

Working papers



Seeping Through the Regulatory Cracks: The International Transfer of Toxic Waste

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The management of toxic waste has become an increasingly global business. The global generation of toxic waste is around 440 million tons, and an estimated 10 percent of that waste makes its way across international boundaries.¹ Industries that generate toxic wastes are many, ranging from chemicals to electronics and from plastics to metal plating. Such toxic wastes have adverse effects on the natural environment and have been linked with various health problems, from immune and reproductive disorders to respiratory and other illnesses. The environmental and health concerns related to toxic waste makes decisions about where to dispose of it highly political. Though they are politically charged, toxic wastes seem to move with relative ease from one country to another, albeit subject to certain rules. The international trade in hazardous wastes is governed by various national and international regulations, such as the Basel Convention, which aim to ensure that the wastes are dealt with in an environmentally sound manner. In this paper, I argue that although global regulations seek to prevent adverse environmental outcomes, the result is not always environmentally benign. There are several key weaknesses, or 'cracks' in existing agreements that allow the trade to continue, often in ways that are not the most environmentally sound. Before explaining these weaknesses, I first give an overview of the rise of the waste trade and the rules that have come about to govern it.

The Rise of the Waste Trade and the Emergence of Global Rules to Govern it

Before the late 1980s there was not much by way of national or international-level regulation to control the transboundary trade in toxic wastes. The bulk of the hazardous waste trade moved between rich countries, taking advantage of regulatory differences.² But it is estimated that at least 20 percent of these wastes also made their way to poorer, developing countries, where costs were lowest and regulations the weakest.³ A number of high profile cases of hazardous waste exports from industrialized to developing countries in the 1980s and early 1990s brought this issue to international attention. Wastes were moving from countries with high

disposal costs and strict regulations to countries with low disposal costs and weak regulations. Because most poor countries did not have the same capacity as rich ones to dispose of the wastes in an environmentally sound way, there was great concern in particular over the trade in wastes between rich and poor countries.⁴ Toxic wastes sent to poor countries were often disposed of in ways that led to adverse environmental outcomes. The Italian waste dumped in a Nigerian farmer's field, and the toxic fly ash from Philadelphia that ended up in piles on beaches in Guinea and Haiti illustrate this lack of proper disposal.⁵ This contrasts with toxic waste disposal facilities in rich industrialized countries that require proper containment and storage of such wastes.

This trade in waste with poor countries that were ill equipped to dispose of it properly outraged many developing countries and was the impetus for the development of both international, regional and national legislation to control this trade. At the international level, the Basel Convention on the Transboundary Movement of Hazardous Wastes and their Disposal seeks to control the trade and in particular aims to protect developing countries from unwanted toxic waste imports. The Basel Convention was adopted in 1989 and came into legal force in 1992 once it received the required number of ratifications. The convention states that parties should reduce their exports of toxic wastes to a minimum. It states that wastes should only be traded across borders if the state of export does not have the capacity to dispose of it in an environmentally sound manner, or if the wastes are raw materials for the importing countries. The convention also requires parties to refrain from exporting wastes to states that have banned its import. It also stipulates that parties are to refrain from trade in hazardous wastes with non-parties unless there is a bilateral or regional agreement under which wastes are to be disposed of in no less environmentally sound a manner than that outlined in the convention. If there is to be trade in hazardous waste between parties, the convention requires that exporting states give prior notification to importing states and receive their written consent before the shipment is sent. In this way, parties have the right to refuse imports of toxic waste if they so choose.

At the national and regional levels, a number of countries have passed laws regarding the waste trade. Many developing countries have banned the import of toxic wastes, and some industrialized countries have banned its export to developing countries. In addition there are a number of regional waste trade agreements which place an outright ban on the trade in wastes between rich and poor countries. These include the Bamako Convention which covers sub-

Saharan Africa and prohibits the import of toxic waste to the region, the Waigani Convention banning the import of toxic wastes into the South Pacific region, the Izmir Protocol which prohibits the trade in toxic waste between OECD and non-OECD countries in the Mediterranean region, as well as a European Union regulation banning the export of hazardous waste to non-OECD countries.⁶

The adoption of these various national and international rules that sought to control the transnational trade in toxic waste, did result in a significant reduction in exports of toxic waste for disposal in developing countries by the early 1990s. But at the same time, a new problem emerged. It soon became apparent that instead of exporting wastes for *disposal* purposes, waste traders shifted their business toward exports of toxic wastes to developing countries for *recycling* purposes. There was, in effect, a loophole in the rules that allowed waste transfer to continue, legally, via the avenue of recycling. While recycling may imply environmentally sound management of wastes, in many cases, particularly in developing countries, it has resulted in negative environmental outcomes. A large proportion of toxic wastes destined for recycling operations in the developing world in fact are not recyclable. And the process of recovering useful elements from these wastes often leaves hazardous by-products that then must be disposed of.⁷ The export of spent mercury from the UK to South Africa for recycling throughout the 1990s illustrated the hazards of toxic waste recycling in the developing world, claiming a number of lives and resulting in severe soil and water contamination.⁸ Similar environmental and health effects resulted from the export of lead-acid batteries, used plastics, and scrap metals to Southeast Asia and Latin American countries.⁹

Attempts to close this 'recycling loophole' in the Basel Convention became the subject of a heated battle over the course of the mid-1990s. Poor countries and environmental NGOs argued for a ban on this trade between rich and poor countries, while most rich countries and the global recycling lobby argued against it. An amendment to this convention, adopted in 1995 but not yet ratified and thus not yet in legal force, prohibits the trade in wastes between rich industrialized countries listed in Annex VII and developing countries not listed in Annex VII. Once ratified by the necessary 62 parties, this amendment will come into legal force and effectively ban the trade in wastes between rich and poor countries that are parties to the Basel Convention.

But the story of waste trading does not end here. There are several important weaknesses in the existing waste trade regime that let hazardous wastes fall through the cracks in various forms. This continuation of the waste trade has resulted in many instances in environmental harm. Though the number of these incidents has slowed substantially since the mid-1990s when the Basel Convention came into force and the Basel Ban Amendment was adopted, it still occurs often enough to raise concern.¹⁰ The first weakness I identify is that it has been very difficult to get key players to commit to and/or abide by the existing rules governing the international trade in wastes. This has in a number of cases led to trade in wastes with poor outcomes for the environment, particularly in developing countries. Second, although the parties to the Basel Convention have adopted an amendment calling for a ban on the trade in wastes between rich and poor countries, this ban does not cover the trade in wastes between poor countries, nor does it cover such transfers between rich countries. Such transfers are thus legal under the Basel Convention, but may in fact result in environmentally unsound management of wastes nonetheless. Third, even if these above weaknesses were addressed such that waste transfers were subject to more strict control or were outright banned, there is still the possibility that toxic wastes could increasingly be transferred to other countries via investment in toxic waste generating industries in other countries. Unless rules are also put into place governing transnational investment in toxic industries, hazardous wastes may still find their way to other countries via this alternate route.

Getting Key Players to Abide by the Rules is Difficult

Though there are national and international rules to control the trade in wastes as described above, getting the key players to abide by these rules has been difficult in practice. A main problem is that not all countries are parties to the original Basel Convention. As of August 2001, over 10 years after its adoption, there were 148 parties to the convention. But there are exceptions; around one quarter of the world's countries have not yet become parties to the agreement. The U.S. is notable in this regard. The U.S. is the world's largest generator of hazardous waste and a key player in the export of wastes, yet it has not yet ratified the Basel Convention. The U.S. government claims that its own laws are compatible with Basel

nonetheless. Several attempts have been made in the U.S. to pass legislation to enable ratification of the Basel Convention since 1991, but these have not been successful. Under the Clinton administration the industrial lobby opposed the ratification of the ban amendment, while the administration was less sure about whether to ratify it. The new Bush administration is less equivocal on this issue, and has recently announced that it plans to ratify only the original 1989 convention without the ban amendment.¹¹ And while the Basel Ban Amendment aims to close the 'recycling loophole', it is not yet legally in force. It has taken much longer to garner ratifications to the amendment than it was to gain enough ratifications to the original convention. As of August 2001, 26 countries had ratified the ban amendment. This number falls far short of the 62 ratifications necessary. While the original convention only required 21 ratifications, the amendment requires nearly three times that number of ratifications.

In the meantime, rich to poor country exports of waste for recycling continues, albeit in smaller quantities than was the case in the mid-1980s. The U.S., for example, as a non-party to the Basel Convention has continued to be involved in some toxic waste exports to developing countries. In a recent incident the U.S. chemical firm, HoltraChem Manufacturing, attempted to export spent mercury waste from its Maine plant to India. HoltraChem used mercury to produce chlorine and other chemicals for use in the paper industry. When the company's Maine plant closed in September 2000, it left behind 260,000 pounds of mercury waste. HoltraChem then announced that it would sell the waste to a broker who planned to ship it to India, already the largest recipient of mercury exports from the U.S.¹² News of this planned shipment sparked a huge controversy in both the U.S. and India. The U.S. government claimed that the spent mercury was a metal with trade value, and not a waste, exempting it from regulations on waste exports. The Indian government in the end refused the shipment, which was returned to the U.S.¹³

Even for countries that have ratified the Basel Convention, there have been recent contraventions of that agreement. In 1999 a Japanese firm shipped 2700 metric tons of wastes for disposal to the Philippines. Labeled as paper for recycling, the wastes in fact were a mix of hazardous medical and industrial wastes unsuitable for recycling.¹⁴ Once the shipment was revealed, the Japanese government took the wastes back. Another example of contravention of the Basel Convention by parties is the fact that imports of hazardous wastes for recycling purposes have continued in India. The country imported over 100,000 metric tons of toxic

wastes, including used batteries, zinc ash and residue, copper cables potentially coated with PVC, and toxic metal scrap between March 1998 to March 1999.¹⁵ These wastes came both from rich countries as well as from other developing countries. Although it is a party to the Basel Convention and it has national laws banning the import of toxic waste, India has not yet ratified the Basel Ban Amendment, and its laws allow certain hazardous wastes to be imported for recycling.

Trade Among Poor Countries, and Among Rich Countries, Can be Problematic

A second major weakness in the existing waste trade regime that results in adverse environmental outcomes is the fact that the Basel Ban Amendment does not does not cover trade in wastes between poor countries, or between rich countries. These sorts of waste transfers are still perfectly legal under the Basel Convention, provided they abide by the original stipulations of the treaty for prior notification and consent. The trade in wastes between poor countries is a growing problem that has plagued not just waste imports to India as mentioned above. Other cases have emerged and may increase in the future as inequalities within the category of 'developing countries' become more pronounced. The most notorious case is the December 1998 shipment of hazardous industrial plastics waste from Taiwan to Cambodia. Formosa Plastics Group (FPG), a Taiwanese firm, employed a waste broker to dispose of some of its mercury contaminated waste, which shipped it to the Cambodian town of Sihanoukville. At least six deaths were attributed to the waste, two from contact with it and the bags in which it was shipped, and four from the crushing crowds that fled out of the town when it was revealed that the waste was toxic.¹⁶ FPG agreed to remove the waste, but it then attempted to ship it elsewhere for treatment. The U.S., France and Germany were approached, but all three refused it. By mid-2000, FPG agreed to re-import the waste and dispose of it in Taiwan.¹⁷ Neither Taiwan nor Cambodia is a party to the Basel Convention. But even if they were parties and had ratified the Basel Ban Amendment, the latter does not prohibit such transfers among poor countries, only between rich and poor countries.

The trade in toxic wastes among rich countries also has the potential to result in negative environmental outcomes. This type of waste trade is only subject to prior notification and consent among Basel parties, on the grounds that industrialized countries are in theory able to

dispose of those wastes in an environmentally sound manner. But this is not necessarily always the outcome, as Kate O'Neill's research on this trade amongst European countries in the 1990s has revealed.¹⁸ A more recent concern emerged this past year in Canada over the rise in imports of toxic waste from the U.S. in the late 1990s. In this case U.S. laws on hazardous waste disposal are more stringent than they are in Canada. The U.S. requires hazardous wastes to be treated to reduce their toxicity prior to disposal in landfills. But this pre-treatment of hazardous wastes before disposal in landfills is not required by law in Canada.¹⁹ Moreover, Canadian law allows waste importers to assume full liability for imported wastes, making Canada an extremely attractive option for U.S. waste exporters who are subject to tight liability laws in their own country.²⁰ The result was a dramatic rise in waste imports to Canada from the U.S. in the late 1990s.²¹ Recent reports show a drop in such exports in 2000, but the overall amount shipped is still high.²² About 30 percent of all imported wastes from the U.S. to Canada in the late 1990s made their way to a landfill in Sarnia, Ontario owned by the U.S. company, SafetyKleen.²³

It appears that the firms exporting these wastes from the U.S. to Canada were definitely seeking less expensive options for disposal. There is a bilateral agreement between the U.S. and Canada, in effect since 1986, on the cross-border trade in toxic waste. As mentioned above, the Basel Convention allows parties, such as Canada, to have such bilateral waste trade agreements with non-parties so long as it is consistent with the requirements of the Basel Convention. But there is reason to question whether this trade is consistent with the Basel requirements. It is difficult to conclude that the U.S. lacks the capacity to properly dispose of the waste or that the landfilling of hazardous waste in Canada is any more environmentally sound than it would be in the U.S. Moreover, the imported U.S. waste is not considered a 'raw material' in Canada.

Canada has not yet tightened its laws on hazardous waste disposal, despite its acute awareness of this problem. One of the reasons may be Chapter 11 of the North American Free Trade Agreement (NAFTA). Under Chapter 11, companies may sue foreign governments for expropriation of profits, or actions that are tantamount to expropriation of profits.²⁴ There have already been two successful suits under Chapter 11 in which regulations imposed by NAFTA governments with respect to hazardous waste management have been challenged by corporations. One case involved a U.S. waste management corporation, Metalclad, that won compensation from the Mexican government over its tightening of laws regarding the siting of the hazardous waste disposal facilities. In the other case, S.D. Myers, a U.S. waste disposal

company won its challenge of Canada's 1995 law banning the cross-border trade of PCB wastes.²⁵ In this latter case, Canada claimed that its law on PCB waste was justified under the Basel Convention. But the NAFTA dispute panel did not accept this argument. This is somewhat ironic because the NAFTA agreement mentions the Basel Convention as one of three international environmental treaties that it recognizes as legitimate means by which to restrict trade to achieve environmental goals. Because a large amount of the current toxic waste imports to Canada are destined for a facility in part owned by a U.S. company, Canada may well be worried that any future tightening of regulations will be legally challenged.²⁶

Foreign Investment in Toxic Waste Generating Industries May Rise in the Future

Even if the above weaknesses with the waste trade regime are dealt with in the near future, others avenues for toxic wastes to make their way to other countries may appear. It has become increasingly apparent that the developing world's share of toxic waste generation from manufacturing is growing.²⁷ If regulations become tighter on the transnational trade in wastes, this may lead to increased investment in toxic industries in countries with more lax waste disposal regulations. The end result is the same - more toxic waste is disposed of in countries with weaker environmental regulations governing that disposal. This phenomenon is already a problem, though the extent to which it is significant is subject to debate.²⁸ Some argue that while in theory such 'pollution havens' are a possibility, in practice they have been more elusive. But in the case of toxic wastes, there does appear to be a clear movement of some of the more hazardous industries locating for environmental reasons.²⁹

Whether or not the move is strictly for environmental reasons, once they have moved abroad, many firms do take advantage of more lax regulations where they can. Cases of hazardous industry relocation have been documented from Japan to other Asian countries, for example, in the 1970s.³⁰ More recently, the *maquiladora* zone in Mexico is a fairly obvious migration of toxic industries that have successfully transferred wastes to other countries via investment rather than trade. These industrial factories are plants owned by U.S. firms located just inside the Mexican border. Originally set up to produce goods for export to the U.S. such as garments, they have in the past few decades been concentrated in industries that produce large amounts of toxic wastes. These include plants in the electronics, chemicals, and furniture

sectors.³¹ By the early 1990s the vast majority of *maquiladoras* were generators of toxic waste, and at the same time the total number of these firms increased substantially.³² This increased generation of toxic waste in Mexico amongst the *maquiladora* factories technically should not have had a negative impact on the local environment. A 1983 agreement between Mexico and the U.S., the La Paz agreement, as well as Mexican law, require the return to the U.S. of any toxic waste generated by the *maquiladoras*. But in the early 1990s, only 2-3 percent of firms were returning their waste to the U.S.³³ Both the U.S. and Mexico admitted at that time to not knowing the amount of toxic waste generated in the *maquiladora* zone.³⁴ After the adoption of the NAFTA in 1994, improved monitoring systems to track the waste were put into place. Some improvements have occurred, as figures show that the return of hazardous wastes to the U.S. has risen to 25-30 percent.³⁵ But at the same time accurate figures on toxic waste generation on the border are widely recognized to be elusive, and there are continuing reports of illegal waste dumping along the border.³⁶ NAFTA is one of the more progressive trade agreements in terms of acknowledging pollution havens as a possibility, and it even attempts to prevent them from occurring by asking NAFTA parties to refrain from exporting toxic industries in order to take advantage of lax environmental regulations in host countries. However, enforcing this provision has been difficult, and the continuation of the export of toxic industries to Mexico shows that it has not met this goal very effectively thus far.

It is feared by many environmental activists working on waste issues that in the absence of global rules aimed to control foreign direct investment in toxic industries, a more global version of the *maquiladora* zone could emerge in other parts of the developing world.³⁷ Some see this as a process that is already underway. For example, TNCs in the chemicals industry have relocated much of their production overseas to Asia, the Pacific Rim, and Latin America over the course of the 1990s, just as demand fell in the West and rose in newly industrializing countries.³⁸ Instead of exporting to these regions, chemical TNCs reasoned that it would be easier to set up shop closer to their markets. In addition to saving on labor and transportation costs, these firms have also acknowledged in some cases that environmental cost factors have played a role. Bayer, for example, has admitted that stringent environmental regulations in Europe have been a main contributor to the movement of their production facilities to Asia.³⁹ In addition, there have also been growing concerns about 'double standards' practiced by TNCs whereby their practices in firms in their home country are more stringent than their operations in developing countries.⁴⁰

Conclusion

The trade in hazardous wastes is not always best for environment, as the examples cited in this paper illustrate. So long there are differences in the regulation of waste disposal between countries, and so long as the global regulatory framework for international trade in toxic wastes has serious cracks that allow toxic waste to seep through, hazardous waste will likely continue to be generated in large quantities, and episodes of environmentally unsound transboundary waste movements will likely persist. Policy efforts must therefore be made on several fronts. Below I outline three areas that warrant particular attention.

First, there must be a firm commitment by all countries to adopt and implement the rules on the transboundary movement of wastes as set out in the Basel Convention, including the ratification and implementation of the Basel Ban Amendment. It is imperative that all countries not only adopt but also abide by these agreements if we are to avoid a continuation of the unfortunate incidents of waste exports to developing countries that are ill-equipped to handle them. Moreover, there is also a pressing need to recognize that the Basel Convention and the Basel Ban Amendment do not in themselves, even when properly implemented, end the risks associated with the trade in hazardous wastes. Efforts to strengthen the rules with respect to the trade among rich countries, as well as the trade among poor countries, should also be considered.

In addition to efforts to strengthen the global regime governing the movement of toxic wastes across borders, it is essential that measures geared toward reducing the generation of toxic wastes in the first place be adopted. Governments, rich and poor alike, must enact tighter regulations on firms regarding emissions controls and waste management, and promote policies to encourage clean production technology adoption. While this may be unpopular amongst governments and firms, it is a vital step. A major survey of TNCs has shown that the primary motivator for firms to improve environmental practice has been government regulations.⁴¹ Pollutant release and transfer registers (PRTRs) are one mechanism that has great potential to encourage firms to adopt cleaner production methods. PRTRs require firms to make information available to the public regarding their own pollution emissions, with the idea that in order to avoid public criticism, firms will seek to reduce their emissions. A number of industrialized

countries, including the U.S. and Canada, have PRTRs in place.⁴² Some developing countries, such as the Philippines and Indonesia, are also experimenting with them.⁴³

Finally, there also needs to be a strengthening of rules regarding foreign direct investment in toxic industries. There may be scope for the adoption of a binding global agreement governing the environmental practices of transnational corporations. In its strongest form, such an agreement could include performance-based criteria with respect to hazardous waste management and clean production. But even an agreement requiring transnational firms to abide by the environmental regulations in their home countries if the regulations in the host country are weak would make a difference. A requirement that TNCs publicly disclose information with respect to hazardous waste generation, similar the PRTRs could also be considered. These measures could help to prevent TNCs from taking advantage of regulatory differences between countries as they phase in stronger hazardous waste management and clean production regulations.

¹ Figure for total waste generation from the Preface to the 1999 version of the Basel Convention. Estimate for the amount of wastes traded from Christoph Hilz, *The International Toxic Waste Trade* (New York: VanNostrand Reinhold, 1992), p.20. These are only estimates, and the precise amounts of toxic waste generated and trade internationally are not known because of discrepancies in definitions of waste and in reporting of the trade in those wastes in different countries.

² See Kate O'Neill, *Waste Trading Among Rich Nations* (Cambridge, MA: MIT Press), 2000 for a discussion of the trade in toxic waste among OECD countries.

³ Jonathan Krueger, *International Trade and the Basel Convention* (London: RIIA, 1999), p.14; Hilz 1992, pp.20-21.

⁴ By the term 'rich' I am referring primarily to the industrialized countries of the Organization for Economic Cooperation and Development (OECD) and by the term 'poor' I am referring primarily to those developing countries and East European countries that are not members of the OECD.

⁵ For a full discussion of these and other dumping incidents in the developing world, see Jennifer Clapp, *Toxic Exports: The Transfer of Hazardous Wastes from Rich to Poor Countries* (Ithaca: Cornell University Press, 2001), pp.32-38.

⁶ For further details on these regional agreements, see the Basel Action Network website: <http://www.ban.org>.

⁷ Jim Puckett, "Disposing of the Waste Trade: Closing the Recycling Loophole", *The Ecologist* vol.24, no.2 (1994): 53-58.

⁸ F. Kockott, *Wasted Lives: Mercury Waste Recycling at Thor Chemicals* (Amsterdam: Greenpeace International and Earthlife Africa, 1994).

⁹ These cases were highlighted by NGOs. See for example, Madeline Cobbing, *Lead, Astray: The Poisonous Lead Battery Waste Trade* (Amsterdam: Greenpeace International, 1994); Bill Moyers and CIR, *Global Dumping Ground* (Cambridge: Lutterworth Press, 1991), pp.52-61. Greenpeace, *The Waste Invasion of Asia* (Sydney, Australia: Greenpeace, 1994), pp.20-22.

¹⁰ The Basel Action Network (BAN) maintains a website that tracks these incidents: <http://www.ban.org>.

¹¹ Basel Action Network, Press Release, "Green Groups Call on USA to Ratify International Toxic Waset Dumping Ban as Part of Basel Treaty", August 9, 2001. Availble online at <http://www.ban.org>.

¹² Susan Young, "Fed Refuse HoltraChem Mercury, Company May Send Chemical to India", *Bangor Daily News*, November 17, 2000; Danielle Knight, "Outcry over US Toxic Chemical Shipment to India", *Inter Press Service*, December 11, 2000.

¹³ Danielle Knight, "Controversy Around Mercury Shipment from US to India", *Inter Press Service*, January 25, 2001. Susan Young, "New Home for Mercury Hard to Find", *Bangor Daily News*, March 28, 2001

¹⁴ "Illegal Dumping", *Mainichi Daily News*, Niigata, Japan, January 13, 2000.

¹⁵ Greenpeace, "Toxic Waste - Poisons from the Industrialised World". www.ban.org.

¹⁶ Lawrence Speer, "Environmentalists Assail Tawian's Plans to Ship Waste to French Treatment Facility", *International Environment Reporter* vol.22, no.21 (1999), p.830.

¹⁷ For a full account of the incident, see BAN, "Victory for Global Environmental Justice: Toxic Waste Dumped on Cambodia will Finally be Treated by Producer", press release, Seattle, June 9, 2000. Retrieved April 10, 2001 from the World Wide Web: <http://www.ban.org>.

¹⁸ O'Neill 2000. See p.103 on the UK case in particular.

¹⁹ Martin Mittelstaedt, "Canada Permits U.S. Waste to Flood In: Report Cites Open-Pit Dumping Regulations that Allow Disposal of Untreated Pollutants", *The Globe and Mail*, Toronto, June 25, 2001.

²⁰ Martin Mittelstaedt, "Quebec Dump Wants Contaminated U.S. Soil", *The Globe and Mail*, Toronto, June 25, 2001.

²¹ Jacott, Marisa, Cyrus Reed and Mark Winfield, *The Generation and Management of Hazardous Wastes and Transboundary Hazardous Waste Shipments between Mexico, Canada and the United States 1990-2000*. (Austin: Texas Center for Policy Studies, 2001).

²² Environmental News Service, "Canadian Imports of U.S.Hazwaste Down in 2000", August 3, 2001, available online at http://www.ban.org/ban_news/canadian_imports.html.

²³ Jeff Sallot and Richard Mackie, "Ottawa to Seek Waste-Disposal Standards", *The Globe and Mail*, Toronto, June 26, 2001.

²⁴ Howard Mann and Konrad von Moltke, *NAFTA's Chapter 11 and the Environment: Addressing the Impacts of the Investor-State Process on the Environment*, available online at: <http://www.iisd.org/trade/chapter11.htm>.

²⁵ Rossella Brevetti and John Nagel, "Arbitration Panel Awards Metalclad Corp. \$16.7 Million in Trade Dispute with Mexico", *International Environment Reporter*, Vol.23, No.19 (2000), p.710; Peter Menyasz, "Canada Loses NAFTA Chapter 11 Case Over Ban on Hazardous Waste Shipments", *International Environment Reporter*, Vol.23, No.24 (2000), p.901.

²⁶ Jacott, Reed and Winfield 2001, p.58.

²⁷ Patrick Low, "The International Location of Polluting Industries and the Harmonization of Environmental Standards, in *Difficult Liaison: Trade and the Environment in the Americas*, eds. H. Munoz and R. Rosenberg (London: Transaction Publishers, 1993), p.25.

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- ²⁸ See Eric Neumayer, *Pollution Havens: An Analysis of Policy Options for Dealing With an Elusive Phenomenon*. *Journal of Environment and Development*. vol.10, no.2 (2001): 147-177.
- ²⁹ H. Jeffrey Leonard, *Pollution and the Struggle for the World Product: Multinational Corporations, Environment and International Comparative Advantage* (Cambridge: Cambridge University Press, 1988), p.232. See also Clapp 2001.
- ³⁰ Hans Maull, "Japan's Global Environmental Policies", *The Pacific Review* vol.4, no.3 (1991), pp.254-62; Derek Hall, "Dying Geese: Japan and the International Political Ecology of Southeast Asia", paper presented at the International Studies Association annual meeting, Toronto, March 1997.
- ³¹ Edward Williams, "The Maquiladora Industry and Environmental Degradation in the United States-Mexico Borderlands", *St. Mary's Law Journal*, vol.27, no.4 (1996): 777-779.
- ³² Leslie Sklair, *Assembling for Development* (San Diego: University of California, Center for US-Mexican Studies, 1993), pp.79-80.
- ³³ Sklair 1990, 253-4; Diane Perry et al., "Binational Management of Hazardous Waste: The Maquiladora Industry at the US-Mexico Border", *Environmental Management* vol.14, no.4 (1990), p.442.
- ³⁴ John Harbison and Taunya McLarty, "A Move Away from the Moral Arbitrariness of Maquila and NAFTA-Related Toxic Harms", *UCLA Journal of Environmental Law and Policy* vol.14, no.1 (1995-1996), p.6.
- ³⁵ Cyrus Reed, "Hazardous Waste Management on the Border: Problems with Practices and Oversight Continue", *Borderlines* vol.6, no.5 (1998). Retrieved May 23, 2001 from the World Wide Web: <http://www.us-mex.org/borderlines/1998/bl46/bl46haz.html>. See also HAZTRAKS on the World Wide Web: <http://www.epa.gov/earth1r6/6en/h/haztraks/haztraks.htm>
- ³⁶ Enrique Medina, "Overview of Transboundary Pollution Issues Along the Mexico-US Border", in Thomas La Point, Fred Price, and Edward Little, eds. *Environmental Toxicology and Risk Assessment: Fourth Volume* (West Conshohocken, PA: American Society for Testing and Materials, 1996), p.9.
- ³⁷ See Clapp 2001.
- ³⁸ P. Abrahams, "The Dye is Cast by Growth and Costs", *Financial Times*, May 31, 1994. Andrew Wood, "Asia-Pacific: Rising Star on the Chemical Stage", *Chemical Week* (Feb. 15, 1995), p.36
- ³⁹ P. Abrahams, "The Dye is Cast by Growth and Costs", *Financial Times*, May 31, 1994
- ⁴⁰ Birtha Bergsto and Sylvi Endresen, "From North to South: A Locational Shift in Industrial Pollution?" (FIL Working Paper no.6), in *Industrial Pollution in the South*, eds. Bersto et al. (Oslo: FIL, 1995), p.19.
- ⁴¹ UNCTAD, Programme on TNCs, *Environmental Management in Transnational Corporations: Report on the Benchmark Corporate Environmental Survey* (New York: United Nations, 1993), p.38.
- ⁴² OECD, *PRTR Implementation: Member Country Progress* (Paris: OECD, 2000), ENV/EPOC(2000)8/FINAL. See also "OECD's Work on Pollutant Release and Transfer Registers (PRTRs)." Available online at: <http://www.oecd.org/ehs/prtr/index.htm>.
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