The European Union Directive on Waste from Electrical and Electronic Equipment (WEEE)

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A MASTER OF ARTS IN COMMERCIAL DIPLOMACY PROJECT

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INTRODUCTION

The MACD project is the final graduation requirement for all candidates in the Master of Arts in Commercial Diplomacy Program (MACD Program) at the Monterey Institute of International Studies (MIIS). Under the guidance of the MACD Program faculty, students choose a trade issue, analyze it, make recommendations for its resolution and develop a strategy to implement the recommendations. This document on the European Union Draft Directive on Waste from Electronic and Electrical Equipment (WEEE) is an example of the MACD project. As such, the issues are real and ongoing, and to the best of this author's ability, the content is presented with the intention that it be used by practitioners in the field. However, as a graduate student, certain liberties may have been taken or assumptions made in order to fill in gaps or unknowns. Positions should not be attributed to parties named within. The organization and the presentation of the product are solely the result of the author's work and do not necessarily reflect the plans of the American Coalition Electronic Industry (ACEI).

That said, the setting for this project is as follows: Acting as an employee of American Coalition Electronics Industry (ACEI), the author analyzed, made recommendations and developed a strategy to be presented to the ACEI Board of Directors at the upcoming meeting. The Board of Directors will decide if ACEI should implement the strategy and if so, will pass a resolution in effect sanctioning action.

Provided herein is a background to the issue followed by commercial, political, legal, and directive analyses, followed by recommendations and finally the strategy. Concluding the document are appendices with pertinent information ranging from the directive to talking points. This document is intended for internal ACEI use only. However, some of the appendices were created for the express purpose of disseminating information to key decision-makers.

ISSUE

A draft directive from the European Union (EU) Director General (DG) XI seeks to minimize the negative effects of waste from electrical and electronic equipment (WEEE). The WEEE Directive, currently in its third draft, attempts to achieve this objective by banning the use of critical substances in electrical products, while requiring producers to pay for disposal facilities and the recycling of products sold both before and after the directive's inception. Producers are also charged with financing the management of the facilities. DG XI's WEEE Directive poses a threat to the $181 billion technology industry in the US, as well as to European producers and consumers. The costs attributed to the directive far outweigh the limited benefit to the environment. Thus, on behalf of the US technology industry, ACEI needs to champion an effort to improve the directive to better reflect the interests of industry while supporting the goal of minimizing the environmental impact from WEEE.

BACKGROUND AND CURRENT STATUS

BACKGROUND

The WEEE Directive

The Waste from Electrical and Electronic Equipment Directive (WEEE) has been in the making for several years. The primary European Government entity responsible for drafting the directive is Directorate General XI (DG XI) Environment of the European Commission. DG XI sought to reduce waste of such electronic equipment as refrigerators, stoves, microwaves, vacuum cleaners, personal computers, printers, calculators, fax and answering machines, radios, luminaries, dialysis machines, smoke detectors, clocks, Game Boys, drills, saws and sewing machines. Seemingly, the intention of DG XI was to target anything through which an electrical current runs.

In order to achieve its goals of 1) preventing waste; 2) reusing and recycling; and 3) minimizing the risks and impacts to the environment associated with recovery and disposal of WEEE, DG XI came up with two provisions. The first provision bans the use of key materials like lead, which are central to the manufacture of electronic components and products, and the second seeks to lay the sole burden for financing the management, recycling, and disposal of WEEE on the producer.

DG XI determined that the use of such materials in electronic products as lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants are dangerous and should be banned. This decision was not based on sound science, a violation of the WTO, and it did not take into account the viability of replacements.

The materials banned are crucial to the production of many electronic products. Take, for instance, lead. Lead solder is used to fuse all circuitry in computers, calculators, radios, etc. Halogenated flame retardants are used on computer casings so they do not burst into flames when a electrical fire occurs. At present, there does not exist an economically or environmentally viable alternative to lead solder and there has not been a scientific study conducted to determine whether these materials in all of their applications are in fact harmful to the environment.

In an attempt to create incentives for industry to incorporate end-of-life reusable materials into production and design, producers were given the sole responsibility for collection and recovery of WEEE with all costs borne by them. This provision stipulates that producers shall establish waste management facilities at their own cost and shall be responsible for the collection and recovery not only of their own particular products, but also of those that are no longer produced, but are similar.

History of WEEE Directive

The high-tech industry is the largest industry in the United States. In 1999, it was a $181 billion business — $40.6 billion of which was exported to the EU. If the WEEE directive were enacted, the US electronics industry would incur severe costs to comply with the provisions. It is for this reason and others that the electronics industry has been vocal on this issue since the beginning.

The first draft of the WEEE directive was issued in early 1998. US and EU industry response was predominately negative. They stated that the draft failed to include previously solicited input on the (lack of) science behind material bans and the appropriate responsibility for the management, collection, and recovery of WEEE. Japan also voiced its concerns about these provisions in the directive. In Canada and Australia, both finished-product manufacturers and raw material suppliers voiced serious concerns. Consequent meetings were held to address the substance of the directive, the electronics industry's concerns for its broad, far-reaching scope, and the process that produced the proposal in the first place.

By July 1998, DG XI circulated the second draft of the WEEE Directive, which industry met with great disapproval. The second draft did not take into account industry's input and in some cases digressed from the first. As expected, industry's opposition to the draft increased. While never officially voicing opposition to the principle behind the directive, the electronics industry began to form coalitions within industry associations, such as ACEI and Eurobit/Ectel, to work with DG XI to formulate a directive to meet all parties' economic and environmental needs.

In November of 1998, USTR initiated a bilateral démarche with the EU. The USG expressed its concern to the Commission regarding the lack of sound science in the development of the WEEE proposal. In particular, the material bans in the directive are not justified by sound scientific testing, nor are there any scientific risk assessments for possible replacements.

DG XI produced its third draft of the WEEE directive in July of 1999. To industry's chagrin, much of the same language was still present. As a result, the US and EU industries, under the auspices of the TransAtlantic Economic Partnership, placed the WEEE directive on its list of priorities in the Early Warning discussions. Alliances in industry, the TABD, the USTR and US industry continue to address this issue.

Current Status

The WEEE Directive is under review within DG XI. It is difficult to determine the progress as transparency is lacking at this stage. Revisions, if any, are being made in a black box. Outside influence from ACEI or any other party is unlikely. However, courses of action do exist to ensure that the two main provisions of the directive are removed.

European Union Policy Process Overview
It is important to understand the legislative process in the EU to know how and where to influence it, and ensure that the US electronics industry's interests are incorporated.

The EU Legislative Process[1]
EU Commission
The Commission is charged with drafting and proposing new regulations and policy for the Union. Generally, one of the Directorate Generals of the Commission drafts a directive or proposal. It is circulated to interest parties to gauge support, and input on how the proposal can be improved is solicited. This process may result in the formation of several drafts. In the case of the WEEE Directive, DG XI presently is working on its fourth draft.

Once a proposal is finalized it is released for inter-services consultations (ISC). ISC is the name given to the process within the Commission that allows for negotiations with other DGs to ensure policy coherence. Other DGs likely to take an interest in this issue are: DG I External Relations and Trade, DG III Industry, DG V Social Policy, DG XV Internal Markets, DG XIX Budget, DG XXIII Enterprise, and DG XXIV Consumers. The objective of the ISC process is a formal Commission proposal to be voted on by the "College of Commissaries". A unanimous vote by the College results in a formal Commission proposal being presented to the EU Council and Parliament for their consideration and potential adoption.

EU Council
The Council's purpose is to create Union legislation based on the proposals offered by the Commission. The Council creates legislation by approval of a qualified majority. Each of the Member States of the European Union has a number of votes based on its importance. The breakdown is as follows:

10 votes: France, Germany, Italy, United Kingdom
8 Votes: Spain
5 Votes: Belgium, Greece, The Netherlands, Portugal
4 Votes: Austria, Sweden
3 Votes: Denmark, Ireland, Finland
2 Votes: Luxembourg

A qualified majority vote is sixty-two of the eighty-seven votes. With minority vote of twenty-three to twenty-five votes, Member States may suspend the passage of a proposed piece of legislation for a reasonable amount of time in order to renegotiate a revised proposal, which then requires a majority vote of sixty-five votes to pass. Once a piece of legislation passes the Council, a period of three years is allowed for adoption and implementation by Member States.

EU Parliament
The EU Parliament assures that the general activities of community policy-making reflect the interests of the people. The Parliament may create examination committees to address

[1] Boucher, F. and Echkenazi, J. Guide de l'Europe des 15. Nathan: Paris, 1998, pp. 16-21.

submissions made by citizens regarding the policies of the Commission. The Parliament would then have the power to appoint an independent mediator to resolve issues between citizens and the Commission.

No legislation is enacted without the approval of the Parliament. The Parliament and the Council can jointly decide to stop the passage of a directive regarding the internal market and the environment.

Yes votes require a majority in the Parliament. There are 626 seats in the Parliament divided in the following way:

Austria = 21
Belgium = 25
Denmark =16
Finland = 16
France = 87
Germany = 99
Greece = 25
Ireland = 15
Italy = 87
Luxembourg = 6
Portugal = 25
Spain = 64
Sweden = 22
The Netherlands = 31
United Kingdom = 87

COMMERCIAL ANALYSIS

Issue

The commercial impact of the European Union (EU) Directorate General (DG) XI Environment directive, Waste from Electrical and Electronic Equipment (WEEE), is potentially great. One key provision of the directive imposes bans on materials like lead, which are central to the manufacture of electronic components and products. Another provision seeks to lay the sole burden for financing the management, recycling, and disposal of WEEE on the producer. The WEEE directive, if approved by EU member states, would threaten not only the US industry but also other electronic equipment producers, including those in Europe. The industry estimates that increased materials costs will run from $140 to $900 million, and additional infrastructure, materials evaluation and qualification costs will likely run into the tens of billions.[2] The two provisions will cost US businesses, on average, $20 million per company. If the two key provisions were removed from the directive, individual companies would still have to pay for problems associated with WEEE, but would be free to do so in a more environmentally and economically efficient manner. Without the two provisions, individual companies stand to save, on average, $15 million in compliance costs.

Impact of WEEE Directive on US Industry

The high-tech industry is the largest industry in the United States. In 1999, it did $181 billion in business — $40.6 billion of which were exports to the EU. Trade in electronics between the US and the EU accounts for $62.5 billion, or one-fifth of the total transatlantic trade. If the WEEE Directive is put into force, the US electronics industry will incur prohibitive costs to comply with the provisions.

One study estimates that the WEEE Directive would cost industry up to $900 million just for increased materials costs.[3] The results of an online consultation conducted by DG XV on the WEEE Directive show that the average compliance cost for the US firms that responded was approximately $20 million per year. These costs will impact the growth of an industry that is expanding at an annual rate of fifteen percent. The essential materials restrictions will create costs for replacement materials, and will also stifle the development of new and potentially less waste-producing technology that could further expand the industry.

The other provision of the directive, that manufactures assume costly and burdensome collection and recovery for used household products, will create an undue burden on manufacturers. Exact costs are near impossible to determine. Different studies determined that on average it costs anywhere from 10 to 500 euros/ton to recycle large household equipment.[4] Regardless, the costs of duplicating waste management systems, which already exist, for the sole purpose of recycling and disposing of one percent of the EC waste stream is disproportional and a waste of resources. This is contrary to the objectives of the directive.

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[2] ACEI Document: Bans on Essential Materials, p.3
[3] Ibid
[4] Hunter and Lopez- Torres. Analysis of Explanatory Memorandum for draft WEEE Directive, p. 16

Impact of WEEE on EU Industry

Many of the same economic burdens borne by US industry will be felt by EC industry. DG XV conducted consultations[5] within the EC on the impact of the WEEE Directive on business. The "Third Consultation of the Business Test Panel" and the "Online Consultation of Business" both illustrate the effects of the WEEE Directive on the commercial interests of European business. The final conclusions are that "the strict responsibility of producers for the management of electrical and electronic products at their end of life might prove to be burdensome" and that due to the industry perceived problem regarding substance bans, exemptions and phase-out time frames "might need to be reconsidered."[6] This analysis combines the two consultations. The following are the findings:

- Of 643 businesses that responded, 216 (33%) said they would be affected by the directive.
- 78% (168) of those affected claimed that the directive would be an administrative burden on a recurrent basis. More than four hours a month would be needed to fulfill the administrative requirements.

Commercial Analysis Table 1: Impact on Business

	Impact on Business	Recurrent Administrative Burden
YES	216 (33%)	168
NO	390 (61%)	--
No Answer	37 (6%)	--
TOTAL	643	168

- The directive affects businesses of all sizes from small and medium to large.
- Nearly half of the large businesses that responded will be affected by the directive, along with roughly one third of the medium and one quarter of the small businesses.

Commercial Analysis Table 2: Impacted Business by Size

Size: (# of employees)	Division of Companies by Size (% of total # or participants)	Businesses affected by Directive (% of total # of businesses in sector)
Small (< 49)	402 (63%)	105 (26%)
Medium (50 - 250)	105 (16%)	34 (32%)
Large (>250)	120 (19%)	56 (47%)
No Answer	16 (2%)	7
TOTAL	643	195 (30%)

- Average compliance costs for the directive range from nearly 13 million euros in the UK to about 3,000 euros in Denmark per year per business.
- Beyond compliance, additional costs are foreseen and run from about 3 million euros in the UK to 3,000 euros in France.

[5] DG XV conducted two consultations on the WEEE Directive: "Third Consultation of the Business Test Panel" and "Online Consultation of Business" both dated 6 August, 1999. They can be found at www.europa.eu.int/comm/internal.market/en/update/panel/panel3en.pdf

[6] DG XV: "Third Consultation of the Business Test Panel", 8/6/99

- Not only will businesses that produce electronic and electrical products incur costs, so too will the recycling industry. Costs will run 12,000 euros to 180,000 euros, a burden for an industry that could further develop otherwise.

Commercial Analysis Table 3: Average Compliance Costs per Country

Country	Avg. compliance costs per country (euro/year)	Costs estimated by manufacturers joining a pool (euro/year)	Additional costs estimated be retailers (euro/year)	Additional costs estimated by recyclers (euro/year)
Austria	17,292	21,616	43,232	12,609
Belgium	--	--	--	--
Denmark	2,676	--	3,325	--
France	27,999	50,100	3,024	126,258
Germany	598,201	26,868	253,475	28,136
Italy	43,283	--	--	--
Netherlands	14,989	--	11,242	--
Spain	330,527	11,947	--	179,201
Sweden	--	--	--	--
United Kingdom	12,856,870	56,822	2,999,160	--

Business response is clear. The WEEE Directive will cause a financial and administrative burden detrimental to commercial growth. A study prepared by the McKinsey Global Institute concluded that Europe's poor job creation performance over the past thirty years (especially when compared to the US) was attributable in large part to product market regulation. By increasing regulatory barriers and burdens to marketing products and services, European regulation increases costs and decreases choice for consumers of those products and services, and hence decreases demand.[7] By removing the two detrimental provisions from the draft, US companies will save on average $15 million, funds which would be better spent for research and development of new and safer production materials and for the development of a joint effort for recovery of household products.

Conclusion

DG XI's explanatory memorandum, which justifies the directive, argues that the main financial benefits to be reaped from the draft will stem from reduction of landfill and incinerator demand. No figures have been set forth. What is certain is that WEEE represents one percent of the waste stream in the EU. The economic benefit realized by targeting one percent of the waste stream pales in comparison with the burden of billions of dollars in new costs for manufacturers and recyclers, which will impede growth, while also eliminating choices for consumers. By eliminating the two prohibitive provisions from the directive, industry will not have to bare an unnecessary financial burden and can more efficiently utilize its resources to address the issues regarding waste from electrical and electronic equipment.

[7] Hunton & Williams, "Analysis of Explanatory Memorandum," p.20

POLITICAL ANALYSIS

Issue

In present form, the DG XI Environment's Waste from Electrical and Electronic Equipment Directive (WEEE) draft presents a technical barrier to trade that will adversely affect trade relations between the US and the EU, relations that account annually for a total of $700 billion.[8] Recent decisions by the WTO DSP and Appellate bodies regarding beef and bananas have already caused a rift in trade relations between the US and the EU. The WEEE Directive targets, in a non-WTO consistent manner, the electronics industry, which is a $181 billion industry in the US with $40.6 billion in exports to the EU. The beef and bananas industries are peanuts in comparison to the electronics industry, and US industry compliance would cost billions. With the genetically modified organisms (GMO) issue already a source of conflict between the EU and the US, passage of the WEEE directive would create another trade war, the ramifications of which promise to be serious for businesses, governments and consumers alike.

Domestic Political Situation

The Departments of State and Commerce as well as the United States Trade Representative (USTR) and the Environmental Protection Agency (EPA) were briefed on the WEEE issue. USTR placed the issue on its discussion agenda with the EU and held a bilateral démarche with the DG I. The EPA has also been following the issue closely. There presently is a divide within the administration between these two entities.

The USTR represents industry's interests in this matter. While the EPA is sympathetic to the efforts of DG XI, it may wish to take similar action to reduce WEEE. It is important to form a consensus on this issue. Not only is the administrative divide hampering government support, but it could also prompt the EPA to take action on its own. A WEEE proposal in the US could cause subsequent problems. What is needed is a harmonized effort to reduce WEEE in the most efficient manner possible.

European Political Situation

As the WEEE Directive is still contained within the Commission, so too are the interested players in the EU government. DG XXIII Enterprise has voiced opposition to the proposal in its three drafts. Based on consultations conducted by DG XV Internal Market, the impact on European businesses will be substantial, and in the view of DG XXIII, alternative methods for achieving DG XI's objectives are merited.

However, all members of government are aware of the politically sensitive nature with which Europeans view the environment. Any perception of not taking the environment into account would create problems for European policy makers. All suggestions for improving the draft must first and foremost address the benefits to the environment and the reduction of waste.

[8] www.tabd.com

WTO Dynamics
Within the WTO at the February meeting of the TBT Committee, representatives from the US, Canada, Japan and Australia raised concerns about the WEEE Directive. All four countries are major trading nations in the electronic sector and all recognize that the provisions of the directive as it stands now are a threat to industry and in violation of the TBT agreement. Apparently, the representative from the EU has solicited such criticism so that he may take it back to Brussels as leverage for dealing with DG XI.

International Political Situation
Early warning is a category of issues that could lead to trade disputes. At the Berlin Conference, the TABD identified the WEEE Directive as an issue for early warning and brought it, along with recommendations for resolution, to the attention high-level US and EU Administration officials.[9]

Politically, the TABD carries a lot of weight. It obliges governments to respond and its involvement has already raised the issue to a visible level. The TABD fully supports accelerating the Transatlantic Legislators' Dialogue, which pairs legislators with their counterparts across the Atlantic to discuss matters of mutual interest. There is a likelihood that the WEEE issue might be addressed in this forum if it emerges from the Commission unchanged for the better.

[9] See www.tabd.com/index1.htm

LEGAL ANALYSIS

Legality under International Trade Law of Draft Directive on Waste from Electrical and Electronic Equipment

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August 17, 1999

In July 1999, the European Commission's DG XI circulated for inter-services consultations a draft proposal for a European Parliament and Council Directive on Waste from Electrical and Electronic Equipment (WEEE) that would apply to virtually all electronic products placed on the Community market. That proposal, if adopted in its current form, would cause the Community to violate its international trade law obligations.

The proposal's ban on electronic products containing lead, mercury, cadmium, hexavalent chromium and some brominated flame retardants would infringe GATT's prohibition of quantitative restrictions and the Technical Barriers to Trade (TBT) Agreement. First, the bans are not designed to achieve a legitimate environmental protection purpose as would be necessary to justify such quantitative restrictions. Secondly, the substance restrictions are not "necessary," in that there are other less trade-restrictive alternatives to achieve the preferred policy objectives (e.g. selective landfill bans, eco-taxes). Thirdly, in view of the absence of adequate justification, the Commission would find it difficult to establish the proportionality of the trade measures as required under the TBT Agreement. The proposal's ban should accordingly be removed.

Furthermore, the proposal's requirement that treatment facilities outside the European Community comply with the draft WEEE Directive's treatment facility conditions would violate the GATT and the GATS. The proposal would make compliance with the EC's environmental requirements in third countries a condition to export, and it would discriminate in favor of those WTO parties that have equivalent treatment standards to those in the EC.

This memorandum explains the trade law concerns arising from the proposal. Part I reviews the draft directive's major elements. Part II recapitulates, by way of background, relevant international trade law. Part III examines how the draft directive would cause the Community to violate its trade law undertakings.

I. Draft WEEE Directive

In July 1999, DG XI issued a third draft for a Proposal for a Directive on Waste from Electrical and Electronic Equipment. The draft legislation aims at "the prevention of waste [from] electrical and electronic equipment" and "minimizing the risks and impacts to the environment associated with the treatment and disposal of waste electrical and electronic equipment."[1] The basic provisions of the draft directive, which is to apply to virtually all electronics products, may be described as follows.

- **Substance bans:** Article 4(4) would ban the use of lead, mercury, cadmium, hexavalent chromium PBB and PBDEs as of January 2004, subject to exemptions contained in Annex II, to be revised through a comitology process.

- **National design and material choice rules:** Article 4(1)–(2) would require member states to encourage repair-ability, recyclable materials, reduction of numbers of plastics, reduction of the use of dangerous substances, etc.

- **Collection obligations:** Articles 5, 7 and 8 would require producers to finance the collection, recovery, and disposal of used equipment from households.

- **Treatment obligations:** Article 6 would require treatment facilities to obtain a waste permit and store and treat electronic waste in compliance with Annexes III and IV. Used equipment may be exported from the EC for treatment, provided that the non-EC treatment facilities are "certified under equivalent conditions" as those set out in the draft directive.

II. International Trade Law — GATT and TBT Agreement

Three World Trade Organization (WTO) agreements are particularly relevant to the analysis of the draft WEEE Directive under international trade law — the General Agreement on Tariffs and Trade (GATT), the Technical Barriers to Trade (TBT) Agreement, and the General Agreement on Trade in Services (GATS).

A. GATT

1. Quantitative Restrictions and National Treatment

Of particular importance to the draft WEEE Directive, the GATT prohibits quantitative restrictions, including import and export bans (article XI), and forbids discrimination against imported products (the so-called "national treatment" principle, article III). GATT panel reports have interpreted these GATT provisions broadly as applying to all measures affecting imports. Measures need not have an effect on the volume of trade or impair the trade benefits of other contracting parties to fall subject to article XI(1)'s ban on trade restrictions and to article III's national treatment clause.[2]

Trade restrictions contravening article XI and article III may nonetheless be permissible where justified pursuant to article XX, which lists the general exceptions to GATT principles. Article XX provides only a limited and conditional exception from GATT obligations. Panels have interpreted article XX narrowly, "in a manner that preserves the basic objectives and principles of the GATT."[3] A contracting party invoking an article XX exception bears the burden of proof in demonstrating that: (1) the contested measure falls under one of the ten categories of exceptions listed in the article, and (2) the measure satisfies the requirements of the preamble of the article (the so-called "chapeau").[4] In accordance with the chapeau, article XX exceptions apply under the following conditions:

- Measures complying with the requirements of article XX may not be applied in a way that would constitute "a disguised restriction on international trade."

- Measures justified under article XX may not be applied "in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail."

Article XX does not contain a general environmental clause. However, the article XX list of ten legitimate justifications for trade restrictions does include two relevant grounds. First, article XX(b) countenances exceptions for measures "necessary to protect human, animal or plant life or health." Secondly, article XX(g) foresees exceptions for measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption."

Under article XX(b) (protection of health), the party bearing the burden of proof must demonstrate: (1) that the policy in respect of the measures for which the provision was invoked falls within the range of policies designed to protect human, animal or plant life or health; (2) that the inconsistent measures for which the exception is being invoked are "necessary" to fulfil the policy objective; and (3) that the measures are applied in conformity with the requirements of the chapeau of article XX.[5]

Under the exception of article XX(g) (conservation of exhaustible resources), the party invoking the exception must demonstrate that: (1) the policy for which the provision was invoked is related to the conservation of exhaustible natural resources; (2) the measures for which the exception is invoked are related to the conservation of exhaustible natural resources; (3) the inconsistent measures are made effective in conjunction with restriction on domestic production or consumption; and (4) the measures are applied in conformity with the requirements of the chapeau of article XX.[6]

2. Non-discrimination

The GATT, article I(1) states that: "with respect to all rules and formalities in connection with importation and exportation…any advantage, favor, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be

accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties."

This so-called Most-Favored Nation (MFN) clause prohibits discrimination in treatment between the contracting parties and requires equal treatment for all GATT parties. In general, MFN treatment means that when a country lowers a trade barrier or opens up a market, it has to do so for similar products from all trading partners. Conversely, a contracting party may not impose trade restrictions discriminating between like products from GATT parties. In the same vein, application of article XX exceptions is subject to the non-discrimination principle to the extent that they may not be applied "in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries were the same conditions prevail."[7]

3. Nullification and Impairment

The GATT, article XXIII.1(b), creates a remedy for situations in which parties to the Agreement undermine the value of a tariff, trade concession, or any other trade benefit through the application of legislative measures, whether they violate GATT obligations or not. This "nullification or impairment" of accrued trade benefits entitles a GATT party to bring the measures before a WTO panel. Under article XXIII(1)(b), a country may not implement measures, unexpected when trade concessions were negotiated, to impair another party's benefits.[8]

B. TBT Agreement

The TBT Agreement is meant to ensure that technical regulations and standards be applied equally to imported and domestic products, and that unnecessary obstacles to international trade are avoided. The substantive rule of the TBT Agreement is article 2.2 which requires that "technical regulations shall not be more trade-restrictive than necessary to fulfil a legitimate objective, taking account of the risks non-fulfillment would create." Among such legitimate objectives, article 2.2 lists the "protection of human health or safety, animal or plant life or health, or the environment."

Article 2.2 seeks to minimize the trade-restrictive effects arising from Members' pursuit of legitimate objectives. For a technical regulation imposing trade restrictions to be justified under article 2.2, three conditions must be met:

- The policy in respect of the measure must correspond to legitimate policy objectives.

- Technical regulations must not be more trade-restrictive than "necessary" to fulfil the legitimate objective.

- Trade-restrictive technical regulations must be proportional to the objectives pursued by a legitimate policy by taking account of the risks that non-fulfillment would create. Article 2.2 cites as relevant considerations for assessing such risks "available scientific and technical information, related processing technology or intended end-uses of products."

Mirroring the equivalent provision in the GATT, article XX, the preamble to the TBT Agreement establishes that measures necessary for the protection of human, animal, plant life or health, or of the environment are "subject to the requirement that they are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade."

The TBT Agreement further provides for instruments to ensure monitoring of compliance of technical regulations. The Agreement's provisions include notification procedures, and the requirement that Members preparing or adopting technical regulations explain "upon request of another Member … the justification for that technical regulation in terms of the provisions of [article 2]."[9]

In short, under the TBT Agreement, technical regulations must be developed in accordance with the principles outlined in the agreement (particularly non-discrimination). They must not be more trade restrictive than necessary, they must be monitored and reviewed, reflect international standards, be performance based, they must develop transparently, and the compliance procedures adopted must not create unnecessary obstacles to trade.

C. GATS

The GATS applies to "all measures affecting trade in services."[10] While the GATS provides no definition for "services," it does define the concept of "trade in services" to include the following four circumstances involving "the supply of a service:"

- From the territory of one member into the territory of any other member (cross-border services)
- In the territory of one member to the service consumer of any other member (consumption abroad)
- By a service supplier of one member, through commercial presence in the territory of any other member (commercial presence)
- By a service supplier of one member, through presence of natural persons of a member in the territory of any other member (presence of natural persons).[11]

These activities cover "any service in any sector except services supplied in the exercise of governmental authority."[12] The "supply of a service" includes the production, distribution, marketing, sale and delivery of a service.[13] The standard classification list, annexed to the GATS, lists eleven broad sectors including environmental services such a sewage, disposal and sanitation.

1. Non-discrimination

Under article II of the GATS, "with respect to any measure covered by this Agreement, each Member shall accord immediately and unconditionally to services and service suppliers of any other Member treatment no less favorable than that it accords to like services and service suppliers of any other country." This provision is equivalent to the MFN clause contained in article I of the GATT, discussed above.

2. Exceptions

The rules of the GATS are subject to the general exceptions contained in article XIV, which mirror the provisions of the GATT, article XX. Among these exceptions are measures "necessary to protect human, animal or plant life or health." As with the GATT, the application of the exceptions is subject to the requirement that (1) they are not "applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where like conditions prevail," (2) they do not constitute a disguised restriction on international trade in services, and (3) they are "necessary."[14] Several WTO panel reports have ruled that GATT jurisprudence applies to the interpretation of equivalent provisions in the GATS.[15] Consequently, analysis of the GATT principle of non-discrimination exceptions (see above) apply to relevant GATS provisions.

III. Trade Legality of Draft WEEE Directive

The draft WEEE Directive's material bans would infringe the GATT and TBT Agreement. Also, the draft WEEE Directive's provisions restricting exports of used equipment for treatment outside the EC would infringe the GATT and the GATS. Further, while it will not become clear until national implementation, the draft directive's provisions inviting member states to promulgate their own product standards could result in further violations.

A. Substance Bans

1. GATT

By banning the use of a number of substances, the draft directive, article 4(4), in fact imposes an import ban on all products containing the disfavored materials. An import ban constitutes a quantitative restriction prohibited by the GATT, article XI(1). The draft directive's bans would not be justifiable under the GATT's article XX exceptions from the prohibition on such quantitative restrictions.

Quantitative Restriction

In the explanatory memorandum accompanying the draft WEEE proposal, DG XI asserts that "an internal measure restricting or banning the use of a product cannot be assimilated to a quantitative restriction within the meaning of GATT Article XI."[16] Although the argument is not further developed, the claim that the draft WEEE Directive's substance bans do not constitute quantitative trade restrictions seems to rest on two grounds: (1) that the measures are "internal," and (2) that they ban the "use" of the product.

DG XI's assertion regarding the scope of the GATT, article XI, is wrong. It is the established jurisprudence of GATT and WTO panels that the provisions of article XI are to be interpreted extensively. The WTO has consistently interpreted GATT's basic obligation on restrictive measures as applying to "provisions establishing conditions of competition."[17] For example, a panel report found that a US measure prohibiting the public distribution in the US of work consisting of copyrighted non-dramatic material in the English language was a quantitative restriction within the meaning of article XI. As to the draft WEEE Directive's substance restrictions applying to the "use" of products, DG XI has not explained the meaning and scope of this term. However, it is arguable that "use" would include marketing, and therefore import, of products containing the banned substances within the EC. Even if import of these products was not restricted, importers would not be able to sell them in the EC, which de facto constitutes a restriction and thus, a measure that "establishes conditions of competition." The substance bans therefore constitute a quantitative restriction within the meaning of the GATT, article XI.

Article XX Exceptions

The draft directive sets the somewhat vague objective for the entire piece of legislation as minimizing "the risks and impacts to the environment associated with the treatment and disposal of end-of-life electrical and electronic equipment."[18] The question would then be whether the bans are justified, as the explanatory memorandum claims,[19] under (1) article XX(b) as a measure "necessary to protect human, animal or plant life or health," or (2) article XX(g) as a "measure relating to the conservation of exhaustible natural resources."

Article XX(b) — Health Protection

As noted above, panel practice has determined that a party invoking the article XX(b) exception must prove that (1) the policy is designed to protect human, animal or plant life or health, (2) the measures are necessary to fulfill the policy objective, and (3) the measures fulfil the requirements of the article XX chapeau. The draft WEEE Directive's substance bans fail to fulfil the requirements for application of article XX(b) exception for the following reasons:

- The policy does not protect human, animal or plant health. DG XI's justification in banning the use of heavy metals is that: "[d]ue to their hazardous content electrical and electronic equipment cause important environmental problems during the waste management phase if not properly prevented."[20] However, DG XI has not provided evidence that the use of these

substances in electronic and electrical products poses a threat to human health or the environment, or that alternatives (if available) could eliminate such risks. Furthermore, even if one assumed that the use of these substances were damaging to the environment, there is no evidence showing that their use in the electronics industry gives rise to higher or different risks that in other types of products. If scientific risk assessments carried out under Community chemical legislation showed that significant health and environmental risks were posed by the banned substances, the Community should impose restrictions on the materials as they appear in all consumer and industrial products. As is, the ban of their use exclusively in electronic products, without the backing of a scientific risk assessment, does not appear to be part of a policy designed to protect health and the environment.

- In the explanatory memorandum, DG XI cites a number of scientific studies carried out on the substances to be phased-out.[21] While this "evidence" may at first sight seem voluminous, a closer look reveals that the group of studies falls short of a valid risk assessment to justify the draft WEEE Directive's proposed substance bans. The studies mentioned in the explanatory memorandum are not specifically devoted to the analysis of the risks posed by these substances in the waste stream. Furthermore, DG XI has not found a single scientific study focusing primarily on risks posed by these substances as found in electrical or electronic waste. Much of the proffered scientific evidence focuses instead on risks to workers in production plants — i.e., occupational health and safety. As the draft WEEE Directive is not an occupational health and safety measure, this evidence is not relevant for the purposes of justifying measures aimed at minimizing risks arising from waste disposal.

  Take, for example, lead. DG XI seeks support in the OECD Risk Reduction Monograph No. 1.[22] This report does not constitute a risk assessment on the risks posed by lead in the waste stream, and there is little in the study to justify the phasing out of lead in electronics. The OECD monograph points out that it is difficult to assess accurately the composition and volume of post-consumer products disposed of in landfills or incinerators, as detailed sampling or monitoring data is not available. However, in some countries where these estimates have been carried out, such as Germany, it has been found that thanks to collection and recycling schemes "the amount of lead in domestic and industrial waste streams is declining."[23] According to the OECD study, "lead is one of the most recycled non-ferrous metals in the world," and "post-consumer product scrap constitutes more than 80 per cent of the scrap supply for recycling."[24]

- The main concern with lead in the waste stream is the potential of drinking water contamination and thus ingestion by the population. However, according to the OECD, "since elemental lead and lead compounds are stable, health concerns are minimal for a properly managed landfill with runoff and leachate controls."[25] As for incineration, lead emissions from lead-containing materials presumably constitute a potential health risk. However, the OECD opines that "lead emissions from combustible and non-combustible components of municipal solid waste can be controlled with 99 per cent or greater efficiency."[26] The OECD report further reviews measures taken by OECD members to reduce risks from exposure to lead. No OECD country has banned the use of lead in electronics as a means to counter-act a "potential" risk from the disposal of electronic goods.

> Furthermore, in all of the European countries reviewed, the average concentration of lead and lead discharges to air, water and soil has decreased in recent years. Thus, the OECD study (1) is not a valid risk assessment to support DG XI's proposal to ban lead, and (2) in fact rebuts DG XI's assertion that the risks posed by the disposal of lead-containing electronic products would require the phasing-out of this material from electronics.

Given the lack of specific risk assessments, the Commission's DG XI might seek to justify the phasing out of substances on the basis of an interpretation of the "precautionary principle." Indeed, the explanatory memorandum affirms that, "[d]ue to the inherent toxicity of these substances and the fact that they may reach the environment in a bioavailable form, associated risks are in any case substantial. It therefore seems appropriate to apply the precautionary principle."[27] A recent judgement of the WTO Appellate Body on the Hormones Case, referring to the Sanitary and Phytosanitary (SPS) Agreement, examined this question.[28] According to the Appellate Body, the precautionary principle is not "a ground for justifying [sanitary and phytosanitary measures] that are otherwise inconsistent with the obligations of Members set out in particular provisions of that Agreement."[29] Furthermore, "the precautionary principle does not, by itself, and without a clear textual directive to that effect, relieve a panel from the duty of applying the normal (i.e. customary international law) principles of treaty interpretation in reading the provisions of the SPS Agreement."[30] These conclusions on the precautionary principle in respect to the requirements of the SPS Agreement are also applicable to similar provisions of the GATT and TBT Agreement. Therefore, the precautionary principle may justify adoption of preventive measures if otherwise supported by scientific evidence; it may not be used as a "substitute" for the requirement to base trade restrictive measures on relevant risk assessments.

The measures are not "necessary" to fulfill the policy objective. Even if the policy goal were deemed legitimate, a trade restriction on all products containing the banned substances is not "necessary" to fulfill the environmental protection objectives. The "necessity test" has become the crucial step in panel practice when examining the application of article XX(b). Panels have interpreted the "necessity" requirement strictly. So far, no panel called to apply article XX(b) has accepted the necessity of a measure otherwise inconsistent with other GATT provisions.

The requirement of article XX(b) that exceptions to free trade rules are "necessary" has been interpreted as an obligation to choose the "least restrictive alternative." Hence, a contracting party may not justify a measure under article XX(b) "if an alternative measure which it could reasonably be expected to employ and which is not inconsistent with other GATT provisions is available to it."[31] Thus, the invoking party must prove that it has "exhausted all the options reasonably available … through measures consistent with the General Agreement."[32] When a measure consistent with other GATT provisions is not available, a country is bound to use "among the measures reasonably available, that which entails the least degree of inconsistency with other GATT provisions." In particular, panel practice has given special relevance to the existence of efforts to encourage international cooperative arrangements.

According to the draft directive's explanatory memorandum, "[a]ll measures in the proposed directive — phasing-out schedules …, etc. — have been designed in such a way as to minimize

potential trade restrictions. In fact, no alternative, less trade-restrictive measures are available to achieve the objectives of the Directive."[33] The objective of the proposal, in respect to banning use of the substances, is arguably meant for "minimising the risks and impacts to the environment associated with the treatment and disposal of waste electrical and electronic equipment."[34] In this context, "it is relevant to observe," as the Appellate Body has pointed out, "that an import prohibition is, ordinarily, the heaviest 'weapon' in a Member's armory of trade measures."[35] Other less restrictive measures are conceivable as means to reduce risks posed by the banned materials: selective landfill bans, waste management regulation and enforcement recycling, eco-taxes, etc.

First, a means to reduce disposal of heavy metals is to encourage recycling. The draft WEEE Directive is in fact intended to do so by imposing collection obligations and ambitious targets for the recycling of electronic products. Heavy metals such as lead are already recycled to high volumes and the technology for recycling is widely available throughout Europe. The explanatory memorandum argues in favor of phasing-out certain substances, in particular brominated flame retardants, due to the environmental risks posed.[36] However, in respect of potentially damaging hazardous emissions to the air during recycling processes, DG XI admits that "[t]hese emissions could be significantly reduced by means of pre-treatment obligations."[37] Such pre-treatment obligations are already included under the scope of the current draft for a WEEE Directive.

Secondly, as mentioned above, the OECD has found that controlled landfill sites and incinerators reduce the risks posed by heavy metals to the point where health concerns are negligible. It would thus appear that available less trade-restrictive measures would include enforcement of technical requirements for landfill sites and incineration plants, and selective landfill bans. Indeed, the EC has recently adopted a Directive on Landfill[38] and is currently in the process of promulgating a Directive on Waste Incineration,[39] which will supplement existing European rules on waste disposal. The explanatory memorandum recognizes that "[s]ignificant impacts could be prevented in those cases where WEEE is put in controlled landfills respecting environmentally sound technical standards."[40] However, it observes that the practice of disposing waste in uncontrolled landfills still takes place in some EC countries (for example, Greece) and that Eastern European candidates for EC accession have not yet imposed equivalent landfill regulations. These circumstances, however, only beckon EC legislation to ensure the environmentally sound functioning of landfills. Indeed, the EC has not "exhausted" all the options reasonably available, as the new directives on landfill and incineration of waste have yet to be tested in their practical implementation. Further, the fact that a high standard of landfill and incineration control has been achieved in most European countries proves that this is a feasible enterprise and that "less-restrictive" measures are thus available to target the hypothetical risks posed by heavy metals at the disposal stage. As for accession-candidate countries, their situation is of no relevance to the drafting of EC legislation in a manner that complies with the Community's international obligations, given that these countries are not yet EC members.

In conclusion, DG XI has provided no evidence that it has exhausted all alternatives available to it before resorting to a total import ban — arguably the most restrictive measure. Furthermore, there is no evidence of efforts to encourage international cooperation on the matter. On the

contrary, OECD countries have not implemented substance bans to deal with potential problems posed by electronic waste, and OECD studies on this matter do not encourage the adoption of such measures. Therefore, the substance bans do not appear to be "necessary" in relation to the draft directive's policy goals and do not satisfy the requirements for the application of the article XX(b) exception.

Article XX(g) — Conservation of Exhaustible Resources

According to DG XI, trade restrictive substance bans could be justified under GATT, article XX(g) as measures "relating to the conservation of exhaustible natural resources."[41]

A party invoking article XX(g) must demonstrate that: (1) the policy relates to the conservation of exhaustible natural resources, (2) the specific measures for which the exception is invoked are related to the conservation of exhaustible natural resources, (3) the inconsistent measures are made effective in conjunction with restriction on domestic production or consumption, and (4) the measures are applied in conformity with the requirements of the chapeau of article XX.[42] The substance bans of the draft WEEE Directive fail to fulfill the requirements for the application of the article XX(g) exception for the following reasons.

The substance bans do not fall within the range of measures covered by article XX(g). From the point of view of their effects on the conservation of natural resources, the draft directive's substance bans have an extraterritorial effect. Many electronics sold in Europe are produced elsewhere, or, even if produced in Europe, are produced from components and materials from elsewhere. Imposing a substance restriction would not preserve natural resources in the Community, but rather would preserve the resources where they have been extracted, which in most cases is outside the Community.

The Appellate Body Report in the Shrimp-Turtle case (mentioned by DG XI in the explanatory memorandum) did state that measures justified under the provision may affect jurisdictions outside that of the invoking country.[43] However, it also stated that "it is not acceptable, in international trade relations, for one WTO Member to use an economic embargo to require other Members to adopt essentially the same comprehensive regulatory program, to achieve a certain policy goal, as that in force within the Member's territory."[44] The extraterritoriality of a measure covered by article XX(g) may be justified only under exceptional circumstances. It is understood that for a transboundary measure to be justified under article XX(g), four conditions must be met:

- The measure must be justified under exceptional circumstances (e.g., because the protected resources are migratory animals moving across jurisdictions)

- The measure must not be more trade restrictive than required to protect the globally-shared environmental resource

- The measure must be directly connected to the environmental objective

- The member must have made genuine efforts to enter into cooperative environmental agreements with other members.[45]

The draft WEEE Directive's substance bans do not meet these requirements for the following reasons: (1) there are no exceptional circumstances that could justify the transboundary impact of measures banning the use of heavy metals in electronics; (2) an import ban is the most restrictive trade measure and DG XI has not showed that other less restrictive measures, i.e. encouraging recycling, are not available; (3) it is not at all clear how the measure relates to the conservation of natural resources; and (4) there is no evidence to date of attempts to cooperate on this matter with third countries before resorting to unilateral measures. Thus, the extraterritorial effect of the substance bans, hypothetically aimed at the protection of third country's resources, are not justifiable under article XX(g).

The substance bans do not address the conservation of exhaustible natural resources. WTO panel practice has determined that for a trade-restrictive measure to be justified under article XX(g), it has to be "primarily aimed" at the conservation of an exhaustible natural resource.[46] According to the draft WEEE Directive, its objectives are the prevention of waste, and minimizing the risks associated with the treatment and disposal of waste. There is little evidence, if any, in the text of the draft directive to suggest that the substance bans are "primarily aimed" at the protection of natural resources. Conversely, evidence is abundant that DG XI prepared the bans with a view principally towards reducing risks posed by the disposal in landfill and incinerators of consumer electronics. Thus, it is not plausible to argue that the proposed substance bans are "primarily aimed" at the conservation of exhaustible natural resources, as required by article XX(g).

2. TBT Agreement

The TBT Agreement, article 2.2, requires that technical regulations, such as the draft directive's bans, do not create unnecessary obstacles to international trade. The draft WEEE Directive substance bans do not meet the requirements of the TBT Agreement.

Technical Regulations

In the explanatory memorandum to the draft WEEE Directive, DG XI notes that "a measure banning the use of a product or a substance having detrimental effects on human health or the environment is not a technical regulation subject to the TBT Agreement."[47] Yet whether a substance is detrimental for health or the environment is irrelevant to the question of whether substance bans are "technical regulations" within the meaning of the TBT Agreement.

The TBT Agreement, Annex I.1, defines a "technical regulation" as a "document which lays down product characteristics or their related processes and production methods, including the applicable administrative provisions, with which compliance is mandatory." To this date, no WTO panel has examined the scope of this definition.

The EC's own Technical Standards Directive defines "technical regulation" as "technical specifications [i.e. a specification contained in a document which lays down the characteristics required of a product] … including the relevant administrative provisions the observance of which is compulsory, de jure or de facto."[48] This definition is remarkably similar to that contained in the TBT Agreement. The Community has consistently interpreted that substance restrictions are specifications laying down product characteristics, thus substance bans constitute "technical regulations." For example, on February 1999, the Danish government notified to the Commission as a technical regulation a draft order banning the use of lead from a number of applications.[49] There is little reason to believe that this interpretation is not defendable in the context of the TBT Agreement. A measure banning the use of a particular substance in electrical and electronic products is quite clearly a measure "laying down product characteristics…with which compliance is mandatory" within the meaning of the TBT Agreement.

By defending that the substance restrictions do not constitute technical restrictions to trade, DG XI contradicts its own assertion, expressed in the recitals of to the WEEE Directive and elsewhere, that "diverging national approaches as to standards for 'design for recycling,' including the phase-out of specific substances, constitute technical barriers to the trade of electrical and electronic equipment."[50]

Justification

Under the TBT Agreement, a trade-restrictive technical regulation is justified if it satisfies the following conditions: (1) it fulfills a legitimate objective such as "the protection of human health or safety, animal or plat life or health, or the environment," (2) it is not more trade-restrictive than "necessary" to fulfil the legitimate policy goal, and (3) it takes account of risks non-fulfillment would create. The draft WEEE Directive's substance bans do not meet these requirements for the following reasons:

- They do not fulfill a legitimate objective. As noted above, DG XI has not provided adequate evidence that use of these substances in electronic and electrical products poses a threat to human health or the environment. Furthermore, even if one assumes that use of these substances is damaging to the environment, there is no evidence that their use in the electronics industry gives rise to higher or different risks that in other industries. DG XI has thus failed to demonstrate that the measures fulfill a legitimate objective such as the protection of human health or the environment.

- The bans are more restrictive than necessary to fulfill the legitimate objective. Even if the policy goal were deemed legitimate, a trade restriction on all products containing the banned substances is not "necessary" to fulfill the environmental protection objectives. The concept of "necessity" in article 2.2 of the TBT Agreement must be interpreted in the same way as in the GATT, article XX(b), as a requirement to choose the "least restrictive alternative." Consequently, the arguments advanced in respect to legality of the measure under the GATT are equally valid to the assessment of its legality under the TBT Agreement, article 2.2. A technical regulation is more restrictive than necessary when the objective can be achieved with less disruption to trade. The Commission's DG XI has not demonstrated that it has exhausted all alternatives available, before imposing an import ban — the most trade-restrictive measure possible. Furthermore, it has not encouraged international negotiations on the issue. Therefore, the substance bans appear to be more trade-restrictive than necessary to achieve the policy goals.

- The substance bans are not proportional to the objectives pursued by the policy. Article 2.2 of the TBT Agreement requires that account is taken of "the risks non-fulfillment would create," when adopting a technical regulation that affects trade. Under this provision, even if there are no alternative measures available, a measure could still be considered more restrictive than necessary when its effects on trade are disproportionate to the risks in question. To assess these risks, one must take into consideration all available scientific evidence and technical information, related processing technology and the intended end-uses of the products.[51] DG XI has provided no substantial evidence on how the absence of the ban would risk the fulfillment of its policy to prevent waste and minimize the risks to the environment associated with the disposal of electrical and electronic equipment. Furthermore, DG XI has carried out no specific and exhaustive scientific or technical study on available alternatives to the banned substances. An assessment of the "risks of non-fulfillment" would require a systematic evaluation of the environmental, health and safety risks and/or advantages of possible substitutes. DG XI has failed to provide this evidence.

The substance bans therefore appear disproportionate in relation to the objectives of the draft WEEE Directive.

Treatment Operations

The draft WEEE Directive, article 6, would require that electrical and electronic equipment be treated prior to re-use, recovery or disposal. Treatment must include, at a minimum, "the removal of all fluids and a selective treatment according to Annex III."[52] Establishments undertaking treatment operations must obtain a waste permit and must comply with the Annex IV technical requirements. These requirements include the use of waterproof covering in sites for storage, balances to measure the weight of the treated waste, containers for storage of batteries, PCB and PCT and hazardous substances, and equipment for the treatment of water, including rainwater. Further permits would take into account conditions necessary for compliance with the recovery targets set by article 7.

The draft directive would allow used equipment to be sent to treatment by handling waste to treatment facilities outside the EC, subject to compliance with the EC Shipment of Waste Regulation.[53] However, producers may "deliver" the equipment only to facilities which are "certified under equivalent conditions as those set out in this article [6]."[54] This requirement would violate the GATT, articles I and XI, and the GATS, article II. First, the requirement would constitute an illegal export ban. Secondly, the provision would result in discrimination among GATT contracting parties, and among service suppliers from GATS contracting parties.

GATT

A. Quantitative Restriction

The draft WEEE Directive bans all exports of waste for treatment to countries where treatment facilities do not comply with the conditions imposed by the draft directive itself for establishments within the Community. An export ban constitutes a quantitative restriction prohibited by the GATT, article XI(1). The ban would not be justified under the GATT, article XX(b), as a measure to protect human, animal or plant health, for the following reasons.

- The measure does not fall within the range of measures covered by article XX. According to the explanatory memorandum, the justification for this measure is that exporting waste for treatment in third countries "should not lead to shipments of WEEE to non-EU countries where no or lower treatment standards than in the EU exist. Accordingly, producers shall deliver WEEE only to those establishments and undertakings, which comply with the treatment and recycling requirements set out in the Proposal. Producers shall verify the compliance with this Article through adequate certifications."[55]

- The draft directive's export ban has an extraterritorial effect. By requiring that treatment facilities outside the EC comply with EC legislation and policy preferences, the draft WEEE Directive would be "protecting" the environment of third countries. Imposing a ban on waste exports for treatment would not prevent hypothetical environmental risks within the EC, but

rather in those countries where treatment operations are carried out. However, as explained above, a country may not invoke the exceptions of article XX to justify measures that affect environmental and health protection outside its own jurisdiction.

B. Discrimination

The export ban on waste would not apply to EC exports of WEEE towards countries where facilities comply with equivalent requirements to those imposed by the draft WEEE Directive. The directive would thus discriminate in favor of countries adopting equivalent standards to those of the EC, in contravention of the GATT, article I. Under the GATT, article I, any trade advantage granted to products from one country must be automatically granted to products from all other contracting parties. For the reasons outlined above, the exception provided for in the GATT, article XX(b), would not justify violation of one of GATT's substantial obligations.

C. GATS

GATS contracting countries outside of the EC supply waste-treatment services to consumers in the EC. This activity constitutes one of the categories of trade in services (consumption abroad) within the meaning of the GATS.[56] The draft WEEE Directive, by prohibiting European and other companies from making use of the waste treatment services provided for in other GATS contracting parties, affects trade in services, and thus falls within the scope of the GATS.

The draft directive would exclude some countries from the export ban, on the grounds that their treatment facilities comply with equivalent conditions to those established by the draft WEEE Directive. This would contravene the GATS, article II. The proposed measure discriminates in favor of GATS countries that provide services for the treatment of waste originating in the EC, while service suppliers from other third countries are precluded from doing so.

The analysis of the equivalent GATT provisions (namely article I and the article XX exceptions) are equally applicable here. As noted before, the jurisprudence on the interpretation of the GATT applies to the interpretation of parallel GATS provisions.

National Design and Material Choice Rules

The draft WEEE Directive's provisions concerning national design and material choice measures may not be illegal, for they are merely instructions to member states to take their own product-standards measures. However, these provisions are an invitation to further trade disputes, for any such national product standards will run the risk of trade law violations. Furthermore, article 7(6), inviting member states to "encourage producers to integrate an increasing quantity of recycled or used material in electrical and electronic equipment" and asking that member states "take this requirement into account with regard to national legislation on public procurement," could result in infringements of the WTO Agreement on Public Procurement.

Nullification and Impairment

The provisions of the draft WEEE Directive would nullify or impair trade benefits accruing other contracting parties of article XXIII(1)(b) of the GATT. The European Community has made concessions over the past fifty years on most products covered by the draft directive. Furthermore, under the Information Technology Agreement, negotiated in the context of the Uruguay Round, the European Community committed to the elimination of trade barriers on a number of products that would be affected by the draft WEEE Directive, such as computers and semi-conductors.

These tariff concessions have been agreed in successive tariff negotiations. The measures that would be introduced by the draft WEEE Directive affecting these products could not be anticipated by other GATT contracting parties at the time when tariff concessions were made: the first draft proposal had not yet been produced when the Uruguay Round negotiations ended. Any provisions of the draft WEEE Directive that affect the import of products on which tariffs and other GATT concessions have been agreed could impair the benefits of other GATT contracting parties. The substance bans, the recycled content rule, and the national design and material choice rules would substantially alter conditions of competition in the Community so that third countries' trade benefits are impaired or nullified altogether.

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[1] Draft WEEE Directive, art. 1.

[2] 1984 Panel Report on "Japan-Measures on Imports of Leather," L/5623, adopted on May 15/16, 1984, 31S/94.

[3] 1994 Panel Report on "United States-Restrictions on Imports of Tuna," DS29/R, not adopted, at par. 5.26.

[4] See GATT/WTO Dispute Settlement Practice Relating to Article XX, Paragraphs (b), (d) and (g) of GATT, Note by the Secretariat, WT/CTE/W/53/Rev.1, Oct. 26, 1998, at par. 5.

[5] 1996 Panel Report on "United States-Standards for Reformulated and Conventional Gasoline," WT/S2/9, adopted on May 1996, at par. 6.20 and 1994 Panel Report on "United States-Restrictions on Imports of Tuna," DS29/R, not adopted, at par. 5.29.

[6] 1996 Panel Report on "United States-Standards for Reformulated and Conventional Gasoline," WT/S2/9, adopted on May 1996, at par. 6.35.

[7] GATT, art. XX.

[8] 1998 Panel Report on "Japan- Measures Affecting Consumer Photographic Film and Paper." WT/DS44/R, adopted on 1998, at par. 10.76.

[9] TBT Agreement, art. 2.5.

[10] GATS, art. I. In parallel with similar provisions in the GATT, the GATS applies to all measures "which may adversely modify the conditions of competition." (1997 Panel Report on "European Communities - Regime for the Importation, Sale and Distribution of Bananas," WT/DS27, adopted on Sep. 25.)

[11] GATS, art. I(2).

[12] GATS, art. I(3)(b).

[13] GATS, art. XXVIII(b).

[14] GATS, art. XIV.

[15] 1997 Panel Report on "European Communities - Regime for the Importation, Sale and Distribution of Bananas," WT/DS27, adopted on Sep. 25, 1997.

[16] Draft WEEE Directive, Explanatory Memorandum, at p. 23. As support for this argument the memorandum refers to the EC submission to the WTO panel on Asbestos (Canada v. the EC), as yet a restricted document. It may be worth noting that the Canadian submission (also a restricted document) argues that the French ban on asbestos is a quantitative restriction violating the GATT, article XI (See European Communities - Measures affecting Asbestos and Products Containing Asbestos, Request for the Establishment of a Panel by Canada, WT/DS135/3, Oct. 9, 1998).

[17] 1990 Panel Report on "European Economic Community - Payments and Subsidies to Processors and Producers of Oilseeds and Related Animal-Feed Proteins," L/6627, adopted on Jan. 25, 1990, 37S/86, at par. 150.

[18] Draft WEEE Directive, art.1.

[19] Id., Explanatory Memorandum, at p. 23.

[20] Id., at p. 4.

[21] These studies include: OECD, Risk Reduction Monograph No. 1 Lead - Background and National Experience with Reducing Risk, OECD Paris, 1993; OECD, Risk Reduction Monograph No. 5 Cadmium, Background and National Experience with Reducing Risk, OECD Paris, 1997; Järup, Lars and others, Health Effects of Cadmium Exposure - A Review of the Literature and Risk Estimate, Scand J Work Environ Health 98; Vonkeman, Gerrit H., Environmental Impacts of Cadmium, 1995; Parkman, Helena and others, Cadmium in Sweden - Environmental Risks, 1997; Brenner, Knies, BASF, Formation of Polybrominated Dibenzofurans (PBDF's) and Dioxins (PBDD's) during Extrusion Production of a Polybutyleneterephtalate (PBTP), Glassfibre Resin Blended with Decabromodiphenylether (DBDPE)/Sb2O3. Product and Workplace Analysis, 1986; Sellström, Ulla, Polybrominated Dyphenyl Ethers in the Swedish Environment, Stockholm 1996; Sjödin et al., Flame Retardants Exposure - Plybrominated Diphenyl Ethers (PBDEs) in Blood from Swedish Workers, Stockholm, 1999; and OECD Risk Reduction Monograph No. 3, Selected Brominated Flame Retardants - Background and National Experience with Reducing Risk, OECD Paris 1994.

[22] OECD Risk Reduction Monograph N°1, Lead (as above).

[23] Id., at p. 62.

[24] Id., at p. 60.

[25] Id., at p. 63 (emphasis added).

[26] Id. (emphasis added).

[27] Draft WEEE Directive, Explanatory memorandum, at p. 37.

[28] 1998 Appellate Body Report on "European Community - Measures concerning Meat and Meat Products," WT/DS26/AB/R, adopted on Jan. 16, 1998, 37S/86.

[29] Id. at par. 124

[30] Id.

[31] 1990 Panel Report on "Thailand - Restrictions on Importation of and Internal Taxes on Cigarettes," DS10/R, adopted on Nov. 7, 1990, 37S/200.

[32] 1991 Panel Report on "United States-Restrictions on Imports of Tuna," 39S/155, not adopted, at par. 5.27.

[33] Draft WEEE Directive, Explanatory Memorandum, at p. 23.

[34] Draft WEEE Directive, art. 1.

[35] 1998 Appellate Body Report on "United States-Import Prohibition of Certain Shrimp and Shrimp Products," WT/DS58/AB/R, circulated on October 12, 1998, at par. 171.

[36] Draft WEEE Directive, Explanatory Memorandum, at p. 12-13.

[37] Id., at p. 13

[38] Council Directive 1999/31/EC of 26 April 1999 on the landfill of waste, O.J. L 182 (July 16, 1999).

[39] Amended proposal for a European Parliament and Council Directive on the incineration of waste, COM (1999) 330 final (July 12, 1999).

[40] Draft WEEE Directive, Explanatory Memorandum, at p. 11.

[41] Id., at p. 23.

[42] 1996 Panel Report on "United States-Standards for Reformulated and Conventional Gasoline," WT/S2/9, adopted on May 1996, at par. 6.35.
[43] In reaching this conclusion, however, the Appellate Body gave particular importance to the fact that the protected turtles were migratory species that moved across jurisdictions, which could justify a rule having an extraterritorial dimension.
[44] 1998 Appellate Body Report on "United States-Import Prohibition of Certain Shrimp and Shrimp Products," WT/DS58/AB/R, circulated on October 12, 1998, at par. 164.
[45] European Communities' submission to the Shrimp-Turtle Appellate Body Report, 1998 Appellate Body Report on "United States-Import Prohibition of Certain Shrimp and Shrimp Products," WT/DS58/AB/R, circulated on October 12, 1998, at par. 68.
[46] 1988 Panel Report on "Canada-Measures Affecting Exports of Unprocessed Herring and Salmon," 35S/98, adopted on March 22, 1988, at par. 4.6.
[47] Draft WEEE Directive, Explanatory Memorandum, at p. 23. DG XI again supports this assertion on the EC submission to the Asbestos panel. In its submission, Canada argues that measures banning use of asbestos violate the provisions of the TBT Agreement.
[48] Directive 98/34/EC of the European Parliament and of the Council Laying Down a Procedure for the Provision of Information in the field of Technical Standards and Regulations, June 22, 1998, O.J. L 204 (July 27, 1998), art. 1.
[49] It is worth noting that the Danish order is still under examination by the Commission services following complaints from some EC member states (namely Austria, Germany and the UK) arguing that the ban on lead was not based on specific risk assessments and thus constituted an unjustified restriction to trade.
[50] Draft WEEE Directive, 6th Recital. See also Explanatory Memorandum at p. 5 and 20.
[51] TBT Agreement, art. 2.2.
[52] Id. , art. 6(1).
[53] Council Regulation 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community, O.J. L 030, 6.2.1993, p. 1.
[54] Draft WEEE Directive, art.6(5).
[55] Id., Explanatory Memorandum, at p. 48.
[56] GATS, art. I(2)(b).

WEEE DIRECTIVE ANALYSIS

Analysis of Explanatory Memorandum of Third Draft Directive on Waste from Electrical and Electronic Equipment

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In July 1999, DG XI issued a third draft for a Proposal for a Directive on Waste from Electrical and Electronic Equipment, together with a 54 page Explanatory Memorandum meant to justify and explain the proposed legislation. The Explanatory Memorandum surveys environmental problems thought to be caused by electronics. In addition, the Explanatory Memorandum comments on impacts of the proposal on employment, small- and medium-sized enterprises (SMEs), the internal market and international trade. The last section of the Explanatory Memorandum comments on the draft proposal's provisions.

Despite its length, a close review of the Explanatory Memorandum reveals that DG XI has failed to justify its draft proposal. DG XI has conducted no risk assessments of substances it seeks to ban, nor has DG XI considered the availability, viability and risks of alternatives. European pilot projects do not support DG XI's arguments for the proposed take-back scheme. The cost/benefit analysis is based on doubtful and unexplained assumptions. Although DG XI's intentions are beyond reproach, a close review of its justifications for the draft WEEE Directive highlight the weakness of analysis behind the proposal, and the need for dispassionate and detached analytical work before proceeding with such ambitious regulation.

This report reviews and comments on the draft WEEE Directive's Explanatory Memorandum. Part I summarizes our observations on the approach and substance of the Explanatory Memorandum. Part II examines the assertions concerning environmental problems posed by WEEE. Part III looks at the assessment of risks posed by the banned substances. Part IV reviews the cost/benefit analysis.[10]

[10] The Explanatory Memorandum also comments on the legality of the draft WEEE Directive under international trade law. For a critique of those comments, and an analysis of the proposal under international trade law, see Rod Hunter and Marta Lopez-Torres (Hunton & Williams), "Trade legality of the WEEE Proposal," Statement Prepared for ACEI-Europe (Aug. 17, 1999).

I. Summary of Observations

A. General Comments

Lack of Scientific and Technical Precision: The Explanatory Memorandum is characterized by vagueness and lack of scientific and technical precision. When DG XI cites pilot projects and scientific studies, references are ambiguous at best, as the footnotes are devoid of page citations. Furthermore, the Explanatory Memorandum often refers to calculations, scientific data and findings without providing any indication of source.

Studies referenced by DG XI often do not support DG XI's arguments: Documentary evidence cited by DG XI is rarely devoted specifically to WEEE, and those that are devoted to WEEE do not, on close review, necessarily support DG XI's case. Take for instance the Nordic Council Report on "Environmental Consequences of Incineration and Landfilling of Waste from Electr(on)ic Equipment," one of the two WEEE-specific studies.[11] The Nordic Council report avoids drawing conclusions as "calculations and assessments in this report are based on limited exact knowledge and information from only a few sources."[12] The Nordic Council report suggests that the issues should thus be further investigated, and that it should be possible to develop informative data on waste for incineration and landfill of electronics. DG XI, however, is attempting to set policy without doing the empirical research or analysis necessary to ascertain the environmental problems and the most prudent and efficient policy solutions.

B. Environmental Problems from WEEE

The Explanatory Memorandum's review of environmental problems arising from WEEE is partial and misleading.

- Two of DG XI's main arguments for WEEE legislation are (1) WEEE poses risks when incinerated or landfilled, and (2) the environmental risks arising from WEEE are not addressed by current waste management practices.

- The Explanatory Memorandum, while providing a percentage of WEEE that is incinerated or landfilled, fails to note that according to a study commissioned by the Commission, WEEE represents less than 1% of the total EC solid waste stream or about 4% of EC municipal solid waste.

[11] The other being ACEI Technologies.
[12] Nordic Council of Ministers, "Environmental Consequences of Incineration and Landfilling of Waste from Electr(on)ic Equipment" (Copenhagen 1995), at p. 83.

- The Explanatory Memorandum, while providing general information on waste incineration, does not provide any data on contribution of WEEE to incineration emissions.

- The Explanatory Memorandum asserts the WEEE proposal is necessary because some incinerators do not operate at strict enough emission levels and landfills in some EC countries (particularly less prosperous ones) are uncontrolled, but neglects to take into account the impact of its proposed incineration directive and the recently adopted Landfills Directive. It also fails to consider whether meeting the WEEE Directive requirements might indeed be more difficult for countries not blessed with infrastructure than applying incineration and landfill legislation.

- The Explanatory Memorandum asserts as a justification for the WEEE proposal that Central European candidate countries cannot be expected to comply with EC emission (or other) requirements. However, as candidate countries are not EC member states, their situation is of no relevance. In any event, this argument runs opposite to DG XI's intent, for it would seem likely that candidate countries would find it difficult to implement such a complex scheme as envisaged by the WEEE proposal.

- DG XI cites material recycling as a main legislative objective, but does not attempt to demonstrate how and why WEEE recycling, an industrial process like any other with potential environmental harms, will necessarily result in a net environmental benefit.

C. Substance Restrictions

The Explanatory Memorandum contains no risk assessments to justify the banning of substances.

- The ban justifications are a mere review of inherent hazards of the suspect substances, devoid of analysis of human and environmental exposure.

- There is no examination of the availability and viability of substitutes, nor of their potential health and environmental risks.

- In short, the Explanatory Memorandum provides no grounds for confidence that the proposal will not result in *greater* risk by forcing the use of materials with less desirable performance and health characteristics.

Example of lead. The Explanatory Memorandum finds support in just one study, the OECD Risk Reduction Monograph on Lead. This document neither constitutes a risk

assessment of lead in electronics nor even provides support for banning lead in electronics.

- The main concern with lead in the waste stream is the potential for drinking water contamination and thus human ingestion. However, according to the OECD study, "since elemental lead and lead compounds are stable, health concerns are minimal for a properly managed landfill with runoff and leachate controls." As for incineration, the OECD study opines that "lead emissions from combustible and non-combustible components of municipal solid waste can be controlled with 99 per cent or greater efficiency."

- The OECD report makes clear that no OECD country has banned the use of lead in electronics as a means to counter-act a "potential" risk from the disposal of electronic goods.

- In all European countries reviewed by the OECD report, the average concentration of lead and lead discharges to air, water and soil has decreased in recent years.

D. Cost/Benefit Analysis

Take-Back Costs. The DG XI cost-estimates of its proposed EC-wide take-back scheme are exclusively (and selectively) based on pilot projects carried out in a handful of member states.

- **How representative these projects are is questionable**. No Southern countries are represented in the pilot projects, even though it seems plausible that take-back schemes would be more costly in Mediterranean and other less economically developed countries where infrastructure is lacking. Also, DG XI has made no use of cost data from those countries where take-back laws are already in place — e.g., the Netherlands and Switzerland.

- **DG XI's use of the pilot project data is suspect**. Only four studies out of eleven surveyed had results generally supporting DG XI's costs conclusions. DG XI's reading seems to constitute a partial interpretation of data in favor of the lowest cost estimates.

- **DG XI's manner of drawing conclusions from these data is cavalier**. DG XI concludes that the total costs of collection and recycling of WEEE for *all* member states *together* will be around 500–900 million euro/year, and notes that this could lead to a price increase of between 1–3% for electronic goods. DG XI then dismisses, without justification, the relevance of this figure, as "it is likely that these calculated costs are substantially overstated."

Substance Restrictions Costs.

- The Explanatory Memorandum's cost analysis for the substance bans is peculiar. The Explanatory Memorandum assumes that the highest costs will arise from substituting lead in solder. It then boldly concludes that if such costs were found to be "bearable," there is no need to analyze further the costs of substituting other substances.

- This approach makes a farce of the Commission's obligation to undertake cost/benefit analyses on legislative proposals. Since the purpose of the assessment is to allow the legislature to form an educated opinion on the prudence of the proposal and its elements, such assessments must examine the costs and benefits of the ban on each and every substance. Even if the costs of banning one substance are in absolute terms less than banning another, that information alone is of little use to the legislature. After all, the purpose is to determine the *relation* of costs to benefits.

- As for the cost assessment of substituting lead in solder, the Explanatory Memorandum is grossly incomplete.

    - It states, without providing its sources, that "the total price increase would remain very small for most products" and that the additional operational costs may be estimated to about 150 million euro/yr. However, industry and other sources estimate the costs to be much higher.

    - Also, as the Explanatory Memorandum recognizes, "this amount does not include R&D costs as well as additional investments needed," which would be, of course, important factors influencing the ultimate substitution costs.

Collection and Recycling Benefits.

- The Explanatory Memorandum provides an impressionistic discussion of environmental benefits (such as "possible use of resources"), enumeration of electronic products' components (that could be "at least partly introduced into the economic cycle") and unsubstantiated data and figures. The discussion leaps, with the analytical rigor of a Rorschach inkblot exercise, from energy savings to negative effects of mining.

- The Explanatory Memorandum argues that the main financial benefits to be reaped from the draft directive will stem from reduction of landfill and incinerator demand. If these are indeed the main financial benefits, one might wonder if the legislation is worth the candle. After all, WEEE constitutes only about 1% of the EC waste stream.

Improved Design and Substance Restrictions Benefits.

- According to the Explanatory Memorandum, the WEEE proposal will result in improved design, which will lead to reduced costs for reuse and recycling of waste equipment, lower disposal costs and less environmental pollution. No analysis is attempted for potential costs incurred by society by restricting or diverting product innovation via government regulation.

- As for benefits of bans, DG XI sees this as a case of application of the "precautionary principle," not requiring further elaboration. This is hardly the sort of analysis that would be contemplated by the draftsmen of the EC Treaty when imposing the cost/benefit analysis requirement.

Employment Benefits. The assessment of employment effects is myopic. The Explanatory Memorandum projects job creation in recycling, but ignores the broader employment effects of the draft directive in the electronics and retail sectors. By increasing regulatory barriers and burdens to marketing products and services, European regulation increases costs and decreases choice for consumers of those products and services, and hence in turn decreases demand. That there ultimately is downward pressure on employment in production, distribution and retail should be no surprise. Any respectable analysis of employment effects of legislation would consider such broader implications.

II. Environmental Problems Posed by WEEE

A. Electrical and Electronic Equipment (EEE)

The Explanatory Memorandum divides EEE into three groups: (1) large equipment primarily or exclusively used by consumers; (2) small equipment primarily or exclusively used by consumers; and (3) equipment for professional use. The Explanatory Memorandum discusses the presence of "problematic" substances in these product groups. According to the Explanatory Memorandum, one of the main problems with large household equipment is condensators, "more than 10% of which are PCB suspect."[13] A main problem with small appliances is that they contain high levels of copper. This selective enumeration material content of some electronic products fails to prove the need for legislation. That is, the Explanatory Memorandum lacks a systematic analysis of the content of the electronics, hazards of suspect substances, risks of exposure to humans and the environment of the suspect substances, and levels of exposure and effects.

The decision to draft legislation covering all electronic products, as opposed to taking a sectoral approach, is based, according to the Explanatory Memorandum, on national experience.

[13] Explanatory Memorandum, at p. 8.

Apparently, "first experiences with the implementation of national legislation in the Netherlands have shown that consumers tend to be confused by a limitation of take back legislation to selected WEEE groups only." The only evidence to support this claim is a vague reference to warnings from "experts from the Dutch government."[14]

As regards equipment for professional use, the proposal covers only small- or medium-sized WEEE. The inclusion of business equipment is justified, according to the Explanatory Memorandum, because it is often found in the municipal waste stream. According to DG XI, this has been "confirmed by pilot projects on the collection of WEEE and by information provided by a number of European recyclers."[15] However, the Explanatory Memorandum refers to only one pilot project, that concerning the Lothian region of Scotland.[16] Moreover, the Explanatory Memorandum does not further explain what was "the information provided by a number of European recyclers," nor who precisely they were.

B. Management of WEEE

Two of DG XI's main arguments for specific WEEE legislation are (1) WEEE poses risks at the incineration and landfill stage, and (2) the environmental risks linked to the waste stream are not properly dealt by current waste management practices. The Explanatory Memorandum asserts that over 90% of WEEE is currently landfilled or incinerated without any pre-treatment.[17] However, the Explanatory Memorandum's draftsmen neglect to mention the percentage of WEEE in respect to total waste. According to a study commissioned by the Commission, but not referred to here, WEEE represents less than 1% of the total EC solid waste stream or about 4% of EC municipal solid waste.[18]

1. Incineration

DG XI cites impressive figures on emissions from waste incineration — 36 t/y of mercury and 16 t/y of cadmium are emitted in the EC, with large dioxin and furan emissions.[19] However, DG XI provides no insight on the contribution of WEEE to these figures. The Explanatory Memorandum merely asserts that "the stream of WEEE contributes *significantly* to the heavy metals and halogenated substances contained in the municipal waste stream."[20] No attempt is

[14] Id., at p. 9
[15] Id.
[16] Lothian & Edinburgh Environmental Partnership, "Unplugging electrical & electronic waste — The findings of the LEEP Collection Trial" (Edinburgh 1997).
[17] Explanatory Memorandum, at p. 9.
[18] ACEI Technology, "Recovery of WEEE: Economics & Environmental Impacts. Final Report" (1997), Executive Summary, at p. iii.
[19] Explanatory Memorandum, at p. 9.
[20] Id. (emphasis added).

made to quantify this contribution and no study or research report is cited to support this sweeping assertion.[21]

WEEE likely contributes less "significantly" to incineration emissions than DG XI would have us believe. First, as DG XI's own consultants pointed out, WEEE represents less than 1% of the total EC solid waste stream or about 4% of the EC municipal solid waste stream.[22] A major Nordic Council study suggests that in Sweden and Denmark amounts of incinerated WEEE are small compared to the total amount of waste incinerated (in Denmark 5.5%).[23] Secondly, DG XI does not address how much WEEE incineration really contributes in volume or harmfulness to pollution from waste incineration. According to a Nordic study, percentages of lead, mercury and cadmium from WEEE of the total amount of waste incinerated are very small — for lead the percentage varies between 1.2% and 3.5%, for cadmium from 0.6% to 3.1%, and for mercury from 0.2% to 0.6%.[24]

The Explanatory Memorandum neglects to examine benefits of further regulation on WEEE incineration. There is a lack of analysis of how the WEEE proposal relates to EC incineration legislation and policy. For instance, it remains ambiguous whether DG XI has taken into account the amended proposal for a Council Directive on waste incineration[25] covering incineration of both hazardous and non-hazardous waste. The Explanatory Memorandum acknowledges this proposal, but denigrates the effect of previous incineration legislation. According to DG XI, "even in the ninth year after the deadline for implementing the Directives[26] …*various* waste incinerators in the Community do not comply with the emission limits of these Directives."[27] This assertion would suggest merely the appropriateness of a review of EC incineration legislation and its implementation, as undertaken by the Commission.

Another argument proffered by DG XI, here and throughout the Explanatory Memorandum, is that candidate countries cannot be expected to comply with emission (or other) requirements of Community legislation. This argument falls on its own weight. As candidate countries are not EC member states, their situation is of no relevance to justification of an EC proposal applying only to member states. In any event, candidate countries must accept the *acquis communautaire* on accession, subject to transitory arrangements.

In any event, DG XI's incapacity argument would seem to undermine its case for WEEE legislation. DG XI ignores the question of whether candidate countries would find it easier to

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[21] Indeed, the Explanatory Memorandum cites chapter 4.2 of the same Explanatory Memorandum (the same chapter where this assertion is to be found) as a source for the information.
[22] ACEI Technology, "Recovery of WEEE: Economics & Environmental Impacts. Final Report" (1997), Executive Summary, at p. iii.
[23] Nordic Council of Ministers, "Environmental Consequences of Incineration and Landfilling of Waste from Electr(on)ic Equipment" (Copenhagen 1995), at p. 60.
[24] Id.
[25] COM (1999) 330 final.
[26] Explanatory Memorandum, at p. 10 (citing Directive 89/369 of June 8, 1989 on the Prevention of Air Pollution from New Municipal Waste Incineration Plants and Directive 89/429 of June 21, 1989 on the Reduction of Air Pollution from Existing Municipal Waste-Incineration Plants).
[27] Explanatory Memorandum, at. p. 10 (emphasis added).

comply with take-back obligations, recycling and recovery targets, and other requirements of the draft WEEE Directive. If it would be unreasonable to expect candidate countries to implement relatively straightforward emission regulation, it would seem even more unreasonable to ask that they implement DG XI's complex take-back scheme. Organization of separate collection, implementation and monitoring of targets, etc., would require considerably more infrastructure and know-how than monitoring incinerator emissions.

2. Landfill

DG XI recognizes that negative environmental impacts of electrical and electronic equipment in landfills "could be prevented in those cases where WEEE is put on controlled landfills respecting environmentally sound technical standards." However, DG XI dismisses the logical conclusion that a solution for WEEE would be to enforce "environmentally sound technical standards" for landfills. DG XI uses the same reasoning as it does in denouncing incineration: (1) some member states still have some uncontrolled landfills, and (2) candidate countries cannot be expected to enforce landfill requirements. The arguments are no more persuasive here than before.

DG XI cites Greece and Portugal as EC member states where uncontrolled landfills exist. According to the Explanatory Memorandum, Portugal has 300 uncontrolled landfills. Neither the relative importance of this figure nor the progress of Portugal in controlling landfills is noted. Moreover, the Explanatory Memorandum does not analyze whether Portugal would more easily and efficiently implement landfill or take-back legislation. The take-back scheme proposed by DG XI for WEEE would be complex, expensive, and would require considerable coordination between producers, authorities and consumers. It would also require basic infrastructure that some member states may lack.

Take the case of the Battery Directive,[28] a modest piece of legislation requiring that certain batteries be separately collected and recycled. Portugal has transposed the Battery Directive into national law, but those provisions are not implemented in practice. Separate collection cannot be supervised as the government does not have necessary infrastructure, and reports from companies are not monitored, as the government lacks the necessary information technology and expertise to process the data. Batteries are not recycled despite the legislative mandate, for the simple reason that there is no facility in the country that could carry out the recycling.[29]

The Explanatory Memorandum further ignores the recently adopted Directive on Landfill of Waste 1999/31, which directly regulates environmental problems (e.g., leaching and evaporation of hazardous substances) related to landfills. The Landfill Directive imposes, according to its article 1, "stringent operational and technical requirements on the waste and landfills." The directive divides landfills into three different classes — landfills for hazardous, non-hazardous and inert waste — and waste going to any of the three types of landfills is subject to "treatment" before landfilling.

[28] Directive 91/157 of March 18, 1991 on Batteries and Accumulators Containing Certain Dangerous Substances, as amended.
[29] Personal conversation with a Portuguese Environment Ministry official.

3. Recycling

DG XI identifies increased recycling of WEEE as one of the main objectives of the proposal. However, the Explanatory Memorandum makes little attempt to demonstrate the need for recycling. According to DG XI, recycling is desirable because it spares (1) resources, and (2) disposal capacities. DG XI does allow that recycling "may add to environmental pollution."[30] It fails to analyze the pros and cons of recycling of WEEE, beyond a reference designed to support the ban on certain brominated flame retardants.[31]

Recycling is itself an industrial activity involving potentially risky processes — transport, handling, processing, residue disposal, etc. As the Nordic Council notes, "for each product it is necessary to assess if it is better to recycle the product or if it should be either incinerated or deposited."[32] The draft proposal, by encouraging indiscriminate recycling of all electronics to arbitrarily chosen targets, neglects conducting this assessment.

C. Resource Aspects

The Explanatory Memorandum asserts valuable materials are lost for future generations because of current WEEE handling,[33] and discusses environmental problems arising from mining. The Explanatory Memorandum dwells at length on the environmental impacts of copper mining, but fails to analyze the real benefits and costs of copper recycling. One may in any event question the significance of copper. If any relative environmental savings/costs are to be calculated, the transport and reprocessing impacts for recycled material and total impacts for virgin material need to be compared.[34] However, the Explanatory Memorandum fails even to attempt a coherent analysis of costs and benefits of resource saving.

[30] Explanatory Memorandum, at p. 12.
[31] Id., pp. 12-13.
[32] Nordic Council of Ministers, "Environmental Consequences of Incineration and Landfilling of Waste from Electr(on)ic Equipment" (Copenhagen 1995), p. 79.
[33] Explanatory Memorandum, at p. 13.
[34] ACEI Technology, "Recovery of WEEE: Economics & Environmental Impacts. Final Report" (1997), at pp. 88-90.

III. Hazardous Substances Legislation

A. Policy Considerations

The Explanatory Memorandum contains no risk assessments of the substances DG XI's Waste Management Unit seeks to ban, as might have been expected in a proposal from DG III's Chemicals Unit. The Explanatory Memorandum's justifications for bans are a mere review of inherent hazards of each substance, without any analysis of human and environmental exposure through use of the materials in electronics. Further, the Explanatory Memorandum does not examine availability and viability of substitutes, nor potential health and environmental risks of such alternatives. In short, the Explanatory Memorandum provides no grounds for confidence that the proposal will not result in *greater* risk by forcing use of materials with less desirable performance and health characteristics.

B. Targeted Substances

1. Lead

The draft WEEE Directive, article 4, would ban use of lead in electronics with the exception of lead used (1) in radiation protection, (2) in glass of cathode ray tubes, light bulbs and fluorescent tubes, (3) as an alloying element in steal and copper, and (4) in electronic ceramic parts. Aside from these exceptions, the main (though not only) use of lead in the electronics industry is lead in solder.

The Explanatory Memorandum briefly reviews lead's negative health effects and finds support in just one study, the OECD Risk Reduction Monograph on lead.[35] As is the case with other substances, this document does not constitute a risk assessment necessary to justify a ban on use of lead. Lead's toxicity is well documented. However, information inherent toxicity alone is not particularly significant — any substance can be lethal in the right circumstances. One must also consider exposure. That is, in order to justify a ban, DG XI should have conducted an assessment of whether lead in WEEE results in significant exposure to humans (e.g., via ingestion) and the environment.

According to the Explanatory Memorandum, consumer electronics constitute 40% of lead found in landfills.[36] The claim is not substantiated.[37] As lead in batteries constitutes more than 60% of

[35] The OECD Risk Reduction Monographs do not constitute chemicals risk assessments. According to the foreword to be found in all these monographs, their purpose is (1) to provide a summary of information regarding the uses of chemicals and their release into the environment and the way OECD countries perceive risks associated with those chemicals, and (2) to describe the actions that OECD members have taken or are contemplating taking to reduce risks associated to exposure to the chemical concerned.

[36] Explanatory Memorandum, at p. 16.

[37] It is not clear whether this figure refers to the EC, Europe more broadly or the world.

total lead used in products,[38] one suspects that this figure includes lead found in batteries (which fall outside the scope of the proposed WEEE Directive). Furthermore, by far the main quantities of lead disposed in landfills are found in CRTs,[39] which are also exempted from the present ban. There is no attempt to analyze contribution of lead in solder to total quantities of lead found in landfills, despite this being the main application where lead would be banned.[40]

The OECD lead monograph, DG XI's only lead reference, points out that it is difficult to assess accurately composition and volume of post-consumer products disposed in landfills and incinerators, as detailed sampling or monitoring data is not available. However, in some countries where estimates have been made, such as Germany, it has been found that thanks to collection and recycling schemes "the amount of lead in domestic and industrial waste streams is declining."[41] According to the OECD study, "lead is one of the most recycled non-ferrous metals in the world," and "post-consumer product scrap constitutes more than 80 per cent of the scrap supply for recycling."[42] Other documentary evidence used by DG XI, such as the Nordic Council study on WEEE, have identified lead used in CRT as the 5th priority for a risk management of products, without any mention of lead as used in printed circuit boards.[43] This evidence suggests that the risks posed by lead found in EEE at the disposal stage are not as substantial as the Explanatory Memorandum implies.

Even if there were evidence showing that the amount of lead from WEEE in landfills were substantial, it would be necessary to determine whether this poses an environmental or health problem that the EC needed to tackle by banning lead in electronics. The main concern with lead in the waste stream is potential for drinking water contamination and thus human ingestion. However, according to the OECD study, "since elemental lead and lead compounds are stable, *health concerns are minimal* for a properly managed landfill with runoff and leachate controls."[44]

As for incineration, the OECD study opines that "lead emissions from combustible and non-combustible components of municipal solid waste can be controlled *with 99 per cent or greater efficiency*."[45] The OECD report further reviews measures taken by OECD members to reduce risks from exposure to lead. No OECD country has banned lead in electronics as a means to counter-act a "potential" risk arising from the disposal of electronic goods. Furthermore, in all European countries reviewed, the average concentration of lead and lead discharges to air, water and soil has decreased in recent years. Thus, the OECD study not only (1) does not constitute a

[38] OECD, Risk Reduction Monograph No 1 Lead, at p. 46.
[39] Nordic Council of Ministers, Waste from Electrical and Electronic Products, at p. 39. For example, in 1991 it was estimated that the total amount of metallic lead present in electronic products sold in Norway was 200 tons, against 2,000 tons of total lead oxides in glass mainly found in CRTs (Id. at p. 83).
[40] The Explanatory Memorandum also neglects to clarify why lead in solder would be allowed in electronic components in vehicles (see proposal for a Common Position with a View to the Adoption of Directive 1999/__/EC on End-of-Life Vehicles, 97/0194 (COD), art. 4 and Annex II, pt. 10), while banned in electronic products.
[41] OECD, Risk Reduction Monograph No 1, Lead, at p. 62.
[42] Id., at p. 60.
[43] Id., at p. 59
[44] Id., at p. 63 (emphasis added).
[45] Id. (emphasis added).

valid risk assessment to support DG XI's proposal to ban lead, but (2) in fact undermines DG XI's assertion that risks posed by the disposal of lead-containing electronic products requires phasing-out this material from electronics.

2. Cadmium

As with lead, the Explanatory Memorandum cites cadmium's health effects. Although some of the suggested effects may be questionable,[46] it is widely recognized that cadmium, when ingested in high quantities by humans, can lead to kidney failure. The question, however, should be whether cadmium as used in EEE contributes to human health and environmental risks.

Again, DG XI fails to answer the question. The discussion of risks posed by cadmium as used in electronics is limited to an enumeration of cadmium uses in electronic components: printed circuit boards; SMD chip resistors; infrared detectors and semiconductors; older CRTs (not newly produced ones); and plastics where cadmium is used as an stabilizer. There are no indications of the extent to which cadmium contained in these products contributes to the total cadmium present in landfills and incinerators, what the percentages are in terms of total cadmium exposure, etc.

The OECD Risk Reduction Monograph on Cadmium does shed light on these questions. Batteries, in particular nickel-cadmium batteries, constitute more than 95% of cadmium used in electronics.[47] The use of cadmium in CRTs has always been less than 0.1% of total use and is today nonexistent.[48] Batteries constitute 55% of the total use of cadmium in products, with stabilizers (including electronic and other products) being 10% of the total. These cadmium applications constitute only 2% of the total cadmium exposure sources. Therefore, the amount of cadmium used in electronics, batteries excluded, is negligible (well under the 0.5% band).[49] For example, in Sweden in 1995 the estimated consumption of cadmium was 73 tons for batteries and 20 tons for plastic stabilizers, compared with 280 tons on fertilizers.[50] Of course, only a small proportion of the cadmium used in plastics is found in electronic products.

As for environmental releases of cadmium resulting from WEEE disposal, the OECD Cadmium Monograph points out that cadmium releases from landfills and incinerators can be controlled. "[T]he amount of cadmium released from landfills can be decreased substantially through modern waste treatment techniques, e.g., an impermeable liner in the landfill and leachate treatment." Furthermore, even in those cases where leaching risks exist "laboratory experiments on leaching of cadmium from pigmented plastics have been interpreted as showing that these products would not contribute significantly to cadmium leachate from landfills."[51] A study

[46] For example, there is no agreement among scientists on whether cadmium is cancerigenous or not. See Jarup, Health Effects, at p. 7.
[47] Nordic Council of Ministers, Waste from Electrical and Electronic Products, at p. 39.
[48] Id.
[49] OECD Risk Reduction Monograph No 5, Cadmium.
[50] Kemi, Cadmium exposure, part II, at p. 9.
[51] OECD Risk Reduction Monograph No 5, Cadmium, at p. 39.

carried out in Canada demonstrated that "99.8 to 99.9 per cent of cadmium introduced to the incinerator was caught in the boiler and the air pollution control equipment."[52]

Cadmium is a by-product of zinc and as such its production is more dependent on zinc refining that on cadmium market demand. It is unlikely that a ban on the (very limited) use of cadmium in electronics will have any effect on cadmium production and thus on cadmium disposal. Cadmium, as pointed out by the OECD Monograph, is "easy to recycle. It can be separated from other materials in a comparatively uncomplicated fashion, with fairly low energy expenditure."[53] In short, the Explanatory Memorandum fails to offer a convincing justification for the need to ban the use of cadmium in electronics.

Mercury

The draft directive would ban use of mercury in EEE, with the exception of (1) mercury in lamps, and (2) mercury in laboratory equipment. The Explanatory Memorandum mentions no study on use of mercury in EEE and associated risks.

According to the Explanatory Memorandum, "22% of the yearly world consumption of mercury is used in EEE."[54] Again, the source of this figure is not mentioned, nor is there an estimate of the percentage in Europe, as opposed to the world. There are already restrictions on the use of mercury in batteries in the EC. According to the OECD, use of mercury in the 80s in OECD countries in electrical and measurement equipment was 16%.[55]

In electronics, mercury is used in thermostats, sensors, relays and switches, discharge lamps, medical equipment, data transmission and mobile phones. The main uses of mercury in electronics (batteries excluded) are those exempted from the draft directive's ban, namely lamps and measurement equipment. No substitute for mercury in fluorescent lamps exists.[56] Otherwise, mercury is used in specific applications of relays and switches where substitution would be difficult. A Nordic Council study calculated that the *total accumulated* amount of mercury in fluorescent tubes in all Nordic countries is about 2 tons. According to DG XI, in "the EU 300 tons of mercury are used in position sensors alone."[57] This assertion may be based on the Nordic Council's study on electronic waste. According to this report, Nordic countries may have 30 tons of mercury accumulated in position sensors. This refers to all mercury accumulated since it was first used in this application and throughout the years.[58] Furthermore, position sensors are no longer fitted in new equipment.

[52] Id., at p. 38.
[53] Id., at p. 25.
[54] Explanatory Memorandum, at p. 17.
[55] OECD Risk Reduction Monograph No 4, Mercury, at p. 15.
[56] Nordic Council of Ministers, Waste from Electrical and Electronic Products, at p. 39.
[57] Explanatory Memorandum, at p. 18. Again no source is cited.
[58] Nordic Council of Ministers, Waste from Electrical and Electronic Products, at p. 82

4. Brominated Flame Retardants

The third draft WEEE Directive alters the earlier proposed ban on all halogenated flame retardants with a more limited ban on only two types of brominated flame retardants, PBBs and PBDEs. Use of these two materials, it should be noted, has already been phased out by industry in Europe.

Still, DG XI fails to provide a risk assessment to justify a ban on PBBs and PBDEs. The part of the Explanatory Memorandum devoted to brominated flame retardants contrasts strikingly with the analysis carried out on other, more contentious, substances. Brominated flame retardants are put into context with the objectives of the legislation (minimizing waste disposal and increasing recycling), specific risks from their use in electronics and during incineration are referred to, and scientific studies are mentioned. If anything, the analyses on desirability of banning PBBs and PBDEs, while poor and far from constituting a scientific risk assessment, highlights the serious shortcomings in the risk analysis of other substances, such as lead and cadmium, where DG XI offers little evidence or analysis.

IV. Cost/Benefit Analysis

A. Take-Back Costs

DG XI's estimates of costs of its proposed EC-wide take-back scheme are exclusively based on pilot projects carried out in a handful of member states, for limited periods, and in most cases for limited project ranges. How representative these projects are is questionable. Pilot projects have been carried out in six member states, namely Austria, France (Rhone-Alpes), the Netherlands, Germany, Sweden and the UK. No Southern regions are represented. It seems plausible that take-back schemes would be more costly in Mediterranean and other less economically developed countries where infrastructure is lacking. Also, DG XI has made no use of cost data from countries where take-back laws are already in place — e.g., the Netherlands and Switzerland.

The Explanatory Memorandum's use of selective pilot project data is suspect. According to the Explanatory Memorandum, recycling costs for large household equipment "typically" range from around 10 to 80 euros/ton,[59] though it acknowledges that the Rhone/Alpes pilot project found cost to be up to 323 euros/ton. However, the Explanatory Memorandum neglects to mention that ACEI Technologies found, in a study commissioned by the Commission itself, that those costs range from 192 to 214 euros/tons, that RDE in a study in Germany calculated costs of up 300 euros/ton, and that the EcoCycle Commission in Sweden found average recycling costs for household equipment to be 500 euros/ton.[60]

[59] Explanatory Memorandum, p. 29.
[60] Id., table 4 at p. 30.

Thus, only four studies, out of the eleven surveyed, had results generally supporting DG XI's conclusions. Of these, only one found the costs to be potentially inferior to 10 euros/ton (the LEEP study in the UK). The Apparetour project in the Netherlands further excluded refrigerators from the general price range, concluding the recycling costs for this product could be of up to 290 euros/ton. In short, DG XI's reading seems to constitute a partial interpretation of data in favor of the lowest cost estimates.

On the basis of these rough estimates, DG XI concludes that the total costs of collection and recycling of WEEE for *all* member states *together* will be around 500–900 million euro/year. The Explanatory Memorandum allows that this could lead to a price increase of between 1–3% for electronic goods. However, DG XI dismisses the relevance of this figure. In its view, "it is *likely* that these calculated costs are substantially overstated."[61] According to DG XI, this assumption "is confirmed by preliminary results concerning the implementation of the Dutch WEEE ordinance."[62] The Explanatory Memorandum provides no evidence of such preliminary results, and it is difficult to ascertain the basis of its brave assertion that costs are "substantially overstated."

B. Substance Restrictions Costs

The Explanatory Memorandum's cost analysis for the substance bans is even more peculiar. The Explanatory Memorandum assumes that the highest costs will arise from substituting lead in solder. It then concludes, in an astonishing leap of logic, that if such costs were found to be "bearable," there is no need to analyze further the costs of substituting other substances.

This approach makes a farce of the Commission's obligation to undertake cost/benefit analyses on legislative proposals. As the purpose of the assessment is to allow the legislature (the Parliament and Council) to form an educated opinion on the prudence of the proposal and its elements, such assessments must examine the costs and benefits of each obligation — in this case, the ban on each and every substance. Even if the costs of banning one substance are in absolute terms less than banning another, that information alone is of little use to the legislature. After all, the purpose is to determine the *relation* of costs to benefits.

As for the cost of substituting lead in solder, the Explanatory Memorandum is insistent: "it is the opinion of the Commission that a phase out of lead-containing solders is possible at reasonable cost within the given time frame of 1 January 2004."[64] The Explanatory Memorandum promises a more "thorough" analysis of this issue. In this analysis, the price of lead is compared with that of other substances to conclude that "the total price increase would remain very small for most products" and that the additional operational costs may be estimated to be about 150 million euro/yr. Again, no source is offered to substantiate these figures. However, this figure seems to be based on the cost involved in substituting lead with tin-silver and tin-copper solders. These

[61] Id. at p. 31 (emphasis added).
[62] Id.
[63] Id.
[64] Id.

are not universal substitutes. The analysis thus ignores the considerably more expensive costs of using other substances such as indium and bismuth. The Commission figure, of unknown origin, also contradicts specific studies on the costs for increased material alone, estimated in the range of $140–900 million.[65]

More importantly, as the Explanatory Memorandum recognizes, "this amount does not include R&D costs as well as additional investments needed,"[66] which would be, of course, important factors influencing the ultimate substitution costs. Studies indicate that costs on additional infrastructure, materials evaluation and qualification costs are likely "to run into the tens of billions [of dollars]."[67]

DG XI's reasoning can hardly be dubbed a cost analysis. Instead, DG XI obscurely states that one manufacturer plans to stop using lead solder by 2001 as proof that costs are not substantial. The reader is left in the dark as to who the manufacturer may be, what types of products would be concerned and whether the manufacturer will actually be able to achieve its plans. [68] This view of DG XI further contrasts with that of industry sources, such as the Amiercan Coalition Electronics Industry, that believe "lead-free implementation costs will be extremely high."[69]

C. Draft Directive's Benefits

As the Explanatory Memorandum itself recognizes, it offers little in the way of a benefit analysis. According to DG XI, "very little research exists which could give a quantitative evaluation of the benefits of the proposal. Therefore, most of the benefits are only described in a qualitative way. This is not a phenomenon of this concrete proposal, but rather reflects the difficulty to put a monetary value on many of the benefits to be expected from waste management in general."[70] This excuse for lack of analysis is rather thin. One might have thought DG XI would have done the "research" to provide some basis for evaluating benefits before tabling a proposal. It is obvious that it is difficult to put a price on many benefits (and costs) of policy, but that hardly justifies abandoning the effort and the analytical discipline required by the EC treaty and needed by the EC legislature.

1. Collection and Recycling Benefits

After this "declaration of intent," the Explanatory Memorandum embarks on an impressionistic discussion of environmental benefits (such as "possible use of resources"), enumeration of electronic products' components (that could be "at least partly introduced into the economic cycle") and unsubstantiated data and figures. DG XI asserts, for example, that

[65] National Center for Manufacturing Sciences (NCMS), Lead Free Solder Project, August 1997.
[66] Explanatory Memorandum., at p. 32.
[67] National Center for Manufacturing Sciences (NCMS), Lead Free Solder Project, August 1997.
[68] Explanatory Memorandum, at pp. 31-32.
[69] American Electronics Association (ACEI), Position Paper on Lead, September 1999.
[70] Explanatory Memorandum., at p. 32.

metals in WEEE constitute 50% of the metals found in municipal waste streams, and that 60% to 80% savings in energy can be obtained using the materials recycled under the proposed directive, without providing sources and elaboration. The discussion leaps, with the analytical rigor of a Rorschach inkblot exercise, from energy savings to negative effects of mining.

The Explanatory Memorandum argues that the main financial benefits to be reaped from the draft directive will stem from reduction of landfill and incinerator demand.[71] If these are indeed the main financial benefits, one might wonder if the legislation is worth the candle. As the Commission's own consultants pointed out, WEEE constitutes about 1% of the municipal waste stream. Even if the proposal would reduce this amount, part of 1% is still a pretty small percentage. Besides, one could think some simpler means of ensuring readjustment of demand and supply of waste disposal options — e.g., privatization and liberalization in the waste services sector.

2. Improved Design and Substance Restrictions Benefits

According to the Explanatory Memorandum, the WEEE proposal will result in improved design, which will lead to reduced costs for reuse and recycling of waste equipment, lower disposal costs and less environmental pollution. No analysis is attempted of potential costs incurred by society by restricting or diverting product innovation via government regulation.

As for benefits of banning substances, DG XI sees this as a case of the application of the "precautionary principle," and thus not requiring further justification or elaboration.[72] This would hardly seem to be the sort of analysis contemplated by the draftsmen of the EC Treaty when imposing a cost/benefit analysis requirement.

3. Employment Benefits

The Explanatory Memorandum reviews potential job creation in the recycling industry. It does not consider the broader effects on employment of the draft directive in the electronics and retail sectors. In this connection, it is worth noting that a study prepared by the McKinsey Global Institute concluded that Europe's poor job creation performance over the past three decades (especially when compared to the US) was attributable in large part to product market regulation.[73] By increasing regulatory barriers and burdens to marketing products and services, European regulation increases costs and decreases choice for consumers of those products and services, and hence in turn decreases demand. That there should ultimately be a reduction in employment should come as no surprise. Any respectable analysis of employment effects of legislation would consider these broader implications.

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[71] Id., p. 36.
[72] Id., p. 37.
[73] McKinsey Global Institute, "Employment Performance" (Nov. 1994) (examining job creation in seven sectors in Europe, Japan and the U.S., with the sectors including automotive, computer, furniture, banking, retail, film/TV/video, and construction).

RECOMMENDATIONS

Based on the preceding analyses, several recommendations are offered to realize WEEE's goals of preventing, reducing and recycling electric and electronic equipment without distorting competition or obstructing trade. The first set of recommendations advocate the removal of the two prohibitive provisions of the directive. The second set of recommendations outline how industry and government can work together to realize the objectives set forth by the directive and solve the problems related with waste from electrical and electronic equipment.

Recommendations for the WEEE Directive

The provisions of the WEEE Directive that ban essential materials and attribute sole responsibility for the collection of end-of-life household products should be eliminated. Presently, through its regulations and requirements, the WEEE directive burdens the electronics industry with unnecessary compliance costs, which would better be used to support new innovations that lessen the environmental impact from WEEE. In order to do so, the ACEI should:

- Lobby the EU Commission, Council and Parliament to remove the two provisions of the WEEE directive.

- Work closely with USTR, lobbying for assurances that if the directive is enacted, the US will bring a case before the WTO DSB.

Recommendations for Joint Action

In order to find solutions to the problems that occur because of waste from electrical and electronic equipment, both government and industry must work together. Representing the US high-tech industry, ACEI has spearheaded the efforts on this issue. Continuing in that capacity, ACEI should facilitate a constructive dialogue between government and industry on how best to achieve the objectives of reducing waste and protecting the environment while not causing an undue burden on industry. In order to do so, ACEI should:

- Organize a conference to address the use of potentially harmful materials and how best to collect end-of-life household products from consumers.

- Facilitate the creation of a database that organizes the information established at the conference.

STRATEGY

Issue
For four plus years, the US electronics industry, represented by ACEI, has worked with DG XI Environment to draft a directive for dealing with waste from electrical and electronic equipment. Despite its best efforts, the present draft does not address several of the industry's key concerns, nor does it achieve its objectives. A different course of action is needed to ensure that any WEEE Directive accepted into EU law adequately addresses the interests of industry as well as the environment.

Introduction
Our aim is to provide an implementation plan for the recommendations on the proposed WEEE Directive. By examining the interests of all parties involved, using the preceding analyses, and utilizing objective criteria such as WTO rules, we will identify which key decision makers should be targeted through lobbying and/or negotiations in order to garner support for ACEI's recommendations.

Just as there are two distinguishable sets of recommendations, so there are two parts to the strategy. Part I addresses how to change the directive to reflect the interests of ACEI's member companies. In particular, it addresses the elimination of material bans from the directive, and the institution of a shared responsibility system for the WEEE collection and recovery of household products. Part II introduces the idea of Joint Action with regards to dealing with WEEE. Part I provides necessary steps for the electronics industry, whereas Part II suggests how to coordinate WEEE's management.

Part I: Strategy for Implementation of Recommendations for the WEEE directive

The recommendations for changing the WEEE Directive are:

- Lobby EU Commission, Council and Parliament to remove the material bans and sole collection/recovery requirements for producers from the WEEE Directive.

- Work closely with United States Trade Representative, lobbying for assurances that if the directive is enacted, the United States will bring a case before the WTO Dispute Settlement Body.

In order to change the directive to reflect these recommendations, both lobbying and negotiations will need to take place with key decision-makers and interested parties. As the WEEE issue has been ongoing for four plus years, coalitions have already formed and international institutions such as the TransAtlantic Business Dialog and TransAtlantic Legislative Dialog have taken notice of the issue. These parties and others have created a network that can be utilized to exert influence on decision-makers. This strategy examines the interests of the decision-makers as well as the interested parties. By doing so, a plan emerges for how to approach resolving the WEEE issue. Lobbying and negotiations are the tools suggested to meet the strategy objective.

Media Strategy
Recognizing the negative attention on trade and the environment at events such as those in December 1999 in Seattle and April 2000 in Washington, DC, public debate on the issue is not in ACEI's interest. In order to eliminate the two problematic provisions of the directive, lobbying and negotiations will be necessary. There are many individuals and groups who see any attempt to change environmental legislation as negative, especially if the efforts to do so are led by what they see as the "multinational corporations" or "big business." There is little to gain, and more likely much to lose, if the ACEI were to employ the media to influence European decision-makers.

However, there is a role for the media in garnering public recognition for joint action by industry and government. The conference should be highly publicized, notifying the public that the problems associated with WEEE are being proactively and efficiently dealt with through a cooperative effort by industry and government.

Interested Parties
Amiercan Coalition Electronics Industry (ACEI)
ACEI's main interest is to change the directive to represent the interests of its 3000 member companies. In addition to its main office in Washington DC, it has eighteen councils across the US and offices in Brussels and Tokyo. The breadth of this Association allows for grassroots level support for policy action. As such, a WEEE coalition has already formed and boasts membership of over 200 interested members. ACEI and the coalition have led the issue thus far and will continue to do so based on its interest in resolving the problems that the present draft of the directive represent for its member companies.

Eurobit/ Ectel
Eurobit, in conjunction with Ectel, represents 2000 companies in the electronics sector in 14 countries in Europe. Its interest is to change the directive to correlate with the interests of European business. Close ties exist between Eurobit and ACEI due to their similar interests. Together, the two combined represent nearly 5000 companies in the Information Technology industry.

Commission
Within the Commission, all have professed their objective to lessen the impact of WEEE on the environment. However, not all DGs agree on how best to realize this objective. DG XI advocates for material bans and full producer responsibility for collection and recovery. DG XXIII, on the other hand, recognizes that it is not in industry's interest to have material bans or solely to bare the burden for collection and recovery — doing so cripples the innovative capacity of business and does not protect the environment. DG I has been alerted (US-EU bilateral Demarche) of the directive's potential to be an obstacle to trade and is not interested in having another trade war with the US. Thus, with the lobbying of DGs to support changes in the draft, DG XI will not achieve a unanimous vote from the College of Commissaries. ACEI should lobby directly Director General Erkki Liikanen for Enterprise, Director General Fritz Bolkestein

for Internal Market, and Director General Pascal Lamy for Trade. It should also distribute materials to staff members under the Director Generals who specialize on this issue.

EU Council
The Council's main interest is to make policy based on drafts by the Commission. In order to do so, a qualified majority is needed to approve proposed legislation. Sixty-five of eighty-seven possible votes are needed from the Member State Council representatives in order to have a qualified majority. However, only twenty-three to twenty-five votes are needed to block a favorable vote from being accepted. Each Member State seeks policies to reflect what is best for its people. ACEI should target the Council members from France, Germany, Italy, The Netherlands and the United Kingdom because the WEEE Directive represents a substantial burden to businesses in these key states. Votes from these countries alone equal forty-five. These countries also make up the majority of EU trade with the US and are home to many US companies that provide continuing increases in growth and employment. These countries stand to lose the most from an US-EU WTO trade dispute. The aforementioned Member States have both the incentive and the ability to block the WEEE Directive if it is not changed.

EU Parliament
The central interest of the Parliament is to insure that EU policy making reflect the interests of the people. Based on submissions made by citizens, the Parliament will establish a committee to investigate policies drafted by the Commission. Consultations conducted by the Commission have already noted the ill affects the directive would have on business, without adequate protection of the environment. Further submissions to the Parliament will raise awareness and committees will be formed. If a satisfactory result does not emerge, the Parliament can alter the proposal when it comes to the floor for a vote.

In order for a piece of proposed legislation to pass through Parliament, 314 votes are needed. Votes from France, Germany, Italy, The Netherlands and the United Kingdom add up to 391 votes. If the draft is not changed, and the Member States, especially those mentioned above, do not see it to be in their interest, they can block passage or edit it before approval. Therefore, ACEI should lobby Parliamentarians from the five countries to block passage of the directive if it is not changed.

TransAtlantic Business Dialog (TABD)
The TABD's interest is to facilitate cooperation between the transatlantic business community and the governments of the EU and US. This is accomplished through an informal process whereby European and American companies and business associations develop joint EU-US trade policy recommendations, in conjunction with the European Commission and US Administration. The TABD has played an active role thus far, issuing briefs and communiqués to the EU on the WEEE issue. Their recommendations for the directive mirror those of this project. The TABD should continue to coordinate efforts to resolve this issue. Continued efforts to influence more DGs will increase the chances for achieving industry's objectives.

TransAtlantic Legislative Dialog (TALD)

The interest of this outfit is to pair US and EU policy makers with their counterparts to discuss issues of mutual interest. This dialogue is designed to share information and to help alleviate potential problems that may arise for one by legislation drafted by the other. The TALD is a pertinent forum to discuss WEEE.

US Congress
Members of the House and Senate from states where the high-tech industry is located would be interested in this issue and may choose to take it up through the TALD. States such as California, Oregon, Washington, Texas, Virginia, Florida, and New York all have a vested interest in changing the WEEE Directive. Representatives and Senators from these states (some of whom constitute Congressional leadership) would be very interested to learn of the potential negative effects of the directive. ACEI member companies should talk with Representatives and Senators in their districts and states, impressing upon them the importance of this issue.

United States Trade Representatives (USTR) Office
The USTR monitors potential barriers to trade. The WEEE Directive is already on their radar screen. USTR's main interest is to avoid another trade conflict. A resolution to the issue is preferred, but due to volatility of trade relations between the US and EU, the USTR is not likely to back down from a fight over this issue.

Environmental Protection Agency(EPA)
The EPA is interested in promoting the same objectives that DG XI advances in the directive. It may also be interested in forming its own proposal for WEEE if Europe is successful in doing so.

Avenues for Action
By examining the interests of the parties involved in the issue, several avenues for action emerge. Presently, the directive is under wraps in the Commission at DG XI. No one knows what will be the result of the actions taken by DG XI, so the best course of action right now is to lobby other key decision-makers on the shortcomings of the directive and on the benefits of the recommendations herein. Because DG XI is only the starting place for the WEEE legislation, the thrust of the strategy is to contact all other parties and to convince them of the need to eliminate the key provisions of the directive. In effect, this strategy is to establish support for ACEI's position at every legislative and influential station outside of DG XI. That means that other DGs in the Commission and majority members in the Council and Parliament must be on side. In order to accomplish this, ACEI must utilize the coalitions it has formed and tap into the transatlantic dialogues that exist to influence key decision-makers. In case the strategy does not work, ACEI must also work with USTR to secure its assurance that the US will take the EU to the WTO for violations embodied in the directive.

EU Commission Strategy
There is already dissension within the ranks of the Commission (see Political Analysis). DG XXIII Enterprise does not share the same view as DG XI pertaining to the WEEE Directive. The focus of the strategy for the Commission is to form a consensus on removing the material bans and the collection and recovery requirements. By doing so, the lack of unanimous support from the College of Commissaries will force DG XI to be open to changing the draft. At this stage,

DG XI and the rest of the Commission can negotiate the elimination of the provisions from the draft.

ACEI should target the Commissioners in order to impress upon them the potential negative affects the directive would have on the areas they represent as well as the problems that would be caused for the Commission with the Council and the Parliament. The ACEI Brussels office and the Coalition led by Jennifer Guhl at ACEI in Washington, DC will be instrumental in lobbying the Commissioners, as will Eurobit/Ectel.

EU Council and Parliament Strategy
The strategies for the Council and for the Parliament are similar. As noted above, a certain number of votes are needed for passage in the Council and the Parliament — the Council sixty-five and the Parliament 314. By targeting the members of the two bodies who represent the leading electronic sector economies, enough votes will be collected to change the directive, or at the very least block its passage.

Just as with the Commissioners, letters, phone calls, faxes, briefing sessions, lunches, dinners and meetings with the representatives from France, Germany, Italy, The Netherlands and the United Kingdom are necessary to lobby effectively for the recommended changes to the WEEE Directive.

US Congress
Strategic meetings with key Senators and Representatives on Capital Hill will help garner domestic support for the efforts of the USTR, TABD, and WEEE Coalition, as well as provide the TransAtlantic Legislative Dialog with industry arguments and viewpoints on why and how the draft should be changed. Meetings with key members from high-tech states[74] are the first course of action.

BATNA
USTR Strategy
Maintaining contact with the USTR is imperative. Continually providing support and assistance on the issue will enable the USTR to communicate effectively to the EU Commission on what is wrong with the draft. Letters of support, and the inclusion of USTR on email lists pertaining to WEEE, will keep USTR in the loop. The key contact at USTR is Jim Sanford. He and his boss Kathy Novelli are apprised of the situation. Continued contact by member companies will also provide USTR the support needed to take future action on behalf of the electronics industry.

Conclusion
Part I coordinates several sub-strategies to create one overall strategy. This overall strategy is to ensure support from all decision-makers involved in the process outside of DG XI. The goal is to make DG XI realize that the directive in its present form is not likely to pass into law. Realizing this, DG XI will revise the draft to better represent the electronics industry and provide a net benefit to the environment.

[74] Refer to ACEI in-house Document: House and Senate High-Tech Scorecard for key players.

Part II: Strategy for Joint Action

The recommendations for Joint Action are:

- Organize a conference to address the use of potentially harmful materials and how best to collect end-of-life household products from consumers.

- Facilitate the creation of a database that organizes the information established at the conference.

In order to implement these recommendations, government and industry must share information. A conference should be held with all the contributors to the life and end-life use of electrical and electronic equipment (i.e. industry leaders, technicians, product designers, waste management, recyclers, etc) along with policy-makers, scientists, and academics. Participants should discuss material bans and develop a system of shared responsibility to deal with the collection and recovery of household waste from electrical and electronic equipment.[75] The OECD may be the best venue for such a conference. The basis for banning a material should be sound science. The goal of the conference should be to utilize data submitted by industry on the applications of materials in order to establish a protocol for which substances in which applications are allowed to be banned, due to the scientific determination that they are harmful to the environment. The findings of this conference should then be compiled in a database that can be used by nations worldwide.

Part II represents a plan that both industry and government can incorporate to deal proactively with WEEE. While the focus of this strategy and indeed the project has been on the US and the EU, such other countries as Australia, Canada and Japan have also been following the WEEE Directive issue. Including industry and government from these countries would improve the chance for a multilateral mutual recognition agreement on how best to deal with WEEE. The creation of a streamlined requirement regime would be in the best interest of all nations and all producers, and it would serve to protect the environment in more places than just Europe.

[75] See attached White Paper: PROACTIVELY DEALING WITH WASTE FROM ELECTRICAL AND ELECTRONIC EQUIPMENT for more detailed information on the Conference and its make-up, objectives, and participants.

WHITE PAPER

PROACTIVE APPROACH TO
WASTE FROM ELECTRICAL AND ELECTRONIC EQUIPMENT

INTRODUCTION

The Amiercan Coalition Electronics Industry (ACEI) supports the objective of minimizing the overall environmental burden of waste from electrical and electronic equipment (WEEE). A proactive approach is needed to address the best ways to meet this objective. This approach consists of coordinating a conference of all contributors to the production, life use and end-of-life use of electrical and electronic equipment. Industry leaders, technicians, product designers, waste management, and recyclers along with policy-makers, scientists, and academics should meet to discuss the use of potentially harmful materials and to develop a system of shared responsibility to deal with the collection and recovery of household waste from electrical and electronic equipment.

Two key issues need to be addressed in order to minimize the impact of WEEE on the environment. They are:

- The use of certain substances and materials in production, which may be harmful to the environment.

- The collection, recovery, and proper disposal of end-of-life electronic and electrical products.

BACKGROUND

In an attempt to address these key issues, the Directorate General (DG) XI Environment of the European Union Commission drafted a directive on the waste from electrical and electronic equipment (WEEE). The draft directive seeks to ban the use of such key substances and materials as lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants by 20004. DG XI's directive also seeks to attribute sole responsibility to the producer for the management and financing of the collection and recovery of end-of-life household electric and electronic products. While the intention of these provisions is sound, the reality is that they do not serve to achieve the objective of minimizing the impact on the environment in the most efficient or economical way.

SUBSTANCE & MATERIAL BANS

The phase out and ban of such substances and materials as lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants — without an adequate risk assessment of the materials in their diverse range of applications within the electronics industry — is not the most prudent course of action to minimize impacts on the environment. Several of the substances targeted by the directive do not have viable replacements. Without knowing what replacements exist, it is impossible to assess whether the replacement substance will have a greater negative impact on the environment. It is foreseeable in some cases that a replacement would cause a

greater negative impact on the environment than the original substance. Without doing a proper risk assessment using sound science, substance and material bans do not minimize the environmental impact from WEEE.

A ban of certain substances or materials should be based on sound science and should be characterized in horizontal legislation, not in a broad umbrella-like directive such as DG XI's WEEE Directive. There are many different applications of such substances as lead and mercury. Each application must be examined to determine whether the use of that substance has a negative impact on the environment and whether another environmentally and economically viable alternative exists. One overarching policy that bans the use of a material in all of its applications does not effectively achieve the best results for the environment, business, or consumers.

What is needed is for industry to make information available on the applications of certain substances and materials that are used in the manufacture of electrical and electronic equipment, and are believed to be detrimental. A risk assessment should then be conducted to determine whether the substance in the particular application is in fact harmful to the environment and whether a better alternative exists. If the scientific risk assessment finds that the material should be banned, then a timetable for its phase-out should be constructed to the satisfaction of both government and industry.

COLLECTION AND RECOVERY REQUIREMENTS

A collection and recycling process for WEEE based on sole producer responsibility will not result in an environmentally or economically efficient solution. By requiring manufacturers to assume sole responsibility for collection, the Commission neglects the traditional role of local governments and municipalities, which would generally develop a parallel collection infrastructure, placing increased burden on the environment. In order to minimize costs and maximize the effectiveness of a WEEE solution, it is necessary to ensure participation of all elements of the product chain, including governments and municipalities. By working together in a system of shared responsibility, the negative impacts from WEEE on the environment can be minimized.

An important part of the product chain, manufacturers must bear a portion of the costs and responsibilities associated with meeting the environmental improvement objectives. ACEI proposes that a "shared responsibility" system is less burdensome economically than sole "producer responsibility" and that a "shared responsibility" system has more chance of leading to a sustainable solution for environmental protection within the EU. End-users, recyclers, public sector waste units, retailers, distributors and manufacturers should all play a role. They all have a stake in the process. By coordinating efforts, there is a greater likelihood that the environmental objectives in terms of WEEE will be achieved efficiently and cost-effectively.

Under a system of shared responsibility, each player should work from its strength, thereby ensuring the greatest efficiency and benefiting the environment. Municipal waste management systems and recyclers should continue to collect waste from households because they have an infrastructure already in place. Industry should provide the local collectors with technical assistance on the best practices for processing electronic and electrical waste and then work with

the local collectors to recover the processed waste. Many partnerships should be formed to ensure an efficient and economical system.

PROACTIVE SOLUTIONS: A CONFERENCE TO ADDRESS "SHARED RESPONSIBILITY" FOR DEALING WITH WEEE

The role of this conference will be to bring together all stakeholders to develop solutions for the recovery and disposal of certain end-of-life electronic and electrical products which may be harmful to the environment.

A list of stakeholders and what each constitutes follows:

- Manufacturer — A company or individual person who manufactures equipment, adds a legal identification mark to equipment made by someone else, or imports equipment into an EU Member State and puts it into commercial operations. This may include retail or leasing activities.

- Distributor — A company, organization, or individual person who puts equipment into a commercial system for someone else to sell.

- Producer — A manufacturer, distributor or importer who places the equipment on the market of an EU Member State.

- Retailer — A company, organization, or individual person who sells or leases the equipment.

- Recycler — A company, organization, or individual person who accepts used equipment on a commercial basis, or processes its own used equipment, for the purpose of treating it further rather than immediate disposal. This activity may take place outside the EU.

- Public Sector Waste Disposal — Operations under the control of local authorities or municipalities within the EU which collect many types of waste from private households and which accept wastes from the general public brought to them.

- End-user — The person who discards used electrical and electronic equipment.

Members from each of the stakeholders above should participate in the conference in order to ensure that everyone's interests are incorporated in the final system.

MAIN PRINCIPLES, BY CATEGORY

There are many different categories that need to be discussed at the conference. Participants of the conference with a particular specialty in a given category should form working groups to develop systems to deal with these issues. Following is a breakdown by category of the issues related to WEEE along with working proposals for how to resolve the issues:

Collection & Sorting

1. The final owner must return WEEE (at minimal personal financial cost) to a collection scheme (private or public sector) run by a manufacturer, local authority/municipality, distributor or retailer.

2. Commercial and private household WEEE should be included in the directive, but producers should not have to collect WEEE from private households. For private households, there should be suitable collection points across Member States controlled by a public sector disposal authority. The public sector waste authorities must organize the collection of used electrical equipment from private households in line with existing infrastructures and in consultation with producers. The public authorities may also enter into a contract with producers for handling commercial wastes.

3. A public sector disposal center must keep separate (a.k.a. sort) WEEE from private households. It must separate WEEE according to its origin or "producer," following consultation with the appropriate producer.

4. "Producers" must be responsible for the collection and subsequent treatment of at least the same mass of WEEE as the mass of similar new equipment they placed individually on the EU market in the previous year.

5. "Producers" should be able to choose their source of WEEE to meet their obligations from within their business area and competence. Public sector centers must accept pre-sorted used equipment from other collection schemes when there is no further economic value to be extracted.

6. If manufacturers/producers do not participate in an industry-led collection system, they can decide on a commercial basis whether to collect any of their equipment sorted out of such a system. Producers may set up their own system, which can interface with other industry-led or collective schemes.

Collection Targets

1. Any data should be open for inspection and verification.

2. Producers must take back what is returned to them or their approved schemes, but there should not be any mandatory targets.

Recycling, Recovery & Treatment

1. Recyclers will charge "producers" for treating their WEEE on a commercial basis according to the difficulty of dealing with hazardous materials and disposing of non-recyclable WEEE. This "shared responsibility" system already operates for commercially used equipment by a contractual agreement between the parties (producers, distributors, users and recyclers). The economic incentive to influence future designs is part of the system (customer requirements and waste cost reduction). In addition, in certain cases, the producer may also be the recycler, in which case the recycler will realize the value without charging the "producer."

2. All collected WEEE must be treated in a verifiable system and disposed of in accordance with current EU waste regulations.

3. Recycling and recovery targets should be realistic and open to revision, based on actual data collection.

Scope: Obligated WEEE

1. The scope should include parts, consumables, accessories, and components or sub-assemblies that are integral constituents of the equipment and are electrical in nature.

2. Historical WEEE should not be included in the directive. Responsibility for waste electrical and electronic equipment put on the market prior to the directive must lie with the last owner or the public sector.

Equipment Design

1. There should be no substance bans unless a rigorous risk assessment has been carried out. A risk assessment must include sound science and appropriate peer reviews. Any substance restrictions for products should be dealt with via horizontal directives, be based on scientific evidence and established risk assessment procedures, and be in line with international trade rules.

2. If risk assessments confirm that substance bans are needed, a minimum level should be set and an appropriate test method defined.

3. Rather than a blanket phase-out of substances, it would be more effective to prioritize those applications where both the quantities of restricted substances used is relatively significant, and restricted substance-free alternatives are currently viable.

4. There should be no restrictions on the number of plastics in new products, without evaluation of the hierarchy of opportunities for the recovery of such items.

5. The directive would be more effective if it provided exemptions, until further notice, for those applications where no viable alternative exists.

Information and Data

1. "Producers" must provide the final owner with disposal information for WEEE and mark new equipment for proper collection and treatment (e.g. the "wheelie-bin" symbol).

2. "Producers" should provide annual figures on the mass of new electrical equipment put into circulation by type and the mass of WEEE taken back according to equipment type.

3. "Producers" may increase the price of new equipment to reflect take-back and recycling costs.

Database

1. All findings of the conference on how to deal with collection and sorting; collection targets; recycling, recovery, and treatment; the scope of WEEE; equipment design; and information and data should be compiled in a database that can be accessed by all parties. This database should be located on the Internet to facilitate easy access.

2. This database will include recognized methods used for risk assessment, what materials and which applications are allowable, who the key contacts are for collection and recovery in every local area, and who is responsible for what at each stage.

CONCLUSION

ACEI should bring all stakeholders together at a conference to develop a system of shared responsibility for dealing with the waste from electrical and electronic equipment. The conference should proactively address the two key issues related to WEEE and set out to resolve the issues through a joint action approach. The final outcome of the conference should be recognized by all stakeholders and implemented. To facilitate the implementation, a web site and database with all needed information for dealing with WEEE should be created. It is foreseeable that this site and database be expanded beyond Europe to include other electronic and electrical equipment producing nations and eventually the world.

APPENDIX I

PROPOSAL FOR A DIRECTIVE ON WASTE FROM ELECTRICAL AND ELECTRONIC EQUIPMENT

Article 1

Objectives

This Directive sets out measures that aim, firstly, at the prevention of waste from electrical and electronic equipment, secondly at the re-use, recycling and other forms of recovery of such wastes, and thirdly at minimising the risks and impacts to the environment associated with the treatment and disposal of end-of-life electrical and electronic equipment. It is also the aim of this Directive to harmonise national measures concerning end-of-life electrical and electronic equipment in order to ensure the functioning of the internal market and to avoid obstacles to trade and distortion of competition within the Community.

Article 2

Definitions

For the purposes of this Directive:

1. “Electrical and Electronic Equipment” shall mean equipment which is dependent on electric currents or electromagnetic fields in order to work properly and equipment for the generation, transfer and measurement of such currents and fields falling under the categories set out in Annex I A and designed for use with a voltage rating not exceeding 1000 Volt for alternating current and 1500 Volt for direct current. Electrical and Electronic Equipment includes all components and sub-assemblies which are part of the product as well as consumables which are referred to in Annex II;

2. “End of life Electrical and Electronic Equipment” is electrical or electronic equipment which is a waste within the meaning of Article 1(a) of Directive 75/442/EEC;

3. “Prevention” shall mean measures aiming at the reduction of the quantity and the harmfulness for the environment of end of life electrical and electronic equipment, their materials and substances;

4. “Re-use” shall mean any operation by which end of life electrical and electronic equipment or its components are used for the same purpose for which they were conceived. “Re-use” includes the continued use of end of life electrical and electronic equipment which is returned to collection points, distributors or manufacturers.

5. “Recycling” shall mean the reprocessing in a production process of the waste materials for the original purpose or for other purposes excluding the use and processing for use as fuel or as other means of generating energy;

6. “Recovery” shall mean any of the applicable operations provided for in Annex II.B to Directive 75/442/EEC;

7. “Disposal” shall mean any of the applicable operations provided for in Annex II.A to Directive 75/442/EEC;

8. “Treatment” shall mean any activity after the end of life electrical or electronic equipment has been handed over to a facility for pre-treatment, depollution, dismantling, shredding, recovery or disposal, and any other operation carried out for the recovery and/or the disposal of the end of life electrical or electronic equipment and its components;

9. “Producer” shall mean manufacturer of electrical and electronic equipment or professional importer of electrical and electronic equipment into a Member State;

10. “Distributor” shall mean anyone who provides a product on a commercial basis to the party who is going to use that product;

11. “Waste from private households” shall mean waste from private households, as well as commercial, industrial, institutional and other waste which, because of its nature and quantity, is similar to waste from private households.

12. “Dangerous substance or preparation” shall mean any substance or preparation which has to be considered dangerous under Directive 67/548/EEC or Directive 88/379/EEC.

Article 3

Scope

1. This Directive shall cover the categories of electrical and electronic equipment falling under the categories set out in Annex I A, regardless of the date when this equipment was put on the market.

2. This Directive shall apply without prejudice to other Community legislation in particular as regards safety standards.

Article 4

Measures to improve recycling

1. Member States shall encourage producers to minimise, as far as possible, the use of dangerous substances and preparations as well as the number of different types of plastics in the individual items.

2. Member States shall ensure that measures to improve recycling are implemented. In particular, Member States shall:

A. promote the design and production of electrical and electronic equipment which takes into full account and facilitates their repair, possibility to be upgraded, re-use, dismantling and recycling. In particular, Member States shall encourage the producers to increase the use of materials which can be easily recycled;

B. ensure that producers use common component and material coding standards, in particular to facilitate the identification of those components and materials which are suitable for re-use and recycling. Member States shall ensure that ISO 11469 on the generic identification and marking of plastic products is applied to plastic parts weighing more than 25 grams.

3. The Commission shall promote, as appropriate, the preparation of European standards relating to the design of electrical and electronic equipment according to paragraph 2 a), b) and Article 7 paragraph 5. With regard to the implementation of these paragraphs Member States shall take into account existing international standards.

4. Member States shall ensure that the use of lead, mercury, cadmium, hexavalent chromium and halogenated flame retardants is phased out by 1 January 2004. The applications of lead, mercury, cadmium and halogenated flame retardants listed in Annex III are exempted from this provision. This paragraph shall be inserted in Annex I to Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations.

Article 5

Separate Collection

1. Member States shall take the necessary measures to ensure that producers set up systems so that last holders and distributors can return end of life electrical and electronic equipment. They shall ensure the availability and balanced geographical distribution of the necessary collection facilities to meet this obligation.

2. Member States shall ensure that distributors, when supplying a new product, offer to take back free of charge a similar end of life electrical and electronic equipment from private households.

3. Member States shall ensure that collection and transport of end-of-life electrical and electronic equipment is carried out in a way which ensures the suitability for re-use and recycling of those components or whole appliances which might be re-used and/or recycled.

4. Member States shall aim at achieving a minimum rate of separate collection of four kilograms on average per inhabitant per year of end-of-life electrical and electronic equipment from private households. Member States shall provide information on the achieved rates of collection from private households to the Commission by 1 January 2004 and on a three-yearly basis thereafter. The information shall be provided in a format which shall be adopted by the Commission within one year from the entry into force of this Directive in accordance with the procedure laid down in Article 18 of Directive 75/442/EEC.

5. On the basis of the information gathered under Article 5.4 and taking into account information gathered under Article 11, the Commission will propose that the Council and the Parliament shall establish compulsory targets for collection of end-of-life electrical and electronic equipment from private households from 1 January 2006 onwards.

Article 6

Pre-treatment and Treatment

1. Member States shall ensure pre-treatment in accordance with this Article prior to the landfilling, incineration or recovery of separately collected end-of-life electrical or electronic equipment. Such a pre-treatment shall be carried out in a way which ensures the suitability for re-use and recycling of those components or whole appliances which might be re-used and/or recycled.

2. Member States shall ensure that producers set up systems to provide for the pre-treatment of end-of-life electrical and electronic equipment that is separately collected and destined for landfilling, incineration or recovery. For the purposes of Article 4 of Directive 75/442/EEC this pre-treatment shall, as a minimum, include the removal of all fluids and a selective treatment according to Annex IV.

3. Member States shall take the necessary measures to ensure that any establishment or undertaking carrying out treatment operations shall obtain a permit from the competent authorities, in compliance with Articles 9 and 10 of Directive 75/442/EEC. The derogation from the permit requirement referred to in Article 11, paragraph 1, of Directive 75/442/EEC shall not apply to operations concerning end of life electrical and electronic equipment covered by this Directive.

4. Member States shall take the necessary measures to ensure that any establishment or undertaking carrying out treatment operations shall store and treat the end of life electrical and electronic equipment in compliance with the technical requirements set out in Annex V.

5. Member States shall take the necessary measures to ensure that the permit referred to in paragraph 3 includes all conditions necessary for compliance with the requirements of paragraph 2 and 4 as well as Article 7 paragraph 2 and 3.

6. The treatment operation may also be undertaken outside the respective Member State or the EU. In all cases, Member States shall ensure that producers deliver the end-of-life electrical and electronic equipment to establishments or undertakings which are certified under equivalent conditions as those set out in this Article.

Article 7

Recovery

1. Member States shall take the necessary measures to ensure that producers set up systems to provide for the recovery of the separately collected end of life electrical and electronic equipment in order to meet the objectives laid down in this Directive.

2. Member States shall take the necessary measures to ensure that no later than 1 January 2004 the following targets are attained by producers:

A. For all separately collected end-of-life electrical and electronic equipment that contain CFC, HCFC or HFCs, the rate of component, material and substance re-use and recycling shall reach a minimum of 90 % by weight of the appliances.

B. For all separately collected end-of-life electrical and electronic equipment falling under category 1 (large household appliances) of Annex I A, with the exception of equipment that contain CFC, HCFC or HFCs, the rate of component, material and substance re-use and recycling shall reach a minimum of 90 % by weight of the appliances.

C. For all separately collected end-of-life electrical and electronic equipment falling under the category 2, 3, 4, 5, 7, 8, 9 and 10 of Annex I A the rate of component, material and substance re-use and recycling shall reach a minimum of 70 % by weight of the appliances.

D. For all separately collected end-of-life gas discharge lamps the rate of component, material and substance re-use and recycling shall reach a minimum of 90% by weight of the appliances.

E. For all separately collected end-of-life electrical and electronic equipment containing a Cathode Ray Tube the rate of component, material and substance re-use and recycling shall reach a minimum of 90% by weight of the appliances.

3. For the measurement of the recycling rates the denominator is constituted by the total weight of the materials contained in the appliances sent to the recycler. This weight is calculated on the basis of the average composition of the respective appliances. The numerator is constituted by the weight of the materials sent by the recycler to specialised recycling enterprises.

4. Without prejudice to paragraph 2 Member States shall also promote the recovery of energy from end of life electrical and electronic equipment.

5. Member States shall encourage producers to integrate an increasing quantity of recycled or used material in electrical and electronic equipment. Member States shall take this requirement into account with regard to national legislation on public procurement. Member States shall ensure that the share of recycled plastic in new electrical and electronic equipment amounts at least to five percent of the total plastic content by 1 January 2004.

6. On the basis of a Proposal from the Commission, the Council and the Parliament shall establish targets for re-use and recycling of end-of-life electrical and electronic equipment as well as the minimum content of recycled plastic in new electrical and electronic equipment from 1 January 2006 onwards.

Article 8

Financing

1. Member States shall ensure that private households can return end-of-life electrical and electronic equipment free of charge. To this end Member States shall ensure that the costs for collection, treatment, the recovery and the environmentally sound disposal of electrical and electronic equipment from private households are borne by producers.

2. Member States shall ensure that producers may create collective systems to provide for the financing in accordance with paragraph 1. Member States shall ensure that producers individually or collectively provide for appropriate guarantees for the financing of the management of waste of electrical and electronic equipment used by private households and put on the market after entry into force of this Directive.

3. Member States shall ensure that producers are allowed to comply with the obligation of paragraph 1 individually under the condition that they contribute to the financing of the management of waste from electrical and electronic equipment put on the market before the entry into force of this Directive. The share of this contribution shall be in proportion to the individual producer's market share at the time of payment.

Article 9

Information for users

1. Member States shall ensure that users of electrical and electronic equipment, including in particular private households, obtain the necessary information about: the return and collection systems available to them, their role in contributing to re-use, recycling and other forms of recovery of end of life electrical and electronic equipment, the meaning of the symbol shown in Annex VI.

2. With a view to achieving a high rate of collection Member States shall ensure that producers appropriately mark electrical and electronic equipment falling under the categories 2, 3, 4, 5, 6, 7, 8, 9 and 10 of Annex I A, as well as the consumables listed in Annex II with the symbol shown in Annex VI.

Article 10

Information for recyclers

Member States shall ensure that producers provide manuals which identify, as far as it is needed by treatment facilities, the different electrical and electronic equipment components and materials, and the location of all dangerous substances and preparations in the electrical and electronic equipment.

Article 11

Information for authorities

1. Member States shall ensure that producers provide information yearly on the quantities of electrical and electronic equipment put on the market within the Member States, both by numbers and by weight as well as on the market saturation in the respective product sectors. It has to be indicated under which of the categories of Annex IA the equipment falls and whether it is sold to professional users or private households.

2. Member States shall ensure that the information required in paragraph 1 is transmitted to the Commission by 1 January 2004 and every three years from that date in accordance with Article 5.5.

Article 12

Management Plans

In pursuance of the objectives and measures referred to in this Directive, Member States shall include in the waste management plans required pursuant to Article 7 of Directive 75/442/EEC, a specific chapter on the management of end of life electrical and electronic equipment.

Article 13

Obligation to report

Member States shall report to the Commission on the application of this Directive in accordance with Article 5 of Council Directive 91/692/EEC. The first report shall cover the period 2002-2004.

Article 14

Implementation in national law

1. Member States shall bring into force the law, regulations and administrative provisions necessary to comply with this Directive within 18 months from the adoption of this Directive. They shall immediately inform the Commission thereof.

2. When Member States adopt these provisions, these shall contain a reference to this Directive or shall be accompanied by such reference at the time of their official publication. The procedure for such reference shall be adopted by Member States.

3. Member States shall communicate to the Commission all existing laws, regulations and administrative provisions adopted within the scope of this Directive.

Article 15

Committee procedure

The Commission shall be assisted by the committee established by Article 18 of Directive 75/442/EEC, and according to the procedure laid down therein, in order to adopt the amendment necessary for adapting the Annexes to this Directive to scientific and technical progress.

Article 16

Entry into force

This Directive shall enter into force on the twentieth day following that of its publication in the Official Journal of the European Communities.

Article 17

Addressees

This Directive is addressed to the Member States.

Annex I A

CATEGORIES OF ELECTRICAL AND ELECTRONIC EQUIPMENT COVERED BY THIS DIRECTIVE

1. Large Household appliances
2. Small Household appliances
3. IT-Equipment
4. Telecommunication
5. Radio, Television, Electroacoustic, Musical instruments
6. Lighting equipment
7. Medical equipment systems
8. Monitoring and control instruments
9. Toys
10. Electrical and Electronic tools
11. Automatic Dispensers

Annex I B

EXAMPLES FOR THOSE PRODUCTS WHICH ARE FALLING UNDER THE CATEGORIES OF ANNEX I A

1. Large Household appliances
Large cooling appliances for professional use: Refrigerators, Freezers, Washing machines, Clothes dryers, Dish-washing machines.
Cooking: Electric stoves, Electric hot plates, Microwaves.
Heating appliances: Electric heaters, Electric fans, Air conditioners.

2. Small Household appliances
Vacuum cleaners, Carpet sweepers, Irons, Toasters, Fryers, Coffee grinders, Electrical knives, Coffee machines, Hair dryers, Tooth brushes, Shavers.

3. IT-Equipment
Centralized Data processing: Main frames, Minicomputers, Printer units
Personal Computing: Personal Computers (CPU, mouse, screen and keyboard included), Lap-top computers (CPU, mouse, screen and keyboard included), Note-book computers, Note-pad computers, Printers, Copying equipment, Electrical and electronic typewriters, Pocket and desk calculators.

4. Telecommunication
User Terminals and systems, Fac-simile, Telex, Telephones, Pay telephones, Cordless telephones, Cellular telephones, Answering systems.

5. Radio, Television, Electroacoustic, Musical instruments
Radio sets (Clock radios, radio-recorders), Television sets, Videocameras, Video recorders, Hifi recorders, Audio amplifiers.

6. Lighting equipment
Luminaires, Other lighting equipment.

7. Medical equipment systems
Radiotherapy equipment, Cardiology, Dialysis, Pulmonary ventilators, Nuclear Medicine, Laboratory equipment for in-vitro diagnostic, Analizers, Freezers.

8. Monitoring and control instruments
Smoke detector, Heating regulators, Thermostat, Clocks, Scales.

9. Toys
Game boys, Other electrical or electronic toys.

10. Electrical and Electronic tools
Drills, Saws, Sewing machines.

11. Automatic Dispensers
Automatic dispensers for hot drinks, Automatic dispensers for hot/cold, bottles/cans, Automatic dispensers for solid products.

Annex II

Consumables falling under the scope of this Directive

1. Records, tapes and other media for sound or other phenomena, such as gramophone records, discs for laser reading systems, magnetic tapes, magnetic discs, cards incorporating a magnetic stripe.

2. All ink and toner cartridges.

3. Straight fluorescent lamps, compact fluorescent lamps, high intensity discharge lamps, including high pressure sodium lamps and metalhalide lamps, low pressure sodium lamps.

Annex III

Applications of lead, mercury, cadmium and halogenated flame retardants which are exempted from Article 4 paragraph 3

Mercury in compact fluorescent lamps not exceeding 4 mg per lamp
Mercury in straight fluorescent lamps not exceeding 15 mg per lamp
Mercury in lamps not specifically mentioned in this Annex
Mercury thermometers used to perform specific analytical tests according to established standards
Equipment for the calibration of platinum resistance thermometers using the triple point of mercury
Lead as radiation protection
Lead in glass of cathode ray tubes, light bulbs and fluorescent tubes
Halogenated flame retardants in those cases where the relevant fire safety standard can technically not be achieved through the use of other types of flame retardants.

Annex IV

Selective Treatment for Materials and Components of Waste from Electrical and Electronic Equipment in accordance with Article 6

1) Components containing substances listed below have to be removed from any end of life electrical and electronic equipment which is destined for landfilling, incineration or recovery:

Lead (except Lead in Cathode Ray Tubes), Mercury, Hexavalent Chromium, Cadmium, Polychlorinated Biphenyls, Halogenated flame retardants, Radioactive substances, Asbestos, Beryllium

These substances have to be disposed of or recovered in compliance with Article 4 of Council Directive 75/442/EEC.

2) The following end of life electrical or electronic equipment which is destined for landfilling, incineration or recovery has to be treated as indicated:

Cathode Ray Tubes: The fluorescent coating has to be removed.
Equipment containing CFC, HCFC or HFCs: The CFC, HCFC or HFCs present in the foam and the refrigerating circuit shall be properly extracted and destroyed.
Gas discharge lamps: The mercury shall be removed.
Liquid crystal displays shall be removed and treated separately.

Electrolyte capacitors of a height of more than 2 cm and a diameter of more than 1 cm or of a comparable volume shall be removed and treated separately.

The substances and preparations mentioned above shall be treated in compliance with Article 4 of Council Directive 75/442/EEC.

Annex V

Technical requirements in accordance with Article 6.5

1) Sites for storage of end of life electrical and electronic equipment: Impermeable surfaces for appropriate areas; Weatherproof covering for appropriate areas.

2) Sites for treatment of end of life electrical and electronic equipment: Balances to measure the weight of the treated waste; Impermeable surfaces and waterproof covering for appropriate areas; Appropriate storage for dismantled spare parts; Appropriate containers for storage of batteries, PCB/PCT containing condensators and other hazardous waste; Equipment for the treatment of water, including rainwater.

Annex VI

Symbol for the marking of electrical and electronic equipment

The symbol indicating separate collection for electrical and electronic equipment consist of the crossed-out wheeled bin, as shown below:

The symbol shall be printed visibly, legibly and indelibly.

APPENDIX II

TALKING POINTS FOR CHANGES TO WEEE DIRECTIVE

- The WEEE Directive burdens the electronics industry, causing increased costs to be borne by the consumer, all without succeeding to lessen the environmental impact from WEEE.

- The WEEE Directive should promote designs for the environment (DfE) products and should be based on sound science. It also should harness the pre-existing waste management systems and infrastructure to serve as the base for a shared effort to properly deal with WEEE.

All substance and material bans should be removed from the directive.

- The outright banning of such materials as lead, mercury, cadmium, and hexavalent chromium (except for a few certain applications) by 2004 is not in the best interest of the environment or continued innovation.

- There is no scientific evidence to support banning certain materials. Furthermore, simply banning a material without an economically and environmentally viable replacement could cause undue burden to the industry and harm to the environment.

- A blanket policy that bans a material, which is used for many different applications in many different products, does not ensure that the best material for the environment is being used. A risk assessment should be done on the replacement materials to determine if they are in fact better than those they are replacing. The ban may cause replacements to be used that are worse for the environment.

- Material bans would be better addressed with horizontal legislation (as provided for under Directive 76/769 on Restrictions on Marketing and Use) targeted at specific applications for materials scientifically deemed harmful to the environment.

Collection and recovery for household products should be done by a system of shared-responsibility.

- By requiring manufacturers to assume sole responsibility for collection at the household level, the directive neglects the traditional role of local governments and municipalities. This could result in the development of parallel collection infrastructure, placing increased burden on the environment.

- Many collection schemes (some voluntary) already exist. The WEEE Directive should seek to harmonize these schemes in a shared responsibility system by incorporating end-users, recyclers, public sector waste units, retailers, distributors as well as manufacturers and

producers in the process. Each party has a role to play to ensure protection for the environment. Involvement of all parties increased the likelihood for success.

APPENDIX III

ACEI position Paper on Lead

The following ACEI Europe position paper, Revision 1, regarding the phase-out of lead, reflects the third draft of the EC Proposal for a Directive on Waste Electrical and Electronic (WEEE) and the accompanying explanatory memorandum. The paper complements the ACEI Europe/Hunton & Williams[76] statement regarding the legality of the WEEE Directive under international trade law.

1. Why phase-out lead?

The most significant comment supporting the phase-out is made in Section 5.2 of the explanatory memorandum, which states "The main concern in regard to the presence of lead in landfills is the potential for the lead to leach and contaminate drinking water supplies".

The industry response may be summed up by the following extract from the ACEI Europe/Hunton & Williams statement[76]:

> "In the explanatory memorandum, DG XI cites a number of scientific studies carried out on the substances to be phased-out. While this evidence may at first sight seem voluminous, a closer look reveals that the group of studies falls short in constituting a valid risk assessment to justify the draft WEEE Directive's proposed substance bans. The studies mentioned in the explanatory memorandum are not specifically devoted to the analysis of the risks posed by these substances as present in the waste stream.
>
> Furthermore, DG XI has not found a single scientific study focusing primarily on risks posed by these substances as found in electrical or electronic waste. Much of the proffered scientific evidence focuses instead on risks to workers in production plants i.e., occupational health and safety. As the draft WEEE Directive is not an occupational health and safety measure, this evidence would not seem relevant for the purposes of justifying measures aimed at minimizing risks arising from waste disposal.
>
> Take for example lead. DG XI seeks support in the OECD Risk Reduction Monograph No. 1. OECD Risk Reduction Monograph N°1, Lead (as above). This report does not constitute a risk assessment on the risks posed by lead in the waste stream, and there is little in the study to justify the phasing out of lead in electronics. The OECD monograph points out that it is difficult to assess accurately the composition and volume of post-consumer products disposed of in landfills or incinerators, as detailed sampling or monitoring data is not available. However, in some countries where these estimates have been carried out, such as Germany, it has been found that thanks to collection and

[76] Revised statement for ACEI Europe prepared by Rod Hunter and Marta Lopez Torres, Hunton & Williams, *Legality under International Trade Law of the Draft Directive on Waste from Electrical and Electronic Equipment*, August 17, 1999.

recycling schemes "the amount of lead in domestic and industrial waste streams is declining." [Id., p. 62] According to the OECD study, "lead is one of the most recycled non-ferrous metals in the world," and "post-consumer product scrap constitutes more than 80 per cent of the scrap supply for recycling." [Id., p. 60]

The main concern with lead in the waste stream is the potential of drinking water contamination and thus ingestion by the population. However, according to the OECD, "since elemental lead and lead compounds are stable, health concerns are minimal for a properly managed landfill with runoff and leachate controls." [Id., p. 63] As for incineration, lead emissions from lead-containing materials could constitute the potential health risk. However, the OECD opines that "lead emissions from combustible and non-combustible components of municipal solid waste can be controlled with 99 per cent or greater efficiency." The OECD report further reviews measures taken by OECD members to reduce risks from exposure to lead. No OECD country has banned the use of lead in electronics as a means to counter-act a "potential" risk arising from the disposal of electronic goods. Furthermore, in all of the European countries reviewed, the average concentration of lead and lead discharges to air, water and soil has decreased in recent years. Thus, the OECD study (1) not only does not constitute a valid risk assessment to support DG XI's proposal to ban lead, but (2) would in fact rebut DG XI's assertion that the risks posed by the disposal of lead-containing electronic products would require the phasing-out of this material from electronics."

Section 4.2 makes general comments related to substance phase-out with regard to the practice of incineration. While figures are given for emissions from waste incineration for mercury and cadmium, no figure was provided for lead.

2. Where is the lead and how much?

Lead is highly pervasive in electrical and electronic equipment (EEE), with estimates that lead is contained in around 90 percent of components. However, the electronics manufacturing sector accounts for only 0.6 percent of the annual consumption of lead.[77]

The explanatory memorandum states in Section 5.2 that "consumer electronics constitute 40% of lead found in landfills" yet provides no reference to the source of this information.

Lead is predominantly used in solders for component attachment on card assemblies (PCB), as a surface finish for active, passive and optical electronic components and is found in integrated circuits, power supplies, motors, cables, coils and fans. The substitution of lead in EEE sold in the EU would impact, and require efforts from, the global EEE manufacturing and component supply industries.

[77] U.K. Department of Trade and Industry Report, *Lead-free soldering — an analysis of the current status of lead-free soldering*, April 1999.

3. What are the alternatives?

Lead and lead-based solders are used in a variety of applications. Each has specific temperature, stress, strain, cycling, compatibility and mechanical property specifications that must be met. Despite the studies carried out thus far, there is no absolute drop-in replacement for tin-lead solder with identical melting temperature, cost, wetting and strength properties. Specificity of solder material and processes is limiting the number of current lead-free applications and there is currently no replacement for high lead, high melting point alloys.

The numerous issues relating to the implementation of lead-free soldering include:

- Availability of components with lead-free finishes
- Lack of reliable data for alternatives
- Lack of understanding for implications of the changes within the global SME domain
- Quantification of the additional energy consumption requirements of higher melting point, lead-free alternatives
- Incompatibility of materials, components and equipment with higher melting point, lead-free alternatives
- Quantification of the change in environmental impact between lead and lead-free

The following comments made in Section 11.2 of the explanatory memorandum clearly illustrate the extent to which DG XI underestimates the scale of the issues involved:

> "The only issue where more substantial problems have been claimed by industry is lead in solders."
>
> "Generally, it is perceived that the transition process to lead-free solders is...an issue of fine-tuning of the quality of the solder."

4. What time scale are industry estimates?

Based on current research and likely substitutes, it is believed that the lead content of electronic products could be reduced significantly over the next 7–10 years. However, there are some applications for lead where substitutes are not available today, and will not likely be found in that timeframe. Additionally, since few lead substitutes have been thoroughly evaluated for their environmental impacts, there is no guarantee that lead reductions during this timeframe will result in any substantial environmental improvements.

5. What does lead-free mean?

It is widely recognized that there is no such thing as an analytical zero so totally lead-free EEE is unrealistic. A reasonable lower limit must be set regarding permissible lead content. However, even allowing relatively low levels of lead would require the replacement of certain steels and all brasses from EEE.

6. What are the cost implications?

The industry consensus view is that lead-free implementation costs will be extremely high, yet are virtually incalculable at this moment due to uncertainty posed by the current wording of the Directive. Studies indicate that the cost in the US for increased materials alone would be in the range of $140–$900 million and that additional infrastructure, materials evaluation and qualification costs would likely run into the tens of billions.[78]

However, Section 11.2 of the explanatory memorandum paints a completely different picture to that given by industry, which is also self-contradictory. For example, it states that "A number of manufacturers already [have] phased out lead...in many uses." It is, therefore, surprising to then find the comment "one major manufacturer of electrical and electronic equipment plans to stop using lead solder completely by 2001 while others have announced substantial reductions within the next few years." Furthermore, the explanatory memorandum then states, "[t]his suggests that the costs of [phasing out] are, at least for applications not contained in Annex II, quite limited. It is nevertheless the opinion of the Commission that a phase out of lead-containing solders is possible at reasonable cost within the given time frame of January 1, 2004."

The (roughly) estimated cost, provided in Section 11.2, of 150 million Euro/yr. relates to the additional material costs involved in using tin-silver/tin-copper solders in place of tin-lead solders. Industry wishes to make DG XI aware that tin-silver/tin-copper solders are NOT universal substitutes for tin-lead solder — other substitutes of indium or bismuth are considerably more expensive. In addition, the estimated costs only reflect the consumption of lead solders in the EU-15. Non-EU costs associated with tin-lead substitution are ignored.

DG XI is internally inconsistent. On the one hand, it states that "[t]his amount (150 million Euro/yr) does not include R&D costs as well as additional investments needed for which figures are difficult to obtain." On the other hand, it states "[i]t can, however, be assumed that both (R&D and additional...) are fairly low since most of the R&D has already been performed and production lines need only minor adjustments to adapt for new solders."

The belief of DG XI that the R&D and associated costs "are fairly low" while referenced sources[78] claim that these costs "run into the tens of billions" is both a major disparity and a significant cause for concern. The industry view is that Section 11 does not constitute a satisfactory economic assessment and, through unfounded assumptions and ignorance of the global consequences, significantly underestimates the actual cost to industry.

[78] National Center for Manufacturing Sciences (NCMS), *Lead Free Solder Project*, August 1997.

7. What are the risks in phasing-out lead?

The risks are manifold and include, but are not limited to, the following:

- Alternatives may be banned in the future despite considerable industry investment.
- The ban may not be considered as the least trade-restrictive measure under international trade law.[76]
- Many key implementation issues need to be addressed and no universal drop-in replacement has been identified.[77]
- There is little evidence that the substitution of tin-lead solders with lead-free solders will decrease environmental impact. The majority of substitutes for tin-lead solder have higher melting points which will significantly increase energy consumption and associated emissions of CO2, NOX, SOX, etc.
- Product reliability and consequential in-service failure and premature end-of-life issues may result from the higher temperature processes.
- Problems may result from the geographical shift in environmental burdens associated with alternative raw material sources.
- The limited supply of lead-free alternative materials may limit industrial output.
- Efficiency impact on recycling/recovery operations such as smelters and precious metal recoverers as presence of lead is important.
- There are health and safety implications of lead-free alternatives.[78]
- SME's inability to provide financial investment may lower employment and economic well-being.

8. Is a lead phase-out consistent with other legislation?

Article 4.2 of the EC proposal for a Directive on End of Life Vehicles provides an exemption for lead used as solder in electronic circuit boards. Industry questions why lead solder used in vehicle electronics is treated differently from that used in electrical and electronic equipment. If the inference is that the long term reliability of vehicle electronics would be impacted by substitute materials, then industry would argue that this would be the case for other electrical and electronic equipment subjected to the same operating conditions.

Industry would also point out that none of the current/proposed European national legislative measures on electrical and electronic equipment contain a lead phase-out requirement. In addition, only Denmark has proposed legislation, applicable to a wide range of products including electrical and electronics, which bans lead but gives an exemption 'until further notice' for lead solder.

9. What are the alternatives to a lead phase-out?

Any proposal to phase-out lead should:

- Be dealt with by existing EC legislation on hazardous substances
- Be based on scientific evidence, establishing risk assessment procedures
- Comply with international trade rules

The substance bans, including the ban on lead, should be removed from the draft waste directive. The Commission's chemicals unit, not the waste unit, should be responsible for reviewing, pursuant to the directive on restrictions and use of dangerous substances, whether any of the substances as used in the economy as a whole merit regulation. In reviewing the use of such substances, it would be necessary to conduct a risk assessment of intrinsic hazards, exposure routes and exposure levels, as well as risks from feasible alternatives. If these analyses suggest need for focused regulation of certain applications, the Commission would then need to evaluate the benefits and costs of imposing such restrictions. A deliberate approach would likely result in a sound legal framework, both environmentally and economically, and avoid the trade law problems of the current draft directive.

Industry believes that alternative approaches are practical and achievable and should be considered. The sensible starting point is to establish the problem statement and then solve the problem with measures that will maximize the environmental benefit yet minimize the cost incurred. If the ban is predicated by concerns that most of the lead contained in products will be landfilled or incinerated, with subsequent potential or actual impact on the environment, then industry questions the rigidity of existing EU Directives covering both of these forms of waste disposal. This concern seems to be shared by DG XI in Section 4.2.1. The explanatory memorandum comments on incineration, "even in the ninth year after the deadline for implementing the directives (89/369/EEC and 89/429/EEC) various incinerators in the Community do not comply with the emission limits of these directives." Section 4.2.2. states that "significant impacts could be prevented in those cases where WEEE is put on controlled landfills respecting environmentally sound technical standards" as opposed to "...when WEEE is put on uncontrolled landfills, which still takes place to a significant extent in certain Member States." A phase-out of lead in EEE is analogous to treating the symptoms rather than the illness.

Industry suggests that an enhanced product recovery and reclamation facility infrastructure in Europe could reduce the environmental impact of lead both through reduced risk of pollution and reduced consumption of raw material. The provisions under Annex III of the proposed directive

require components containing lead to be removed from any waste electrical and electronic equipment. This requirement, coupled with the reuse and recycling targets in Article 7, should achieve a significant reduction in the potential quantity of lead being disposed through landfill or incineration. Industry believes that the cost of removing the remaining lead is disproportionate to the unquantifiable environmental benefit provided.

The current European Commission Integrated Product Policy initiative proposes a toolkit of instruments, including compulsory information, economic and voluntary instruments, and direct regulatory instruments, and we understand this to be the new model for future EC proposals.

Conclusion

Governments and industry must ensure that the overall environmental impact of WEEE is not increased by the substitution of lead by other materials. They must also pose the question whether the costs incurred would be better invested elsewhere to yield far greater returns of environmental benefit. Industry hits the nail on the head in Section 11.3 of its explanatory memorandum:

> "Although there is general awareness about the problems associated with waste electrical and electronic equipment, very little research exists which could give a quantitative evaluation of the benefits of the proposal."

APPENDIX IV

Draft Directive on Waste Electrical and Electronic Equipment (WEEE)

Dear Commissioner,

We would welcome a Commission initiative to harmonise and improve national legislation on WEEE. In this vein, we call your attention on the following issues:

A market-driven approach through individual, future-oriented responsibility
After the directive is activated, all companies, producers as well as importers, should take individual financial responsibility for recycling their household products. This will encourage competition in design, product development, and recycling operations, and will benefit the environment. Companies should of course be allowed to work together to manage the recovery of products. This does not conflict with basic individual financial responsibility.

Retroactivity — products sold before the directive has come to effect
Industry should not be responsible for historic waste. However, we recognise the importance of historic waste and believe a satisfactory solution can be found.

Competition on equal terms — preventing 'free-rider' companies from escaping their responsibility

The directive should ensure that Member States enforce all producers and importers to meet their individual responsibilities, thus avoiding problems with free riders.

Substances reviewed under horizontal legislation, pursuant to roadmaps
Substances should be dealt with under separate, horizontal legislation and not included in the WEEE Directive. We are committed to working with the Commission to deal with problematic substances, in the light of sound science, product understanding, and customer needs. A roadmap, developed by the companies and the Commission, would define responsibilities and set deadlines for such steps as data submission, risk assessment definition and preparation, decisions on voluntary agreements and regulatory measures.

Our companies stand ready to contribute to the Commission's work on the draft WEEE Directive along the lines discussed in the attached proposals. In the meantime, we would like to thank you for considering our concerns.

Sincerely,

APPENDIX V

November 17, 1999

Mr. Jim C. Sanford
Director, Technical Barriers to Trade
Office of Europe and the Mediterranean
Office of the U.S. Trade Representative
600 Seventeenth Street, NW
Washington, DC 20508

Dear Mr. Sanford:

On behalf of the Amiercan Coalition Electronics Industry (ACEI) and the Electronic Industries Alliance (EIA), we would like to provide you with recommendations concerning the development of a common set of regulatory Principles and Guidelines, which would support bilateral cooperation on Early Warning issues within the Transatlantic Economic Partnership (TEP).

In 1998, the $62.5 billion in two-way trade of electronics equipment[79] accounted for one-fifth of all transatlantic trade. U.S. exports of electronics products to the European Union (EU) totaled $40.6 billion, while imports to the U.S. of European electronics products reached $21.9 billion. We appreciate the efforts of USTR and their European counterparts to work within TEP to bolster this important trade relationship.

In July 1999, the European Commission's Directorate-General (DG) Environment circulated the third draft proposal for a directive on waste electrical and electronic equipment (WEEE), which would apply to virtually all electronic and most electrical products, impose unjustified substance bans, and require producers to assume cumbersome and costly collection and recovery obligations for used products, including "historical" products. In its present form, the draft directive will negatively affect both U.S. and EU industries working in the information technology and electronics sector, while also failing to enhance the protection of the environment. The draft proposal is under consideration within the Commission, and may be formally proposed to the Council and Parliament by the second quarter of 2000.

Given the significant commercial relationship in this dynamic sector and the importance of early input on draft regulation in the EU, ACEI and EIA believe it is appropriate that the draft proposal for an EU directive on WEEE be addressed by governments in the context of Early Warning discussions in the TEP. Trade and environment confrontations are often difficult, sometimes divisive, and potentially destructive to both the causes of expanded trade and of an improved environment. Thus, developing workable mechanisms for preventing or avoiding such confrontations should be a high priority in the TEP process.

[79] Electronics products include: computers and office equipment; consumer electronics; communications equipment; semiconductors; industrial electronics; electromedical equipment; and photonics.

We recognize that the U.S. raised the draft proposal on WEEE as an Early Warning issue in July 1999; however, we understand the Commission has not responded. We expect and strongly urge the Commission to support the TEP Action Plan goals to "[consult] whenever possible in the early stages of drafting regulations and to…[rely] on each other's technical resources and expertise."[80]

To this end, in the development of a set of TEP Guidelines and Principles on regulatory cooperation — which will serve to support the TEP Early Warning mechanism of avoiding trade conflicts — ACEI and EIA recommend that the USG and EU Commission commit to:

1. Ensure transparency at the earliest possible stage in regulatory development by systematically allowing access to counterpart regulators and the public of draft regulation;

2. Allow interested stakeholders a meaningful opportunity to provide input on draft regulations;

Provide a published response to input received, with an explanation of why different opinions are or are not incorporated in the regulatory approach adopted. ACEI and EIA suggest that the relevant parameters for regulatory development be based on:

(a) An examination of the life-cycle environmental impacts of the proposal, including an assessment of the risks, based on scientific evidence;
(b) Consideration of the costs to industry and/or the consumer, as well as an explanation of the net benefit to the environment, including:
   - An impact analysis of draft regulation on international trade and investment;
   - An examination of the least trade-restrictive means to achieve regulatory aims;
   - An impact analysis of draft regulation on small- and medium-sized businesses;
(c) The prospective application of regulation;
(d) The use of international standards in product design and material choice requirements.

ACEI and EIA believe that the adoption of these criteria for bilateral cooperation on regulatory development will assist governments in realizing regulatory objectives and avoiding trade conflicts, without compromising environmental protection or public safety, or distorting the market.

The electronics industry is committed to the environmentally sound, economically efficient management of end-of-life electronics products in order to minimize waste and promote sustainable development. In pursuit of these goals, the electronics industry is the global leader in research and innovative design to eliminate or reduce, wherever feasible, substances of concern from electronics products and to promote the recovery, reuse and recyclability of electronics products. In addition to these design initiatives, ACEI and EIA member companies are recycling, recovering and reusing large volumes of electronics products through voluntary programs, and are working in partnership with governments and other relevant stakeholders in Europe and the United States to expand the recycling, recovery and reuse infrastructure for electronics products.

ACEI and EIA respect a sovereign government's right to regulate to its own high standards of environmental protection and public safety. Indeed, ACEI and EIA endorse the *goal* of sustainable development and share the desire of the Commission to minimize adverse environmental impacts

[80] See TEP Action Plan, November 1998, page 7.

from electronic products, including efforts to increase the recycling, recovery and reuse of products. While supporting these shared objectives, ACEI and EIA, along with our European and Japanese industry counterparts, are concerned with the *means* outlined in the draft proposal to achieve these goals.

Unfortunately, we are concerned with the means in the draft proposal, in part, because the Commission did not follow these sensible procedures recommended above. For example, ACEI and EIA are concerned with the lack of scientific evidence to support the proposed substance bans. In its current draft, the proposed directive would ban use of lead, mercury, cadmium, hexavalent chromium and certain flame retardants (PBB and PBDE) as of 2004, subject to an exemption list to be revised through an obscure technical adaptation committee process. The Commission would, in the future, allow exceptions only where a material's use is, in its view, "unavoidable" and would not need to consider performance, economic viability or even environmental impact. DG Environment did no risk assessments of the substances as used in electronics before proposing bans, nor did it do a comparative analysis of risks of feasible alternatives. DG Environment's cost/benefit analyses are partial for lead (e.g., excluding R&D and capital investment costs), and non-existent for other substances. Therefore, we believe the substance restrictions should be removed from the draft proposal, and the Commission should regulate substances pursuant to the regulatory process recommendations above.

In addition, ACEI and EIA are concerned with the lack of true transparency in the development of the draft proposal and in the proposed process for determining exemptions to the substance bans in the draft proposal. Therefore, in order to avoid potential trade conflicts and enhance environmental protection, the Commission should adopt a more transparent legislative and regulatory development processes, ensuring open, meaningful stakeholder input to all levels of government.

ACEI and EIA appreciate and recognize the on-going attention your office has paid to this matter. We look forward to working with you in the months ahead to ensure that any EU proposal results in a net benefit to the environment and to transatlantic trade and investment.

Sincerely,

Jennifer Guhl
Director, International Trade Policy
Amiercan Coalition Electronics Industry

David Isaacs
Director, Environmental Affairs
Electronic Industries Alliance