

Mercury Reduction in the Canadian Provinces: Interprovincial vs. Cross-Border Policy Diffusion

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Recent research points to an increasingly dense network of subnational cross-border linkages along the Canada-United States border, particularly in the environmental policy sphere. Considerable effort has been expended on characterizing these linkages, and observers agree that they have become more formal, institutionally complex and ambitious in both their subject focus and their approaches to cooperative action. Yet, the impact of these cross-border linkages on actual environmental policy adoption in participating jurisdictions – provinces and states – has thus far not been the subject of sustained inquiry. Given their existence, one might expect them to act as important channels of policy diffusion.

The literature which analyzes the diffusion of policy ideas among US states and, to a much more limited degree, among Canadian provinces, has tended to focus on two routes for horizontal diffusion – via regional neighbours or national professional networks promoting interaction on specialized policy issues. The growth of cross-border linkages – providing new channels for the transmission of policy ideas – raises the possibility of an additional pattern of policy diffusion in North America. In the Canadian case, one can highlight three major conduits for horizontal environmental policy diffusion: regional neighbours; the Canadian Council of Ministers of the Environment (CCME), an intergovernmental body in which agency officials set Canada-wide standards; and cross-border linkages which involve provinces and states in shared environmental problem-solving.

The central aim of this paper is to raise the issue of cross-border policy diffusion as a complement or competitor to regional and national environmental policy diffusion in Canada. In doing so, the paper considers the case of mercury policy, for three reasons: first, provinces (and states) have the policy and regulatory latitude within the federal system to adopt independent and possibly differing policies on this issue; second, mercury reduction has been the focus of policy action within the CCME; and, third, there exist diffusion channels focused on mercury reduction across the Canada-U.S. border, particularly in the Northeast but also in the Great Lakes and Pacific Northwest, that make cross-border diffusion plausible. This case thus allows us to test the strength of regional, national and cross-border diffusion patterns.

The paper provides empirical research results with respect to 27 mercury policy indicators across the 10 provinces and 60 states¹ which allow for an initial test of the major hypothesis: Given the density of cross-border diffusion channels in the Northeast, Great Lakes and Pacific Northwest regions, cross-border policy similarity (relative to national or regional cross-provincial policy similarity) will be significant. In examining this hypothesis, the paper adopts a synchronic approach, looking for patterns in current policy that are consistent with the operation of policy diffusion, rather than attempting an examination of diffusion dynamics over time. In addition, preliminary results from an online survey of provincial and state officials involved in mercury policy-making are provided, shedding some additional light on the importance of domestic vs. external channels of policy diffusion.

The examination of mercury policy adoption reveals patterns that indicate very limited regional diffusion, and only among Atlantic provinces. Further, the presence of a looser Atlantic provincial cluster adjacent to the tighter and very active New England cluster is suggestive of the

¹ The author would like to thank Matt Walcoff for his invaluable research assistance in gathering the mercury policy data across the 60 units. The author is also grateful to the Social Sciences Humanities Council of Canada which has provided funding to conduct the research in this paper.

possibility that policy diffusion in the cross-border Northeast region may act as a *complement* to domestic diffusion on the Canadian side, spurring a higher level of activity than would otherwise be occurring, particularly in light of formalized cross-border cooperation in the broader region. Otherwise, there is little evidence to indicate that cross-border diffusion channels are significant. Instead, the most significant influence in terms of the diffusion of mercury policy among Canadian provinces appears to be the CCME. These findings are supported by the survey results, in which officials appear to attach considerably more importance to CCME deliberations than to their regional neighbours or to cross-border cooperation.

Policy Diffusion at Home and Across the Canada-U.S. Border

The study of policy diffusion, understood as the process by which an innovation spreads,² has a venerable history, particularly with regard to policy diffusion across U.S. states. These studies have focused on the relative speed, causal determinants and – of particular interest here – spatial patterns of the diffusion of policy ideas across states. Jack Walker declared in his 1969 seminal study that, “[w]hen examining the public policy of any state, . . . , it is important to discover in which ‘league’ it has chosen to play.”³ An energetic dialogue has been ongoing within this literature over the question of whether diffusion follows a regional pattern, whereby states are more likely to adopt an innovation if their neighbours have already undertaken adoption, or a national pattern, whereby officials from adopter and nonadopter states interact within national communication networks, particularly state professional associations which serve as sources of policy information and occupational contact networks.

Both the regional and national interaction models are based on the operating assumption, first expressed by Walker, that “state officials make most of their decisions by analogy,” looking for similarity between their own policy conundrum and that of another state, and taking cues from a state where the problem has been successfully resolved.⁴ Mintrom and Vergari categorize both regional and national interactions as part of “external policy networks” which “serve as the source for generating new ideas and for providing policy entrepreneurs with insights into how approaches used elsewhere could be applied to their own situation.”⁵ These two models also share the assumption that the ‘interorganizational’ or ‘horizontal’ context within the federal system is a “principal influence which regulates . . . the patterns of diffusion of innovations.”⁶ The aim, as Gray explains, is to discern a “regular, i.e., predictable” diffusion process among states from which a “dynamic model” can be constructed.⁷

Studies of U.S. states have found support for both propositions, operating individually or in tandem. Walker himself isolated five (approximately) regional groupings – New England, Mid-Atlantic/Great Lakes, Border/Great Lakes/California, Mountains/Northwest, and South – which provided some support for a “neighbourhood effect” in terms of policy adoption.⁸ Yet, he also noted the importance of professional associations of state officials which serve as a “source

² Virginia Gray, “Innovation in the States: A Diffusion Study,” *The American Political Science Review* 67 no.4 (December 1973): 1175.

³ Jack L. Walker, “The Diffusion of Innovations among the American States,” *The American Political Science Review* 63 no.3 (Sept. 1969): 892.

⁴ *Ibid.*, p.889.

⁵ Michael Mintrom and Sandra Vergari, “Policy Networks and Innovation Diffusion: The Case of State Education Reforms,” *The Journal of Politics* 60 no.1 (Feb.1998): 130, 145.

⁶ Jack L. Walker, “The Diffusion of Innovation among the American States,” 889.

⁷ Virginia Gray, “Innovation in the States: A Diffusion Study,” 1175.

⁸ Jack L. Walker, “The Diffusion of Innovation among the American States,” 892-3.

of information and policy cues” and help to establish “a set of norms or national standards.”⁹ Alfred R. Light concluded that “[s]tate administrators’ perceptions of the sources of new ideas are related both to their geographic regions and to their functional policy areas.”¹⁰ The regional clusters which emerge in Light’s study approximate Walker’s, with New England, Midwestern, and Northwestern states likely to seek advice from each other as well as monitor each other’s programming.¹¹ Patricia Freeman found strong support for geographic regionalism in her study of energy policy innovation, noting that “[i]n all states except California, most legislators looked only to states within their region for policy cues,”¹² while Aballa uses a case study of health insurance to show that interstate professional organizations can have a discernible impact on the development and dissemination of innovations by state officials.¹³

Policy diffusion across Canadian provinces has been much less studied. A 1976 study by Dale Poel, which takes its cue from the early American works by Walker and Gray, concluded with regard to patterns of policy adoption that “provincial interaction with respect to legislative initiatives does not take place within some national leader-follower patterns, but, rather, that emulation takes place within clusters of provinces which are only defined in part by geography.”¹⁴ Poel suggested that there *might* be regional leaders among the provinces, specifically Nova Scotia, Ontario, Saskatchewan and British Columbia. Lutz considered the question of regional dynamics in more depth in 1989, focusing his analysis on three regions: eastern (Quebec and Atlantic provinces), central (Ontario and Quebec), and western (prairie provinces and British Columbia). The findings of his study indicated the possibility of regional emulation, with Nova Scotia, Ontario and Saskatchewan emerging as both regional, and in the case of Ontario, national leaders.¹⁵

It is notable that, in this search for a dynamic model of policy diffusion among states or among provinces, the policy issue focus of the major works in this field – education, health insurance, tort reform, civil rights, technology adoption or state lotteries – are those in which spillovers, such as would be evident in the environmental policy sphere, are minimal. This literature assumes that state decision-makers face the *same* problem, but not necessarily a *shared* problem. Environmental policy is a good case for studying the diffusion of policy innovations, as we would *expect* policy diffusion – particularly regional diffusion that corresponds with the boundaries of ecosystems, bioregions, airsheds, etc. Although the role of Canadian provinces and American states within their respective environmental protection regimes is not identical, this is a policy area where subnational governments in both countries have considerable leverage to undertake innovations.¹⁶ And, in both countries, an upsurge of studies on the environmental

⁹ Ibid., p.895, 898.

¹⁰ Alfred R. Light, “Intergovernmental Source of Innovation in States Administration,” *American Politics Quarterly* 6 no.2 (April 1978): 162.

¹¹ Ibid., p.156.

¹² Patricia K. Freeman, “Interstate Communication Among State Legislators Regarding Energy Policy Innovation,” *Publius: The Journal of Federalism* 15 (Fall 1985): 104-5.

¹³ Steven J. Balla, “Interstate Professional Associations and the Diffusion of Policy Innovations,” *American Politics Research* 29 no.3 (May 2001): 221-245.

¹⁴ Dale H. Poel, “The Diffusion of Legislation among the Canadian Provinces: A Statistical Analysis,” *Canadian Journal of Political Science* IX no.4 (December 1976): 617.

¹⁵ James. M. Lutz, “Emulation and Policy Adoptions in the Canadian Provinces,” *Canadian Journal of Political Science* XXII no.1 (March 1989): 151-153.

¹⁶ In Canada, ‘executive federalism’ governs national-constituent unit relations. The federal environmental protection framework is highly decentralized, regulatory authority for most pollution sources are the preserve of the provinces, and power resides in provincial capitals or intergovernmental forums where the federal government is

policy activities of subnational units has been animated by a concern that the federal government has never really been (as in Canada) or is no longer (as in the U.S.) the primary environmental innovator. Subnational governments, whether because of constitutional, political or economic constraints on federal actors, are increasingly seen as the primary defense against environmental decline, although there is considerable discussion about whether subnational governments are up to the challenge.

The American literature on state environmental policy has addressed the question of whether states, in the absence of federal initiative, can act as environmental policy laboratories, bringing forth innovations that may then diffuse across states. Studies have demonstrated a willingness on the part of the states to devote ever increasing resources to environmental protection,¹⁷ to undertake innovations in terms of environmental policy approaches and instruments,¹⁸ and to forge ahead in issue areas that are clearly of national or international concern, such as climate change¹⁹ and air pollution.²⁰ The literature also indicates, however, that the diffusion of these innovations is uneven. It would appear that certain states – such as California, New Jersey, Minnesota, Maine, Massachusetts, Wisconsin and Oregon – as well as certain regions – such as the Northeast and states along the West coast – are consistently out in front in terms of environmental policy innovation, particularly with respect to air pollution, climate change and solid waste reduction.²¹ However, other recent environmental challenges associated with nonpoint source pollution and pollution prevention (especially for smaller contamination sources) exhibit a decidedly nonregional pattern of diffusion that may have more to do with national interactions through such forums as the Environmental Council of States²² and the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials (STAPPA/ALAPCO).²³

merely one player at the table. U.S. states, by contrast, must operate within a context of ‘regulatory federalism,’ wherein they retain primary responsibility for implementing an increasing range of environmental requirements, though many of these requirements are set at the national level. A succession of devolutionary initiatives in the 1980s and 1990s in the U.S., however, has placed the environmental policy spotlight on the states.

¹⁷ R. Steven Brown, “States Put Their Money Where Their Environment Is,” Washington, DC: Environmental Council of the States, April 1, 2001; and R. Steven Brown, “Coping With the Budget Crunch,” *ECOSTates* (Winter 2002): 16-19.

¹⁸ See, for example: Barry G. Rabe, “Permitting, Prevention, and Integration: Lessons from the States,” in Donald F. Kettl, eds., *Environmental Governance: A Report on the Next Generation of Environmental Policy*. (Washington, DC: Brookings Institution Press, 2002), pp.14-57; Lia Parisien and Adam Wollenberg, “State Environmental Innovations 2000-2001,” Washington, DC: Environmental Council of the States, June 15, 2001; Scott P. Hays, Michael Esler and Carole E. Hays, “Environmental Commitment among the States: Integrating Alternative Approaches to State Environmental Policy,” *Publius: The Journal of Federalism* 26 no.2 (Spring 1996): 41-58; Michael E. Kraft and Denise Scheberle, “Environmental Federalism at Decade’s End: New Approaches and Strategies,” *Publius: The Journal of Federalism* 28 no.1 (Winter 1998): 131-146; Alfred A. Marcus, Donald A. Geffen, and Ken Sexton, *Reinventing Environmental Regulation: Lessons from Project XL*. (Washington, DC: Resources for the Future Press, 2002).

¹⁹ Barry G. Rabe, *Statehouse and Greenhouse: The Emerging Politics of American Climate Change Policy*. (Washington, DC: Brookings Institution Press, 2004).

²⁰ Debora L. VanNijnatten, “Canadian-American Environmental Relationship: Interoperability and Politics,” *The American Review of Canadian Studies* 34 no.4 (Winter 2004): 545-460.

²¹ P.G. Fredriksson and D.L. Millimet, “Strategic interaction and the determination of environmental policy across U.S. states” *Journal of Urban Economics* 51 (2002): 101-122.

²² The Environmental Council of the States (ECOS) is a national non-partisan association of state environmental agency leaders whose mission is to provide a forum for the exchange of ideas and experiences.

²³ See successive issues of *ECOSTates*, the magazine of the Environmental Council of the States, and *Governing*, a monthly magazine whose primary audience is state and local government officials.

Analysts of Canadian environmental policy have a considerably less optimistic outlook on the activities of the provinces. In the Canadian case, the highly decentralized environmental protection regime, along with the low level of federal support for innovation and the dependence of most provinces on natural resource development, has led to a dynamic of “buck-passing” rather than competitive innovation.²⁴ While there is little in the way of established wisdom with respect to diffusion patterns, empirical work by both academics and environmental groups indicate a patchwork of environmental policies across provinces, with a light patina of harmonization with respect to specific pollution problems, particularly those which have recently come under public scrutiny.²⁵ Policy similarities within regions do not appear to be common. Instead, individual provinces show signs of innovativeness on particular environmental issues, i.e., Manitoba is shaping up as an innovator with respect to greenhouse gas reduction, Nova Scotia is on the cutting edge with respect to solid waste management, and British Columbia has been a leader in air pollution reduction.

Since the 1998 Canada-wide Accord on Environmental Harmonization was signed, studies have focused on the dynamic engendered by intergovernmental bargaining in committees established under the auspices of the Canadian Council of Ministers of the Environment (CCME) to set Canada-wide Standards (CWSs) for ambient environmental quality and/or particular emissions sources.²⁶ The Canada-wide standard-setting process can certainly be viewed as a channel for horizontal diffusion, as the objective is to formulate standards to be implemented across all provinces via deliberations of environmental agency officials from all provincial and federal governments. However, it is not altogether clear how/whether policy diffusion under the auspices of the CCME proceeds, for three reasons. First, the standards themselves are not legally binding.²⁷ Second, provinces may choose varying implementation instruments. And, third, not all provinces are submitting implementation plans or progress reports as required, nor are provincial sources always in compliance with these plans.²⁸

Another group of environmental studies over the past decade or so have painted a picture of an increasingly dense network of sub-national and cross-border regional organizational linkages along the Canada-United States border that posit an additional, and relatively unstudied,

²⁴ Kathryn Harrison, *Passing the Buck: Federalism and Canadian Environmental Policy*. (Vancouver: UBC Press, 1996).

²⁵ See, for example: Debora L. VanNijnatten, “The Bumpy Journey Ahead: Provincial Environmental Policies and National Environmental Standards,” in Debora L. VanNijnatten and Robert Boardman, eds., *Canadian Environmental Policy: Context and Cases*. 2nd edition, Oxford University Press, 2002; as well as comparative studies of provincial policy by Sierra Legal Defense Fund (water quality standards), David Suzuki Foundation (climate change policies) and WWF-Canada (endangered species and spaces).

²⁶ Kathryn Harrison notes that, even though the sub-agreement on standards emphasized that ambient environmental quality, rather than particular point sources, would be the focus of standard-setting (which would allow for different point source standards across provinces), the process has instead tended to focus on the promotion of consistent discharge standards. Kathryn Harrison, “Federal-Provincial Relations and the Environment: Unilateralism, Collaboration, and Rationalization,” in Debora L. VanNijnatten and Robert Boardman, *Canadian Environmental Policy: Context and Cases*. (Don Mills: Oxford University Press, 2002), pp.123-144. Harrison notes that, even though the sub-agreement on standards emphasized that ambient environmental quality, rather than particular point sources, would be the focus of standard-setting (which would leave room for different point source standards across provinces), the process has tended to promote consistent discharge standards.

²⁷ See various chapters in: Patrick C. Fafard and Kathryn Harrison, *Managing the Environmental Union: Intergovernmental Relations and Environmental Policy in Canada*. (Kingston and Regina: Institute for Intergovernmental Relations, Queen’s University and Saskatchewan Institute of Public Policy, 2000).

²⁸ See CCME progress reports on provincial implementation of CWS for benzene, dioxins and furans, particulate matter and ozone can be viewed at: <http://www.ccme.ca/initiatives/standards.html>

pattern of policy diffusion.²⁹ At the same time that provinces and states are gaining more policy latitude and – perhaps – innovating within their own intergovernmental contexts, they are interacting more frequently in another horizontal fashion, that is, with one another across the international border, particularly in the environmental sphere. The roots of this phenomenon are varied and likely intertwined. The economic context is relevant; all provinces now trade more with their American neighbours than they do with their provincial counterparts³⁰ and these trade relations are increasingly regionally focused.³¹ One also might argue that cross-border action is spurred by a sense of ‘bioregionalism,’ a bioregion being defined as having unique natural characteristics which are, in turn, linked to human economic and cultural activity patterns.³² The most oft-cited example here is “Cascadia” in the Pacific Northwest. At the same time, there is a growing consensus in North America that “integrated” and “holistic” approaches to environmental management, where the decision-making focus is on ‘places,’ such as the major ecosystems, watersheds and airsheds that span the Canada-U.S. border, should be pursued. This places provinces and states, which are closest to and most familiar with these places, at the forefront of environmental policy-making efforts.

The literature which attempts to track such interaction in more detail bears out these contextual indicators of increased subnational cross-border activity. A succession of studies has found that, not only are state-province agreements becoming more numerous, they also have become increasingly formal, being based on written documents rather than implicit understandings or verbal commitments, and they have undergone institutional sprawl as initiatives proliferate.³³ Moreover, these studies have indicated that a significant portion of state-province agreements and cooperative mechanisms are multi-lateral and regional, involving more than two contiguous jurisdictions.³⁴ The burgeoning case study literature on subnational and cross-border environmental ties shows that multilateral, regional cooperation is ongoing in the

²⁹ Don Munton and John Kirton, “Beyond and Beneath the Nation-State: Province-State Interactions and NAFTA.” Paper presented to the International Studies Association Annual Conference, San Diego. April 1996; Sanchez-Rodriguez, R.A., K. von Moltke, S. Mumme, J. Kirton, and D. Munton, “The Dynamics of Transboundary Environmental Agreements in North America” in R. Kiy and J.D. Wirth, eds. *Environmental Management on North America's Borders*. (College Station: Texas A & M University Press, 1998) p.32-39; Debora L. VanNijnatten, “Analyzing the Canada-United States Environmental Relationship: A Multi-Faceted Approach,” *The American Review of Canadian Studies: Thomas O. Enders Biennial Issue on the State of the Canada-U.S. Relationship* 33 no.1 (Spring 2003): 93-120; Jean-Francois Abgrall, ****2004.

³⁰ Thomas J. Courchene, “FTA at 15, NAFTA at 10: A Canadian Perspective on North American Integration,” *North American Journal of Economics and Finance* 14 (2003): 265.

³¹ For example, fully 41.5% of Ontario’s GDP is derived from exports to the U.S., almost half in terms of trade with Michigan and New York. See: Debora L. VanNijnatten and Gerard W. Boychuk, “Economic Integration and Cross-border Policy Convergence: Social and Environmental Policy in the Canadian Provinces and American States,” *Journal of Borderlands Studies* 19 no.1 (Spring 2004): 42.

³² Peter Berg, “Bioregionalism,” *Columbiana Magazine* Feature 4 (2002). Available at: <http://www.columbiana.org/feature4-2002.htm#Bioregionalism>.

³³ Sanchez-Rodriguez, R.A., K. von Moltke, S. Mumme, J. Kirton, and D. Munton, “The Dynamics of Transboundary Environmental Agreements in North America” in R. Kiy and J.D. Wirth, eds. *Environmental Management on North America's Borders*. (College Station: Texas A & M University Press, 1998) p.32-39; NACEC, Publications and Information Resources, Available at : http://www.cec.org/pubs_info_resources/law_treat_agree/transbound_agree/index.cfm?varlan=english

³⁴ Sanchez-Rodriguez, R.A., K. von Moltke, S. Mumme, J. Kirton, and D. Munton, “The Dynamics of Transboundary Environmental Agreements in North America,” p.32-39.

Great Lakes, Northeast and Pacific Northwest regions, with some activity in the Prairies-Great Plains region as well.³⁵

One of the oldest cross-border regional mechanisms, the Conference of Northeastern Governors/Eastern Canadian Premiers (NEG/ECP), considers itself “a forceful advocate of environmental issues and sustainable development”³⁶ and it has acted before federal governments on a succession of air quality issues, utilizing its own cross-border committee system as well as a variety of linkages with research organizations, universities and governments. The Great Lakes states and provinces have undertaken their own initiatives to monitor and address the effects of air deposition in the basin using the Great Lakes Commission and an annual conference of states and provinces as planning platforms. In the Pacific Northwest, BC and Washington state have taken *preventive* measures to forestall the increase in air pollution expected under future population and economic growth scenarios, by bringing regional, subnational and federal officials together under one task force umbrella.³⁷

This thickened network of regional ties has become the primary locus of environmental innovation along the Canada-U.S. border. National governments have undertaken little in the way of new initiatives over the past decade, aside from updates/additions to existing bilateral agreements such as the Canada-United States Air Quality Agreement and MOUs for research collaboration and information sharing. At the subnational and cross-border regional level, however, there have been numerous institutional and policy innovations.³⁸ In fact, provinces and states are undertaking increasingly ambitious projects which have large-scale implications, and employing management approaches that are tending toward the ‘harder’ end of the policy instrument spectrum, moving beyond mere information sharing and technology transfer to joint goal-setting and regular reporting on implementation actions.³⁹ To a significant extent, it appears to be U.S. states rather than Canadian provinces that have been the more forceful drivers of cross-border innovation, especially in the climate change and air quality fields. It is

³⁵ See: J. Alley, “The British Columbia-Washington Environmental Cooperation Council: An Evolving Model of Canada-United States Interjurisdictional Cooperation,” Pp.53-71 in R. Kiy and J.D. Wirth, eds., *Environmental Management on North America’s Borders*. (College Station: Texas A & M University Press, 1998); D.K. Alper, “Transboundary Environmental Relations in British Columbia and the Pacific Northwest,” *The American Review of Canadian Studies - Red, White and Green: Canada-U.S. Environmental Relations* 27 no.3 (Autumn 1997): 359-384; D.K. Alper, “Emerging Collaborative Frameworks for Environmental Governance in the Georgia Basin/Puget Sound Ecosystem.” Paper presented to the Association of Borderland Studies, Las Vegas, Nevada, April 2003; L.P. Hildebrand, V. Pebbles and D.A. Fraser, “Cooperative ecosystem management across the Canada-U.S. border: approaches and experiences of transboundary programs in the Gulf of Maine, Great Lakes and Georgia Basin/Puget Sound” *Ocean and Coastal Management* 45 (2002): 421-457; A. Springer, “North American Transjurisdictional Cooperation: The Gulf of Maine Council on the Marine Environment,” *Canadian-American Public Policy* (April 2002). Accessed at: <http://www.umaine.edu/canam/PublicPolicyJournal/titles.htm>; and Jean-Francois Abgrall, “The Regional Dynamics of Province-State Relations: Canada and the United States” Report: Policy Research Initiative. Available at: http://policyresearch.gc.ca/page.asp?pagenm=v7n1_art_09

³⁶ U. Rausch, *The Potential of Transborder Cooperation: Still Worth Try*. (Halifax: Centre for Foreign Policy Studies, 1997), iii.

³⁷ I refer here to the Georgia Basin-Puget Sound International Airshed Task Force.

³⁸ Debora L. VanNijnatten, “Towards Cross-Border Environmental Policy Spaces in North America: Province-State Linkages on the Canada-U.S. Border,” *AmeriQuests: The Journal of the Center for the Americas* (Special Issue on Quebec and Canada in the Americas) 3 no.1. Available at : <http://ejournals.library.vanderbilt.edu/ameriquests/viewissue.php?id=7>

³⁹ L.P. Hildebrand, V. Pebbles and D.A. Fraser, “Cooperative ecosystem management across the Canada-U.S. border: approaches and experiences of transboundary programs in the Gulf of Maine, Great Lakes and Georgia Basin/Puget Sound” *Ocean and Coastal Management* 45 (2002): 421-457.

interesting that Fredriksson and Millimet, in addition to noting a tendency toward a regional upward harmonization dynamic in the Northeast and Northwest regions of the U.S., have also suggested the potential for spillover into Canada.⁴⁰

If we accept that provinces and states are important environmental policy actors who are open to learning from their subnational counterparts across the border, and that they are indeed working together in cross-border organizations to resolve shared environmental problems, this raises the question of what impact cross-border channels may have on patterns of policy adoption vis-à-vis domestic channels. Cross-border organizations provide an interesting case for discussing the diffusion dynamic as they are both regional and interactive. That is, states and provinces engaged in cross-border activity are certainly ‘neighbours’; indeed, provinces are in most cases closer geographically to their American neighbours than to their provincial counterparts. Cross-border organizations are also specialized networks for professional interaction. Cross-border task forces working on air quality issues, for example, are made up of mid-level officials who work in their air quality agencies at home and can share their ‘war stories.’ Finally, subnational and crossborder regional action in the environmental policy sphere is given impetus by a physical reality not present in other policy areas – pollution spillovers which cannot be addressed on one side of the border alone, but require joint action.

Mercury as a Local and Transboundary Policy Problem

This paper looks for patterns in current policy that are consistent with the operation of policy diffusion, using the case of mercury policy. Mercury is a naturally occurring substance which is harmful to humans and animals, acting as a neurotoxin and having adverse impacts on several organ systems. Methylmercury (MeHg), a persistent, bioaccumulative toxin formed when mercury is deposited to watershed soil, has been shown to adversely impact the development of the brain, with neurobehavioural effects in children. It also has been linked to effects on the developing and adult cardiovascular system (blood pressure regulation, heart-rate variability and heart disease). In addition, humans can be exposed to elemental mercury, which is highly volatile and easily absorbed via the lungs, inhalation at the site of a liquid mercury spill or exposure to mercury containing equipment. The central nervous system is the most sensitive target for elemental mercury vapour exposure and the severity increases as exposure duration and/or concentration increase. At high levels of exposure, elemental mercury can induce respiratory failure, cardiac arrest, and cerebral oedema.⁴¹

The most common pathway of exposure is through human consumption of fish tissue in which MeHg has bioaccumulated. In 2004, a U.S. EPA biochemist estimated that one in six pregnant women in the United States had high enough blood mercury to damage her child, for a total of 630,000 U.S. newborns at risk.⁴² In Canada, a high proportion of the indigenous population have high blood mercury levels, mainly because of high fish consumption. And, the contamination problem is widespread and growing. In 2001, the USEPA released a report concluding that drastic reductions in airborne mercury would be required for many watersheds to

⁴⁰ P.G. Fredriksson and D.L. Millimet, “Is there a Race to the Bottom in Environmental Policies? The Effects of NAFTA,” in Commission for Environmental Cooperation, ed. *The Environmental Effects of Free Trade*. Papers Presented at the North American Symposium on Assessing the Linkages between Trade and the Environment, 2002, p. 241-261.

⁴¹ United Nations International Programme on Chemical Safety.

⁴² Dennis Bueckert, “Health Canada reviewing fish guidelines,” Canadian Press, November 17, 2004. Available at: <http://cnews.canoe.ca/CNEWS/Canada/2004/11/17/718763.html>

meet criteria for MeHg levels in fish.⁴³ In 2003, 24% of U.S. river miles and 35% of U.S. lake acreage were under a mercury-related fish-consumption advisory. These numbers were up from 2% and 8%, respectively, in 1993. As of December 2002, 21 states had statewide advisories for all of their rivers, all of their lakes, or both. That number includes every state bordering Canada except for Idaho and New York.⁴⁴ In 2004, nine provinces had a fish advisory for at least one waterway, while New Brunswick had a province-wide advisory.⁴⁵

The largest sources of mercury in Canada and the United States are atmospheric, although the distribution of emissions from particular point sources differs. In Canada, as of 2000, coal-burning power plants contributed an estimated 9.17% of mercury emissions in Canada, compared to 21.4% for base-metal smelting and 10% for waste incineration, with the rest coming from other sources.⁴⁶ In 1999, the USEPA estimated that about 43% of total emissions came from utility coal boilers, with gold mines, institutional boilers, hazardous-waste incinerators, chlorine production, municipal waste combustors and medical-waste incinerators also contributing significant amounts.⁴⁷ Regional emissions differ from these totals, however. For example, the distribution of mercury emission sources in the U.S. Northeast is: municipal waste incineration 45%, non-utility boilers 18%, electric utility boilers 13%, manufacturing sources 7%, sewage sludge incineration 6% and medical waste incineration 5%.⁴⁸ By contrast, there is a much higher contribution of mercury from coal-fired utility boilers than municipal incinerators in the Great Lakes.

The fact that the largest sources of mercury are atmospheric suggests another reality about this policy problem. Mercury is a transboundary problem. While localized mercury “hotspots” develop around particular point sources (or clusters of sources), mercury released to the atmosphere can travel great distances before being transported to waterways via precipitation.⁴⁹ According to the Canadian government, 10% of mercury deposited in Canada, and 38% in the Canadian Great Lakes region alone, comes from the United States.⁵⁰ It is also estimated that at least 30% of mercury deposition in the U.S. Northeast is attributable to sources outside the region.⁵¹ In the Pacific Northwest, atmospheric dispersal from other parts of North America is believed to be a major contributor to mercury contamination in the Georgia Basin-Puget Sound region.

Despite its harmful impacts on the environment and human health as well as its transboundary nature, it is policy-makers and officials at the subnational level rather than federal governments in the United States and Canada that have been most active in taking steps to reduce mercury pollution. It is certainly the case that both provinces and states have

⁴³ Cocca, P., “Mercury Maps: A Quantitative Spatial Link Between Air Deposition and Fish Tissue: Peer Reviewed Final Report,” USEPA, 10 Sept. 2001: <http://www.epa.gov/waterscience/maps/report.pdf>.

⁴⁴ USEPA, “2003 Advisory Listing,” <http://epa.gov/waterscience/presentations/fishslides/2003.ppt>.

⁴⁵ Environment Canada, “Fish Consumption,” 4 Feb. 2004, <http://www.ec.gc.ca/MERCURY/EN/fc.cfm>.

⁴⁶ Canadian Council of Ministers of the Environment, “Canada-Wide Standards for Mercury Emissions,” June 2000, http://www.ccme.ca/assets/pdf/mercury_emis_std_e1.pdf.

⁴⁷ USEPA, “Controlling Power Plant Emissions: Emissions Progress,” 14 April 2005, http://www.epa.gov/mercury/control_emissions/emissions.htm.

⁴⁸ Northeastern States for Coordinated Air Use Management, “Mercury Report” Available at: <http://www.nescaum.org/pdf/mercury.pdf>. Accessed: 02/08/05.

⁴⁹ Jeff Johnson, “The Mercury Conundrum,” Chemical and Engineering News 79 (2001): 9.

⁵⁰ Environment Canada, “Canada’s Comments on the U.S. Mercury Standard,” 30 March 2004, <http://www.ec.gc.ca/mercury/en/mcepa.cfm>.

⁵¹ Northeastern States for Coordinated Air Use Management, “Mercury Report” Available at: <http://www.nescaum.org/pdf/mercury.pdf>. Accessed: 02/08/05.

considerable room to maneuver with respect to taking action to reduce mercury pollution. No statute at the federal level in Canada or the U.S. strategically identifies mercury as a matter of concern, as is the case for PCBs. In Canada, while the Canadian federal government conducts most of the research pertaining to mercury contamination, encourages toxic pollution prevention under the *Canadian Environmental Protection Act*, and is the primary authority with respect to fisheries and consumption advisories, it is the provinces, for the most part, that regulate point sources. Incineration, utility and nonutility boilers, and other industrial releases are matters of provincial jurisdiction. Restrictions on mercury in products, however, such as fluorescent lighting, have not generally been the focus of provincial activity.

In the U.S., mercury is covered under the overarching structures of several federal statutes that address toxic substance use and release, or that specify a maximum acceptable concentration for various media. Keeping in mind that the largest source of mercury pollution is air deposition, national emission standards for hazardous air pollutants (NESHAPS) have been established for major emission sources,⁵² although states can and some have enacted stricter standards. They also may impose site-specific mercury regulations on individual sources. Moreover, both EPA's new Clean Air Mercury Rule (still a matter of debate) and its Clean Air Interstate Rule for NO_x and Sox, which will also have an impact on mercury emissions, in a departure from practice under the *Clean Air Act*, allow states to set their own more stringent regulations for mercury emissions and to choose the method of reduction. In addition, restrictions on mercury-containing products are a policy tool employed almost exclusively by states to address disposal contamination.

Channels for Mercury Policy Diffusion

Domestic channels for policy diffusion within Canada are both more limited and less obvious than in the U.S. There are no national professional associations of provincial environmental administrators akin to ECOS or STAPPA/ALAPCO. Instead, the dominance of executive federalism in Canada has encouraged provincial interaction within intergovernmental forums focused on achieving similarity of effort across the country with respect to specific policy problems. Environmental issues are dealt with in the CCME, as discussed above. Canada-wide standards (CWSs) are set in committees of officials and experts, which provide an institutionalized forum for national, professional interaction on particular environmental policy problems. The CCME's Air Management Committee manages intergovernmental approaches to air quality issues in Canada, including mercury. The CCME endorsed CWSs for waste incineration (hazardous waste, sewage sludge, municipal waste and medical waste) and for base metal smelting in 2000, and CWSs for mercury-containing lamps and dental amalgam waste the following year.⁵³ More recently, in 2005, the Ministers adopted-in-principle CWSs for mercury emissions from coal-fired power plants.

Regional diffusion is also a possibility. Policy regions in Canada are also not institutionalized in the same manner as they are in the U.S. For example, in the U.S. Northeast, there is an extensive network of specialized organizations, such as the Northeastern States for Coordinated Air Use Management (NESCAUM), the Northeast Waste Management Officials' Association (NEWMOA) and the Coalition of Northeastern Governors. The closest Canadian

⁵² These include hazardous and municipal waste incineration, commercial/industrial boilers, chlor-alkali plants, and portland cement kilns.

⁵³ Canadian Council of Ministers of the Environment, *Canada-wide Standards for Mercury: A Report on Progress*. June 2005.

counterparts would be the Western Premiers' Council and the Council of Atlantic Premiers, wherein senior officials may address specific policy problems. The inductive approach of this paper ameliorates this difficulty somewhat, although identifying a predictable regional policy dynamic in Canada, as Gray would have us do, remains a challenging (perhaps impossible?) task. Yet, it is worth noting that the existence of different regulatory regimes in the two countries may encourage the existence of domestic regional, rather than cross-border regional, environmental policy diffusion, as officials look to neighbouring jurisdictions for policy inspiration.

Nevertheless, the means for cross-border regional interaction on mercury reduction does indeed exist. In the most ambitious project, the Conference of New England Governors and Eastern Canadian Premiers (NEG/ECP) adopted a comprehensive Mercury Action Plan in 1998 designed to reduce mercury in the region. Based on extensive research showing that mercury posed a health and environmental threat in the Northeast, the Governors and Premiers endorsed the long-term goal of virtual elimination of anthropogenic mercury releases in the region, with interim reduction goals of 50% by 2003 and 75% by 2007. In order to achieve these reductions, the NEG/ECP endorsed specific objectives for the reduction of mercury emissions from point sources (municipal solid waste combustors, medical waste incinerators, sludge incinerators, utility and nonutility boilers, as well as other industrial and area sources), for the source reduction and safe waste management of mercury and for research and continued monitoring of mercury in the environment.⁵⁴ A Mercury Task Force staffed by state and provincial officials was created in order to guide implementation. However, individual jurisdictions can choose specific implementation instruments.

Environmental interaction in the Great Lakes region is also institutionalized, but there is a stronger federal presence here and action on mercury pollution is somewhat less focused. The International Joint Commission and its various Boards, the Great Lakes Fisheries Commission and, more recently, the Great Lakes Regional Collaboration all involve state and provincial officials in broader efforts to reduce toxics in the Basin. In addition, the Great Lakes Commission, whose membership includes the eight states as well as Ontario and Quebec as Associate Members, has undertaken a Great Lakes Air Deposition Program which is specifically concerned with estimating mercury emissions from within and outside the Basin and monitoring deposition. The Canada-United States Binational Toxics Strategy provides the most explicit framework for actions to reduce or eliminate mercury in the Basin through its Mercury Workgroup. The Strategy has endorsed an overall goal of 50% reduction in air releases of mercury nationwide and releases to water within the Basin by 2006.⁵⁵ The Mercury Workgroup, whose membership consists of representatives of the federal, state and provincial governments as well as NGOs and industry, does not seem to have an action plan per se, but is instead studying and promoting various options for reducing mercury pollution resulting from energy production, manufacturing, the medical and dental industries, waste disposal and schools.⁵⁶ The Workgroup, like the NEG/ECP Mercury Task Force, appears to be offering subnational governments a menu of policy options to choose from as they undertake mercury reduction efforts.

⁵⁴ The Committee on the Environment of the Conference of New England Governors and Eastern Canadian Premiers, *Mercury Action Plan 1998*. New England Governors/Eastern Canadian Premiers, June 1998.

⁵⁵ United States Environmental Protection Agency, "Binational Toxic Strategy Mercury Progress Report," November 29th, 2004. Available at: <http://www.epa.gov/region5/air/mercury/progress04.pdf>

⁵⁶ US EPA Great Lakes Program Office, *Great Lakes Binational Toxics Strategy: Draft Report for Mercury Reduction Options*. September 1, 2000.

Regional cooperation in the Northwest is more bounded (i.e. focused on the Georgia Basin-Puget Sound ecosystem), largely bilateral, less institutionally mature and also less focused on mercury. Attempts to engage in systems-wide planning to address pollution on either side of the border via the Georgia Basin Ecosystem Initiative and the Puget Sound Water Quality Management Authority led to the signing of the *British Columbia-Washington Environmental Cooperation Agreement* in 1992. Cross-border cooperation with respect to air and water quality in the region has been institutionalized under the Agreement through an overarching Environmental Cooperation Council and various Task Forces. The Georgia Basin-Puget Sound International Task Force and the International Airshed Strategy are addressing mercury contamination as part of ongoing cooperative activities to reduce pollution in the region. A crucial aid to ongoing transboundary reduction efforts has been the extensive scientific and professional networks in the region, including those associated with the Air and Waste Management Association – Pacific Northwest International Section, the Pacific Northwest Pollution Prevention Resource Council and the Northwest International Air Quality Environmental Science and Technology Consortium.

Mercury Policy Similarity:

This section undertakes an examination of mercury policy diffusion by looking for patterns in current policy that are consistent with the operation of policy diffusion. 27 different mercury policies were identified as representing the range of existing mercury policy actions that have been taken by at least one subnational jurisdiction and might be taken by others. (See Appendix A for methodological notes.) In examining potential patterns of policy diffusion, one possible approach would be to look at the total number of mercury policy adoptions for each jurisdiction and look for patterns of similarity and difference on this aggregate basis. However, this implies a relatively loose understanding of policy diffusion – various jurisdictions address mercury-related policy problems, albeit possibly in different ways. A tighter conceptualization might lead one to expect that jurisdictions would adopt the same specific policy responses to those mercury-related policy problems. The specification of what counts as ‘similarity’ and ‘difference’ between given jurisdictions will be crucial in determining the degree of policy diffusion which is perceived as existing among these jurisdictions.

This analysis pays attention to the overall ‘score’ of each jurisdiction on mercury regulation (i.e. the number of policies implemented by each jurisdiction out of the total of 27 possible policies). However, jurisdictions with the same overall score may score high or low on the similarity index. For example, two jurisdictions who have each adopted 10 (out of 27) mercury policies might score high on the similarity index if they have adopted the exact same 10 policies, or they might score zero if they adopted 10 different policies. Thus, the central focus is on the similarity between individual jurisdictions in terms of whether or not they have adopted the same specific policies out of the range of possibilities. Any two sets of jurisdictions can be compared and given a score out of 27 which represents the sum of the number of policies on which the jurisdictions are similar – both having adopted the particular policy in question. Because jurisdictions would appear similar if they both chose not to act, these cases are excluded from the calculations. Instead, the purpose here is to determine whether jurisdictions, when they choose to act, have taken the same policy action.

The central empirical question of the paper is whether there are cross-border clusters of states and provinces that demonstrate significant policy similarity. However, policy similarity and difference is relative. For the purposes of this paper, cross-border policy similarity is

measured relative to policy similarity among regional clusters of Canadian provinces and among Canadian provinces more generally.

Clustering Among Canadian Provinces

Overall, Canadian provinces are not as active as American states with respect to mercury policy adoption (see Table 3). On the American side, states in the Northeast show adoption rates as high as 18 out of the total 27 mercury policies (Rhode Island, Maine), 15 (Vermont), 14 (Connecticut) and 12 (New Hampshire). Indeed, the average rate of adoption is 12.4 out of 27 policies in the Northeast and 13.8 in the tighter New England region (Table 3).⁵⁷ Pacific states had a lower but still significant number of adoptions at 10 (Washington), 7 (California) and 6 (Oregon), with an average rate of adoption of 7.7. Minnesota is the highest Midwestern state, with 9 adoptions. By comparison, in the Canadian context, Ontario had the highest number of adoptions, at 8 out of the total 27, with New Brunswick having the second highest number of adoptions – 6. The Atlantic provinces (New Brunswick, Nova Scotia, PEI, Newfoundland) appear to be slightly more active in terms of mercury policy adoption than the western provinces (British Columbia, Alberta, Saskatchewan)⁵⁸; the average rate of adoption across the western provinces was 2.7, while the average across the Atlantic provinces was 4.5.

The numbers of mercury policies adopted do not tell us, however, whether provinces within regional clusters (if they do, in fact, exist) have chosen similar mercury policies out of the possible range of policies surveyed here. This is, however, captured in our similarity index. There appears to be a higher level of similarity as one moves eastward, with Atlantic provinces more similar to one another than the western provinces are to one another. Alberta, for example, is considerably more similar to Ontario, Nova Scotia and Newfoundland than it is to other western provinces (Table 2). British Columbia is also more similar to Nova Scotia and Newfoundland than it is to other western provinces (Table 1). Indeed, according to the distinctiveness index, the western provinces do not constitute a policy region (Table 3). The Atlantic provinces, however, do appear to form a policy region that is about as tightly clustered as the U.S. Northeast region, though not as tightly as the New England region.⁵⁹

Clustering in Cross-Border Regions

Because the clusters of American states active in mercury policy are located adjacent to the Canada-U.S. border, and in regions where cross-border channels for mercury policy diffusion are present, one might expect some policy similarity among states and provinces within these cross-border regions. The findings in regard to cross-border regional clustering are, however, relatively weak and confined to one cross-border region.

⁵⁷ Given the clustering of activity as well as the orientation of our hypothesis re. cross-border regions, mercury policy similarity is examined in those states in the border regions, with some ‘variable geometry’ in order to test how policy regions are defined in this case: Pacific (WA, OR, CA), Midwest (MN, IL, IN, MI, OH, WI), Great Lakes (MN, IL, IN, MI, OH, WI, PA, NY), Northeast (NY, NJ, CT, VT, MA, NH, ME, RI) and New England (CT, VT, MA, NH, ME, RI).

⁵⁸ The Atlantic provinces include, for the purposes of this paper, NB, NS, PEI, NF. The western provinces include BC, AB and SK. Manitoba is not included in the calculations as it had zero adoptions. See Methodological Notes re. NB.

⁵⁹ It should be noted here that we cannot calculate a distinctiveness index for a single jurisdiction region, like Ontario. (The distinctiveness index indexes similarity scores for other regions relative to the similarity score within a given region. In the case of a single jurisdiction region, the latter value is always 100%, thus making the index scores for other regions meaningless.)

When we look at levels of similarity of jurisdictions within Canadian and American regions relative to their similarity to jurisdictions in neighbouring cross-border regions, the strength of regions within countries overwhelms cross-border regional similarities, particularly in the U.S. (Table 2). Perhaps the best example of this is in the West. When reporting the percentage of policies on which two jurisdictions match, states within the Pacific regional grouping score highest on the similarity index (see Table 1); of the various regions, Pacific states are most likely to adopt a policy that is similar to their neighbours. There is also a high level of policy similarity between states within the Pacific region relative to other regional groupings of states (Table 2) and the Pacific grouping scores highest on the distinctiveness index as a region (Table 3). However, this similarity has not spilled over the border, as western provinces do not resemble their state counterparts at all (Table 2). In fact, Pacific states are much more like states in all other American regions than they are like Canadian provinces.

Further east, U.S. states within the Midwest and Great Lakes groupings are not particularly similar in a policy sense.⁶⁰ The Midwest scores just 26% in terms of average policy similarity, the Great Lakes 23% (Table 3). Particular pairs are relatively close, such as Wisconsin-Illinois and Indiana-Minnesota (Table 1). However, both Minnesota and Illinois look more like the Pacific states than they do the Midwest states and Indiana looks as much like the Pacific states as the Midwest states. Minnesota also appears remarkably similar to New England states such as Vermont and Rhode Island. Wisconsin and Michigan do not appear any more similar to states in their own vs. any other region (Table 2). These observations are borne out in the distinctiveness index, where the Midwest and Great Lakes do not appear to be policy regions at all. That is, the similarity index for each state in this region, when paired with other states in the same region, is on average lower than when these states are paired with states in other regions (see notes under Table 3). From a cross-border perspective, the lack of similarity between Midwest states and Canadian provinces is marked, with one exception: Michigan looks more like Ontario (Table 2) and as much like the Atlantic provinces (Table 1), particularly New Brunswick, as it does states in any other American region.

The highest level of policy similarity can be found in the cross-border Northeast region, although this finding cannot be considered robust. On the U.S. side, the New England region represents a tight policy cluster. When examining policy similarity between states within the New England region relative to other regional groupings of states (Table 2), including the broader Northeast, all six states appear more like states within their own region than they do states in other regional groupings. New England also receives the second highest score in terms of the distinctiveness index (Table 3). The similarity index for New York and New Jersey, when paired with the New England states, scores relatively low (Table 1). In terms of potential cross-border policy diffusion, the Atlantic provinces are more similar to northeastern states than they are to states in any other American region, but they are still more similar, on the whole, to their regional provincial counterparts and to the other Canadian provinces – particularly Ontario – more generally. The exception to this is New Brunswick, which appears as similar to states in the Northeast and New England regions as it does to Atlantic provinces.

⁶⁰ This is important given that one might expect less active states to be more similar, especially if there is a hierarchy of mercury policies by which one particular policy is typically adopted first. In that case, states which are minimally active would tend to be highly similar. However, in these findings, the Midwest and Great Lakes groupings are both less active and less similar than the Pacific and Northeast/New England groupings. This suggests that the difference in the level of similarity within these latter two regions is not necessarily the result of the latter being more active than the former.

The presence of the looser Atlantic provincial cluster adjacent to the tighter and very active New England cluster is suggestive of the possibility that policy diffusion in the cross-border Northeast region may be occurring, particularly given the existence of the NEG/ECP Mercury Action Plan. A look at mercury policies adopted in the Atlantic provinces and New England states can be useful in determining the extent to which these policies are in accord with the NEG/ECP Mercury Action Plan. Table 4 shows considerable clustering among the six New England states with respect to policies advocated in the NEG/ECP Mercury Action Plan. All six states have endorsed the reduction target and those states with air emissions sources tagged in the Action Plan (utility boilers, incinerators, etc) have, for the most part, adopted limits more stringent than federal standards. There is also some clustering in terms of mercury-containing product restrictions, disposal objectives and notification requirements among New England states. The Atlantic provinces also have endorsed the NEG/ECP target and have adopted some mercury policies that are consistent with the Mercury Action Plan, although by no means have they been as active as New England states. However, the area where Atlantic provinces seem most active – regulating point sources associated with atmospheric mercury releases – has also been the subject of Canada-wide standard-setting under the CCME. Which diffusion channel, then, is more significant? The next section sheds some (albeit diffuse) light on this question.

Mercury Policy Survey

This section presents, in a preliminary fashion, the results of an online survey of provincial and state government officials involved in mercury reduction policy, also conducted in 2005, which are suggestive of the significance of various diffusion channels for subnational officials.⁶¹ The results indicate, first, that state governments consider mercury pollution to be a more significant problem than provincial officials. While 70% of state respondents indicated that mercury pollution was “very important” to their state, only 18% of provincial respondents answered in the same manner. States also indicated a higher level of activity in this policy area than provinces, with 44% of respondents noting that their state has been “very active,” 26% “active.” Half of provincial respondents, by contrast, indicated a moderate level of activity, one-third indicated they were “very active.”

In terms of sources of mercury policy influence, fully 73% of provincial respondents indicated that deliberations in the CCME were “very important.” Indeed, verbatim responses to a question asking about mercury policy achievements focused almost exclusively on CCME activities. The Canadian federal government scored a close second, with two-thirds of respondents rating this actor as “active” or “very active.” Interestingly, more than half of provincial respondents ranked the American federal government as “moderately important” in terms of mercury policy influence. Neighbouring provinces did not seem to be any more important for provincial officials than provinces in other parts of Canada; both sources of influence garnered a “moderately important” score from 45% of respondents. The influence of cross-border organizations was not considered particularly important, with only 18% of provincial respondents ranking them as “moderately important.” In fact, the Sound Management

⁶¹ Survey respondents included 11 provincial officials and 27 state officials. In terms of regional affiliation, 4 respondents were from eastern Canada (QC, NB, NS, PEI, NF), one respondent was from Ontario and 6 respondents were from western Canada (BC, AB, SK, MB). Due to the limited number of respondents, the results can be considered indicative only and detailed follow-up interviews are required. See Appendix C for information about the survey questions. All questions asked respondents to use a 5-point scale.

of Chemicals Program of the trilateral North American Commission for Environmental Cooperation rated slightly higher than cross-border organizations, although was still not considered a significant influence. By contrast, domestic influences were considered most significant by state officials, with almost half of all respondents rating these as “very important.” In terms of external influences, state professional associations (e.g., STAPPA-ALAPCO) and the scientific community followed closely, with approximately half of respondents ranking them as “important” or “very important.”

When asked about the benefits of cross-border cooperation, 36% of provincial respondents suggested that “increasing scientific knowledge” was significant, with 27% attaching a similar significance to “leveraging scarce resources,” “building/maintaining good relations,” “contributing to a decline in pollutants,” “additional support in the face of opposition,” and “spurring action at home in your provinces.” Only 18% indicated that cross-border cooperation was an “important” source of new policy ideas. The findings were strikingly similar for state respondents, who indicated moderate support for the importance of cross-border cooperation in increasing scientific knowledge, building good relations and contributing to a decline in pollutants. Also similar was the level of significance attached to cross-border organizations being a source of new policy ideas: 22%. One difference was that 22% of state officials indicated that cross-border organizations were “very important” in terms of providing additional support in the face of opposition (the comparable score for provincial officials was 0).

There was also some overlap in terms of state and provincial opinions with regard to mercury policy innovators in North America. Both states and provinces indicated that Massachusetts was an innovator, and both expressed some (though considerably less) support for Maine. However, whereas one-quarter of the provinces fingered Ontario as an innovator, no provinces were cited as innovators by state respondents. In addition, one-quarter of state respondents pointed to Minnesota as an innovator, more than any other state. Minnesota received no support from provincial respondents.

Observations

This examination of mercury policy adoption reveals patterns that are suggestive of very limited regional diffusion, and only among Atlantic provinces. Further, the presence of a looser Atlantic provincial cluster adjacent to the tighter and very active New England cluster is suggestive of the possibility that policy diffusion in the cross-border Northeast region may act as a *complement* to domestic diffusion on the Canadian side, spurring a higher level of activity than would otherwise be occurring, particularly in light of formalized cross-border cooperation in the broader region. Otherwise, there is little evidence to indicate that cross-border diffusion channels are significant. Instead, it would appear that national diffusion, primarily through the CCME, is most significant in terms of provincial mercury policies. Ontario, as a national leader, appears to play an important role with respect to national patterns of mercury policy diffusion.

Further research, however, is required. First, selected interviews with state and provincial officials on the NEG/ECP Mercury Task Force would be useful in terms of assessing the degree to which policy decisions are being made on the basis of external vs. internal considerations, as well as the relative weight of various external considerations. For example, cross-border organizations can help to build support for policy action, although conditions must also be ripe domestically in order for action to be meaningful. Further, cross-border cooperation may encourage activity but not the same kind of activity on both sides of the border. Interviews

might help to identify the ways in which cross-border policy cooperation matters, if not to actual policy adoption.

Second, it would be worthwhile to have an understanding of the dynamics of policy adoption within the region, on both sides of the border. It is evident that, within the U.S., New England states have been the earliest adopters on almost all mercury policies surveyed here (see Appendix B), and, within this group, border states such as Maine, New Hampshire and Vermont figure prominently. At the same time, Ontario, the most active Canadian province, also appears to have been an early adopter on a number of mercury policies. This suggests the possibility different policy diffusion dynamics for a province such as New Brunswick, the most active Atlantic province.

Appendix A: Methodological Notes

The 27 mercury policy categories were chosen through a multi-step process. First, initial research on northeastern states, which appeared to be most active, yielded a set of possible mercury policies, as did an initial survey of activity in the provinces. Studies conducted by the Mercury Policy Project, which tracks mercury policies across all U.S. states, were also utilized. Attention was given to the question of comparability, i.e., whether actions were possible within the regulatory and policy context of both countries. There has arisen some question of whether it is appropriate to compare states and provinces on mercury-containing product restrictions, as provinces indicate that this is an area of federal activity, though perhaps not legal jurisdiction.

After the variables were identified, we searched the statutes, regulations and recent session laws of the 60 jurisdictions for the policies in question. The following types of policies were counted in our survey:

- 1) Binding, formalized policies, such as statutory restrictions on products; executive orders on procurement policies; or ministerial directives to public institutions to remove mercury.
- 2) The regular inclusion of mercury limits in the permitting process, when it is an official policy of the jurisdiction to do so.
- 3) Actions by a province to ensure that all existing emissions sources covered under a CCME standard already meet that standard and that any future source will have to meet it.

For the states, we faxed the results of our survey to relevant officials for confirmation of our data. After 24 days, 23 states had responded in full: Alaska, Alabama, Arkansas, Colorado, Connecticut, Illinois, Indiana, Kansas, Massachusetts, Maryland, Michigan, Missouri, Nebraska, New Hampshire, New Jersey, Ohio, Oregon, Rhode Island, Tennessee, Utah, Vermont, West Virginia, and Wyoming. The lack of formal verification from other states can be considered a data limitation.

Due to the nature of Canadian policy-making, less information was available in provincial statutes than was the case with the states. As a result, we sought the answers to the survey questions directly from provincial officials. The data for Quebec has been excluded from the calculations in this paper.

In addition, in calculating the similarity index across regions, Manitoba and Ohio were excluded, as they both had zero policy adoptions.

Jurisdictions for which a particular mercury policy was not applicable, i.e., they did not possess the point source to be regulated (for example, utility boilers), were treated as though they had taken no action on that policy indicator.

Appendix B: Top 3 States, Mercury Policy Indicators

- A. Target -- six-way tie among New England states
- B. Utility boilers --
 - 1. WI (2001)
 - 2. CT (2003)
 - 3. NJ (2004)
 - 3. MA (2004)
- C. Institutional boilers --
 - 1. NJ (2004)
- D. MWCs --
 - 1. NJ (1994)
 - 2. ME (1998)
 - 2. MA (1998)
- E. HMIWIs --
 - 1. NY (1998)
 - 2. NH (1999)
 - 3. RI (2000)
 - 3. MI (2000)
- F. Sludge --

The only states with "yeses" are MI and RI, which do it in permits.
- G. Other point sources --
 - 1. FL (1993)
 - 2. ME (1997)
 - 3. NJ (2004)

MI does it in permits.
- H. Labeling --
 - 1. MA (1992/3)
 - 2. VT (1997)
 - 3. ME (1999)
 - 3. CT (1999)
- I. Thermometers --
 - 1. NH (2000)
 - 2. ME (2001)
 - 2. RI (2001)
 - 2. IN (2001)
 - 2. MN (2001)
 - 2. OR (2001)
 - 2. CA (2001)
- J. Novelties --
 - 1. NH (2000)
 - 2. RI (2001)
 - 2. IN (2001)
 - 2. OR (2001)
 - 2. CA (2001)
- K. Lighting restrictions --
 - 1. CT (1999)
 - 2. RI (2001)
 - 3. VT (2001)

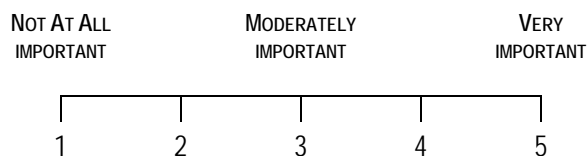
AZ and NM ban outdoor mercury vapor fixtures due to light pollution.
- L. Cars with mercury switches --
 - 1. ME (2001)
 - 1. OR (2001)
 - 1. CA (2001)
- M. Mercury switches in general --
 - 1. RI (2001)

- 2. CT (2002)
- 3. ME (2003)
- N. Schools --
 - 1. NH (2000)
 - 1. MI (2000)
 - 3. ME (2001)
 - 3. RI (2001)
 - 3. MD (2001)
 - 3. OR (2001)
 - 3. CA (2001)
 - 3. IN (2001)
- I have no date for West Virginia's policy.
- O. Elemental mercury --
 - 1. MN (1992/3)
 - 2. NH (2000)
 - 3. ME (2001)
 - 4. RI (2001)
 - 5. IN (2001)
- P. Amalgam separators --
 - 1. ME (2003)
 - 1. CT (2003)
 - 3. VT (2005)
- Q. Hospitals --
 - 1. VT (2005)
- R. Vaccines --
 - 1. CA (2004)
 - 1. IA (2004)
 - 3. DE (2005)
 - 3. MO (2005)
- S. Packaging --
 - 1. VT (1989)
 - 1. ME (1989)
 - 1. WI (1989)
- T. Disposal ban --
 - 1. MN (1992)
 - 2. VT (1997)
 - 3. ME (1999)
- U. Thermostat disposal --
 - 1. MN (1992/3)
 - 2. ME (1999)
 - 3. OR (2001)
- V. Auto switches collection
 - 1. ME (2001)
 - 2. RI (2005)
 - 2. NJ (2005)
 - 2. AR (2005)
 - 2. TX (2005)
- W. Collection of other products
 - 1. CT (2002)
 - 2. RI (2005)
- X. Medical patient notification
 - 1. ME (2001)
 - 2. NH (2002)
- Y. State notification
 - 1. NH (2000)
 - 2. ME (2001)
 - 2. RI (2001)

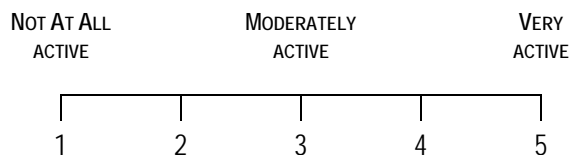
- Z. Required state report
 - 1. VT (2005)
- AA. Procurement program
 - 1. MN (1995)
 - 2. MI (around 1998)
 - 3. RI (2001)
 - 3. MD (2001)

Appendix C - Mercury Policy Survey

- 1) How important do you believe the issue of mercury pollution is to your province? Please rate the importance of mercury pollution to your province using a 5-point scale where 1 means not at all important, 5 means very important, and the mid-point 3 means moderately important. (Please circle the appropriate number.)



- 2) How active would you say that your province has been in terms of mercury-reduction policy over the past 5 years? Please rate your province's level of activity using a 5-point scale where 1 means not at all active, 5 means very active, and the mid-point 3 means moderately active.



- 3) What would you consider to be your province's single most significant mercury policy achievement?

4) How important have the following been as sources of policy influence with respect to mercury policy-making in your province? Please rate the importance of these actors/forums using a 5-point scale where 1 means not at all important, 5 means very important, and the mid-point 3 means moderately important.

		NOT AT ALL IMPORTANT	2	MODERATELY IMPORTANT	3	4	VERY IMPORTANT	5	DON'T KNOW	9
a.	Domestic actors (e.g. elected officials, NGOs, etc.).....	1	2	3	4	5	9			
b.	Neighbouring Canadian provinces.....	1	2	3	4	5	9			
c.	Provinces in other parts of Canada.....	1	2	3	4	5	9			
d.	Canadian federal government.....	1	2	3	4	5	9			
e.	Deliberations in the Canadian Council of Ministers of the Environment.....	1	2	3	4	5	9			
f.	Scientific community.....	1	2	3	4	5	9			
g.	Neighbouring U.S. states.....	1	2	3	4	5	9			
h.	States in other parts of the U.S.....	1	2	3	4	5	9			
i.	American federal government.....	1	2	3	4	5	9			
j.	Cross-border organizations.....	1	2	3	4	5	9			
k.	Sound Management of Chemicals Program, North American Commission on Environmental Cooperation.....	1	2	3	4	5	9			
l.	Other: (please specify) _____ ...	1	2	3	4	5	9			

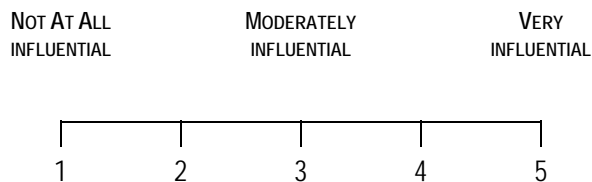
5) If your province has been involved in cross-border cooperation with U.S. states with regard to mercury pollution reduction, please note the organizations with which you are involved:

If your province has not been involved in cross-border cooperation with U.S. states with regard to mercury pollution reduction, please go to Question #8.

6) Please rate the significance of the following in terms of the benefits of cross-border cooperation, using a 5-point scale where 1 means not at all significant, 5 means very significant, and the mid-point 3 means moderately significant.

		NOT AT ALL SIGNIFICANT		MODERATELY SIGNIFICANT		VERY SIGNIFICANT		DON'T KNOW
m.	Leveraging scarce resources.....	1	2	3	4	5		9
n.	Increasing scientific knowledge.....	1	2	3	4	5		9
o.	Training for officials.....	1	2	3	4	5		9
p.	Source of new policy ideas.....	1	2	3	4	5		9
q.	Building/maintaining good relations.....	1	2	3	4	5		9
r.	Contributing to a decline in pollutants.....	1	2	3	4	5		9
s.	Public/media exposure.....	1	2	3	4	5		9
t.	Additional support in face of opposition.....	1	2	3	4	5		9
u.	Spurring action at home in your province.....	1	2	3	4	5		9
v.	Other: (please specify) _____ ...	1	2	3	4	5		9

7) Overall, how influential has cross-border cooperation been in terms of mercury policy-making in your province?



8) Overall, which jurisdictions (provinces or states) do you consider to be the top three innovators with respect to mercury policy in North America?

#1: _____

#2: _____

#3: _____

Thank you very much for completing our survey!

TABLES

Table 1: Similarity Index, Selected States and Provinces, %

	OR	WA	CA	MN	WI	IL	IN	MI	PA	NY	NJ	CT	VT	NH	MA	RI	ME	BC	AB	SK	ON	NB
OREGON		60	44	36	14	38	38	20	0	36	8	25	24	20	20	26	26	0	0	0	0	9
WASHINGTON	60		42	58	20	50	36	23	10	27	21	41	47	29	23	47	47	0	6	0	6	23
CALIFORNIA	44	42		33	29	50	33	18	14	33	17	24	29	36	18	25	25	0	0	0	0	18
MINNESOTA	36	58	33		22	27	40	15	11	38	23	35	50	40	15	50	42	0	7	0	6	25
WISCONSIN	14	20	29	22		40	17	0	50	10	13	14	13	17	0	11	5	0	0	0	0	0
ILLINOIS	38	50	50	27	40		43	22	20	27	20	27	33	31	22	28	21	0	0	0	0	10
INDIANA	38	36	33	40	17	43		38	0	40	20	19	33	31	22	28	21	0	9	0	0	22
MICHIGAN	20	23	18	15	0	22	38		0	25	30	5	17	20	20	33	20	14	18	0	27	50
PENNSYLVANIA	0	10	14	11	50	20	0	0		0	14	7	7	8	0	6	6	0	0	0	0	0
NEW YORK	36	27	33	38	10	27	40	25	0		14	35	33	50	36	35	35	22	23	9	21	25
NEW JERSEY	8	21	17	23	13	20	20	30	14	14		17	16	19	18	25	32	13	40	11	25	18
CONNECTICUT	25	41	24	35	14	27	19	5	7	35	17		53	44	33	45	52	7	17	13	22	5
VERMONT	24	47	29	50	13	33	33	17	7	33	16	53		50	24	57	50	0	5	13	10	24
NEW HAMPSHIRE	20	29	36	40	17	31	31	20	8	50	19	44	50		38	43	50	17	12	15	25	29
MASSACHUSETTS	20	23	18	15	0	22	22	20	0	36	18	33	24	38		14	33	14	18	29	40	20
RHODE ISLAND	26	47	25	50	11	28	28	33	6	35	25	45	57	43	14		57	5	19	0	18	33
MAINE	26	47	25	42	5	21	21	20	6	35	32	52	50	50	33	57		5	19	11	24	26
BRITISH COLUMBIA	0	0	0	0	0	0	0	14	0	22	13	7	0	17	14	5	5		29	25	25	14
ALBERTA	0	6	0	7	0	0	9	18	0	23	40	17	5	12	18	19	19	29		11	36	18
SASKATCHEWAN	0	0	0	0	0	0	0	0	0	9	11	13	13	15	29	0	11	25	11		22	0
ONTARIO	0	6	0	6	0	0	0	27	0	21	25	22	10	25	40	18	24	25	36	22		27
NEW BRUNSWICK	9	23	18	25	0	10	22	50	0	25	18	5	24	29	20	33	26	14	18	0	27	
NOVA SCOTIA	0	8	0	8	0	0	0	11	0	30	10	20	6	23	43	10	16	50	38	17	50	25
PEI	0	8	10	18	0	0	0	0	0	18	10	13	12	33	25	10	22	20	10	17	20	25
NEWFOUNDLAND	0	7	0	8	0	0	0	22	0	27	9	19	5	21	38	15	15	40	33	14	63	22

*Bold denotes regional groupings.

Note: Table 1 reports the number of policy options (out of a total of 28) where the two jurisdictions match not including those policies on which neither jurisdiction has taken any action.

Table 2: Average Similarity Index of State and States/Provinces in Various Regions

	ALL STATES	PACIFIC	MIDWEST	GREAT LAKES	NORTHEAST	NEW ENGLAND	WESTERN	ONTARIO	ATLANTIC	ALL PROVS
OREGON	27	52	29	26	23	24	0	0	2	1
WASHINGTON	36	51	38	32	35	39	2	6	11	7
CALIFORNIA	29	43	33	30	26	26	0	0	7	4
MINNESOTA	34	43	26	26	37	39	2	6	15	9
WISCONSIN	17	21	20	23	10	10	0	0	0	0
ILLINOIS	31	46	33	30	26	27	0	0	3	1
INDIANA	29	36	34	30	27	26	3	0	6	4
MICHIGAN	19	20	19	17	21	19	11	27	21	18
PENNSYLVANIA	10	8	16	14	6	6	0	0	0	0
NEW YORK	30	32	28	23	34	37	18	21	25	22
NEW JERSEY	19	15	21	19	20	21	21	25	12	17
CONNECTICUT	30	30	20	20	40	46	12	22	14	14
VERMONT	33	33	29	27	40	47	6	10	12	9
NEW HAMPSHIRE	33	28	28	28	42	45	15	25	27	22
MASSACHUSSETTS	21	20	16	17	28	29	20	40	31	28
RHODE ISLAND	33	33	30	27	39	43	8	18	17	14
MAINE	33	33	22	21	44	48	12	24	20	17
BRITISH COLUMBIA	6	0	3	5	10	8	27	25	31	29
ALBERTA	11	2	7	8	19	15	20	36	25	25
SASKATCHEWAN	6	0	0	1	13	13	18	22	12	15
ONTARIO	13	2	7	8	23	23	28	0	40	35
NEW BRUNSWICK	20	17	0	19	23	23	11	27	24	19
NOVA SCOTIA	11	3	4	7	20	20	35	50	46	42
PEI	11	6	4	5	18	19	16	20	29	22
NEWFOUNDLAND	11	2	6	8	19	19	29	63	44	40

*Bold denotes state/province's own region.

Notes: Table 2 reports the average similarity index (i.e. percentage of policies where jurisdictions match) for each state/province relative to other groups of states/provinces (all states included in the table, states in various regions, provinces in various regions, and all provinces.)

Table 3: Raw Scores, Cohesion Index and Regional Distinctiveness Index

	SCORE /27	AVG. % SIMILARITY	DISTINCTIVENESS INDEX
<i>PACIFIC</i>	7.7	49	0.62
<i>MIDWEST</i>	5.3	26	1.01
<i>GREAT LAKES</i>	5.3	23	1.07
<i>NORTHEAST</i>	12.4	36	0.81
<i>NEW ENGLAND</i>	13.8	43	0.68
<i>WESTERN</i>	2.7	22	1.18
<i>ATLANTIC</i>	4.5	36	0.84
<i>ALL PROVS</i>	4	28	n/a

Notes:

The cohesion index reports the average percent incidence where two jurisdictions in a given region have the same policy (excluding instances where neither jurisdiction has taken any action.)

The overall regional distinctiveness index is derived from the average similarity index of each jurisdiction relative to domestic jurisdictions in its own and other regions as reported in Table 3. First, the similarity scores reported in Table 3 are indexed to the average similarity score for a state matched with all states from its own region. Thus, for each jurisdiction, the score for its own region is 1.00 and scores for other regions are either higher or lower depending on whether the jurisdiction is more similar to states in another region in comparison with states in its own region (greater than 1.00) or less similar to states in another region in comparison with states in its own region (less than 1.00). For each jurisdiction, this produces four scores for each of the other regions in the country. The scores for all jurisdictions in a given region are then averaged to produce a regional distinctiveness index. A lower regional distinctiveness index implies greater regional distinctiveness. Thus, for example, the Pacific states are significantly more similar to each other than they are, on average, to states in other regions. On the other hand, states in Northeast are not more similar to other states within that region than they are, on average, to states in other regions.

	HI	AK	OR	WA	CA	NV	ID	UT	AZ	MT	WY	NM	CO	ND	SD	NE	TX	OK	KS	MN	IA	AR	MO	LA	MS	Notes	
Restrictions on sale of lighting	N	N	N	N	N	N	N	N	N*	N	N	N*	N	N	N	N	N	N	N	N	N	N	N	N	N	N	<i>*NM and AZ ban mercury vapor outdoor lighting as a light-pollution measure..</i>
Restrictions on sale of cars	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	<i>*If any individual switch surpasses mercury threshold</i>
Restrictions on sale of switches	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Restrictions on Hg in schools	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Restrictions on sale of elemental Hg	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	
Amalgam-separator requirement	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Hospitals required to reduce Hg	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Ban on Hg vaccines for kids	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	N	
Ban on Hg in packaging	N	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	Y	N	N	
Ban on household Hg disposal	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	
Manf. required to help dispose thermostats	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	
<i>Collection of auto switches required</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	

	HI	AK	OR	WA	CA	NV	ID	UT	AZ	MT	WY	NM	CO	ND	SD	NE	TX	OK	KS	MN	IA	AR	MO	LA	MS	Notes	
Collection of other items required	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N		
Medical client notification	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
State notification	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Regular mercury reports required	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
Procurement program	N	N	N*	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N**	N	N	N	N	<i>* WA programs not required for agencies **AR bans state purchases of some lights (perhaps as a light-pollution measure)</i>
<i>Total Y's</i>	<i>0</i>	<i>0</i>	<i>6</i>	<i>10</i>	<i>7</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>9</i>	<i>2</i>	<i>1</i>	<i>2</i>	<i>0</i>	<i>0</i>		

	WI	IL	AL	TN	IN	KY	MI	GA	OH	FL	WV	SC	NC	VA	PA	MD	DE	NY	NJ	CT	VT	NH	MA	RI	ME	Notes
Target	N	N	N	N	N	Y*	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	*KY target of Dept. for Env. Prot.
Limits -- utility boilers	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	n/a	N	Y	n/a	Y*	*ME has no sizable coal power plants, while RI and VT have none at all
Limits -- institutional boilers	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	n/a	N	N	N	N	
Limits -- municipal waste incinerators	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	n/a	Y	Y	n/a	Y	
Limits -- medical-waste incinerators	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	n/a	Y	n/a	Y	n/a	*ME has no HMIWIs. **The only HMIWI in NB meets the standard already.

	WI	IL	AL	TN	IN	KY	MI	GA	OH	FL	WV	SC	NC	VA	PA	MD	DE	NY	NJ	CT	VT	NH	MA	RI	ME	Notes
Limits -- sludge incinerators	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	n/a	N	N	Y***	n/a	*ME does not incinerate sludge. ***RI uses permitting to ensure sources do not cause violation of ambient-air quality standard for Hg.
Limits -- other point sources	N	N	N	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y**	Y	**RI uses permitting to ensure sources do not cause violation of ambient-air quality standard for Hg.
Labeling	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	Y	Y	N	N	Y	Y	
Restrictions on sale of thermometers	N	Y	N	N	Y	N	Y	N	N	N	N	N	N	N	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	
Restrictions on sale of novelties	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	Y	N	
Restrictions on sale of lighting	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y**	N	N	Y	N	**VT: Neon lamps only.

	WI	IL	AL	TN	IN	KY	MI	GA	OH	FL	WV	SC	NC	VA	PA	MD	DE	NY	NJ	CT	VT	NH	MA	RI	ME	Notes
Restrictions on sale of cars	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y	*If any individual switch surpasses mercury threshold
Restrictions on sale of switches	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	N	N	Y	Y	
Restrictions on Hg in schools	N	Y	N	N	Y	N	Y	N	N	N	Y	N	N	N	N	Y	N	Y	N	N	Y	Y	Y	Y	Y	
Restrictions on sale of elemental Hg	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N	Y	Y	
Amalgam-separator requirement	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	N	Y	
Hospitals required to reduce Hg	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N*	N	N	*MA: Y, if served by state-owned water utility.
Ban on Hg vaccines for kids	N	N	N	N	N*	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	*IL governor signed ban into law 8/18/05.
Ban on Hg in packaging	Y	Y	N	N	N	N	N	N	N	Y	N	N	N	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y	Y	

	WI	IL	AL	TN	IN	KY	MI	GA	OH	FL	WV	SC	NC	VA	PA	MD	DE	NY	NJ	CT	VT	NH	MA	RI	ME	Notes
Ban on household Hg disposal	N	N	N	N	N	N	N	N	N	N*	N	N	N	N	N	N*	N	Y	N	N	Y	Y	N	Y	Y	*FL bans incineration of Hg lamps but does not ban households from throwing them away. MD regulators plan to write rule to avoid covering households
Manf. required to help dispose thermostats	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	
Collection of auto switches required	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	Y	Y	
Collection of other items required	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y	N	
Medical client notification	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	
State notification	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	N	Y	Y	
Regular mercury reports required	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N*	N	N	*MA governor, not legislature, requires reports.
Procurement program	N	N	N	N	Y	N	Y	N	N	N	N	N	N	N	N	Y	N	N	Y	N	Y	N	N*	Y	Y	*MA, WA programs not required for agencies
Total Y's	2	6	0	0	5	1	6	0	0	2	1	0	0	1	1	5	1	9	7	14	15	12	6	18	18	

	BC	AB	SK	MB	ON	QC	NB	NS	PEI	NL	Notes
Restrictions on Hg in schools	N	N	N	N	N	N	Y	N	N	N	
Restrictions on sale of elemental Hg	N	N	N	N	N	N	N	N	N	N	
Amalgam-separator requirement	N	N	Y	N	Y	N	N	N	N	N	
Hospitals required to reduce Hg	N	N	Y	N	N	N	N	N	N	Y	
Ban on Hg vaccines for kids	N	N	N	N	N	N	N	N	N	N	
Ban on Hg in packaging	N	N	N	N	N	N	N	N	N	N	
Ban on household Hg disposal	N	N	N	N	N	N	Y	N	Y	N	
Manf. required to help dispose thermostats	N	N	N	N	N	N	N	N	N	N	
Collection of auto switches required	N	Y	N	N	N	N	N	N	N	N	
Collection of other items required	N	Y	N	N	N	N	N	N	N	N	
Medical client notification	N	N	N	N	N	N	N	N	Y*	N	*For vaccinations, patients must be given fact sheets which includes mercury information
State/Prov notification	N	N	N	N	N	N	N	N	N	N	
Regular mercury reports required	N	N	N	N	N	N	N	N	N	N	
Procurement program	N	Y	N	N	N	N	Y	N	N	N	
Total Y's	2	3	3	0	8	4	6	4	4	4	

