

1996

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Recommended Citation

Tracey Wallace, *As the Twenty-First Century Nears, Countries Are Becoming More Concerned with the Environment*, 2 LAW & BUS. REV. AM. 57 (1996)

<https://scholar.smu.edu/lbra/vol2/iss1/10>

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As the Twenty-first Century Nears, Countries Are Becoming More Concerned with the Environment

Tracey Wallace

Student Editorial Board

I. Introduction

As the Twenty-first Century nears, society's tolerance for pollution continues to decrease—mainly as a result of the increasing concern for the environment. In response to this increasing concern, governments have responded by imposing tougher standards on industries with respect to pollution emissions.¹

In its own way, the North American Free Trade Agreement has responded to environmental concern by enacting the Environmental Side Accord. This accord pertains to the three countries which are now involved in the NAFTA—the United States, Mexico, and Canada—and will also have an effect on any other country that wishes to become a part of the NAFTA. This article will look at the impact of environmental regulations in Canada.

In looking at some of Canada's environmental regulations, this article will discuss the divisions of power between the federal and provincial governments with respect to environmental matters. Next, this article will discuss how the environmental regulatory framework is applied to three pollutants—chlorofluorocarbons (CFCs), polychlorinated biphenyl (PCBs), and organochlorines—and how these regulations impact the development of new technologies in Canada.

II. The Division of Power in Canada

The Constitution Act, 1867,² in sections 91, 92, and 92A, gives each level of government the jurisdiction to handle certain matters. This Act was completed before the advent of environmental problems; as a result, environmental matters do not fit under any one head of power listed in the Act. This means that some environmental matters are handled by the federal government, some matters are handled by the provinces, and some overlap.

Generally, the areas of federal jurisdiction that may relate to environmental matters include navigation and shipping, fisheries, federal lands, and lands reserved for native peo-

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1. Roger Cotton & Cara Clairman, *The Effect Of Environmental Regulation On Technological Innovation In Canada*, 21 CANADA-U.S. L.J. 239 (1995).
 2. Constitution Act, 1867, 30 & 31 Vict., ch.3 (1867) (Eng.).
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ples. Environmental matters which come within provincial jurisdiction are those that deal with respecting property and civil rights in the province, and matters of local or private nature.³ The responsibility of dealing with property matters means that the provinces will generally enact the regulations aimed at controlling pollution emissions.

III. Chlorofluorocarbons (CFCs)

In 1974, scientists began to speculate that the use of CFCs in industry was causing the damage detected in the ozone layer. This speculation was confirmed when the scientific community released the results of intensive studies. These studies corroborated the scientists' theory that CFCs released at the earth's surface interacted with ozone molecules in the atmosphere causing those molecules to break apart, resulting in a thinning, and subsequent creating of "holes" in the ozone layer.⁴

In March 1985, representatives from twenty countries met and signed the Vienna Convention on the Protection of the Ozone Layer. While this agreement did not set out targets to be met in the reduction of CFCs, it did require cooperation between countries in researching and monitoring the relationship between CFCs and the depletion of the ozone layer. The scientific community stressed the fact that greater efforts were required if the ozone layer was to be protected. This led to the subsequent signing of the Montreal Protocol by forty-seven countries. This protocol required a fifty percent reduction in the use of ozone depleting substances by 1992.⁵

As the problem surrounding the ozone layer become more apparent, an agreement was struck by the participating countries to accelerate the requirements of the Montreal Protocol. In June 1990, these countries agreed to a 100 percent ban of ozone depleting substances by the year 2000 and by 2010 for developing countries. In 1992, the countries agreed to accelerate the ban on the production and use of new CFCs by January 1, 1996.⁶

In response to the Montreal Protocol, Ontario, as well as other Canadian jurisdictions, enacted a number of regulations which required industry to either control their CFC emissions or to eliminate the use of new CFCs.⁷ One of the requirements of this regulatory scheme was to require companies to capture and recycle CFCs contained in stationary refrigeration and air-conditioning units. However, no technology was available that would allow the recycling and use of CFCs. Also, there was no technology available that would allow the collection of gas from diluted streams such as emissions occurring during purging, vacuum evacuation, and leak testing.⁸ The absence of and need for such a technology

3. For more information, see Roger Cotton & John S. Zimmer, *Canadian Environmental Law: An Overview*, CANADA-U.S. L.J. 63 (1992).
4. Gary Gallon, Green Industries Working Group-Progress Report, Part IV 46 (1993) (prepared for Third National Stakeholders' Assembly).
5. This protocol came into effect January 1, 1989. *Id.* at 47.
6. *Id.*
7. Roger Cotton & Cara Clairman, *supra* note 1, at 243. The current regulatory scheme includes R.R.O 1990, Reg. 356, O. Regs. 189/94, 323/94 and 413/94.
8. O. Reg. 189/94.
9. Roger Cotton & Cara Clairman, *supra* note 1, at 243.

led to the development of the "Halozone" technology.¹⁰ This technology allows for the capture of CFCs, from either concentrated or diluted streams, in a non-pressurized container called the Blue Bottle.^{® 11}

The Blue Bottle[®] cylinder can be connected directly to the refrigeration or air-conditioning unit. Since CFCs are not under pressure in the Blue Bottle,[®] these containers are relatively safe to transport and are therefore not subject to Canada's Transportation of Dangerous Goods Regulations.¹² Once the CFCs are collected in the Blue Bottle,[®] they can be transported to the Halozone Central Processing Facility. After arrival, the CFCs are then removed from the Blue Bottle[®], using heat and other methods, leaving both the pure CFCs and the regenerated Blue Bottle[®] cylinders available for reuse.¹³

The invention of this technology made it possible for companies to keep up with regulatory demands designed to achieve the requirements of the Montreal Protocol, while at the same time continuing to use existing coolant equipment. Many Canadians have posited that if it had not been for the tougher environmental regulations, companies would not have been pushed to produce new technologies like the Blue Bottle.[®] For example, the following has been written:

Had it not been for documents and legislation like the Montreal Protocol-which is mandatorily phasing out CFC production and manufacturing, we may not have gotten off our laurels and thoroughly investigated the potential of looking at new ways to condense, transfer, heat, and use less refrigerant gases that we have been traditionally used to for over forty years.¹⁴

Progressive environmental legislation has not only made it possible to invent new technologies, it has also made it possible for Canada to monetarily gain from the new technologies. The technology can be exported to other countries which have not developed their own technology.¹⁵

While progressive environmental regulations result in the development of new technologies, regulatory frameworks that lag behind the times only serve to impede the development of new technologies. Such is the case with polychlorinated biphenyl (PCBs) and organochlorines.

10. *Id.*

11. *Id.*

12. Leon Rucker, *How Ozone Protection Regulations Encourages Technical Innovation-A Case Study, The "New Economy" - Green Needs and Opportunities* 3 (1994).

13. Dusanka Filipovic, *Recovery, Reclaiming and Recycling of Halogenated Hydrocarbons*, in First North American Conference and exhibition on Emerging Clean Air Technologies and Business Opportunities. Larger size Blue Bottles[®] are now available to deal with commercial and industrial equipment containing larger quantities of CFCs.

14. Michael A. Steele, *Montreal Protocol: Driving the CFC Conversion Business* in Emerging Clean Air Technologies and Business Opportunities 1 (1994). Michael Steele is the president for Thermco Canada, a division of Halozone Recycling Inc. Thermco's business objective is to reduce the volume metric use requirement of ozone depleting gases by 90 % while guaranteeing 100 % containment of the remaining 10 %.

15. See *supra* note 1, at 244.

IV. Polychlorinated Biphenyl (PCBs)

PCBs have been labeled and studied as an environmental threat for over twenty years. They have been shown to bioaccumulate, meaning that their concentrations increase as they are transferred up the food chain.¹⁶ Scientists have linked reproductive problems in fish-eating birds with high concentrations of PCBs, and some studies have indicated that a connection existed between the ingestion of PCBs and cancer and birth defects in women.¹⁷ In response to a public demand to ban PCBs, the Canadian government began a Canada-wide ban against the import or manufacture of PCBs in 1976.¹⁸

The governments of Canada and Ontario have now enacted regulations setting out how PCBs should be managed once they are taken out of service. These regulations outline storage requirements for PCBs, including dealing with access to the storage site, maintenance and inspection, labeling requirements, fire protection, and emergency procedures, safety, record keeping, and reporting requirements.²⁰

Because the regulations only deal with storage, there is no requirement to dispose of high level PCBs in any Canadian jurisdiction. Until recently, there were no permanent facilities to destroy PCBs, which led to the stock piling of PCBs at sites across the country.²¹

The threat of lawsuits reinforced the need for a process that could safely destroy PCBs, either at a facility or on-site. ELI Eco Logic, Inc. developed a process that is able to destroy PCBs in a closed-loop process without incineration. One of the advantages of this technology is that it can be transported to the site rather than taking the PCBs to a central facility.²² In addition, the lack of incineration means that there is no risk that contaminants will be dispersed into the air.

Even though the plan was well thought out by ELI Eco Logic, Inc., it had a great deal of difficulty getting the new technology accepted by the Canadian government. The program was not received with much enthusiasm. It was not until a United States Environmental Protection Agency sponsored demonstration, in 1992, that the plan began to be accepted. After proving the technology to be a success, ELI Eco Logic, Inc. has now obtained major industrial contracts in Canada and the United States as well as in Australia.²³

The difficulties experienced by this company were arguably a result of a lack of regulation. Since no one was required to actually dispose of PCBs, the new technology was not embraced by industry. Tougher environmental regulations would likely have meant the ready acceptance of this new technology.

16. See *supra* note 1, at 245.

17. *Id.*

18. Daniel Stoffman, *The Big Clean-Up Report* on Bus. Mag., Nov. 1994, at 45-56.

19. SOR/92-507; R.R.O 1990, Reg. 362.

20. Ontario enacted its first PCB storage regulation in 1982, but the federal government did not follow suit until 1992. The federal Regulation and the Ontario Regulation are similar but not identical. The provisions discussed come from the Ontario Regulation.

21. See *supra* note 1.

22. See *supra* note 1, at 246.

23. *Id.*

V. Organochlorines

Organochlorines are used in the bleaching process at lumber pulp mills. Because the forest industry is one of the largest in Canada,²⁴ the subject of the use of chlorine-based chemicals has been the subject of much debate. Out of 145 pulp and paper mills in Canada, forty-six use chlorine in their bleaching process.²⁵ Their effluent contains "organochlorines," or organic compounds of chlorines. Environmentalists have been pushing for chlorine-free mills due to the concerns about the persistence and toxicity of organochlorines.²⁶ Unfortunately, the Canadian governments have not passed regulations requiring pulp and paper mills to eliminate the use of chlorines. However, the government regulations imposed on pulp mills have become more stringent with respect to the chlorine content of their effluent.²⁷

Although pulp and paper mills in Canada have made strides toward the elimination of dioxins and furans in their effluent,²⁸ environmental groups, such as GreenPeace, have begun to assert the view that all organochlorines are dangerous and have been lobbying for the reduction and eventual elimination of "AOX," a term used to describe a method of measuring chlorinated compounds.²⁹ The pulp and paper industries of Canada have not given in to the environmentalists' demands because they do not believe that the dangers of organochlorines have been scientifically substantiated. They believe that not all organochlorines are toxic or bioaccumulate, and that there is no evidence that AOX below 1.5 kg/tonne of pulp is harmful to the environment.³⁰ In addition, they believe that they have already gone a long way toward reducing AOX by virtually eliminating dioxins and furans. Finally, they state that a goal of zero discharge of AOX will have a negative impact on the competitiveness of their industries in the global marketplace since they export eighty percent of their production.³¹

In response to this issue, Ontario enacted a regulation in 1993 which requires all Ontario mills, that discharge directly into surface waters, to monitor and to report on their progress in reducing the level of AOX in their effluent discharges.³²

24. Canadian Pulp and Paper Association, Submissions to the Standing Committee on Environment and Sustainable Development Concerning the Review of the Canadian Environmental Protection Act 2 (1994) [hereinafter Canadian Pulp and Paper Ass'n].
25. Gary Gallon, *Environmental Industries: Part of the New Canadian Economy*, Nat'l Round Table Rev. 9, 10 (1993).
26. See *supra* note 1.
27. *Id.*
28. Ontario Forest Industries Association, Position on the Draft MISA Effluent Regulation For the Pulp and Paper Sector - A Submission to the Hon. Bud Wildman, Minister of the Environment 2 (1993) [hereinafter Ontario Forest Industries Ass'n].
29. Brian Hull, *Effluent From Pulp Mills Using Chlorine* 3 (1992).
30. See *supra* note 1, at 247.
31. Ernst & Young, *Study of the Ontario Environmental Protection Industry 51* (1992) (prepared for the Ontario Ministry of the Environment).
32. *Effluent Monitoring and Effluent Limits - Pulp and Paper Sector*, O. Reg. 760/93. See Edward Turner, *Pulp and Paper Regulations in Ontario*, Environmental Law and Management for the Canadian Forest Industry (Canadian Institute 1994).

This regulation is moving the pulp and paper industry in Ontario toward chlorine-free mills. A few mills are already chlorine-free. The reticence in moving toward chlorine-free mills is surprising considering the fact that the technology to become chlorine-free has existed since 1913. It seems as though the industry will only go as fast as the regulations push require.³³

At the present time, the pulp and paper industries in other countries have already been required to become chlorine-free. In response to this requirement, these countries have already developed and implemented new technologies to satisfy the goal of becoming chlorine-free. These other countries also have the jump on Ontario with respect to monetary gain. These countries will be able to supply companies with the technology which will allow them to prosper and grow.

As a result, Canada will be more likely to import this existing technology rather than developing Canadian technology.³⁴ Many pulp mills in Canada are currently using an effluent process that was developed in Scandinavia.³⁵ This is a clear-cut example of how lagging environmental regulations impede the development of new and innovative technologies.

VI. Conclusion

The three examples illustrate the effect environmental regulations can have on the development of new technology. If the regulations impose tough standards on industries, then the industries are more likely to develop new technologies to meet the demands of the regulations. However, if the environmental regulations imposed are not demanding, there is not an incentive to create new technologies and companies will not invest time and money into the creation of new technologies.

Finally, if the environmental regulations imposed by Canada are less stringent than those imposed in other countries, Canada may be put into a position of importing these technologies since other countries will likely have developed the new technologies necessary to enable their companies to comply with stringent environmental policies.

33. Ron Larocque & Alan Pryor, *Using Ozone in the Pulp and Paper Industry*, ENVTL SCI and ENG'G, July 1994, at 67.

34. See *supra* note 1.

35. Ron Doering, *Investing in Green Industries: Opportunities and Problems*, in Technology Transfer Conference 2 (1993).