

# Hi-tech Yet Highly Toxic: Electronics And E-Waste

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## **Abstract**

There is no gainsaying the importance of computers in today's technological development. Computers that were so rare barely 20 years ago are now almost a banality in most countries, including the developing world. However, the increase in numbers has posed a new danger of how to dispose of old computers. The practice has been to throw decrepit computers into dumpsites thus posing a fatal threat to the environment and the people.

In this paper, we review the dangers posed by high tech products when they are not disposed of in the correct manner. In particular we discuss how rich nations dump toxic wastes in poor countries as a way of "assisting" them cope with economic problems. Garbage imperialism poses a real threat to world stability and health.

*Key words: computers, technology, toxic wastes, conventions, environment*

## **Introduction**

The world is consuming more and more electronic products every year. In 2005 alone, \$125 billion dollars worth of consumer electronics were purchased. This has caused a dangerous explosion in electronic scrap (e-waste) containing toxic chemicals and heavy metals that cannot be disposed of or recycled safely. Every year, hundreds of thousands of old computers and mobile phones are dumped in landfills or burned in smelters. Thousands more are exported, often illegally, from the Europe, US, Japan and other industrialised countries, to the Third World countries. There, workers at scrap yards (some of whom are children) are exposed to a cocktail of toxic chemicals and poisons.

But this problem can be avoided. Leading electronic companies should be pressed to change in order to turn back the toxic tide of e-waste.

## **The Problem**

Throughout history, direct regulation through statutes and subordinate rules has been the normal approach to pollution control and environmental protection.<sup>1</sup> Nevertheless, it has been said that international law is only as strong as the international will to enforce it. In 1972, the **Stockholm Declaration of the United Nation's Conference on the Human Environment** stated clearly in Principle 21:

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<sup>1</sup> Gilpin Alan Environmental Economics: A Critical Overview (John Wiley & Sons Ltd, 2000) p113

“States have...the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.”<sup>2</sup>

A free market in hazardous waste is an abrogation of this Principle — the geopolitical application of the “golden rule”. Putting a stop to waste trade would be a hallmark in the realization of political responsibility to act locally to respect and protect the global community.<sup>3</sup> The proposition that free trade can improve economic welfare is one of the oldest and most widely accepted principles of economics. It has played a part in shaping much of the international political economical and institutional framework that has been built since 1945 (for example single market areas such as European Union, World Trade Organisation). Is the validity of this proposition affected by the existence of environmental pollution?<sup>4</sup>

Industrialization brought with it the wonders of technology and the hazards of pollution and waste production. Accordingly, the first and second laws of thermodynamics inform that pollution is an inevitable by-product of any economic activity. Furthermore, a certain minimum amount of economic activity can be pursued without causing damage to the natural environment. This is because the natural environment has the capacity, albeit limited, to degrade waste. Nevertheless, for persistent pollutants the assimilative capacity of the environment may be, if not zero, quite insignificant.<sup>5</sup>

As waste disposal over the last 3 decades became increasingly restricted to land, with a succession of bans placed on the dumping of wastes in the seas<sup>6</sup>, public pressure in industrialized countries against the landfilling and land-based incineration of hazardous wastes grew dramatically. All landfill sites leak and all incinerators release extremely dangerous air pollutants and toxic ash. In Europe, more than 55,000 sites covering between 47,000 to 95,000 square kilometers are already known to be contaminated by hazardous wastes.<sup>7</sup> Countries such as the Netherlands spent over a billion dollars to try and minimize and collect dioxin from incinerators but still had to contend with hazardous emissions and disposal of toxic ashes<sup>8</sup>. In rich, industrialized countries, public pressure against toxic waste generation and proliferation has resulted in the closure of some toxic waste disposal sites, actual or proposed clean-up of many, and the adoption of stricter regulations in the rest. All of these efforts have dramatically raised the costs of waste disposal. The cost of land-filling a tonne of hazardous waste in the US soared from \$15 per ton in 1980 to \$250 in 1989<sup>9</sup>. In the United Kingdom, the Confederation of British Industry estimated an increase of 150% in landfill costs

<sup>2</sup> UNEP and International Humanitarian Law: Case Studies (2002)

<sup>3</sup> Puckett Jim ‘The Basel Ban: A Triumph Over Business As Usual’ The Basel Action Network October 1, 1997

<sup>4</sup> Roger Perman, Yue Ma James McGulvray & Michael Common Natural Resources and Environmental Economics 2nd Ed (Essex UK: Pearson Education Ltd, 1999) p339

<sup>5</sup> Ahmed Hussein Principles of Environmental Economics 2nd ed (London & New York: Routledge, 2004) p68

<sup>6</sup> The London Convention, first adopted in 1972 and entered into force in 1975, banned most forms of industrial waste dumping including ocean incineration at the 16th Consultative Meeting of the Convention in November 1993.

<sup>7</sup> Europe’s Environment: The Dobris Assessment, Overview, European Environment Agency, October 1994, p. 36

<sup>8</sup> Dr. Paul Connett, Speech at the International Dioxin Conference, University of Amsterdam, Netherlands, August 1996

<sup>9</sup> Tieman, M., Waste Exports: US and International Efforts to Control Transboundary Movement, US Congressional Research Service, Washington, D.C., December 1989, pp.4-5. Figures not adjusted for inflation.

from 1985 to 1991. Costs of incineration have risen even more dramatically as more and more hazardous wastes are diverted from landfills to incinerators. The price of incinerating a tonne of hazardous wastes in the UK went as high as 10,000 US dollars.<sup>10</sup>

### The Larry Summers Principle Of Impeccable Logic

Meanwhile, within the same period of the last decades, there has seen a dramatic rise in the quantities of hazardous waste subject to regulation. The European Union adopted a hazardous waste list that included over 400 different waste streams. In the United States alone, the amount of hazardous waste leapt from 9 million tons a year in 1970 to 238 million tons in 1990.<sup>11</sup> While an OECD report expected that the total hazardous waste volume in Europe doubled from 24 million tonnes (in 1988) to 48 million in the year 2000.<sup>12</sup> Thus, there is continued pressure to export the problem. The United Nations Environment Programme estimates that between 300 and 500 million tons of hazardous wastes are generated every year. The industrialized market economies generate more than 90 per cent of the world's hazardous wastes. As the laws regulating waste disposal grow stringent in those countries, firms have sought cheaper sites for their disposal.<sup>13</sup> There are those who call it the Lawrence Summers Principle:

"...the measurements of the costs of health impairing pollution depend on the foregone earnings from the increased morbidity and mortality. From this (strictly economic) point of view, a given amount of health impairing pollution should be done in the country with the lowest cost, which would be the country with the lowest wages. I think the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable and we should face up to that ... I've always thought that underpopulated countries in Africa are vastly under-polluted. Their air quality is probably vastly inefficiently low compared to Los Angeles or Mexico City..."<sup>14</sup>

In other words, this is the economic institution of garbage imperialism or toxic colonialism. The drastic example of the low wages being an indicator of low impacts of environmental disruption was a way to make the implicit value judgments contained in the neoclassical view on comparative advantage more explicit. According to the law of comparative advantage, toxic waste should be stored or treated where environmental costs are low, that is, *ceteris paribus*, in low income countries.<sup>15</sup> It is economic logic and in that respect awfully true. The words of Mr. Summers speak volumes about the 'imperatives of free trade and its failure as a model for governance'.<sup>16</sup> Without collective international legal action taken on the basis of environmental protection, human rights, and common

<sup>10</sup> United Kingdom Department of the Environment, as noted in International Labour Office, Environment and the World of Work, Research Note: Employment and Training Implications of the Waste Management Industry, International Labour Organisation, November 1991, p. 8.

<sup>11</sup> Puckett Jim Op cit

<sup>12</sup> "Europe's Hazardous Waste Dilemma," *Chemical Engineering*, February 1991, pp. 30-39.

<sup>13</sup> Porter Gareth, Brown, J.W. & Chasek P.S. *Global Environmental Politics 3rd Ed.* (Westview Press; Boulder CO, 2000) p103

<sup>14</sup> Lawrence Summers 'Let Them Eat Pollution' Internal World Bank Memo as reported in *The Economist* February 8, 1992

<sup>15</sup> Rauscher Michael 'International Trade in Hazardous Waste' in Schulze, Gunther S. & Ursprung, Heinrich W (Eds) *International Environmental Economics* (Oxford University Press; New York, 2002) p148

<sup>16</sup> Puckett Jim Op cit

decency to bridle the forces of free trade, there would have arisen a new form of waste colonialism; an environmental apartheid where the poorer countries serve as custodians for the industrial excesses of the rich. Indeed Roger Perman, Yue Ma James McGulvray and Michael Common in *Natural Resources and Environmental Economics* state,

...where countries differ in the degree to which environmentally damaging behaviour is regulated trade and the international mobility of factors of production may lead to countries with relatively weak environmental protection to become pollution dustbins, with important consequences for economic welfare.<sup>17</sup>

The economies of developing countries tend to be weak and unstable. They are often confronted with an urgent need to finance both domestic and international debt. In their desperate attempt to finance such debt, the governments of these countries are likely to offer their natural resources for sale at a discount.<sup>18</sup> . In 1988 when the government of Guinea-Bissau, one of Africa's poorest nations, briefly agreed to accept over 15 million tonnes of toxic waste for 600 million dollars — four times its Gross National Product, the minister of Trade and Tourism explained simply, "We need money."<sup>19</sup> A number of European or North American businesses or municipal authorities have sought to transport toxic wastes to certain third world nations with little or no consideration of the possible consequences for local populations. The local authorities at the disposal sites were often unaware of the composition of the wastes and of the hazards that they presented. In the late 1980s it also became evident the volume of such exports was likely to grow very rapidly, unless steps were taken to curb this trade. The cost of transporting toxic wastes to third world nations was only a fraction of the cost of safely incinerating or storing them in the West and meeting government regulations in doing so.<sup>20</sup>

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<sup>17</sup> Roger Perman, Yue Ma James McGulvray & Michael Common *Natural Resources and Environmental Economics* 2nd Ed (Essex UK: Pearson Education Ltd, 1999) p337

<sup>18</sup> Hussein Ahmed Op cit p303

<sup>19</sup> "Africa: The Industrial World's Dumping Ground?" *African Business*, July 1988, pp. 10-11

<sup>20</sup> Jorge Hardy, Diana Mitlin & David Satterthwaite *Environmental Problems in Third World Cities* (London: Earthscan Publications, 1992) p69

THE BENIN CASE adapted from <http://www.american.edu/TED/benin.htm>

**CASE NAME: BENIN-FRENCH WASTE TRADE**

In 1988, the government of Benin negotiated a bilateral deal with the French government to import radioactive and industrial waste in return for \$1.6 million down payment and 30 years of economic assistance. Later, the French were forced to cancel the deal because of a massive media opposition in France. Seraphin Noukpo, the commandant of the Ganvie (Benin's only merchant-marine vessel) acknowledged that he transported a shipment of nuclear waste from Le Havre in France. The shipment is reportedly buried in Saklo also in the Abomey region. London-based *Africa Analysis* published a story on April 1, 1988 saying Abomey was deliberately chosen because it is the center of opposition to the marxist regime in power.

Still in 1988, the Beninese government signed yet another contract with the Anglo-American company, Sesco-Gibraltar, that called for the country to stockpile as much as 50 million tons of toxic wastes over a ten years period. A British television (BBC) documentary reproduced an aerial photograph, taken by the Franco-Swedish satellite Spot-1, that revealed the existence of a one-kilometer square hole in the ground constructed to store the waste near the southern village of Agon.

The government of Benin, desperate for hard currency, had decided to ignore the long term consequences of storing untreated hazardous waste to rip the profits from the

lucrative business of wastes import. For the waste traders, the profits are even greater. The cost of dumping in Benin or elsewhere in Africa can be as little as one thousandth of that in the more ecologically conscious West. "It was so cheap, we even sold them the ship as scrap," said Pompeyo Realuyo, a New York attorney who arranged a secret waste export deal in the early 1980s.

"Much of the trade in waste destined for cheap dumping sites in the Third world, mostly in Africa, is conducted clandestinely. Toxic commodity brokers operate in the shadows from box numbers in Gibraltar, the Isle of Man and Liechtenstein." They buy and sell the waste like any other commodity. However, as the original producer has no binding responsibility for its final destination, it is traded as a liability rather than an asset. The destinations of the ships are often obscured and the cargo misrepresented as building materials or fertilizer.

THE NIGERIA CASE adapted from <http://www.american.edu/TED/NIGERIA.HTM>

**CASE NAME: Nigeria-Italy Waste Trade**

1. The Issue

"Poverty is the reason people have been lured into accepting substances that otherwise they would not have." This poverty is encouraging waste exports to Africa. In some cases the fees for trade in the hazardous wastes "rivals the African nations' annual gross national product." One exemplary case took place in Koko, Nigeria in 1987 between Italian and Nigerian businessmen. Italian businessmen shipped toxic waste of several Italian industries to Nigeria for storage in the backyard of a Nigerian businessman, who described them merely as miscellaneous construction materials. Months later, a scandal over toxic waste was publicized when the barrels of waste began leaking into the surrounding area.

2. Description

Italy produces between "40 and 50 million tons of industrial wastes and 16 million tons of household wastes each year," most of which is believed to be exported to developing countries for disposal. In 1987, Italian businessmen Gianfranco Raffaeli and Renato Pent, of the waste broker firms Ecomar and Jelly Wax respectively, signed an illegal agreement with Nigerian businessman, Sunday Nana, to use his property for storage of 18,000 drums of hazardous waste for approximately \$100 a month. The wastes were exported from the port of Pisa, and elsewhere in Italy, to the receiving firm in Nigeria, the Iruokpen Construction Company, owned by Sunday Nana. The wastes were imported as substances "relating to the building trade, and as residual and allied chemicals."

Local Nigerian officials discovered the illegal toxic waste stored at the port of Koko. When the story broke in Italy, the Nigerian Embassy in Rome did not even inform the government in Lagos of the scam. That was left to some Nigerian students in Italy who phoned the Lagos daily, *The Guardian*, to trigger a reaction by President Babangida's regime. It was then discovered that the waste, which had been stocked at random under the tropical sun, was deadly: "Not only was there PCB, but also asbestos fiber and perhaps dioxin."

Over 100 workers from the Nigerian Port Authority were employed to remove the wastes. The Nigerian government supplied the workers with equipment, protective clothing, and gas masks, but the protective clothing was insufficient and many did not even have gloves to protect their hands. The wastes were more toxic than many had realized and many workers began needing hospitalization with problems ranging from chemical burns, nausea, to paralysis.

Dr. Solomon Ogbemi, the senior medical officer at Koko General Hospital, declared that the "seven premature births that occurred within a one two-week period in July were due to the high toxicity of the dumpsite." Eventually, the Italian government agreed to pay the cost of returning the wastes back to Italy, at least until they could determine the guilty parties. As a result, in July of 1988, two ships, the KARIN B and the DEEPSEA CARRIER, began the process of carrying the wastes from Nigeria back to Italy. While in route back to Italy, the Italian Environment Minister, Giorgio Ruffolo, announced the Italian ports designated to accept the wastes as the Tuscan port of Livorno and either Ravenna or Manfredonia Harbour in the South Adriatic. The former was to accept the wastes from the KARIN B and the latter was to accept the wastes from the DEEPSEA CARRIER. However, the announcement resulted in protests, strikes and blockades in all three ports in an attempt to prevent the waste from being unloaded. (After its arrival in Italy the KARIN B was refused entry into Livorno when water samples taken from the surrounding area showed traces of toxins leaking from the ship.)

In December of 1988 workers began unloading the KARIN B. The containers of waste were transported to a warehouse until they could be identified, after which they would be repackaged and shipped off to a temporary storage place in the Emilia Romagna area of Italy. In January of 1989 the first wastes left Livorno. The DEEPSEA CARRIER, on the other hand, was still held at bay, with its crew sequestered on board, until August of 1989 when the ship was finally allowed to unload in Livorno.

### **The Basel Convention**

In June of 1987, following the intense outrage expressed by developing countries, the United Nations Governing Council authorized the then Executive Director of the United Nations Environment Programme, Mustapha Tolba, to begin negotiations to prepare a global convention on transboundary movements of hazardous waste. This led, in March 1989, to 118 nations signing the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal.<sup>21</sup> The use of the word "control" in the Convention's title - rather than prevention or prohibition - was telling. During the negotiations leading up to the Basel Convention, the vast majority of nations made it clear that they wanted to ban waste trafficking entirely, particularly from developed to developing countries. Certain heavily industrialized countries, however, most notably the United States, fought to reject any such prohibition.

Thus the Basel Convention became primarily an instrument to monitor the transboundary movements of hazardous waste rather than prevent it. With the exception of a ban on exports to Antarctica, the Convention established only a weak control regime based on the principle of "prior informed consent" (PIC). Under such a regime, hazardous waste exports are not to take place unless the "competent authority" in the recipient country is notified in advance and gives written consent.<sup>22</sup>

The efficacy of PIC was immediately brought into doubt when, on the eve of the signing of the Basel Convention, Gianfranco Ambrosini, an Italian waste trader who had just masterminded a shipment of waste from Italy to Djibouti, publicly scorned the treaty on Swiss television. Compared to other hurdles he faced in shipping wastes to the Third World, he said the acquisition of the signature of one governmental official, as required by the PIC provisions of the Convention, was no problem.<sup>23</sup> He was later proved correct. Thus, critics were quick to point out that the Convention had in effect licensed a trade that should have, out rightly, been considered criminal. Many developing countries did not see the need to ratify the defective instrument. The African group of states was thus disappointed to the point of walking out and they declared an intention to initiate their own treaty that would institute a total ban on hazardous waste imports to the continent.

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<sup>21</sup> [www.unep.org/basel](http://www.unep.org/basel)

<sup>22</sup> Puckett Jim (1997) Op cit

<sup>23</sup> Ernst Klatte, Greenpeace delegate and guest on same Swiss Television show, March 1989.



### The Road To The Ban

Having failed initially to achieve a global ban on hazardous waste trade from developed to developing countries, the latter were quick to pursue national and regional statutes towards this end. Some of the agreements include;

- **The Lomé IV Convention:** In December of 1989, the African, Caribbean and Pacific nations (ACP), now numbering 70, successfully concluded a waste trade ban with the European Union, which now numbers 15 member states, as part of their negotiations of the Lomé IV Convention. The agreement prohibits the European Union (EU) from exporting nuclear or hazardous wastes to the ACP states, while the ACP countries agreed to prohibit such waste imports from any country.<sup>24</sup>
- **The Bamako Convention:** In January of 1991, in Bamako, Mali, member states of the Organization of African Unity adopted a treaty banning all forms of hazardous and nuclear waste imports to the African continent. The treaty also forbids import of products that have been banned for use in the country of manufacture. The Bamako Convention later went into force in 1996.<sup>25</sup>
- **National Bans:** Many countries enacted unilateral hazardous waste import bans. Colombia, for example, has a full waste import ban in its national constitution.<sup>26</sup> Many have bans in law or policy as a result of the regional commitments. In 1986, three countries had committed to ban the imports of hazardous wastes; by 1988, that figure had risen to 33, and by 1992, to 88. The total of import bans, with the adoption of the Waigani Treaty, the Barcelona Convention Waste Trade Protocol, and the Basel Ban, was well over 100 by 1997.<sup>27</sup>

Predictably, in the presence of some import bans but still no global export bans in place, the toxic waste continued to follow the path of least resistance. Waste traders were quick to move the wastes to those areas of the world where no bans existed, and, most significantly, they were quick to categorize all waste bound for export as destined for “recycling,” not dumping.

The Basel Convention was complemented on 25 March 1994 by a full ban on all exports of hazardous wastes from the 24 rich industrialized countries of the OECD. (This is also referred to as the Basel Ban). The agreement was reached over opposition from the richest countries, which received from Greenpeace, in this context, the name

<sup>24</sup> Article 39, Lomé IV Convention, adopted 15 December 1989.

<sup>25</sup> Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, adopted 29 January 1991 in Bamako, Mali. Wawa O. Leba, Director of ESCAS Dept., OAU Secretariat, Addis Ababa, January 1991. Article 2, para. 1 (d) includes “hazardous substances which have been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons.”

<sup>26</sup> Article 81 of Constitution of Colombia, “Colombia: Government Clarifies Policy Barring Toxic Waste Imports in ‘Free-trade zones’, *International Environmental Reporter*, 6 November 1991.

<sup>27</sup> Spalding, Heather, Greenpeace Toxic Trade Project, Greenpeace USA.



of Sinister Seven. Some defections inside the EU (Denmark and later Italy) helped an alliance among China and the South.<sup>28</sup>

Although such anecdotal data is hardly conclusive and probably represents only the tip of icebergs readily observed, Greenpeace recorded the following number of proposed or actual waste trade deals involving exports of hazardous wastes from the Organization for Economic Cooperation and Development (OECD)<sup>29</sup> to non-OECD countries: 76 in 1989<sup>30</sup>, the year the Convention was signed, 118 in 1990, 113 in 1991, 285 in 1992, the year the Basel Convention entered into force, and 146 in 1993. Germany, the world's largest exporter of waste, increased its exports every year since 1988 until 1993.<sup>31</sup> In 1994 the year the Basel Ban was agreed, the recorded trade in hazardous waste dropped considerably.<sup>32</sup>

### Trash For Cash

'The practice of exporting hazardous wastes for disposal in developing countries has been described as environmental injustice or environmental racism on a global scale.'<sup>33</sup> Immediately following adoption of the Basel Ban, some countries began to plot a strategy to, at best, weaken it or, at worst, reverse it. Misinformation was quickly spread to claim it will stop trade on all recycling materials. There were also concerted efforts to render it useless by altering the definitions of wastes and hazardous wastes and, furthermore, by punching loopholes in its legal foundation.

Australia and the United States (although a non-Party) became the most visible countries working in opposition to the ban, while other countries like the United Kingdom, Germany and Canada are known to work more quietly. Soon after the Basel Ban decision of COP2, Australia sent diplomatic missions to their waste trading partners, India, South Korea, Philippines, Malaysia, South Africa, Japan, and China, specifically to discuss waste trade arrangements between the two countries.<sup>34</sup> Many of these talks centered on the possibility of establishing bilateral agreements to trade in hazardous wastes, and the need for "capacity building" — a not so subtle code word for a quid pro quo arrangement for waste acceptance.<sup>35</sup>

<sup>28</sup> Martinez-Alier Joan *The Environmentalism of the Poor: A Study of Ecological Conflicts and Valuation* (Edward Elgar Publishers; Glos UK, 2002) p183

<sup>29</sup> An organisation comprising the most industrialized and developed nations. The OECD Currently consists of the following member states: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Japan, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, South Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States of America

<sup>30</sup> Compiled from Vallette, J. and Spalding, H., *The International Trade in Wastes: A Greenpeace Inventory, International Waste Trade Schemes and Related International Policies*, Fifth Edition, Greenpeace, 1990.

<sup>31</sup> *OECD Environmental Performance Reviews: Germany*, OECD, Paris, 1993, p. 190

<sup>32</sup> Spalding, Heather, *Greenpeace International*, November, 1996.

<sup>33</sup> Lipmann Z 'Trade in Hazardous Waste: Environmental Justice vs. Economic Growth' *Conference on Environmental Justice*, Melbourne 1998

<sup>34</sup> Puckett Op cit

<sup>35</sup> Puckett Op cit

At the March 1995 Dakar Workshop, entitled the “Global Workshop on the Implementation of Decision II/12”, the US government and industry fronted by the International Chamber of Commerce (ICC) and the Bureau of International Recycling (BIR), had hoped and schemed to scuttle the unity of the G-77. Despite the workshop being pre-stacked with industrialists who claimed to be impacted by the ban decision, not one government representative from a non-OECD country spoke out against the ban (the only one that did was from Germany). Further, many of the participants clearly did not understand that the Basel Convention only regulates trade in hazardous wastes. Many had been led to the meeting on the basis of misinformation about the bans purported impacts on non-hazardous wastes such as scrap metals, paper, and textiles. At the end of all of the confusion, Denmark came to the rescue and stated that the real concern that everyone needed to address was the finer points of defining hazardous waste. Denmark offered to host a meeting to jump-start the process to create better definitions that could then more formally be taken up by the Basel Convention’s Technical Working Group.<sup>36</sup>

The next tactic of ban opponents was to claim that the Decision (II/12) alone without an amendment to the Convention was not really legally binding. Undoubtedly, the opponents hoped that if the issue had to be voted on again, this time for an amendment, they would have another chance to create enough doubt and convince Ministers sympathetic to industrial and trade interests in key non-OECD countries to reverse the ban decision. Due to intensive lobbying by the opponents, certain non-OECD governments, most notably India, Brazil, the Philippines (G-77 chair), and South Korea suddenly began to argue against the ban. About 30 industrialists from India came to the conference wearing blue badges reading “Recycle Now”. At the end of a very divisive conference, however, thanks to full support by European Union countries and some powerful bully-pulpit interventions by Denmark, South Africa and Indonesia, a new decision (III/1) to amend the Convention based largely on the principles of Decision II/12 was adopted by consensus.<sup>37</sup>

Having been unsuccessful by attacking the Ban head-on at COP3, opponents got busy with efforts to either redefine what a waste is or what is considered a hazardous waste under the Convention. Following the Basel Ban, therefore, technical discussions became grossly contaminated with politics, with science being manipulated for the sake of certain economic interests. The efforts to attack the Basel Convention’s definitions fell into two categories: Re-defining all materials that are bound for recycling destinations as non-waste, and de-listing certain hazardous wastes that are commonly recycled from the Basel listings, no matter how hazardous they may be. In May of 1994, the Bureau of International Recycling (BIR), a global recycling business association, set up a legal fighting fund of US\$250,000 for legal costs to challenge the Basel definition of scraps and residues as “waste”.<sup>38</sup> It was industry’s strategy to call all recyclables “non-waste” or “secondary raw material” instead of “waste.” By doing this, the industry hoped it will be able to perform a Houdini- like

<sup>36</sup> [www.greenpeace.org](http://www.greenpeace.org) (Dr. Kevin Stairs, head of Greenpeace delegation at Dakar)

<sup>37</sup> [www.greenpeace.org](http://www.greenpeace.org) (Dr. Kevin Stairs, head of Greenpeace delegation at COP1, COP2, and COP3)

<sup>38</sup> Veys, Francis. Secretary General of Bureau of International Recycling, Brussels, Belgium.

escape from the huge body of existing legislation both national and international, (including the Basel Convention) which all make reference to the term “waste”.<sup>39</sup>

### **E-Wastes And Effects**

Hungry for information technology but with a limited capacity to manufacture it, Africa has become the world’s latest destination for obsolete electronic equipment. Much of this material is more or less functional and provided in good faith by well-meaning donors. But the brokers who arrange these exports often pad shipping containers with useless junk, essentially saddling African importers with electronic garbage.<sup>40</sup> Most of Sub-Saharan Africa has a thriving repair market, but no capacity to safely deal with electronic waste, most of which winds up in landfills and informal dumps. That is a problem, because this “e-waste” can be toxic: much of it is loaded with potentially toxic metals. What is more, electronic components are usually housed in plastic casings that spew carcinogenic dioxins and poly-aromatic hydrocarbons when burned. Nonetheless, demand for electronic waste began to grow when scrap yards found they could extract valuable substances such as copper, iron, silicon, nickel and gold, during the recycling process. A mobile phone, for example, is 19 percent copper and eight percent iron. Methods of extraction though range from crude to very crude which leads to exposure to health risks and environmental harm.

Environmental degradation, even in areas that seem remote, usually carries a high human cost. That cost is often borne disproportionately by the people least able to cope with it- people already on the margins of society.<sup>41</sup>

The average computer monitor contains more than five pounds of lead. Computers can also contain mercury and cadmium. Multiplied by the millions of outdated computers and monitors that yearly go out of use, that adds up to an enormous amount of toxins that should not be put back into the earth. It’s environmentally unsafe for individuals to just throw out computers and monitors. Businesses usually pay electronic recyclers to haul away the old equipment and pull it apart, and if it is done right, pretty much everything can be reused. Unfortunately, it is not always done right. Some recyclers in the West are not recycling everything. Actually, some experts say most recyclers aren’t recycling everything.<sup>42</sup>

“Eighty percent of all the scrap electronics in the United States end up offshore and usually in Third World countries,” said Bob Glavin of Chicago, who runs one of the biggest recycling plants in the country. Puckett<sup>43</sup> also saw what was happening in China and the Third World firsthand. Much of this stuff came from the United States, yet U.S. authorities did nothing. Frustrated, Puckett’s group released a report in 2005 from Nigeria.

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<sup>39</sup> Puckett J was coordinator for Greenpeace International’s toxics campaigns from 1989 to July 1996.

<sup>40</sup> Schmidt Charles ‘Unfair Trade e-Waste in Africa’ *Environmental Health Perspectives* April 2006

<sup>41</sup> Sachs Aaron, *Eco-Justice: Linking Human Rights and the Environment* (World Watch Paper, Washington, D.C. 1995) p6

<sup>42</sup> ABC News Report ‘Is America Exporting a Huge Environmental Problem?’ *Toxic News* 6 January 2006

<sup>43</sup> Jim Puckett is coordinator of a group called Basel Action Network, which monitors global exports of hazardous waste

“Everywhere there’s space – empty lots, swampy areas – they’ll throw the cathode-ray tubes, the computer carcasses, the plastic housings and routinely set them ablaze,” Puckett said.<sup>44</sup> Puckett says his group saw dusty warehouses piled high with computers and components exported from the United States and Europe, supposedly bought for Nigerians to fix and use.

According to Puckett, however, “About 75 percent of what they were receiving was not repairable, not usable and was simply dumped and burned in the landfills of Africa. That’s what’s happening to many of the old computers we get rid of. They’re sent overseas. We’re simply exporting a huge environmental problem.”

More than anything else it is also a public health problem. It has already been established that all landfill sites leak. Once all the derelict computers are piled into swamps and informal dumps, the incineration to get rid of them when they are in excess will release the toxic metals, dioxins and furans among other e-wastes. Some of their effects are:

**Lead:** The symptoms of lead poisoning include neurological problems, such as reduced IQ, nausea, abdominal pain, irritability, insomnia, excess lethargy or hyperactivity, headache and, in extreme cases, seizure and coma. There are also associated gastrointestinal problems, such as constipation, diarrhea, abdominal pain, vomiting, poor appetite, weight loss. Other associated affects are anemia, kidney problems, and reproductive problems. In humans, lead toxicity often causes the formation of a bluish line along the gums, which is known as the “Burton’s line”. A direct link between early lead exposure and extreme learning disability has been confirmed by multiple researchers and child advocacy groups.

**Mercury:** Mercury is a bioaccumulative toxin that is easily absorbed through the skin, respiratory and gastrointestinal tissues. Humans or animals poisoned with mercury or its compounds often manifest excessive salivation, a condition called mercurial ptyalism. Minamata disease is a form of mercury poisoning.

Mercury attacks the central nervous system and endocrine system and adversely affects the mouth, gums, and teeth. Mercury poisoning certainly could cause neurological symptoms: insomnia, tremor and the rage attacks. High exposure over long periods of time will result in brain damage and ultimately death. (The term “Mad as a hatter” is thought to relate to occupational insanity caused by exposure to mercury compounds in the manufacture of felt hats in the 19th century). It can pose a major health risk to an unborn fetus.

**Cadmium:** Acute exposure to cadmium fumes may cause flu like symptoms including chills, fever, and muscle ache. Symptoms may resolve after a week if there is no respiratory damage. More severe exposures can cause tracheo-bronchitis, pneumonitis, and pulmonary edema. Symptoms of inflammation may

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<sup>44</sup> ABC News Original Report ‘Is America Exporting a Huge Environmental Problem?’ *Toxic News* 6 January 2006

start hours after the exposure and include cough, dryness and irritation of the nose and throat, headache, dizziness, weakness, fever, chills, and chest pain.

Inhaling cadmium-laden dust quickly leads to respiratory tract and kidney problems which can be fatal (often from renal failure). Ingestion of any significant amount of cadmium causes immediate poisoning and damage to the liver and the kidneys. The kidneys lose their function to remove acids from the blood in *proximal renal tubular dysfunction*. The kidney damage afflicted by cadmium poisoning is irreversible and does not heal over time. The *proximal renal tubular dysfunction* creates low phosphate levels in the blood (*hypophosphatemia*), causing muscle weakness and sometimes coma. The dysfunction also causes gout, a form of arthritis due to the accumulation of uric acid crystals in the joints because of high acidity of the blood (*hyperuricemia*). Another side effect are increased levels of chloride in the blood (*hyperchloremia*). The kidneys can also shrink up to 30%.

The bones become soft (*osteomalacia*), lose bone mass and become weaker (*osteoporosis*). This causes the pain in the joints and the back, and also increases the risk of fractures. In extreme cases of cadmium poisoning, the mere body weight causes a fracture. Other patients lose their sense of smell (*anosmia*). Compounds containing cadmium are also carcinogenic.

**Dioxins:** Are known to be carcinogenic. **Polyvinyl chloride (PVC)** is a chlorinated plastic used in electronics products and for insulation on wires and cables. Chlorinated dioxins and furans are released when PVC is produced or disposed of by incineration (or simply burning). These chemicals are highly persistent in the environment and many are toxic even in very low concentrations.

Some **brominated** flame retardants, used in circuit boards and plastic casings, do not break down easily and build up in the environment. Long-term exposure can lead to impaired learning and memory functions. They can also interfere with thyroid and oestrogen hormone systems and exposure in the womb has been linked to behavioural problems.

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<sup>45</sup> 'What's in Electronic Devices?' in Eliminate Toxic Trade [www.greenpeace.org](http://www.greenpeace.org)

As much as 1000 tonnes of a brominated flame retardant called **TBBPA** was used to manufacture 674 million mobile phones in 2004. This chemical has been linked to neuro-toxicity.<sup>45</sup>

### **Solutions And Recommendations**

'We recognize the nature of the problems facing humankind; since we are all part of the problem, we must all be part of the solution. In the past, many problems could be solved exclusively by the single act of a state. Now there is hardly a problem that could be solved by one country alone.'<sup>46</sup> It is important to note that the rich nations have a moral obligation to find solutions to the poverty and environmental crisis in the developing countries since they are *directly* responsible for many of the regional and global environmental problems resulting from their over consumption of resources on a per capita basis.<sup>47</sup>

Manufacturers of electronic goods, who have benefited from sales of their products, should take responsibility for them from production through to the end of their lives. To prevent an e-waste crisis, manufacturers must design clean electronics with longer lifespan, that are safe and easy to recycle and will not expose workers and the environment to hazardous chemicals.

**Clean up:** Electronics manufacturers must stop using hazardous materials. In many cases, safer alternatives currently exist. Some of the companies that have committed to cleaning up their act include Sony, LG, Nokia, Hewlett-Packard, Samsung, Sony and Ericsson.

**Take back:** The taxpayer should not bear the cost of recycling old electrical goods. Manufacturers should take full life cycle responsibility for their products and, once they reach the end of their useful life, take their goods back for re-use, safe recycling or disposal.<sup>48</sup>

**Building Capacity:** OECD countries should facilitate the transfer of technology to the developing countries that the people may establish better industries for recycling the computers and other electronics. This will go a long way in helping alleviate poverty by creating employment opportunities and achieve many of the Millennium Development Goals. Moreover, this will aid in strengthening the environmental regulation on hazardous wastes in these countries, thereby improving health and lives in general.

**National Programs:** The governments of developing countries should work towards strengthening the national and regional programmes on sound management of chemicals and hazardous wastes. Some of the specific activities of such programmes

<sup>46</sup> Grossman Claudio 'Global Ecosystem Governance and Transboundary Requirements' in Organizing Knowledge for Environmentally and Socially Sustainable Development. Proceedings of a Concurrent Meeting of the 5<sup>th</sup> Annual World Bank Conference *Partnerships for Global Ecosystem Management: Science, Economics and Law* (UNESCO & WB, Washington D.C. October 9-10, 1997)

<sup>47</sup> Ahmed Hussein *Principles of Environmental Economics* 2<sup>nd</sup> ed (London & New York: Routledge, 2004) p316

<sup>48</sup> 'Solutions' in Eliminate Toxic Trade [www.greenpeace.org](http://www.greenpeace.org)

include working with development partners to establish and strengthen sub-regional accreditation for analytical laboratories within. There should be information exchange and networking infrastructure to facilitate hazardous waste information dissemination.

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