leahy's statement about the need for presidential support), and was not evident in the same way in Canada. The manner of the administration's response is relevant because it demonstrates the integral part interest groups played in advancing the issue. The government's lead on pesticides and children's health, Dr. Goldman, had worked for state governments previously, but has also taken an explicit advocacy role as the co-founder of the first major interest group focused on children's environmental health. The administration chose to present its progress on the issue at a conference lead by an NGO. This represents a high degree of interest group access to and involvement in the regulatory process, which as discussed in chapter one is more characteristic

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[123] Goldman, "Interview with Author."
[124] Penelope A. Fenner-Crisp, "Pesticides--the NAS Report: How Can the Recommendations Be Implemented?" *Environmental Health Perspectives* 103, no. S6 (1995).

of American ENGOs than Canadian. The government's response to the NAS report, then, conforms to theoretical expectations regarding interest group involvement.

The administration's response to the NAS report also included broader measures to address children's environmental health, and it is here that the significance of the NAS report and later the FQPA for the American children's environmental health policy regime can begin to be seen. In 1995, Administrator Carol Browner announced a new national policy to "consistently and explicitly take into account health risks to children and infants when conducting assessments of environmental risks".[125] Jennifer Rega says that "this announcement directly responded to the NAS report and began a new trend in environmental regulation".[126] Other authors have cited the NAS report as a "catalyst" for the "change in national posture" regarding children's environmental health[127] and credit it with promoting a greater understanding of children's environmental health issues more generally.[128]

The FQPA was signed into law in 1996. The bill which eventually became the FQPA, H.R. 1627, was actually introduced by Congressmen Bliley (R-VA), Lehman (D-CA) and Rowland (D-GA) in 1993, shortly before the release of the NAS report. It eventually gained 225 co-sponsors in the House, but was not passed during the 103rd Congress.[129] It should be noted that this bill required the EPA to weigh health risks against the economic and agricultural benefits of a pesticide, while the Waxman and Kennedy bills made health risks the only standard for pesticide evaluation.[130] Congressmen Bliley reintroduced the bill in 1995, where it was

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[125] U.S. EPA press release quoted in Jennifer J. Rega, "The EPA's National Agenda to Protect Children's Health from Environmental Threats: The Trend to Better Protect Our Nations' Children from Environmental Health Hazards," *Dickinson Journal of Environmental Law and Policy* 119, no. Winter (1998).
[126] Ibid.
[127] Jennifer Brown, "Pediatric Environmental Health Hazards and the Role of Government in Adopting Standards to Protect Children," *Pace Environmental Law Review* 16 (1998).
[128] Gail Charniey and Reshs M. Putzrath, "Children's Health, Susceptibility, and Regulatory Approaches to Reducing Risks for Chemical Carcinogens," *Environmental Health Perspectives* 109, no. 2 (2001).
[129] *Issues and Legislation: Pesticides and Our Food* [Webpage of Rep. Henry Waxman] ([Undated] [cited May 5 2005]); available from <http://www.house.gov/waxman/issues/environment/pesticides/issues_environment_pesticides.htm>.
[130] Congressional Quarterly, "No Action Taken on Pesticide Regulation."

strongly opposed by Waxman, who along with Senator Kennedy introduced a bill they argued would better protect children's health compared to the Bliley approach. The Bliley bill was also criticized by the chair of the NAS committee that produced "Pesticides in the Diets of Infants and Children", Dr. Philip Landrigan.[131]

In 1996, a revised version of the bill finally passed through a fortunate confluence of interests, illustrating the centrality of bargaining across traditional cleavages into order to pass legislation in the American system. Congressman Waxman's webpage states that discussions between Waxman, Bliley, and Rep. John Dingell "to try to resolve their differences on pesticide reform" began on July 10, 1996, and concluded "with unexpected and extraordinary speed, [when] a comprehensive agreement was reached by July 14".[132] The agreement included the abolishment of the zero-tolerance Delaney clause and setting of a single standard for pesticide residues, and the adoption of all the NAS report's recommendations concerning children's environmental health, plus some additional measures such as the consideration of possible endocrine disruptors. Dr. Landrigan said "it was the trade-off of the Delaney clause for children that was the grand compromise that made possible the Food Quality Protection Act": the pesticide manufacturers were "very, very happy, delighted" at the removal of the Delaney clause, while environmental and children's environmental health interest groups were pleased with the protection of children.[133] Dr. Goldman notes that growers and food processors were "tired of the scare of the month" when it came to pesticides and public opinion,[134] which was another element of the FQPA bargain: it was meant to increase public confidence in the safety of the pesticide regulatory system.

A final element of the bargain was noted by both Dr. Landrigan and Congressman Waxman's representative: the congressional Republican Party's need to pass an environmental

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[131] "Food Safety at Risk in the Congress," *San Francisco Chronicle*, July 5 1995.
[132] *Issues and Legislation: Pesticides and Our Food* ([cited).
[133] Landrigan, "Interview with Author."
[134] Goldman, "Interview with Author."

law before the upcoming elections. When Republicans took control of both the Senate and House of Representatives in November 1994 mid-term elections and began to implement their "Contract with America", they began to take steps to weaken environmental regulations. However, according to Dr. Landrigan, "by the spring and summer of 1996, they [Republicans in Congress] realized that they were facing re-election and that wide segments of the public considered them to be anti-environment and anti-children".[135] Congressman Waxman's office volunteered a similar assessment, as the representative noted the Republicans' need to redeem themselves before the next election in light of public criticism of their environmental record.[136] Thus, although the children's environmental health measures in the bill were originally introduced and championed by Democrats, the FQPA was passed with broad bi-partisan support by a Republican Congress in what was essentially a timely alignment of interests.

A government official reported the observations of one of the drafters of the legislation, saying "the FQPA passed unanimously, which means that no one read it – but it was about kids and it was an election year, so it passed".[137] This is a testament to the power of children in making a contentious issue such as pesticide regulation appealing to many interests, and even if most members of Congress "didn't read" the legislation, the wide array of interests involved in forging the FQPA compromise demonstrates the breadth of the debate around children's health and pesticides. The next section, examining the development of similar legislation in Canada, will demonstrate the marked differences in how that law came about and its implications for children's environmental health more broadly, based again on the combination of policy contexts, institutions, and interest groups present in that country.

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[135] Landrigan, "Interview with Author."
[136] Representative of Rep. Henry Waxman, "Interview with Author," (June 24, 2005).
[137] EPA official, "Interview with Author," (June 22, 2005).

Canada to the PCPA: 1980s to 2002

The first important difference in the development of pesticide laws in Canada was introduced in chapter one: a lack of the lead poisoning and pesticide scares that were such important elements of the policy context in the US. During the time period under consideration, lead poisoning of children was a non-issue in Canada, although recently it has been gaining some legislative attention, with the passage of new regulations to "limit lead content in children's jewellery that is imported, advertised or sold in Canada".[138] Canada still lacks a national monitoring program for childhood lead poisoning.

The US food contamination issues of the 1980s did have an impact in Canada, but their effect was generally muted compared to the public panic that occurred south of the border. For example, in 1989 the Alar issue received remarkably little coverage in Canadian newspapers, especially compared to its daily appearance in the US: Harrison and Hoberg note that "for the year 1989, there were more stories (21) in the *New York Times* alone than there were in all of the newspapers covered by the *Canadian News Index* (17)".[139] Most of these noted that Health Canada did not recognize a significant risk to children, and was not planning on taking regulatory action.

Like the United States, Canada was involved in a protracted attempt to reform its pesticide legislation starting in the 1980s, but in Canada there was no single issue that defined the debate, as the Delaney paradox did in the US. Recommendations for reform began in 1984 with the Salter Report, "Consultation in the Assessment and Registration of Pesticides", for the Agriculture Department, followed by reports from the Law Reform Commission of Canada in 1987 and the Pesticide Registration Review Team ("a multidisciplinary task force established in

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[138] Health Canada, *Minister Dosanjh Announces New Regulations for Lead Content in Children's Jewellery* [Press release] (June 1 2005 [cited July 19 2005]); available from <http://www.hc-sc.gc.ca/english/media/releases/2005/2005_52.html>.

[139] Harrison and Hoberg, *Risk, Science, and Politics: Regulating Toxic Substances in Canada and the United States.*

1989 by the federal government") in 1990.[140] The 1990 report contained no mention of children, and neither did the federal government's response to the report in 1994.[141] This is despite the fact that concerns about children's health in relation to pesticides had been growing in the US legislature since at least 1991, and the fact that the NAS report was released the year before to such great fanfare in the US. Again, the NAS report received very little coverage in the Canadian media, and as will be discussed below, it seemed to have very little impact on Canadian policy makers and interest groups.

While these various reports and responses were being produced at the federal level, a parallel system of reforms was occurring at the municipal level. The first municipal bylaw banning the use of cosmetic lawn pesticides on public and private property was passed in Hudson, Québec in 1991. This law was subject to a number of legal challenges, and was finally upheld by the Supreme Court in 2001.[142] Since this time, municipal pesticide bans have grown into a significant movement in Canada, with the support of a number of major Canadian ENGOs (including the Canadian Environmental Law Association, Canadian Association of Physicians for the Environment, and the Sierra Club of Canada), resulting in a total of 71 by-laws across Canada as of the spring of 2005.[143] The movement makes significant use of the children's environmental health frame: virtually all groups mention risks to children in at least some of their materials (pointing to children's more sensitive developing systems as well as the fact they play on lawns sprayed with pesticides), and groups such as the Canadian Partnership for Children's Health and the Environment and the Canadian Association of Physicians for the

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[140] Hébert, "Bill C-8: An Act to Protect Human Health and Safety and the Environment by Regulating Products Used for the Control of Pests."

[141] See Canada, "Government Proposal for the Pest Management Regulatory System," (Pest Management Secretariat, 1994). [The Purple Book].

[142] See Canadian Environmental Law Association, *Hudson, Quebec Pesticide Bylaw* [webpage] (2003 [cited July 19 2005]); available from <http://www.cela.ca/celacourts/detail.shtml?x=1615>.

[143] Mike Christie, *Private Property Pesticide by-Laws in Canada* (March 3 2005 [cited May 28 2005]); available from <www.cche-info.com/pdf/cche_municipal_pesticide_bylaws.pdf>.

Environment have brought their special concern with children to the debate.[144] The high degree of activity at the municipal level (in contrast with the federal level) in Canada is particularly interesting because there is limited evidence of a similar movement at the local level in the US,[145] a fact that may be attributable to the more constrained jurisdiction of most local governments in the States. Another noteworthy component of the success of the municipal movement in Canada is that local government is the only level of government in the country that lacks a parliamentary structure: in municipal governments there are (for the most part) no political parties or party discipline, and there may be greater opportunities for entrepreneurship as each municipal politician is free to act according to his or her beliefs or constituents' wishes, as is the case in the US separation of powers system.

Events at the federal level proceeded slowly. The speed at which policy developed may in fact demonstrate a lower level of executive commitment to the issue than was evident in the US: consider that the Liberal government under Prime Minister Chrétien pledged in 1993 to introduce new pesticide legislation,[146] yet despite the comparatively greater power of the executive to pass legislation in Canada's parliamentary system and the Chrétien government's continued tenure, new legislation was not in place until 2002. In 1995, the federal government announced the creation of the Pest Management Regulatory Agency (PMRA) within Health

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[144] See for example Sierra Club of Canada, *Pesticide Facts* [Fact sheet] (1998 [cited August 1 2005]); available from <http://www.sierraclub.ca/national/programs/health-environment/pesticides/pesticid.html>. and Canadian Partnership for Children's Health and the Environment, *Partnership for Pesticide Bylaws* [Webpage] (2003 [cited August 1 2005]); available from <http://www.healthyenvironmentforkids.ca/english/special_collections/fulltext.shtml?x=787>.

[145] Limited to the recent creation of a "National Coalition for Pesticide-Free Lawns", founded in 2004 by Beyond Pesticides and a number of other small ENGOs (including some local organizations), which is attempting to develop voluntary, private cessation of cosmetic pesticide use by homeowners. See Beyond Pesticides, *National Coalition for Pesticide-Free Lawns* [Webpage] (Undated [cited July 26 2005]); available from <http://www.beyondpesticides.org/pesticidefreelawns/>.

[146] Standing Committee on Environment and Sustainable Development, "Pesticides: Making the Right Choice for the Protection of Health and the Environment."

Canada, and the transfer of responsibilities for the PCPA from the Minister of Agriculture to the Minister of Health. However, the PCPA was not amended to reflect these changes.[147]

In May 2000, the House of Commons Standing Committee on Environment and Sustainable Development produced a report entitled "Pesticides: Making the Right Choice For the Protection of Health and the Environment" which recommended major changes to pesticide legislation, including measures to better account for the health of children and "other vulnerable subpopulations", such as those living in the North (particularly Aboriginal peoples), women, and people in poor health (particularly the elderly), and workers who come into contact with pesticide through their jobs. Although the Standing Committee's final report is cited as in a government information bulletin regarding the new PCPA,[148] testimony at committee hearings in 1999 indicate that legislation had already been drafted at this point.[149] A variety of government departments, Canadian ENGOs (including World Wildlife Foundation, Canadian Environment Defence Fund, and the Sierra Club of Canada) and medical organizations (including the Canadian Institute for Child Health and the Canadian Public Health Association) testified at the committee hearings and discussed children's vulnerabilities to pesticides. The final report was quite critical of the Liberal government's current regulation of pesticides, which may demonstrate a degree on entrepreneurship on the part of its Liberal chair, the Honourable Charles Caccia. In fact, Chairman Caccia's "notoriously independent" committee has a history of challenging government, as it put forward amendments to the Canadian Environmental

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[147] Ibid.

[148] Health Canada, *The Proposed New Pest Control Products Act – Pest Management Regulation in the 21st Century* ([cited).

[149] On November 17, 1999, Angela Rickman, the Deputy Director of the Sierra Club of Canada testified before committee, saying, "currently the Minister of Health is considering amendments to the Pest Control Products Act, and draft legislation is ready." See Standing Committee on the Environment and Sustainable Development, *Evidence*, 36th Parliament, 2nd sess., November 17 1999.

Protection Act in 1999 and the Species At Risk Act in 2002, but in both these instances was rebuffed by Cabinet.[150]

The Standing Committee report is interesting because although it references the FQPA,[151] it mostly discusses the issue of pesticides and children's health independently of the developments in US science and policy that had occurred over the previous eight or nine years. The NAS report is not cited in the report, except in a brief quotation from the testimony of a representative of the Canadian Institute for Child Health, despite the fact it was the groundbreaking scientific review of the effect of pesticides on children's health. This may demonstrate some degree of disjuncture between Canadian and American policy makers, at least at the legislative level. Moreover, the similarities between the two countries' regulatory systems seem to indicate a high degree of knowledge diffusion, but the members of Parliament who served on the Standing Committee did not seem to take into account the regulatory emulation that had already taken place. After reviewing the FQPA's additional tenfold safety measure for children, they concluded that "the Canadian government should take recent child protection development in the United States as its model", which a clearly indicates the desirability of emulation, but also suggests the Committee was unaware that this regulatory emulation had occurred at least three years before in PMRA policies though not in law. This disjuncture may be an important element of why the legislation occurred so much earlier in the US than in Canada, and why the child-specific elements of the regulatory system had a broader impact on children's environmental health policy in the US.

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[150] Kathryn Harrison, "Passing the Environmental Buck," in *New Trends in Canadian Federalism*, ed. Miriam Smith and Francois Rocher (Peterborough: Broadview, 2003).

[151] The Committee notes the FQPA's additional safety factor for children, and states that it thinks "that the PMRA should go beyond the US requirements and take the vulnerability of certain sectors of the population [i.e. vulnerable subpopulations] into account when doing any kind of risk assessment, not just children and not just for dietary intake". See Standing Committee on Environment and Sustainable Development, "Pesticides: Making the Right Choice for the Protection of Health and the Environment."

Eighteen years after the first Canadian report on reform was issued, and six years after the passage of the FQPA in the United States, amendments to the PCPA were finally introduced in 2002. The first bill, Bill C-53, was introduced by Health Minister Anne McLellen on March 21, 2002. It was debated in the House in April and again in early June, where members of the opposition parties (at that time the Canadian Alliance, Bloc Quebecois, and New Democratic Party) were very critical of the fact that their proposed amendments to the bill (that dealt with confidential business information, and ensuring that the House of Commons reviews the new legislation after 5 years and that were agreed upon at committee stage) were not included in the government legislation.[152] Bill C-53 did not pass before the session's end. It was reinstated on October 9, 2002, as Bill C-8, and was "deemed approved at all stages and passed by the House" with no debate.[153] The bill then went through the Senate, and was given royal assent on December 12, 2002. Royal assent (from the Governor General) is needed for acts of the Canadian parliament to become law. However, the Governor General can delegate authority to Cabinet to proclaim the date on which a law will actually take effect. This is case with the PCPA; proclamation was delayed to give the executive time to develop regulations. The PMRA released a Notice of Intent concerning the proposed regulations on June 13, 2005,[154] so three years after the passage of the Act there is some indication that this process is nearing completion.

The fact that the amended PCPA passed through Parliament relatively easily, and with relatively little debate that would require substantive changes to the bill, is an indication of the greater centralization of power in Canada's parliamentary system compared to the US separation of powers, which required many rounds of bargaining in order to pass the FQPA, although, as the participants noted, the final stage was accomplished in a matter of days. This is a significant element of the development of the two pieces of legislation, because the more open style of

[152] Parliament of Canada, "Edited Hansard," (37th Parliament, 1st Session, June 5, 2002).
[153] Parliament of Canada, "Hansard," (37th Parliament, 2nd Session, October 9, 2002).
[154] Pest Management Regulatory Agency, "Proposed Revisions to the Pest Control Products Regulations," ed. Health Canada (2005).

debate and bargaining in the US produced more opportunities for the policy frame to spread to new applications by alerting entrepreneurs and interest groups about the issue. The importance of open debate in the US system will be returned to in the next chapter in the discussion of the legislation's implementation.

I have already discussed the fact that regulatory emulation seems to have been in place long before legislative emulation, and will now return to this puzzle in greater detail. The similarities between Canadian and American regulatory processes, as well as the texts of the legislation, were described at some length earlier in this chapter. Despite relevant differences, the similarities seem to present strong evidence for some type of elite emulation.[155] For instance, a PMRA interviewee noted that the PCPA is an example of taking on a positive element of US regulation, namely the FQPA,[156] and reevaluation documents explicitly state the adoption of FQPA requirements and a dependence on EPA scientific evaluations. However, debate at the parliamentary level (perhaps naturally, given its greater visibility) presents a very different picture of almost independent policy development. Members of Parliament focused debate on the recommendations of the Standing Committee on Environment and Sustainable Development, which itself included very few references to US science or policy, and on issues that were prominent at the municipal and (in the case of Quebec) provincial level, namely bans on cosmetic lawn pesticides. This issue that was not included in the PCPA and had never appeared in the national US debates.

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[155] As described by Hoberg, "Sleeping with an Elephant: The American Influence on Canadian Environmental Regulation."
[156] Canadian government official, "Interview with Author."

Summary

If the substance of the regulations in Canada occurred through emulation of the American legislation, perhaps with very little time lag,[157] the difference in timing and broader development of the legislation requires further explanation. This explanation can be found in a number of crucial elements in the development of the FQPA that were missing in Canada, the most important of which is policy entrepreneurs. In the US, entrepreneurs such as Leahy and Waxman played crucial roles in bringing the issue to the legislature by requesting motivating reports, proposing legislation, and holding hearings. Although the timing of the FQPA's passage was highly dependent on factors that are not necessarily predictable by theory, such as the fortunate coincidence of the pressing need to resolve the Delaney paradox and a strong electoral incentive for congressional Republicans to pass environmental legislation, it was policy entrepreneurs who ensured that children's environmental health measures were on the table and a central part of the FQPA compromise. Individual Canadian members of Parliament do not have the same freedom and ability to act as entrepreneurs as actors in the American separation of powers system, and the type of reframing US actors were engaged in (highlighting the failure to protect children in government policies) is not necessarily attractive to government actors in a parliamentary system, so it is not surprising that similar legislation did not immediately develop in Canada.

A second important element of the differences in how legislation was developed in the two countries was the lack appropriate policy contexts (in the form of lead and pesticide scares) and focusing events (such as the NAS report) that turned policy-maker attention to this issue. In the US, these factors provided a basis for entrepreneurial action, and ensured that the resulting debate was prominent, public, and broad in nature. As will be seen in the next chapter, the

[157] An official noted that although child-specific risk assessments were conducted in a case-by-case basis since the 1980s, they "were formally initiated in 1997/1998, shortly after the Food Quality Protection Act came into force in the US". See Ibid.

significant debate on the issue of children's health and pesticides that surrounded the legislation in the US meant that various governmental and non-governmental actors were poised to make implementation an issue as well.

Finally, the Canadian parliamentary system did not allow for a broad public debate to develop among elements represented in legislature, and the failure of interest groups to engage in the debate also prevented the Canadian legislation from gaining prominence similar to the FQPA in the US. These factors were compounded by fact that the political executive in Canada did not demonstrate a high level of commitment to the issue, and resulted in legislation that was in many ways a "non-issue" in Parliament, the regulatory agency, and the public arena. This marked contrast with the United States resulted in Canadian pesticide policies and legislation that contain measures for children's environmental health, but as will be seen in the next chapter, has so far failed to have a major impact on the use of the children's environmental health frame in Canadian policy.

CHAPTER III

Introduction

The previous chapter dealt with the development of children's environmental health-oriented laws in the United States and Canada, emphasizing the US's earlier adoption of legislation and the broader, more prominent level of public debate on pesticides and children's health that the development of legislation generated in that country. This chapter will compare American and Canadian pesticide policies in practice under the new law in the case of the US, and similar regulatory processes in the case of Canada, and discuss their impact on policy regimes for children's environmental health.

United States after the FQPA: 1996-2005

The passage of the FQPA in 1996 generated a great deal of media coverage in the United States, most of it very positive. It focused on the bill as an "amazing breakthrough"[158] and a "rare legislative compromise"[159], and a major advance in protecting children from the dangers of pesticides. President Clinton was quoted as saying, "I like to think of this bill as the 'peace of mind act', because parents will know that the fruits, grains, and vegetables their children eat are safe".[160] The true measure of the legislation, of course, cannot be made without examining its implementation over a period of time, and accordingly this section will trace the impact of the FQPA on regulatory policies, non-regulatory policies, and children's environmental health policy more generally in the United States since 1996.

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[158] "Food for Thought: Pesticide Bill Shows That Progress Is Possible," *Columbus Dispatch*, August 14 1996.
[159] Gary Lee, "In Food Safety Changes, Victory for Many," *Washington Post*, July 28 1996.
[160] "Clinton Praises Bill Regulating Pesticides," *New York Times*, August 4 1996.

Regulatory policies

Before the passage of the FQPA, all food-use pesticide registration applications required reproductive and neurotoxicity studies. These tests require that chemicals are tested on adult animals and their offspring, and when adults and offspring react differently to the pesticides, the chemicals are regulated on the basis the offspring's reactions. Therefore, effects of these chemicals on children were considered in the risk assessments for pesticides in a way they were not for other hazardous non-food use chemicals.[161] However, as one government official acknowledged, before the FQPA consideration of children in pesticide risk assessments "wasn't uniform...so the FQPA sort of mandated that we were all on the same page... [before the FQPA] there was nothing that said that this is what you would do to investigate children's health".[162]

The FQPA also mandated a series of new methods and studies to better assess children's environmental health when evaluating pesticides, as well as a massive reevaluation program (the agency is to "reassess approximately 10, 000 existing pesticide tolerances"[163]). An official said that complying with the FQPA reevaluation schedule, which is required by law to be completed by 2006, is now "98% of the job" of re-registration branches.[164] New scientific techniques include a developmental neurotoxicity test, which is used to address the FQPA's call for an examination of subtle behavioral effects that may result from early exposure to pesticides. This test is extremely expensive, and was not in regular use before the FQPA, but is now part of the tiered testing requirements in the Office of Pesticide Programs. It is requested from registrants when the results of standard tests show certain outcomes, such as evidence of neurotoxicity at low doses. An official noted that "it takes a long time" to develop the required new methods, protocols and studies, and that the agency is trying to meet the reevaluation requirements of the

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[161] EPA official, "Interview with Author."
[162] Ibid.
[163] U.S. Environmental Protection Agency, *Children's Environmental Health Yearbook Supplement.*
[164] EPA official, "Interview with Author."

law but is "falling a bit short".[165] Thus, the FQPA has resulted in significant changes to the regulatory process in the US, and the style of regulation, with its detailed mandates and strict deadlines, has been important in determining the character of these changes. It should also be noted that these changes occurred for the most part while there was a Democrat administration and Clinton-appointed leaders (Browner and Goldman) at the EPA: as mentioned in the last chapter, their greater receptiveness to more stringent regulations is potentially very significant, as interpretation of FQPA implementation is debated under the current Republican administration.[166]

The nature of the EPA's initial implementation of the FQPA was also affected by setbacks at a political level. In 1998, Vice-President Gore issued an "unusual" memo to the EPA Administrator and Agriculture Secretary that "stunned environmentalists by directing the EPA to give 'due regard for the needs of our nation's agricultural producers' when regulating pesticides".[167] This caused concerns that the administration was attempting to delay implementation of the FQPA, and concerns about the legislation's implementation intensified when Congressman Richard W. Pombo (R-CA) introduced the Regulatory Fairness and Openness Act (H.R. 1592) in 1999. If passed, the bill "essentially would reverse the burden of proof (concerning pesticide's safety for children), requiring the EPA to provide detailed justification before it sought to apply any additional safety margins for children".[168] The bill prompted an outcry from agency officials and children's environmental health advocates who

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[165] Ibid.

[166] A major issue at the EPA and in Washington at the time of writing is the ethics and regulatory value of testing pesticides on human subjects. Industry is in favour of this practice, as it means that the tenfold interspecies safety factor does not apply in setting pesticide tolerances, which can therefore be more lenient. ENGOs and children's environmental health advocates are strongly against this practice, as they deem it unethical and likely to undo the intended extra protections laid out in the FQPA by resulting in lower standards. Senator Barbara Boxer (D-CA) successfully held up the confirmation of the newest Republican nominee for EPA administrator (Stephen L. Johnson) for some time due to his support for human pesticide tests. See Landrigan, "Interview with Author.", Representative of Rep. Henry Waxman, "Interview with Author." and Oleskey et al., "Pesticide Testing in Humans: Ethics and Public Policy."

[167] Sharon Begley and Mary Hager, "Pesticides and Kids' Risks," *Newsweek*, June 1 1998.

[168] George Lardner and Joby Warrick, "Pesticide Coalition's Text Enters House Bill; Industry, Farmers Trying to Blunt U.S. Regulation," *Washington Post*, May 13 2000.

acted quickly to preserve the children's environmental health frame in the issue. EPA officials were quoted saying the new bill would "prohibit our ability to protect the environment and particularly the health of our children"[169] and Waxman stated that the bill "would guarantee that the law we passed [the FQPA] would never be implemented."[170] The environmental group EWG was very critical of origins of this bill (an industry consulting firm was closely involved), saying it was the product of a pesticide lobby that did "not like the way the EPA has begun to implement [the FQPA] in ways that could be very good for kids, but very bad for the pesticide business."[171] Although the Regulatory Openness and Fairness gained the support of a large number of co-sponsors, including Rep. John Dingell, one of the members of Congress who negotiated the final version of the FQPA, the bill never passed. A political staffer noted that it was never meant to; saying that it was a strategic move to pressure "Gore and the Administration to take a deep breath on implementation", and it made the agency more cautious about the application of the additional tenfold safety factor for children, thus representing a success for industry.[172]

The Regulatory Fairness and Openness Act may be seen as another example of the role of entrepreneurs in the American system, as well as the high degree of access interest groups (in this case, industry groups) have to the process, given that much of the controversy surrounding the bill focused on the fact it may have been "largely drafted by the industry that the EPA regulates."[173] It is significant in understanding the different effects of children's environmental health-oriented pesticide regulatory policies in Canada and the US because it demonstrates mechanisms for mobilization of opposing interests and promoting debate in the US that do not

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[169] Jake Thompson, "Pesticide Regulation Puts Hagel in Motion," *Omaha World Herald*, June 9 2000.
[170] Lardner and Warrick, "Pesticide Coalition's Text Enters House Bill; Industry, Farmers Trying to Blunt U.S. Regulation."
[171] Kenneth A. Cook, "Foreword," in *Attack of the Killer Weeds*, ed. Todd Hettenbach and Richard Wiles (Washington, D.C.: EWG, 1999).
[172] Representative of Rep. Henry Waxman, "Interview with Author."
[173] Thompson, "Pesticide Regulation Puts Hagel in Motion."

exist in Canada, firstly because there no law yet in force, and secondly because of the nature of the parliamentary system, where all bills are passed by the government, and opposition bills never present a serious challenge as they will not be passed as a matter of fact.

Mobilization of interest groups continued to be a major component of the US and Canada's differences in the regulation of pesticides for children's health after the failure of the Regulatory Openness and Fairness Act. Interviews with a variety of children's environmental health advocates indicate that, though the FQPA is acknowledged to be a landmark piece of legislation with some major successes (such as the phasing out of organophosphate pesticides), its implementation leaves much to be desired. For example, Congressman Waxman's representative said that although it was possible to point to key FQPA successes, the pesticide industry's traditional capture of this aspect of environmental regulation was evident in the implementation.[174] Dr. Landrigan expressed concern that "the EPA is being very lax" in applying an extra margin of safety to pesticide standards when there is a lack of data on the chemical's effect on children.[175]

Examples of interest group action range from the CEHN's letter urging members of Congress to implement the FQPA's improvements to the protection of children and succinct, "report card"-style evaluations of the EPA's actions,[176] to litigation by the NRDC[177] and more detailed scientific studies of particular regulatory actions and the implementation of the FQPA's new scientific methods by the EWG and Consumers Union (a public interest group),

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[174] Representative of Rep. Henry Waxman, "Interview with Author."
[175] Landrigan, "Interview with Author."
[176] Children's Environmental Health Network and American Public Health Association, *Food Quality Protection Act: An Open Latter to the House Agriculture Committee* (June 25 1998 [cited April 14 2005]); available from <http://www.cehn.org/cehn/stmt.html>.and Children's Environmental Health Network, *Pesticide Regulations/Food Quality Protection Act* (September 5 2003 [cited April 30 2005]); available from <http://www.cehn.org.cehn/reportpesticide.html>.
[177] In 2001, NRDC reached a settlement agreement with the EPA that requires the agency to act on various reassessment obligations under the FQPA. This is discussed further below, see also Natural Resources Defence Council, *Court Approves NRDC-Led Coalition's Settlement with EPA; Agency Must Meet Legal Obligation to Regulate Pesticides* [Press release] (September 27 2001 [cited July 21 2005]); available from <http://www.nrdc.org/media/pressreleases/010927.asp>.

respectively.[178] Two important points may be made about US interest groups' approach to pressuring government and the access points they used. First, in all actions taken by interest groups with regards to FQPA implementation, there was evidence of the explicitly scientific approach referenced in chapter one. The CEHN report card is quite brief but it still engages the regulatory science, commenting on the use of developmental neurotoxicity tests and data requirements for registration. The Consumers Union's FQPA Project webpage states that the group's aim is "to generate new, solidly data- and science-based analyses of risk trade-offs that will project the consequences of regulatory choices and help EPA reduce public health and ecological risks simultaneously".[179] EWG actually prepares its own quantitative risk assessments and, as president Ken Cook notes, is in this way unique.[180] This approach of challenging the regulatory science, as will be discussed below, is not in evidence in Canada.

The second important element of interest groups' involvement in the FQPA is their use of litigation as a key point of access. Interest groups enjoy access at other points in the policy making process that may be particular to the more open US system; for example, Congressman Waxman's representative noted the importance of EWG and representatives of the food processing industry in crafting the FQPA compromise.[181] However, litigation is crucial to interest groups' influence in the US, and also key to understanding the different impact of groups in Canada, where discretionary statutes and a more limited tradition of adversarial regulation severely limit this option. American interviewees expressed the expectation that litigation would serve to strengthen the protection of children's environmental health, both under the FQPA and

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[178] EWG studies include 1999 reports on methyl parathion, dursban, and DBCP; see Environmental Working Group, *EWG Reports by Issue -- Pesticides* [webpage] (2005 [cited July 21 2005]); available from <http://www.ewg.org/archives/reports-by-issue.php?issueid=5012>. From 1997-2001, the Consumers Union had a major project on implementation of the FQPA. For the final report, see Consumers Union, *A Report Card for the EPA: Successes and Failures in Implementing the Food Quality Protection Act* [Report] (February 2001 [cited July 21 2005]); available from <http://www.consumersunion.org/food/fqpa_info.htm>.

[179] Consumers Union, *FQPA -- the Project* [webpage] ([Undated] [cited May 14 2005]); available from <http://www.ecologic-ipm.com/project.html>.

[180] Cook, "Interview with Author."

[181] Representative of Rep. Henry Waxman, "Interview with Author."

in reference to other children's environmental health decisions. For example, one EPA Office of Children's Health Protection official said (referring to the agency's passage of a disappointingly weak mercury rule that states were expected to challenge) "if you can get a few states' attorney generals to sue us, that's always a good thing".[182] Dr. Goldman noted current efforts to sue over the EPA's decisions of when to apply the ten-fold safety factor for children under the FQPA, saying that in these cases the courts tend to be quite deferential to the agencies. However, she expected ENGOs to be more successful in litigating the FQPA once the 2006 deadline for reevaluation had past, as it is not possible for the EPA to complete the required evaluations on time.[183] The NRDC has begun litigation of the FPQA, and in 2001 was successful in achieving a consent decree and settlement agreement concerning when particular families of pesticides must be assessed and controlled.[184] Therefore, as more deadlines pass, US ENGOs are likely to be even more successful in pressuring for the implementation of child-protective measures in the FQPA.

Non-regulatory policies

The FQPA, and the NAS report that helped produce it, have also had an impact on children's environmental health-orientated pesticide policies outside of the regulatory process. Some of this impact has been direct, in the case of research and associated conferences to support implementation. The EPA has a research program, "Exposure of Children to Pesticides and Toxics" that aims to "identify those pesticides, pathways, and activities that represent the highest potential exposure to children" according to the FQPA's requirements to consider

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[182] Berger, "Interview with Author." When questioned about the role of litigation in the EPA's standard setting, Berger referred to a recently passed rule that weakened the regulation of mercury emissions. She noted that states would sue the agency (the NRDC has already launched a suit) and that this would bring pressure on the agency to change or amend the rule.

[183] Goldman, "Interview with Author."

[184] Natural Resources Defence Council, *Court Approves NRDC-Led Coalition's Settlement with EPA; Agency Must Meet Legal Obligation to Regulate Pesticides* ([cited).

"multimedia, multi-pathway exposures" when setting tolerances.[185] In 1999, the EPA held "One Way to Increase the Commitment: Conference on the Food Quality Protection Act", which was "designed for food producers, commodity groups, state and federal regulators, and others".[186] In addition to these direct impacts, since 1996, the EPA and other federal agencies have engaged in a broader range of education and awareness-building programs with regards to children's environmental health and pesticides. These include education programs aimed at improving pesticide safety for children who work in agriculture and are exposed to pesticides, labeling restrictions for insect repellants used on children, and support for school IPM programs.[187] Although these non-regulatory programs are not mandated by the FQPA, the fact that they greatly increased in prominence and number since 1996 indicates that they are strongly associated with the law's passage, and by the commitment of administration it was passed under, with leaders such as Goldman and Browner, were likely inclined to expand the protection of children in the non-regulatory sphere. These policies, then, are the result of both greater agency and public attention to the issue of children's health and pesticides, and support from various interest groups such as Beyond Pesticides, which has been engaged in a promotion and education campaign regarding school IPM.[188]

General children's environmental health policies

The development and passage of the FQPA have been shown to have had a notable effect on both regulatory processes and non-regulatory policies that deal with pesticides and children's environmental health. While this represents an important advance in children's environmental health policy in its own right, given the significant risks pesticides pose for children, it is arguable that the most significant impact of the FQPA in the United States has been its

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[185] U.S. Environmental Protection Agency, *Children's Environmental Health Yearbook Supplement.*
[186] Ibid.
[187] Ibid.
[188] See for example School Pesticide Reform Coalition and Beyond Pesticides, "Safer Schools: Achieving a Health Learning Environment through Integrate Pest Management," (2003).

motivation of a range of more general children's environmental health policies, which address other or multiple risks and which today form the United States' unique policy regime for children's environmental health.

These broader policies come in a wide variety of forms, from agency actions to presidential directives and proposed legislation. The first major initiative, the EPA's 1995 policy of considering risks to children in all its assessments, was introduced in chapter two as coming directly out of the NAS report, and demonstrates the power of the pesticides issue to focus that administration's attention on risks to children. In September 1996, months after the passage of the FQPA, EPA Administrator Browner "released a major new report that details health threats faced by children from toxics in the environment and sets forth a new national agenda to protect children from those risks more comprehensively that ever before".[189] The document reported on problems such as asthma, lead poisoning, and endocrine disrupters, including pesticides and other hazardous chemicals. The new National Agenda to Protect Children's Health from Environmental Threats included many steps the FQPA legislated for pesticides, including research on children's unique susceptibility and exposure to environmental pollutants and a move to addressing children's total exposure to toxic chemicals, similar to the FQPA's multimedia, multi-pathway assessment of pesticides. The press release concerning the Agenda notes that it

> builds on a series of actions taken by the EPA to protect children, including: unprecedented steps to protect children from the risks posed by pesticides in their food; a national policy to take into account children's health risks when assessing environmental risks on which standards are based; and safety controls and widespread public information on toxic hazards in the home, including lead-based paint.[190]

This statement is telling because it illustrates how quickly a major initiative such as the FQPA (the "unprecedented steps" to protect children from pesticides) can become part of a country's

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[189] U.S. Environmental Protection Agency, *EPA Administrator Releases New Report on Environmental Health Threats to Children* [Press release] (September 11 1996 [cited April 14 2005]); available from <http://yosemite.epa.gov/opa/admpress.nsf/0/f11dab0871b319978525646b0067d2ee?OpenDocument>.
[190] Ibid.([cited).

policy context and in doing so, provide the same pressure for further action that lead poisoning gave to pesticides initially. It also points to the fact that the impact of these child-specific elements of the policy context may be cumulative, as a relatively long history of legislation and policies dealing with childhood lead poisoning had failed to produce broad actions like the National Agenda, but the addition of pesticides and a prominent public debate about environmental risks to children's health directly contributed to the development of these policies.

Actions continued in 1997, with Executive Order 13045 -- Protection of Children From Environmental Health Risks and Safety Risks. This directed each federal agency to "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children" and to "ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks".[191] As mentioned in chapter one, the Executive Order also created the Presidential Task Force on Environmental Health Risks and Safety Risks to Children, which has produced major reports on asthma and lead, as well as an inventory of school environmental health policies, and has been involved in preparations for the National Children's Study. 1997 also saw the creation of the Office of Children's Health Protection (OCHP) within the Office of the Administrator of the EPA. As will be discussed further when Canadian children's environmental health policies are examined, an institutional "home" for children's environmental health within government can be a very important element of successful policy making, as it provides a direct contact for interest groups, legislators, and other government agencies. It demonstrates a degree of executive commitment to institutionalizing the children's environmental health issue on the part of the Clinton administration, and the potential value of institutionalization, as the office has persisted under the less-environmentally inclined Bush administration. An official also emphasized the role of OCHP in creating "articulate and powerful champions" for children's

[191] Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks."

environmental health in the community, through education programs for health professionals and community leaders,[192] illustrating the sometimes very close relationship between advocates and agencies in the open American system.

The FQPA has also provided impetus for further legislation dealing with children's environmental health issues. The latest effort with perhaps the most direct link to the FQPA is Senators Jeffords and Lautenberg's work to expand FQPA-style protections for children to all toxic chemicals by amending the Toxic Substances Control Act (TSCA). The issue has been making headlines recently, as EWG released a report July 14, 2005 detailing the hazardous chemicals found in umbilical cord blood. Senator Lautenberg commented that "today, chemicals are being used to make baby bottles, food packaging and other products that have never been fully evaluated for their health effects on children – and some of these chemicals are turning up in our blood".[193] Lautenberg also said that he intended "to co-sponsor a bill to require chemical manufacturers to provide data to the EPA on the health affects of their products"[194] and EWG president Ken Cook indicated in a research interview that he expected a bill on TSCA amendments in July of 2005.[195] In fact, Senator Lautenberg, along with co-sponsoring senators Boxer, Corzine, Kennedy, Clinton, Jeffords and Kerry, introduced S. 1391, the "Kid Safe Chemical Act" to amend TSCA on July 13.[196]

The FQPA serves as a model not only for the specific types of regulatory changes S.1391 proposes, but also a method for achieving legislation for children's environmental health. The Kid Safe Chemical Act demonstrates again the role of interest groups in promoting an issue through an explicitly scientific approach and the role of individual members of Congress in engaging in the particular type of reframing necessary to make environmental regulation an issue

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[192] Berger, "Interview with Author."
[193] Maggie Fox, "Unborn Babies Carry Pollutants, Study Finds," *Yahoo News*, July 14 2005.
[194] Ibid.
[195] Cook, "Interview with Author."
[196] Thomas, *Bill Summary & Status for the 109th Congress: S.1391* ([cited).

of children's health. The appearance of other legislation aimed at children's environmental health, such as Senator Boxer's Children's Environmental Protection Act (S.855, 2001) and Representative Rush Holt's School Environmental Protection Act (H.R.110, 2001), demonstrate that entrepreneurs have been alerted to the possibilities of children's environmental health legislation, and will likely continue to pursue it as a means of environmental regulation.

Canada after the FQPA: 1996-2005

Since the PCPA is not in force, it is obviously not possible to evaluate its implementation or effect on Canadian regulatory processes and broader children's environmental health policies. However, ample evidence has been provided to show that the PMRA adopted FQPA-style policies shortly after the US legislation was passed and that, in effect, Canada's pesticide regulatory system has been working under child-protective policies as laid out in the FQPA and PCPA since 1996 or 1997, despite the fact that the new PCPA was not passed until 2002. Thus, it is possible to ask what impact these non-legislated policies have had, and compare them to the effect of legislated regulation in the United States.

Regulatory policies

As chapter two demonstrated, the regulatory processes in Canada are very similar to those in the US. The fact that the Canadian system produces less documentation than its American counterpart, and the fact that Canadian interest groups have not engaged the regulatory system as have US ENGOs means that it is somewhat more difficult to track the progress of policy implementation. However, information available from PMRA officials and documents suggest that many of the changes accomplished under the FQPA have also occurred in Canada. A program of pesticide reevaluation is in place, and an official stated that the agency is

committed to re-evaluating 401 older pesticides within a short time frame.[197] The PMRA's dependence on EPA evaluations should be reiterated here, as Canada cannot complete more or different evaluations than the US if "the progress on these re-evaluations is highly dependent on the availability of EPA reviews."[198] The PMRA has used the ten-fold safety factor to restrict the same organophosphate pesticides as the EPA, and in the agency's September 2000 reevaluation note for chlorpyrifos, it is noted that the PMRA

> has completed, under the authority of the *Pest Management Products Act*, a risk assessment of chlorpyrifos using reviews of data done by the PMRA and internationally available evaluations including those of the United States Environmental Protection Agency...the EPA risk assessment was based on the science policies developed under the *Food Quality Protection Act* of 1996 which 'sets a more stringent standard for most pesticides and which offers special protection for children'.[199]

It is interesting to note that both this pesticide and another restricted organophosphate, diazinon, have had their domestic (mainly lawn and garden) uses discontinued in Canada and the United States – although debate around the FQPA was overwhelmingly focused on food safety, its main successes so far have dealt with non-agricultural use of pesticides, which is more a focus of debate in Canada.

The major element of regulatory change missing in Canada is scrutiny from interest groups, which has been such an important factor in publicizing and promoting timely implementation in the US. Although a PMRA official said that the agency "consults with all stakeholders regarding regulations and policy" through a process of publication and commenting in the *Canada Gazette*, there is only limited evidence of interest group involvement in the regulatory process. A number of groups (including CAPE, CELA, WWF, and the Sierra Club) testified at hearings of the Standing Committee on Environment and Sustainable Development for the production of its 2000 pesticides report, but this participation does not directly engage the

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[197] Although this appears to be less ambitious than the 10,000 tolerances cited in the EPA's documents it should be noted that one pesticide may have a number of different tolerances set for it, depending on the pesticide/crop combinations, so while the differences in the US and Canadian programs may be illustrative, they are not directly comparable. Canadian government official, "Interview with Author."

[198] Pest Management Regulatory Agency, "Re-Evaluation of Organophosphate Pesticides."

[199] Pest Management Regulatory Agency, "Re-Evaluation Note: Chlorpyrifos," ed. Health Canada (Submission Coordination and Documentation Division, 2000).

regulatory agency, and one interviewee noted that this was only a minor component of his group's strategy on the pesticides issue, most of which was focused on the municipal level.[200] CELA (in conjunction with the Ontario College of Family Physicians) produced a major report entitled "Environmental Standard Setting and Children's Health" in 2000, which included a detailed case study of pesticide regulation and children's health, including the impact of the FQPA's measures for children on PMRA policies.[201] However, this thoughtful analysis seems to be the exception rather than the rule: interviews with two other major Canadian ENGOS showed almost complete disengagement. Ken Ogilvie, the executive director of Pollution Probe said that his organization was not involved in pesticide regulation and instead chose to focus on producing a children's environmental health "policy primer" (due to be published September 2005), which will be a science-based assessment of environmental risks to children's health. The primer aims to get the federal government to make a public commitment to children's environmental health issues by assigning a political lead and dedicating an office and annual budget to children's environmental health, and is interesting in that it is an example of a Canadian ENGO "catching on" to the children's environmental health frame, or at least putting their interest in the issue into action.[202] A representative of another group, who was cited above in regards to Standing Committee testimony and who did not wish to be identified, stated that "most of what we do is bylaw work", referring to the municipal movement to ban lawn pesticides, because this issue is "low hanging fruit" where groups have been successful in achieving policy results and gaining broad public support.[203] Other examples of Canadian ENGOs' high degree of disconnect from PMRA policies abound. The Canadian Association of

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[200] Advocacy group representative, "Interview with Author."

[201] Kathleen Cooper et al., "Environmental Standard Setting and Children's Health," (Canadian Environmental Law Association, Ontario College of Family Physicians Environmental Health Committee, 2000). The pesticide case study was completed in 1999 in time to be presented to the Standing Committee, and further information about regulatory policies was added later.

[202] However, Pollution Probe's executive director notes that the policy primer is not a "hard advocacy" document, but rather meant to provide information and prompt debate about children's environmental health, (see Ogilvie, "Interview with Author."), meaning that it is still a step behind US groups in pressing for concrete policies.

[203] Advocacy group representative, "Interview with Author."

Physicians (CAPE), a group active in the municipal pesticide movement, cites the NAS report and FQPA on its website about pesticides and children's health (published in 2000) but states that "in Canada, little has been done to update the regulation of pesticides, despite evidence that it is sorely out of date".[204] Although the new PCPA had not been passed at this time, PMRA sources including publicly available reevaluation documents provide evidence that FQPA-style policies were already in place. Similarly, the website of the Canadian Partnership for Children's Health and the Environment (CPCHE), the umbrella organization for Canadian groups with an interest in children's environmental health, contains a wealth of information about pesticides' effect on children's health and the municipal movement, but no resources on pesticide regulation by the PMRA.[205]

The lack of interest group engagement at the federal level, and corresponding lack of public debate about pesticides and children's environmental health in terms of federal regulatory policies, may be attributed to different styles of regulation, interest group access, resources, and scientific approach, all of which are closely linked. Since the PMRA policies related to children's environmental health are not yet the subject of enforceable legislation, the opportunities to test the regulations that arose in the US are not present in Canada. Thus potential objectors to the regulations have not made public opposition efforts such as the Regulatory Openness and Fairness Act in the US,[206] and potential supporters have not been able to litigate implementation, which is highly unlikely to be possible even after the PCPA is in force, given its elements of ministerial discretion discussed above. However, even without the advantage of a prominent piece of legislation as a rallying point, it should have been possible for

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[204] Canadian Association of Physicians for the Environment, *Pesticides* [Webpage] (2000 [cited July 23 2005]); available from <http://cape.ca/toxics/pesticides.html>.

[205] Canadian Partnership for Children's Health and the Environment, *Healthy Environments for Kids* [Webpage] (2003 [cited July 23 2005]); available from <http://www.healthyenvironmentforkids.ca/english/>.

[206] Although it is unlikely, given the length of time since its passage and the nature of Canada's parliamentary system, that legislative challenges will be brought when the new PCPA comes into force. The opposition parties in parliament have limited resources and opportunities to challenge the government's legislative agenda, and a correspondingly low probability of influencing the implementation of a law.

Canadian interest groups to scrutinize the PMRA's application of FQPA-style protections for children, especially given the volume of similar materials produced by groups in the US. With the exception of CELA's "Environmental Standard Setting" report, this has not occurred, and even the detailed and scientifically sophisticated approached used in that report has failed to prompt a policy response. Explanations stemming from interest group resources and approaches will be discussed further in the next section, where non-regulatory policies are examined.

Non-regulatory policies

As noted in chapter one, there are very few federal pesticide programs related to children's health outside of the PCPA regulatory policies, especially compared to the United States. In fact, the only non-regulatory program of note is the Federal/Provincial/Territorial Action Plan for Urban Use Pesticides and the accompanying Healthy Lawns Strategy, and although this policy potentially benefits children's health and is connected with the concerns of the municipal movement, which often employs child-specific framing, neither the Action Plan nor the Healthy Lawns Strategy makes explicit mention of children. The Action Plan on Urban Use was announced in October 2000, as "one of the first steps that the government will be taking as part of its response to the Standing Committee on the Environment and Sustainable Development's report".[207] It has a major information and education component, with the Healthy Lawns webpage designed to educate the public regarding reduced domestic pesticide use. It also contains a regulatory element, as part of the Strategy is for the PMRA to complete "priority re-evaluations...of the most common chemicals in lawn care pesticides".[208] There is some overlap with FQPA-style reevaluations here; in the reevaluation notice for restricted organophosphate pesticide diazinon it is noted that "action on the lawn uses was also one of the

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[207] Health Canada, *Minister Rock Announces Federal/Provincial/Territorial Action Plan for Urban Use Pesticides* [Press release] (October 16 2000 [cited May 18 2005]); available from <http://www.hc-sc.gc.ca/english/media/releases/2000/2000_101e.htm>.
[208] Ibid.([cited).

commitments in the Action Plan on Urban Use Pesticides".[209] Nevertheless, there is a sharp contrast with the US in the federal government's efforts to frame pesticide policies in terms of children's health, which is perhaps commensurate with the apparent legislative disconnect from regulatory policies discussed in chapter two. Since the actions of the PMRA to implement FQPA-style policies regarding pesticides and children's health did not appear to register with individual members of Parliament (such as those involved in the Standing Committee on Environment and Sustainable Development) and, more significantly, were not publicized by the agency's department, Health Canada (which is responsible for major press and public announcements, and which was silent on the subject of changes to regulatory policies[210]) it is not surprising that this child-oriented approach to pesticide regulation did not permeate other aspects of Canadian policy.

While federal pesticides policies framed in terms of children's environmental health are noticeably absent, the municipal pesticide bylaw movement continued to make gains after 1996. The municipal movement has gained wide media coverage, particularly in Ontario, where there is an active and extensive network of grassroots groups (often based in a single municipality or community) in addition to major ENGOs such as CELA, CAPE, and the Sierra Club of Canada. The movement's goals have even spread to one province: on April 3, 2003, Québec's new Pesticides Management Code (administered by the Ministère du Développement Durable, de l'Environnement et des Parcs) came into force, regulating the storage, sale and particularly the use of pesticides. According to the Ministry's webpage, the Code "promotes an approach aimed

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[209] Pest Management Regulatory Agency, "Update on Re-Evaluation of Diazinon in Canada," ed. Health Canada (2000).

[210] A search of Health Canada's press release archives from 1996-1999 (the period prior to PCPA amendment activity when changes to the PMRA's regulatory policies were being changed to match FQPA requirements) finds only one release (in 1998) that refers to the PMRA's approach to regulation, announcing a benchmark study of the agency that found "that Canada's schedule for re-evaluating older pesticides lags behind other countries" and noted the reevaluation of pesticides with regards to children's risks in the US, stating that "coordination of the Canadian and U.S. re-evaluation programs is crucial in order to minimize any potential loss of sales, avoid trade barriers and reduce costs," without indicating whether coordination had occurred or was occurring. See Health Canada, *Health Minister Releases Benchmark Report on the Pest Management Regulatory Agency* [Press release] (September 14 1998 [cited August 3 2005]); available from <http://www.hc-sc.gc.ca/english/media/releases/1998/98_58e.htm>.

at better prevention of health risks posed by these products, particularly to children and the environment".[211] The Code contains a list of the most toxic pesticides, which are banned from application on public land and a variety of private lands where children may be exposed, and materials on the Code are explicitly framed in terms of children's health.

The increasing number of bylaws banning pesticide use in particular communities, and possibly even Québec's new regulations, may be seen mainly as a product of the work of interest groups. As was mentioned above, Canadian groups chose to focus on this sphere of action for reasons related to their opportunities for access at the federal level and their resources and approaches to pressure. Access is improved at the local level by the absence of a parliamentary system, where party discipline restricts the opportunities of politicians to respond to pressure from outside groups. Local politicians rarely belong to political parties and do not face these restrictions. Furthermore, the regulatory system of the average municipality is likely more accessible than its federal counterpart because its much smaller size and lower level of complexity means there will only be a few people who are key to accomplishing change.

In terms of resources and approaches, there is first the influence of community-level organizations to consider. As an NGO interviewee noted, these grass-roots organizations provide an incentive for larger groups to become involved, as they form a base of public support for action.[212] Although there are some such local groups in the US, they tend to focus on personal pesticide behavior change rather than local ordinances, and were only recently organized into the National Coalition for Pesticide-Free Lawns by the ENGO Beyond Pesticides.[213] Then there is the fact that bylaws, given their much smaller scale, require fewer resources to influence than federal regulations. There is a coordinated effort to pass these

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[211] Québec Ministère du Développement Durable de l'Environnement et des Parcs, *The Pesticides Management Code: Environmental Protection and Health in Pest Management* [webpage] ([cited July 20 2005]); available from <http://www.menv.gouv.qc.ca/pesticides/permis-en/code-gestion-en/gestion-parasit.htm>.

[212] Advocacy group representative, "Interview with Author."

[213] See for example the Greater Madison Healthy Lawns Team and the Marin Beyond Pesticides Coalition, Beyond Pesticides, *National Coalition for Pesticide-Free Lawns* ([cited). The National Coalition was launched in 2005.

bylaws, with a common pool of advocacy information provided by the larger ENGOs and regional networks of community groups, but they are accomplished one municipality at a time, which makes the effort more manageable in the face of limited personnel and financial resources.

A final issue, which is closely related to the question of resources and access, is the approach taken by interest groups involved in the municipal movement. Although the argument for banning lawn pesticides must be made on a scientific basis, the science need not be the detailed and costly (in terms of funding and expertise) reproduction of regulatory science that is used by interest groups at the federal level in the US, because the objective is not to adjust the uses and registration of certain pesticides, but to ban them outright. Also, as noted above, municipal regulatory bodies are much smaller and have less capacity in terms of scientific expertise that the PMRA, which is staffed by professional scientists: more municipalities will not have toxicologists or epidemiologists on staff. An example of this less stringent scientific approach is a key resource of the municipal movement in the last year, the Ontario College of Family Physicians' *Pesticides Literature Review*.[214] It is widely cited by interest groups[215] but in fact contains only a brief chapter on pesticides' effects on children's health, and therefore can only address the issue in limited detail, though it does draw on the NAS report and more recent American research. It also focuses on the link between pesticides and children's health, while the debate in the US has in many ways gone beyond this stage to focus on the risks posed by specific chemicals, and how regulations should treat these risks. The less sophisticated scientific approach in Canada (compared to the explicitly scientific approach employed by American NGOs) is an important element of Canadian interest groups' impact (or lack thereof) on federal regulatory policy: theory and the experience of American NGOs suggests that without a more

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[214] Ontario College of Family Physicians, "Pesticides Literature Review," (Toronto: 2004).

[215] For example, the London Coalition Against Pesticides, in Samuel E. Trosow, "Pesticide Foes Aren't Inflexible but Want Firm Action," *London Free Press*, March 30 2005., and the Waterloo, Ontario group in K Jean Cottam, "Pesticide Ban Needed," *Record*, January 28 2005. and Carol Goodwin, "Anti-Herbicide Law a Step Closer," *Record*, November 17 2004.

sophisticated scientific approach, it would be difficult for Canadian groups to successfully challenge federal regulations, particularly given the complex and relatively new science of pesticides' risks to children. Lacking the resources to take on this approach, then, Canadian groups are likely rational to focus their attention elsewhere.

General children's environmental health policies

Although the federal government provides a range of programs that impact children's environmental health, for example, extensive asthma policies, there are no explicit policies framed in terms of children's environmental health. The Office of Children's Environmental Health was recently created within the Health Impacts section of the Safe Environments Programme, a part of Health Canada's Healthy Environments and Consumer Safety division. The creation of the office was not the subject of major media announcements, as was the case with the Office of Children's Health Protection in the US,[216] and as its nested position several levels down in the department hierarchy may indicate, it is very low-profile. The Office's objective is to "lead and coordinate federal activities on children's environmental health"[217] but at this time, its public face consists of a single webpage with links to mostly international children's environmental health resources. Ken Ogilvie of Pollution Probe noted that children's environmental health lacked program status in the federal government, meaning it did not have a dedicated staff and annual budget, and that he was not aware whether the Office of Children's Environmental Health was even funded at this time.[218] Therefore, though the Office indicates some interest from the federal government in addressing children's environmental health issues, this interest has yet to be pursued.

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[216] A search of Health Canada press release archives using the keyword "child" finds no mention of the office. The US EPA OCHP was announced by Administrator Carol Browner in 1997: see U.S. Environmental Protection Agency, *Browner Announces New EPA Offices to Support Children's Health, Regulatory Reinvention and Right to Know* [Press release] (February 27 1997 [cited July 31 2005]); available from <http://www.epa.gov/history/org/ao/agency/01.htm>.

[217] Office of Children's Environmental Health, *Children's Environmental Health* [Webpage] (April 29 2005 [cited July 23 2005]); available from <http://www.hc-sc.gc.ca/hecs-sesc/oceh/index.htm>.

[218] Ogilvie, "Interview with Author."

Summary

As was the case with the development of legislation discussed in chapter two, the most important element of the lack of a spillover effect from pesticide regulation to other children's environmental health issues in Canada is institutional. In particular, the lack of institutional access points was crucial: there was no high profile opportunity to mobilize children's environmental health advocates around the new policies, as regulatory changes were low-profile and the legislation has not come into force. Furthermore, Canadian parliamentary institutions make it doubtful that the law will ever produce similar mechanisms for mobilization that the FQPA did in the United States, since legislative challenges are unlikely. Also, the style of regulation (with less detailed mandates and deadlines) affected both the PMRA's implementation of regulatory changes and interest groups' access to litigation. Litigation was and is an important element of interest groups' ability to promote the children's environmental health frame and ensure policy implementation in the US, and this is lacking in Canada.

Another important institutional factor in the lack of children's environmental health spillover in Canada was the lack of policy entrepreneurs. A level of executive commitment allowed Democrat agency officials to pursue entrepreneurial expansion of children's environmental health-oriented pesticide policy to the non-regulatory sphere, and although this could have occurred in Canada if a minister or high-ranking official had taken an interest, the apparently insulated environment the PMRA operates within (compared to the EPA) coupled with the disinclination of the government as a whole to embrace a frame that showed their own policies as lacking prevented this: there are relatively few examples of the PMRA's regulatory actions impacting the opinions of legislators, interest groups, or the public with regards to children's environmental health. Perhaps more importantly, there were no policy entrepreneurs in Canada's parliamentary system who could take up the children's environmental health frame

and apply it to other environmental risk areas, as Senators Lautenberg and Jeffords did when they proposed amendments to TSCA recently.

Finally, the lack of public debate at the federal level is the result of the low level of interest group participation in regulatory politics, which in turn is a result of their more limited opportunities for access (as mentioned above), smaller pool of resources, and less explicitly scientific approach to casual stories regarding pesticides and children's health. Thus, although there appear to be significant steps in place to regulate pesticides with a consideration of children's environmental health, this issue has been quite contained and has not provided a children's environmental health "spark" in the manner of the FQPA and associated reports and decisions in the United States.

CHAPTER IV

Conclusions

The goal of this thesis has been to shed some light onto the unexpected difference between the United States' and Canada's use of a children's environmental health frame for policy, and corresponding development of children's environmental health policy regimes. Pesticide policy was chosen as a case study because it was the first piece of child-specific environmental legislation in the United States, and there was some evidence that it had acted as an important motivator for the development of the children's environmental health frame (a fact that was borne out by the research), and also because Canada had adopted similar legislation six years later, but presented no evidence of a similar broad development of children's environmental health policies.

In addressing my specific research questions concerning the timing and development of children's environmental health-specific pesticide laws (the FQPA and PCPA) in the two countries, and the different impacts of changes to regulatory policies, I found that the United States experienced a broader and more prominent public debate over children's health and pesticides, correspondingly quicker legislative actions (in terms of the time between recognition of the issue and adoption of legislation) and significant policy spillovers from implementation, including children's environmental health-oriented non-regulatory programs for pesticides, and more general children's environmental health policies, directives, and legislation. Although Canada adopted the child-specific pesticide regulatory processes laid out in the US law within a short time of its passage, through a process of elite emulation within the regulatory agencies, the legislative process was much slower, much narrower, and did not seem to be informed by the same factors as the US debate. Furthermore, it has not as of yet produced any discernable policy spillovers in pesticides or other areas of environmental or health policy.

In my theoretical framework, I suggested that three types of variables would explain the differences between Canadian and American policy development: elements of the policy contexts in the two countries, institutional factors, and the influence of interest groups. Although these three categories overlap somewhat, and all were relevant to the explanation, institutional factors were the most important to my explanation. Specifically, I found the differences in policy entrepreneurs produced by the American separation of powers system versus the Canadian separation of powers system and the different styles of regulation in the two countries to be crucial. However, different policy contexts and the way interest groups took advantage of the particular institutions in their respective countries were also important.

Policy entrepreneurs were key to the development of legislation in the US. Individual members of Congress picked up the emerging science on pesticides' risks to children's health and brought it into the public and legislative areas. They acted independently by requesting reports, proposing legislation, and holding hearings in a way that is not possible for individual members of Parliament in Canada, where there is a much greater centralization of power in the executive. Moreover, the type of reframing US entrepreneurs were engaged in required highlighting major failures in past policy to protect children, and this is likely to be less attractive to collective government actors (such as cabinet ministers or government party leaders) who would have the power and resources to undertake similar actions in the Canadian system, unless there is a change in governing party, which has not occurred in Canada since 1993. In the US, the children's environmental health frame for pesticides and other policies was readily taken up by the (at the time, new Democratic) administration, but the initial calls for better protection of children from pesticides were made by individual entrepreneurs.

The context in which US entrepreneurs acted was also important, and very different from the Canadian situation. Experience with childhood lead poisoning had provided a research and policy base on environmental risks to children's health that did not exist in Canada, and the Alar

incident, although it did not lead directly to policy action, primed politicians and the public to be concerned about children's ingestion of pesticides. This context, particularly Alar with its prominent place in the popular media, helped ensure that the entrepreneur-requested NAS report "Pesticides in the Diets of Infants and Children" was a major focusing event and policy driver when it was released in 1993.

These elements of the American policy context meant that the passage of the FQPA was much more prominent in the US than the eventual passage of the PCPA was in Canada, a factor that helped prompt policy spillover in the US. The FQPA was also higher profile because of the open debate and bargaining that occurred in Congress. A dramatic (if theoretically unpredictable) compromise between traditionally competing interests allowed for the resolution of a longstanding regulatory issue (the Delaney paradox) and the passage of child-protective measures at the same time. Since most of the bargaining that occurs in the parliamentary system (particularly when there is a majority government, as was the case in 2002) happens between members of the same party within Cabinet, there was no comparable public legislative debate on the legislation. The FQPA also gained stature in the US from the work of interest groups and children's environmental health advocates in promoting its child-specific measures, and from executive commitment in responding to the NAS report, proposing similar legislation, and praising its eventual passage. Neither executive commitment nor extensive interest group involvement was evident in Canada.

Policy entrepreneurs were also key to the spillover effect of the FQPA and associated elements such as the NAS report in the US. It was critical that strong advocates existed both within the implementing agency (particularly political appointees Carol Browner and Lynn Goldman) and within Congress to ensure the implementation of the legislation, and expand the children's environmental health frame to other elements of pesticide policy, and to more general children's environmental health policies dealing with other risks or groups of risks. The

implementation and expansion process was also aided by attention from interest groups, who directly engaged the regulatory science and litigated agency actions. In Canada, interest groups were much less involved in the federal regulations and policies, choosing instead to focus on bylaws banning cosmetic pesticide use at the municipal level.

The first factor in limited interest group involvement in Canada was the style of regulation: litigation is not possible without a law in force, and it is unlikely to be successful in the future given the discretionary language in the PCPA. The style of regulation also affected how regulatory agencies in the two countries implemented the legislation or policies, as the US EPA must fulfill more detailed requirements with legislated deadlines, and Canada's implementation of the child-specific measures is less ambitious (for example, in the case of the reevaluation of older pesticides to account for risks to children) and conditional on receiving information from the EPA.

Secondly, and perhaps more importantly given that litigation is just beginning to affect US policy implementation now, interest group involvement in Canada was also limited due to the generally fewer resources and different approach taken by Canadian ENGOs. The groups involved in pesticides and children' environmental health had smaller staff and financial resources than most of the major American actors, and chose to focus their resources on an area where visible successes were possible: the municipal movement. This focus also had the advantage of a strong pre-existing network of local community groups, no parliamentary structure to government that would impede access or prevent local politicians from acting as entrepreneurs, and a much less complex municipal regulatory organization. This last point is particularly important given the less sophisticated scientific approach used by most Canadian groups: lacking the resources and expertise of the major US groups, it was likely more feasible to

take on the smaller municipal organizations with their more limited scientific staff that the "largely inscrutable"[219] PMRA with its large staff of professional scientists.

It remains to be seen whether Canada will begin to come closer to the United States in adopting more measures for children's environmental health. Certainly there has been some indication of interest from the federal government recently, with the creation of the Office of Children's Environmental Health, but more information about the Office will need to become available before its true significance can be evaluated. The fact that major Canadian ENGOs such as Pollution Probe seem poised to employ the children's environmental health frame in a more consequential way, with the impending release of a children's environmental health policy primer, may also indicate a change in how Canada deals with the issue. However, this thesis has demonstrated that in the case of pesticides, Canada's slow adoption of a public children's environmental health frame is not simply a matter of lagging behind US actions, but of significant institutional barriers to a parallel development of policy.

[219] Elaine L. Hughes, "A Pesticide Primer and the Need for Federal Action," *Environmental Law Centre News Brief* 15, no. 3 (2000).

APPENDIX A: FEDERAL CHILDREN'S ENVIRONMENTAL HEALTH POLICIES AND ACTIVITIES, US AND CANADA[220]

United States

Title	Date	Notes
Lead-Based Paint Poisoning Prevention Act	1971	• Earliest lead legislation • Establishes requirements for the detection and control of lead-based paint hazards in public and private housing • All local governments are eligible for federal grants to establish poisoning prevention programs
Strategic Plan for the Elimination of Childhood Lead Poisoning	1991	• Federal plan that focuses on elimination rather than mitigation of lead poisoning
US EPA Risk Assessment Policy	1995	• First agency-wide policy to evaluate risks to children from environmental hazards • Meant to "consistently and explicitly" consider risks to children as part of all risk assessments, risk characterizations, and environmental and public health standards
Food Quality Protection Act	1996	• First environmental legislation to mention children • Contains variety of measures to ensure that risks to children are considered when setting pesticide tolerances
National Agenda to Protect Children from Environmental Health Threats	1996	• Outlined in EPA report "Environmental Health Risks to Children" shortly after FQPA passed • Aims to provide better protection of children's environmental health in such key areas as setting protective public health standards, expanding scientific research, and providing families with expanded right-to-know information
Indoor Air Quality (IAQ) Tools for Schools kits distributed nationally	1996	• Guidance developed by EPA in partnership with NGOs and education system intended to empower schools to prevent and resolve IAQ problems at little or no cost using simple activities and in-house staff
Executive Order 13045 – Protection of Children from Environmental Health Risks and Safety Risks	1997	• Directs all federal agencies to "make it a high priority to identify and assess environmental health risks and safety risks that may disproportionably affect children" • Created Presidential Task Force on Environmental Health Risks and Safety Risks to

[220] Note that this is not intend to be an exhaustive list, but is included to demonstrate the range of children's environmental health policies in place in the US, in contrast to the limited policy in Canada. Sources: agency press releases and on-line program descriptions.

		Children
Creation of the Office of Children's Health Protection	1997	• Created within the Office of the Administrator, US EPA • Meant to implement the 1996 National Agenda and Executive Order 13045 • Dr. Philip Landrigan appointed Senior Advisor to the Administrator for Children's Health
US EPA publishes Children's Environmental Health Yearbook and Children's Environmental Health Yearbook Supplement	1998 2000	• These comprehensive publications catalogue the EPA's children's environmental health activities up to the date of publication • Activities are sorted mainly by health outcome (chapters on asthma and other respiratory, childhood cancer, developmental and neurological toxicity, pesticides, and contaminated water) and within the outcome chapters, by specific risks (e.g. lead, mercury within developmental toxicity) • Also includes chapters on risk assessment, environmental education, and community right-to-know initiatives
Launch of first Pediatric Environmental Health Specialty Unit	1997	• Collaboration among US Centers for Disease Control and Prevention, Agency for Toxic Substance and Disease Registry and the EPA with the Association of Occupational and Environmental Clinics • Clinics "developed to provide education and consultation for health professionals, public health professionals and others about the topic of children's environmental health" • Network now includes 10 units in the US and one each in Canada and Mexico
Launch of eight Children's Environmental Health Research Centers	1998	• Cost of about $1.25 million annually for each Center funded equally by EPA and the National Institute of Environmental Health Sciences, within the Department of Health and Human Services • Aims to "provide an atmosphere for scientists to interact in establishing outstanding, state-of-the-art research programs addressing environmental contributions to children's health and disease and establish a national network that fosters communication, innovation and research"
One Way to Increase the Commitment: Conference on the Food Quality Protection Act	1999	• Conference "designed for food producers, commodity groups, state and federal regulators, and others focused on issues, such as pesticide-related risk assessments, implementation of the Food Quality Protection Act, and data needs"
Congress establishes the Healthy Homes	1999	• This initiative "builds upon the Department's existing activities in housing-related health and

Initiative within the Department of Housing and Urban Development		safety issues - including lead hazard control, building structural safety, electrical safety, and fire protection - to address multiple childhood diseases and injuries in the home" • Provides grants for "activities [that] focus on researching and demonstrating low-cost, effective home hazard assessment and intervention methods, as well as on public education"
Proposed Labeling Restriction for Insect Repellents used on Infants and Children	2000	• Restrictions on packaging and labeling specifically targeted to children (e.g., "for children" or "for kids") to help avoid inappropriate handling and use by children

Canada

Title	Date	Notes
UV Index Sun Awareness Program	1998	• Created by Environment Canada in partnership with Health Canada • Program "teaches students under the age of 14 about the UV Index and how to use it to minimize the risk to their health from solar ultraviolet radiation" and was expanded in 2001 to include free UV Index resource kit for teachers from the Meteorological Service of Canada
5NR (Natural Resources) Working Group in Children's Environmental Health	2000	• The Working Group, under the federal sustainable development strategy, commissioned a gaps analysis study on children's environmental health and on May 8-9, 2000 held a workshop entitled "Our Children, Our Health: Towards a Federal Agenda on Children's Environmental Health", attended by federal, provincial, and municipal government officials as well as NGOs and industry representatives • The Working Group is now defunct and information is no longer available online
Children's Environmental Health: A Gaps Analysis	2000	• Prepared for Policy and Communications, Environment Canada and the Health Protection Branch, Health Canada • Summarizes current activities on children's environmental health and assesses gaps between activities and identified needs (from interviews with federal, provincial, and territorial government officials, NGO and professional organizations, and academics) • Notes that "perhaps the single, most important finding is that most participants believe that children's environmental health should have a

		higher profile within the federal government"
PMRA Science policy Notice – Children's Health Priorities with the Pest Management Regulatory Agency	2002	• Published prior to introduction of PCPA amendments later in 2002 • Outlines PMRA policies that include consideration of risks to children in setting pesticide tolerances
Amended Pest Control Products Act	2002 [Not in Force]	• Mirrors FQPA's requirements for consideration of risks to children in setting pesticide tolerances

Office of Children's Environmental Health	Not available	• The office's mandate "is to advance the protection of children's health in Canada from exposure to environmental hazards"
		• Website notes involvement in the following programs, but no further information available:
		  • Statistics Canada – Canadian Health Measures Survey
		  • Federal, Provincial, Territorial Cooperation
		  • Canadian International Development Agency- funded Project in Argentina
		  • Children's Environmental Health Indicators
		  • Federal Working Group – Children's Health and the Environment

APPENDIX B: INTERVIEWS

United States

Name/organization	*Date*
Government, legislative (2)	
Representative of Congressman Henry Waxman	June 24, 2005
Carolyn Brickey, former staff person for Senator Patrick Leahy	June 17, 2005
Government, bureaucracy (5)	
Michael Firestone, US EPA OCHP	June 20, 2005
Martha Berger, US EPA OCHP	June 20, 2005
US EPA OCHP official	June 20, 2005
US EPA official	June 22, 2005
Tobi Jones, California Department of Pesticide Regulation	June 15, 2005
Interest group/advocate/academic (5)	
Ken Cook, EWG	June 20, 2005
Beyond Pesticides representative	June 24, 2005
Philip Landrigan, chair of NAS Committee and CCHE	June 9, 2005
Lynn Goldman, former head of US EPA Office of Pesticides, researcher	June 21, 2005
Ellen Silbergeld, researcher	June 22, 2005

Canada

Name/organization	*Date*
Government, bureaucracy (1)	
Canadian government official	June 27, 2005 July 11, 2005
Interest group/advocate/academic (2)	
Ken Ogilvie, Pollution Probe	June 30, 2005
Advocacy group representative	July 5, 2005
Paul Muldoon, Canadian Environmental Law Association	August 18, 2005

APPENDIX C: COMPARISON OF STATUTES

	Food Quality Protection Act, 1996 Title V – Amendments to the Federal Food, Drug and Cosmetic Act, sec. 405 – tolerances and exemptions for pesticide chemical residues, 2 C, 110 STAT. 1518	Pest Control Products Act, 2002 [Not in Force] Registration of Pest Control Products - Applications for Registration or Amendment, sec 7.7
Consumption patterns: not present in PCPA Special vulnerability (US, see below) Cumulative effects/common mechanism of toxicity Aggregate exposure	"(C) EXPOSURE OF INFANTS AND CHILDREN.—In establishing, modifying, leaving in effect, or revoking a tolerance or exemption for a pesticide chemical residue, the Administrator— "(i) shall assess the risk of the pesticide chemical residue based on— "(I) available information about **consumption patterns among infants and children that are likely to result in disproportionately high consumption of foods** containing or bearing such residue among infants and children in comparison to the general population; "(II) available information concerning the **special susceptibility of infants and children** to the pesticide chemical residues, including neurological differences between infants and children and adults, and effects of **in utero exposure** to pesticide chemicals; and (III) available information concerning the **cumulative effects on infants and children of such residues and other substances that have a common mechanism of toxicity**; and "(ii) shall— "(I) ensure that there is a reasonable certainty that no harm will result to infants and children from **aggregate exposure** to the pesticide chemical residue;	(7) In evaluating the health and environmental risks of a pest control product and in determining whether those risks are acceptable, the Minister shall (*a*) apply a scientifically based approach; and (*b*) in relation to health risks, if a decision referred to in paragraph 28(1)(*a*) or (*b*) is being made or has been made in relation to a pest control product, (i) among other relevant factors, consider available information on **aggregate exposure to the pest control product, namely dietary exposure and exposure from other non-occupational sources**, including drinking water and use in and around homes and schools, and **cumulative effects of the pest control product and other pest control products that have a common mechanism of toxicity**,

Special vulnerability (Canada)		(ii) apply appropriate margins of safety to take into account, among other relevant factors, the use of animal experimentation data and the **different sensitivities to pest control products of major identifiable subgroups, including pregnant women, infants, children, women and seniors,** and
Application of additional tenfold safety factor for children	(II) In the case of threshold effects, for purposes of clause (ii)(I) an additional tenfold margin of safety for the pesticide chemical residue and other sources of exposure shall be applied for infants and children to take into account potential pre- and postnatal toxicity and completeness of the data with respect to exposure and toxicity to infants and children. Notwithstanding such requirement for an additional margin of safety, the Administrator may use a different margin of safety for the pesticide chemical residue only if, on the basis of reliable data, such margin will be safe for infants and children.	(iii)in the case of a threshold effect, if the product is proposed for use in or around homes or schools, apply a margin of safety that is ten times greater than the margin of safety that would otherwise be applicable under subparagraph (ii) in respect of that threshold effect, to take into account potential pre- and post-natal toxicity and completeness of the data with respect to the exposure of, and toxicity to, infants and children unless, on the basis of reliable scientific data, the Minister has determined that a different margin of safety would be appropriate.

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