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# **MOBILE PHONE PARTNERSHIP INITIATIVE (MPPI) - PROJECT 2.1**

## **GUIDELINE FOR THE TRANSBOUNDARY MOVEMENT OF COLLECTED MOBILE PHONES**

**Revised and Approved Text  
March 25, 2009**

## **Foreword**

The previously approved Guideline for the Transboundary Movement of Collected Mobile Phones has been revised to incorporate changes adopted by the Parties during the ninth meeting of the Conference of the Parties to the Basel Convention (COP9).

The Mobile Phone Working Group would like to express its appreciation to the chair of the Project Group 2.1, Dr. Joachim Wuttke from German Federal Environmental Agency, for ensuring that all these changes have been reviewed and incorporated in the revised guideline.

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## EXECUTIVE SUMMARY

The guideline addresses transboundary movement of collected used and end-of-life mobile phones<sup>1</sup>. Once collected, the mobile phones should be evaluated and/or tested and labelled to determine whether they are suitable for reuse, possibly after repair, refurbishment, or upgrading, or if they are destined for material recovery and recycling or final disposal.

**Part 1** introduces the background, purpose and use of the guideline.

**Part 2** provides assistance to regulatory agencies and authorities, manufacturers, network operators, repair, refurbishment and recycling facilities and any organization that are involved:

- In the transboundary movement of used mobile phones suitable for reuse possibly after repair, refurbishment, or upgrading in the importing country;
- In transboundary movements of end-of-life mobile phones destined for material recovery and recycling or final disposal.

The type of transboundary movement procedure to be applied depends on the condition of the collected mobile phones after evaluation and/or testing and labelling. It is recommended that Basel Convention transboundary movement controls should be implemented for end-of-life mobile phones destined for material recovery and recycling (Annex IV B operations) or final disposal (Annex IV A operations) where the end-of-life mobile phones contain Annex I constituents (shown in Appendix 2, unless it can be demonstrated that these end-of-life mobile phones are not hazardous using Annex III characteristics (shown in Appendix 3).

To determine what is and what is not covered under the Basel Convention, the Convention defines the “wastes” to be covered in Article 2.1 of the Convention, and stipulates that wastes are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. The Convention then defines disposal by reference to a set of technical annexes. In addition, every Party may determine, by its own national legislation, to define additional substances and objects as wastes and hazardous wastes.<sup>2</sup>

If, following Article 2.1 of the Basel Convention or national legislation, at least one of the Parties involved in a transboundary movement has determined<sup>3</sup> that used mobile phones destined for repair or refurbishment in the importing country are classified as wastes, then the decision tree procedure, described in Chapter 2.3.2, should be used. The Basel Convention control procedure would then apply where such waste mobile phones are hazardous wastes in accordance:

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<sup>1</sup> Shipments by individual customers of their own mobile phones destined for repair or refurbishment (e.g. under warranty and intended to be returned to them; and defective batches of mobile phones sent back to the producer (e.g. under warranty) are to be considered outside the scope of this procedure and of the Basel Convention

<sup>2</sup> Such determination should be made through Parties' obligations as per Articles 3 and 13 of the Basel Convention. Each Party has the obligation to inform each other, through the Basel Secretariat, of their national definitions and of any subsequent changes, which includes any additional substances and/or objects as wastes and hazardous wastes.

<sup>3</sup> Ibid

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- with Article 1.1(a) and contain Annex I constituents, unless it can be demonstrated that these used mobile phones are not hazardous using Annex III characteristics, or
- with Article 1.1(b) and are considered hazardous waste by the national legislation of one of the Parties involved.

However, if, following Article 2.1 of the Basel Convention and national legislation, none of the Parties involved in a transboundary movement has determined that used mobile phones destined for repair or refurbishment in the importing country are classified as wastes<sup>4</sup>, the Basel Convention control procedure will not apply. In such circumstances the voluntary notification procedure, described in Chapter 2.3.1, or the decision tree, described in Chapter 2.3.2 should be considered by the countries involved to ensure that such movements are being monitored, and the importing country is given an opportunity to react (consent, object, or identify conditions) to such movements.

Both procedures, the voluntary notification and the decision tree, as described in Chapters 2.3.1 and 2.3.2 respectively would be subject to further review at specific time intervals in order to ensure that the objective of environmentally sound management is upheld and to reflect the knowledge and experience gained, including those from the proposed MPPI pilot projects.

It is geared for use by: environmental and other regulatory agencies and authorities, manufacturers, network operators, repair, refurbishment and recycling facilities and any organization that is interested in the export or import of refurbished mobile phones for reuse, or those destined for refurbishment, material recovery and recycling.

Throughout this guideline, references to Annex I, II, III, IV, VIII or IX refer specifically to the annexes to the Basel Convention.

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<sup>4</sup>

Such determination should be made through Parties' obligations as per Articles 3 and 13 of the Basel Convention. Each Party has the obligation to inform each other, through the Basel Secretariat, of their national definitions and of any subsequent changes, which includes any additional substances and/or objects as wastes and hazardous wastes

## **1 INTRODUCTION**

### **1.1 Background**

This document is one of the five guidelines developed under the Mobile Phone Partnership Initiative (MPPI) of the Basel Convention and addresses transboundary movement of used and end-of-life mobile phones, collected through a system described in the guideline on collection, and is mainly intended as guidance for

- Any organization that is involved in collecting used mobile phones and shipping them across national boundaries
- Collection and accumulation facilities
- Environment and other regulatory agencies and authorities
- Environment and community groups
- Network operators
- Manufacturers
- Consumers
- Distributors of mobile phones.

### **1.2 Purpose**

This guideline is intended to encourage companies that collect used and end-of-life mobile phones to be shipped for reuse (including repair, refurbishment or upgrading), recycling, material recovery and disposal to implement practices in an environmentally sound manner which will protect human health and the environment.

This guideline will also assist government authorities responsible for the transboundary movement of electronic devices such as used and end-of life mobile phones.

## **2 TRANSBOUNDARY MOVEMENT**

Used and end-of life mobile phones, collected through a system described in the guideline on collection, may be re-used with or without refurbishment or repair, or if they cannot be reused they can be processed and possibly shipped for material re-

covery and recycling. This should be done in accordance with recommendations of this guideline, recommendations prepared by project group 1.1 on refurbishment, recommendations of the project group 3.1 on material recovery and recycling, and finally in accordance with relevant national and international law.

Once collected, the mobile phones should be evaluated and/or tested to determine whether they are suitable for reuse possibly after refurbishment or repair, or if they cannot be reused they are destined for material recovery or disposal.

The type of transboundary movement rules to be applied depends on the state of the collected mobile phones after evaluation and/or testing and labelling.

## **2.1 Basel Convention**

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal was adopted on 22 March 1989 and entered into force on 5 May, 1992. The Basel Convention emphasizes, amongst other principles, environmentally sound management of hazardous wastes, which is defined as taking all practicable steps to ensure that hazardous wastes are managed in a manner which will protect human health and the environment against the adverse effects which may result from such wastes. The Convention stipulates a number of objectives, including the following:

- The prevention and minimization of the generation of hazardous wastes.
- The reduction of transboundary movements of hazardous and other wastes subject to the Basel Convention.
- The provision of adequate capacity to manage wastes within the country of origin.
- The active promotion of the transfer and use of cleaner technologies.

These objectives are supported by a provision under the Basel Convention, which places an obligation on the state of export to provide an advance notification and obtain approval from the importing country before any shipment of hazardous waste is initiated. This notification is required to be also provided to the competent authorities of any transit countries. It should be recognized that any country has the sovereign right to ban the entry or disposal of foreign hazardous wastes and any



other wastes in its territory. The exporter is prohibited from shipping the hazardous waste until written approval is received from the country of import and any transit countries. In addition, countries of export and import are required to assure themselves that hazardous wastes destined for final disposal or recycling will be managed in an environmentally sound manner. Further, transboundary movements of hazardous wastes and other wastes, as defined and classified by the Basel Convention, can only be justified if the exporting country lacks adequate capacity to manage the wastes or if they are required as a raw material in the importing country or for other reasons designated by the Parties. Transboundary movements of hazardous wastes shall not be allowed to proceed if the exporting and importing countries believe that the hazardous wastes in question shall not be managed in an environmentally sound manner. Furthermore, each shipment of hazardous waste or other waste shall be accompanied by a movement document from the point at which a transboundary movement begins to their final destination. Once consents have been obtained, wastes must be transported with the appropriate packaging and labelling as required by international transportation rules (i.e. UNTDG).

## **2.1.1 Definitions**

### **2.1.1.1 Waste definition**

What is controlled under the Basel Convention? The Convention defines the wastes to be covered by reference to a set of technical annexes, supplemented by a provision that allows every party to determine, by national legislation, additional hazardous wastes.

The definition of "waste" is found in Article 2.1 of the Convention, and stipulates that wastes are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law (See Box 1).

#### **Basel Convention waste definition (Article 2.1)**

"Wastes" are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law;

A list of operations, which qualify as "disposal", is provided in two lists Annex IVA (operations which do not lead to the possibility of resource recovery, recycling,

reclamation, direct re-use or alternative uses) and IVB (operations which may lead to resource recovery, recycling, reclamation, direct re-use or alternative uses).

**Basel Convention disposal definition (Article 2.4)**

"Disposal" means any operation specified in Annex IV. Annex IV includes list IVA (operations that lead to final disposal) and list IVB (operations that lead to resource recovery, recycling, reclamation, direct reuse or alternative uses)

**2.1.1.2 Hazardous Waste Definition**

Under the Basel Convention, a hazardous waste is defined in two ways.

Firstly in order to be classified as hazardous, and controlled under the Basel Convention, wastes destined for operations listed in Annex IV must contain a substance listed in Annex I, or be listed waste stream in Annex I (shown in Appendix 2), unless it does not exhibit a hazard characteristics listed in Annex III (shown in Appendix 3).

**Basel Convention hazardous waste definition (Article 1.1)**

1. The following wastes that are subject to transboundary movement shall be "hazardous wastes" for the purposes of this Convention:
  - (a) Wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III; and
  - (b) Wastes that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit.

Secondly wastes are subject to the Basel Convention, which are not covered by the first approach (Article 1.1(a)), but are considered hazardous waste by the country of import, export or transit. These are also considered hazardous waste under the Convention (Article 1.1(b)).

Parties must inform each other, within six months of becoming parties, through the Convention Secretariat, of the additional wastes they define as hazardous.

The Basel Convention system does not usually establish minimum values of concentration, so that a substance with a quantitatively small hazardous constituent may be considered a hazardous waste. Whilst this matter is indirectly addressed in the "Tests" note in Annex III (shown in Appendix 3) referring to the need for further re-

search into testing methods to determine the hazard potential of the wastes in question, the Basel Convention leaves open the question of the burden of proof for the inclusion of a substance or waste in its scope. The matter is also being dealt with in the hazardous characteristics guidance documents being prepared by the Basel Convention on the hazardous characteristics of Annex III, where guidance is given on approaches and levels for consideration by the Parties (e.g. for toxic, ecotoxic characteristics etc.).

Several national definitions or the definitions of hazardous waste of the European Union do contain limit values.

## **2.1.2 Classification**

### **2.1.2.1 Basel Convention Waste Classification (Annex VIII and IX)**

In order to facilitate a more specific classification of hazardous waste streams that actually exist in practice, the Convention has developed more detailed waste lists:

- a list of wastes deemed to be hazardous (List A -Annex VIII) and
- a list of wastes deemed to be non hazardous (List B - Annex IX).

These lists were developed according to the substances contained in the wastes and are similar to previous OECD waste lists<sup>5</sup>. However, because the Basel Convention classifies hazardous wastes solely depending on intrinsic hazard properties they vary from the OECD-listings. With Decision IV/9 of COP 4 these waste lists have been included in the Basel Convention in Annexes VIII (List A) and IX (List B). As these annexes have been adapted through the amendment of Annex I, and therefore the Annexes VIII and IX are applicable among Parties worldwide since November 1998.

Both of the new Annexes VIII and IX include a so-called "Chapeau". The Annex VIII (List A) chapeau explains that the designation of wastes on this Annex does not preclude the use of Annex III to demonstrate that a waste is not hazardous. Likewise, the Annex IX (List B) chapeau makes it clear that wastes on that list will be considered hazardous if they contain an Annex I material (shown in Appendix 2) to an extent causing it to exhibit an Annex III characteristic (shown in Appendix 3).

<sup>5</sup>

Green, Amber and Red Waste Lists of the OECD Council Decision C(92)39, which has been superseded by the OECD Council Decision C( 2001)107/Final

### 2.1.2.2 Classification of Collected Mobile Phones and Application of the Basel Convention

When classifying collected mobile phones according to the two waste lists of the Basel Convention you will find two mirror entries for waste electric and electronic assemblies in the Basel Convention Annexes VIII and IX: A1180 and B1110 (See Box 4 and 5).

#### Basel Convention waste classification Annex VIII (List A)

**A1180** Waste electrical and electronic assemblies or scrap<sup>6</sup> containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) to an extent that they possess any of the characteristics contained in Annex III (note the related entry on list B B1110)<sup>7</sup>

#### Basel Convention waste classification Annex IX (List B)

**B1110** Electrical and electronic assemblies:

- Electronic assemblies consisting only of metals or alloys
- Waste electrical and electronic assemblies or scrap<sup>8</sup> (including printed circuit boards) not containing components such as accumulators and other batteries included on list A, mercury-switches, glass from cathode-ray tubes and other activated glass and PCB-capacitors, or not contaminated with Annex I constituents (e.g., cadmium, mercury, lead, polychlorinated biphenyl) or from which these have been removed, to an extent that they do not possess any of the characteristics contained in Annex III (note the related entry on list A A1180)
- Electrical and electronic assemblies (including printed circuit boards, electronic components and wires) destined for direct reuse<sup>9</sup>, and not for recycling or final disposal<sup>10</sup>

## 2.2 Evaluation, Testing and Labelling

The Evaluation and/or Testing and Labelling decision point, whether functionality has been tested or not, may include evaluation and/or testing for defects that materially affect the mobile phones functionality, such as whether the device powers up, and or whether it performs an internal set-up routine and/or self-checks, and/or whether it communicates; physical damage that impairs functionality or safety may

<sup>6</sup> This entry does not include scrap assemblies from electric power generation.

<sup>7</sup> PCBs are at a concentration level of 50 mg/kg or more.

<sup>8</sup> This entry does not include scrap from electrical power generation.

<sup>9</sup> Reuse can include repair, refurbishment or upgrading, but not major reassembly

<sup>10</sup> In some countries these materials destined for direct re-use are not considered wastes.

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include but is not limited to whether the mobile phone screen is broken, cracked, heavily scratched or marked, or that the image is distorted. Used mobile phones destined for re-use, including repair, refurbishment or upgrading should be packaged in an appropriate protective manner.

Batteries that are unable to be charged or to hold power and the absence of sufficient packaging to protect the mobile phones from damage may also be considered in determining whether collected phones are being managed for re-use. The functionality evaluation and/or test should determine whether the collected mobile phones are suitable for reuse as is, require repair or refurbishment before reuse, or whether the used mobile phones are suitable only for the material recovery and recycling.

For testing the functionality of a collected mobile phone the test numbers can be applied<sup>11</sup>. At a minimum the following basic tests should be applied as an efficient minimum test procedure:

"Air" or "Ping" (automatic phone response) test. The tester is to dial the above-mentioned number, which will then “ping” a network and receive a customer service response from the nearest network. In North America the number is "611". In other locations other numbers are used. If a response is received then it can be assumed that the mobile phone is essentially functional.

"Loop back test". The tester to blow or speak into the handset, whilst on a call, to determine whether or not the microphone and speaker are functional.

Microphone and speaker test. The tester is to blow or speak into the microphone and listen to see if the same input sound can be heard out of the speaker. If this is working, then the sound system of the phone can be considered as functional.

Screen and keypad test: The tester is to turn on the phone so that the screen is displayed and the keypad is punched to show that it is functioning for each key. If the numbers appear on the screen for each key then the screen and keypad can be considered as functional.

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<sup>11</sup>

Test-numbers of other regions may be available

Battery test: Battery should be charged (either through the phone it accompanies or by using commercial charging and measuring equipment) and tested with a volt meter to determine whether or not the battery is functional and hold an appropriate charge<sup>12</sup>. The battery will be tested to guarantee accepting and holding a charge and operate correctly under load of standard mobile phone. In addition, the test will include a guarantee that the battery protection circuit is present and functioning properly. All batteries tested for reuse possibilities will only be OEM product and not created from used or recycled power.

### 2.3 Transboundary Movement Procedures

Based on Annex VIII and IX designations and also by virtue of utilization of Annex I and III end-of-life mobile phones destined for material recovery and recycling (Annex IVB) or final disposal (Annex IVA), containing Annex I constituents (shown in Appendix 2), are subject to Basel Convention transboundary movement controls, unless it can be demonstrated that these end-of-life mobile phones are not hazardous using Annex III characteristics (shown in Appendix 3).

For those used mobile phones that have been evaluated and assessed to be likely suitable for reuse<sup>13</sup> after repair, refurbishment or upgrading in the importing country, the type of transboundary movement procedure to be applied depends on the condition of the collected mobile phones after evaluation and/or testing and labelling.

To determine what is and what is not covered under the Basel Convention, the Convention defines the “wastes” to be covered in Article 2.1 of the Convention, and stipulates that wastes are substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law. The Convention then defines disposal by reference to a set of technical annexes. In addition,

<sup>12</sup>

Appropriate charge, according to refurbishment and battery recycling industry, is 80%. Once the battery has been charged (either through the phone it accompanies, or by using commercial charging and measuring equipment) it should be tested with a voltmeter to determine whether or not the battery is functional and hold an 80% charge. Another criterion to check batteries is to check for the proper functioning on the internal protection circuit, which protects the Li-Ion cell from operating outside the recommended ranges. This protection circuit is included inside all OEM manufactured batteries and minimizes the possibility of any type of cell meltdown or explosion. This will ensure that the customer gets good value and will help ensure that importing countries do not end up getting short-life batteries.

<sup>13</sup>

Reuse: a process of using again a used mobile phone or a functional component from a used mobile phone, possibly after repair, refurbishment or upgrading (from the MPPI Glossary of Terms, shown in Appendix 1).

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every Party may determine, by its own national legislation, to define additional substances and objects as wastes and hazardous wastes<sup>14</sup>.

If, following Article 2.1 of the Basel Convention or national legislation, at least one of the Parties involved in a transboundary movement has determined<sup>15</sup> that used mobile phones destined for repair or refurbishment in the importing country are classified as wastes, then the decision tree procedure, described in Chapter 2.3.2, should be used. The Basel Convention control procedure would then apply where such waste mobile phones are hazardous wastes in accordance:

- with Article 1.1(a) and contain Annex I constituents, unless it can be demonstrated that these used mobile phones are not hazardous using Annex III characteristics, or
- with Article 1.1(b) and are considered hazardous waste by the national legislation of one of the Parties involved.

However, if, following Article 2.1 of the Basel Convention and national legislation, none of the Parties involved in a transboundary movement has determined that used mobile phones destined for repair or refurbishment in the importing country are classified as wastes<sup>16</sup>, the Basel Convention control procedure will not apply. In such circumstances the voluntary notification procedure, described in Chapter 2.3.1, or the decision tree, described in Chapter 2.3.2 should be considered by the countries involved to ensure that such movements are being monitored, and the importing country is given an opportunity to react (consent, object, or identify conditions) to such movements.

When hazardous wastes, derived from imported used or end-of life mobile phones are to be sent back to the original exporting country or to a third country, the Basel Convention notification procedures are to be followed. As appropriate, these documents should include references to original documents, to ensure effective tracking.

In those situations, where hazardous wastes are to be sent back to the original exporting country or to a third country, it is recommended that the contract between

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<sup>14</sup> Such determination should be made through Parties' obligations as per Articles 3 and 13 of the Basel Convention. Each Party has the obligation to inform each other, through the Basel Secretariat, of their national definitions and of any subsequent changes, which includes any additional substances and/or objects as wastes and hazardous wastes.

<sup>15</sup> Ibid  
<sup>16</sup> Ibid

the exporter and importer specifies details of the return of the hazardous waste, return dates, and financial responsibilities.

### **2.3.1 Voluntary Notification Procedure**

In cases where used mobile phones are sent regularly to the same repair, refurbishment or upgrading facility by the same exporter, and if there is no existing agreement between the exporter and the governmental authorities (importing and exporting countries), the exporter will provide a Statement of Evaluation and Intent to Reuse ("the Statement") to the Governmental Authority<sup>17</sup> of the countries of export, import, and transit (if any), by means of email, fax or other agreed method, prior to the departure of the shipment from the country of export. One Statement is sufficient for shipments within a defined time period for up to one year, or other time period as agreed by the parties involved.

In the case of single shipments of greater than 200 units of used mobile phones, or other quantity as agreed to by the parties involved (especially of trial shipments to a new repair or refurbishment facility), that have been evaluated and assessed to be likely suitable for reuse, the exporter will provide a Statement to the Governmental Authority of the countries of export, import, and transit (if any), by means of e-mail, fax, or other agreed to method, prior to the departure of the shipment from the country of export. In this case, the Statement would substitute an actual count of the shipment for the maximum count.

Statements, as described in above, would include the following:

- a. A commitment by the exporter that MPPI Guidelines are to be followed and assurances that such shipments will be managed in an environmentally sound manner;
- b. A description of the shipment, in particular, content, maximum count, packaging;
- c. An indication whether the information is for a single shipment or multiple shipments, and estimated frequency at which such shipments are to be exported;
- d. An indication of the proposed date of the first and the last shipment during the defined time period;

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<sup>17</sup>

Governmental Authority: means a governmental authority designated by a Party or Signatory to be responsible, within such geographical areas under the legal jurisdiction of the Party or Signatory, as the Party or Signatory thinks appropriate for implementing relevant rules and regulations and to receive information related to transboundary shipments of used mobile phones destined for reuse, possibly after repair, refurbishment or upgrading.



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- e. Identification of the ports of export and import;
- f. Identification of and contact information (name, address and phone number) of the importer and exporter;
- g. A description of the evaluation used to determine that the used mobile phones in the shipment are suitable for re-use, possibly after repair, refurbishment or upgrading.
- h. Identification of and contact information (name, address, and phone number) of local persons associated with the importer and exporter who can provide any additional information about the shipment;
- i. Information on how residues and wastes arising from repair, refurbishment or upgrading operations will be managed.

All phones, individually or in partitioned batches, must be appropriately documented with reference to the above-mentioned Statement, or other suitable method, so that recipients in the importing country are properly informed.

The Governmental Authorities should acknowledge by e-mail, fax or other agreed method the receipt of the Statement within the 3 calendar days, or other agreed time period, and should send this acknowledgement to the states concerned and to the exporter and the importer. After this time period has elapsed, any evidence of effective delivery of the Statement to the Governmental Authorities will be deemed as the acknowledgement date.

If the Governmental Authorities have provided authorization or have not responded within the 14 calendar days from the acknowledgement date, transboundary movement may commence for the single shipment or the shipments within the period of time defined in the Statement. An updated Statement might be submitted at any time. However:

- a) If further information<sup>18</sup> is requested by the Governmental Authority of the state of export, import or transit, the shipment must not commence, until the requested information has been provided.
- b) If the response indicates that there is no objection, but suggests conditions, then the shipment may commence only after necessary conditions have been taken into account.

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<sup>18</sup>

Such information may indicate that more stringent provisions to be applied like the provisions of the Basel Convention.

The Statement is provided solely for use by the Governmental Authority and is not for disclosure to third parties if the statement is marked as business confidential.

The content of this procedure should be reviewed at specific time intervals in order to ensure that the objective of environmentally sound management is upheld and to reflect the knowledge and experience gained, including those from the proposed MPPI pilot projects.

### **2.3.2 Decision Tree Procedure**

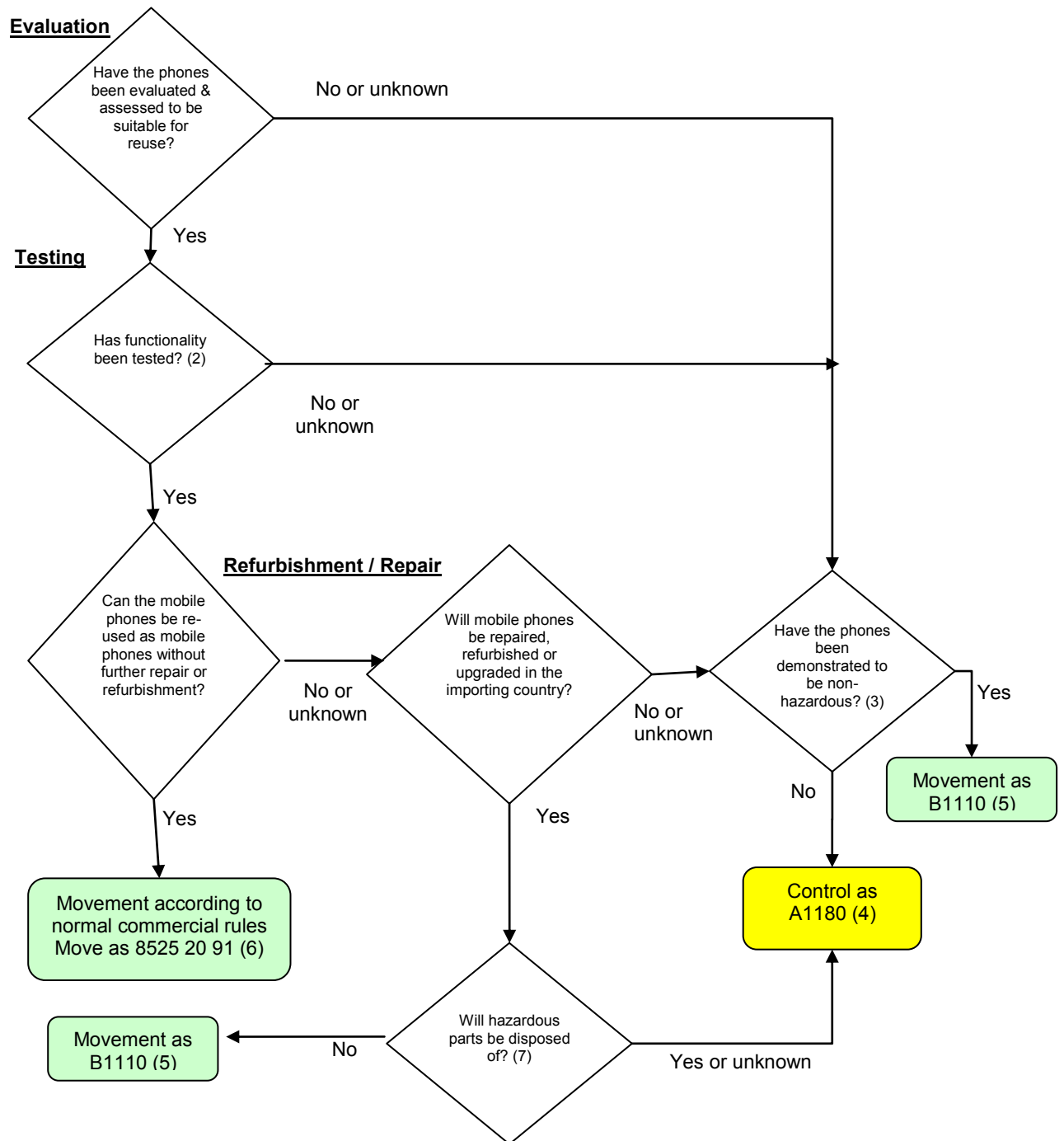
The decision tree starts from the point where mobile phones have been collected by regional or national collection schemes and are destined for transboundary movement. It then requires a series of questions to be applied to the used equipment to determine whether in fact a transboundary movement of hazardous waste will take place directly or whether hazardous parts will be disposed as a result of repair or refurbishment operations.

Shipments by individual customers of their own mobile phones destined for repair or refurbishment (e.g. under warranty) and intended to be returned to them; and defective batches of mobile phones sent back to the producer (e.g. under warranty) are to be considered outside the scope of this procedure and of the Basel Convention.

The content of this decision tree procedure should be reviewed at specified time intervals in order to ensure that the objective of environmentally sound management is upheld to reflect the knowledge and experience gained, including those from the proposed MPPI pilot projects.

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**Figure 1: Decision Tree Procedure (1)**



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### No Further recommendations and explanations

- (1) Movement within OECD or European Union, subject to bilateral agreements, or those defined as products under national legislation may not be subject to this procedure.
- (2) Results of evaluation and/or testing should be available through labelling, serial number referencing, or other suitable methods.
- (3) An end-of life phone is hazardous if it contains Annex I constituents, unless it can be shown (through testing or other evidence) not to possess an Annex III characteristic. If batteries are present, they should be considered as part of the analysis (see the decision tree on TBM of collected batteries).
- (4) The material should be controlled as hazardous waste under the Basel Convention. The code refers to the Annex VIII category. If one of the States concerned is not a Party, then a valid Article 11 agreement must be in place.
- (5) The material should not be controlled as hazardous waste under the Basel Convention. The code refers to the Annex IX of the Convention. For mobile phones with batteries, those batteries should hold an appropriate charge<sup>19</sup>. Exporters should nevertheless ensure there are neither export restrictions in place from the country or region of export, nor import restrictions from the country of import applicable to these used mobile phones.
- (6) The material should not be considered as a waste, but rather as a commodity. The number refers to the code number of the Harmonised Commodity Description and Coding System. For mobile phones with batteries, those batteries should have been tested as described in the MPPI guidelines to determine whether they can hold an appropriate charge<sup>20</sup>.
- (7) If the repair, refurbishment or upgrading will not be conducted in compliance with the MPPI Guidelines or if components or parts of used phones, involved in a transboundary movement, contain Annex I constituents and are expected to be replaced, or otherwise likely to be destined as a consequence of repair or refurbishment, to go to an Annex IV operations in the importing country, then the shipment should be considered as a controlled hazardous waste shipment, unless it can be shown that the components or parts do not exhibit Annex III characteristics. Governmental Authorities should make a determination as to the appropriate de minimis waste quantities and values (the level of contamination) above which Basel Convention controls will be exercised.  
In Annex IX of the Basel Convention the waste entry B1110 ("Electrical and electronic assemblies") two footnotes are included which reads:
  1. In some countries, these materials (used mobile phones) destined for direct reuse are not considered wastes".
  2. Reuse can include repair, refurbishment or upgrading but not major reassembly" in the importing country.

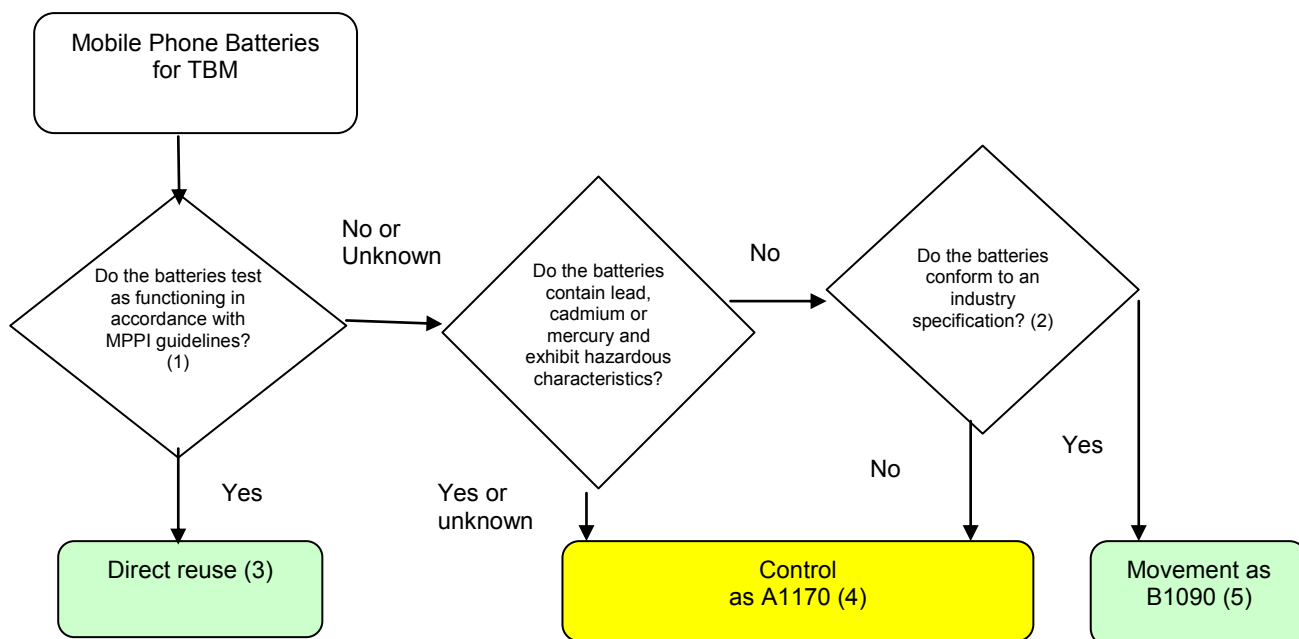
<sup>19</sup>

Appropriate charge, according to refurbishment and battery recycling industry, is 80%. Once the battery has been charged (either through the phone it accompanies, or by using commercial charging and measuring equipment) it should be tested with a voltmeter to determine whether or not the battery is functional and hold an 80% charge. Another criterion to check batteries is to check for the proper functioning on the internal protection circuit, which protects the Li-Ion cell from operating outside the recommended ranges. This protection circuit is included inside all OEM manufactured batteries and minimizes the possibility of any type of cell meltdown or explosion. This will ensure that the customer gets good value and will help ensure that importing countries do not end up getting short-life batteries.

<sup>20</sup>

Ibid.

**Figure 2: Decision Tree for Transboundary Movements (TBM) of Collected Mobile Phone Batteries**



**Further recommendations and explanations**

- (1) In order to determine whether a battery should be considered suitable for re-use and be considered a non-waste it should be tested as described in the MPPI Guidelines to determine whether it can hold an appropriate charge<sup>21</sup>
- (2) Any mobile phone battery shipment should be sorted and/or pre-treated to meet appropriate national or internationally recognized specifications.
- (3) If the battery has been tested, as described in the MPPI Guidelines, to determine whether it can hold an appropriate charge, then it is considered as a commodity and not a waste.
- (4) If the battery shipment does not meet the conditions of not containing lead, cadmium or mercury and does not conform to an appropriate national or internationally recognized specifications it should be controlled under the Basel Convention. The number here refers to Basel Annex VIII hazardous waste category. If one of the States concerned is not a Party then a valid Article 11 agreement must be in place.
- (5) The number here refers to Basel Annex IX hazardous waste category. Exporters must nevertheless ensure there are neither export restrictions in place from the country or region of export, nor import restrictions from the country of import, applicable to this Annex IX category.

<sup>21</sup> Appropriate charge, according to refurbishment and battery recycling industry, is 80%. Once the battery has been charged (either through the phone it accompanies, or by using commercial charging and measuring equipment) it should be tested with a voltmeter to determine whether or not the battery is functional and hold an 80% charge. Another criterion to check batteries is to check for the proper functioning on the internal protection circuit, which protects the Li-Ion cell from operating outside the recommended ranges. This protection circuit is included inside all OEM manufactured batteries and minimizes the possibility of any type of cell meltdown or explosion. This will ensure that the customer gets good value and will help ensure that importing countries do not end up getting short-life batteries.

## 2.4 Recommendations

- 2.4.1** All used mobile phones, that have been collected should be evaluated and/or tested, and labelled prior to any transboundary movement.<sup>22</sup>
- 2.4.2** When mobile phones are to be tested the test should utilize at minimum an i) “air” or “ping” test, ii) loop back test, iii) a screen and keypad test, and iv) a battery test in order to determine to what extent the mobile phones are suitable for reuse with or without repair, refurbishment or upgrading.
- 2.4.3** Used mobile phones that have been collected but have not been evaluated and/or tested and labelled as suitable for re-use are subject to Basel Convention procedures, unless it can be demonstrated that these end-of-life mobile phones are not hazardous using Annex I (shown in Appendix 2) and Annex III characteristics (shown in Appendix 3).
- 2.4.4** End-of-life mobile phones destined for material recovery and recycling (Annex IVB) or final disposal (Annex IVA), containing Annex I constituents (shown in Appendix 2), are subject to Basel Convention transboundary movement controls, unless it can be demonstrated that these end-of-life mobile phones are not hazardous using Annex III characteristics (shown in Appendix 3).
- 2.4.5** Where used mobile phones that have been evaluated and assessed to be likely suitable for reuse<sup>23</sup>, possibly after repair, refurbishment or upgrading in the importing country, have been classified as waste by at least one Party involved in their transboundary movement, the decision tree, described in Chapter 2.3.2, should be used.
- 2.4.6** Where used mobile phones destined for repair or refurbishment in the importing country are not classified as waste by any Party involved in their transboundary movement, a voluntary notification procedure, described in Chapter 2.3.1, or the decision tree procedure, described in Chapter 2.3.2, should be considered by the countries involved to ensure that such movements are being monitored, and the importing country is given an opportunity to react (consent, object or identify conditions) to such movements.
- 2.4.7** The following shipments are to be considered outside the scope of this procedure and of the Basel Convention:
- Collected mobile phones that have been tested and labelled as being suitable for reuse without further repair or refurbishment.
  - Shipments by individual customers of their own mobile phones for repair or refurbishment (e.g. under warranty), and intended to be returned to them.
  - Defective batches of mobile phones sent back to the producer (e.g. under warranty).

<sup>22</sup>

Consistent with the Collection Guideline

<sup>23</sup>

Reuse: a process of using again a used mobile phone or a functional component from a used mobile phone, possibly after repair, refurbishment or upgrading (from the MPPI glossary of terms).

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- 2.4.8** When hazardous wastes, derived from imported used or end-of life mobile phones are to be sent back to the original exporting country or to a third country, the Basel Convention notification procedures are to be followed. As appropriate, these documents should include references to original documents, to ensure effective tracking.
- 2.4.9** In those situations, where hazardous wastes are to be sent back to the original exporting country or to a third country, it is recommended that the contract between the exporter and importer specifies details of the return of the hazardous waste, return dates, and financial responsibilities.
- 2.4.10** All transboundary movements of used and/or end-of-life mobile phones should follow applicable transport rules.
- 2.4.11** Consistent with MPPI Guidelines, importing countries should take measures to establish an appropriate infrastructure to ensure mobile phones, which reach their final end-of-life, are collected and recycled in environmentally sound facilities, be these located within or outside of the country.

## Appendix 1

### Glossary of Terms

**Note:** *These terms were developed for the purpose of the overall Guidance Document and individual project guidelines, and should not be considered as being legally binding, or that these terms have been agreed to internationally. Their purpose is to assist readers to better understand this Guideline and the overall Guidance Document. The processes of dismantling, refurbishment or reconditioning and repairing may entail the removal of batteries, electronic components, printed wiring boards or other items which should be managed in an environmentally sound manner and in accordance with the Basel Convention when destined for transboundary movement.*

**Basel Convention:** UNEP's Convention of March 22, 1989 on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, which came into force in 1992.

**Components:** parts or items removed from used mobile phones which may include batteries, electronic components, circuit boards, keyboards, displays, housing or other parts or items

**DfE:** Design for Environment; meaning a product has been designed to reduce environmental impact throughout its whole life cycle.

**Dismantling:** (manual) separation of components/constituents in a way, that recycling, refurbishment or reuse is possible.

**Disposal:** means any operations specified in Annex IV of the Basel Convention.

**EMC:** Electromagnetic compatibility (EMC) means the ability of equipment to function satisfactorily in its electromagnetic environment without either introducing intolerable electromagnetic disturbances to other equipment in that environment, or being adversely affected by the emission of other electrical equipment.

**EMF :** Electromagnetic Fields (EMF) are a combination of both electric and magnetic fields. EMF occurs naturally (light is a natural form of EMF) as well as a result of human invention. Nearly all electrical and electronic devices emit some type of EMF. Safety standards are applicable, but these may vary from country to country.

**Eco-efficiency:** producing economically valuable goods and services with less energy and fewer resources while reducing the environmental impact (less waste and less pollution) of their production. In other words eco-efficiency means producing more with less. It may include, for example, producing goods through recycling when that is more efficient, and more environmentally friendly, than production of the same goods with primary resources and methods.

**End-of-life mobile phone:** a mobile phone that is no longer suitable for use, and which is intended for disassembly and recovery of spare parts or is destined for material recovery and recycling or final disposal. It also includes off-specification mobile phones which have been sent for material recovery and recycling or final disposal



**Environmentally Sound management:** taking all practicable steps to ensure that used and/or end-of-life products, or wastes are managed in a manner which will protect human health and the environment.

**Evaluation:** the process by which collected used mobile phones are assessed to determine whether or not they are likely to be suitable for re-use. This assessment may include:

- a) A visual check
- b) A 'power-on' check
- c) A check that the model is included / not included on a list of handsets provided by the refurbishment company.

**Hydrometallurgical processing:** processing of metals in cyanide, and/or strong acids such as aqua regia, nitric acid, sulphuric acid, and hydrochloric acid.

**Incineration:** a thermal treatment technology by which municipal wastes, industrial wastes, sludges or residues are burned or destroyed at temperatures ranging from 1000°C to more than 1200°C (high temperature incineration used mainly to incinerate hazardous wastes) in the presence of oxygen resulting from the rapid oxidation of substances. Most of them have an air pollution control equipment to ensure the emission levels meet the requirements prescribed by the regulatory authorities.

**Integrated copper smelter:** a facility, or related facilities in the same country under the same ownership and control, that melts metal concentrates and complex secondary materials that contain - among others - copper and precious metals, using controlled, multi-step processes to recycle and refine copper, precious metals and multiple other metals from managed product streams.

**Labelling:** the process by which individual or batches of mobile phones are marked to designate their status according to the guideline developed under the project 2.1.

**Landfilling:** the placement of waste in, or on top of ground containments, which is then generally covered with soil. Engineered landfills are disposal sites which are selected and designed to minimize the chance of release of hazardous substances into the environment.

**Leachate:** contaminated water or liquids resulting from the contact of rain, surface and ground waters with waste in a landfill.

**Life cycle management:** holistic way to consider the environmental issues associated with a substance, product or process from resource utilization, through manufacture, transportation, distribution, use, to waste management and disposal of residues from treatment or recycling operations.

**Material Recovery:** means relevant operations specified in Annex IVB of the Basel Convention.

**Mechanical Separation:** mechanical means to separate a mobile phone into various components or materials.

**Mobile phone (sometimes called a cellular phone or cell phone):** portable terminal equipment used for communication and connecting to a fixed telecommunications network

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via a radio interface (taken from International Telecommunication Union K.49 (00), 3.1). Modern mobile phones can receive, transmit and store: voice, data, and video.

**Printed wiring board:** also called a printed circuit board, consisting of integrated chips, resistors, capacitors and wires.

**Pyrometallurgical processing:** thermal processing of metals and ores, including roasting and smelting, remelting and refining.

**RoHS:** Directive of the European Parliament and the Council on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment.

**RF:** describes electromagnetic energy transmitted through radio and microwaves.

**Recycling:** means relevant operations specified in Annex IVB of the Basel Convention.

**Refurbishment or Reconditioning:** the process for creating a refurbished or reconditioned mobile phone.

**Refurbished or reconditioned mobile phone:** a mobile phone that has undergone refurbishment or reconditioning, returning it to a satisfactory working condition fully functional for its intended reuse and meeting applicable technical performance standards and regulatory requirements including the original product's rated operational characteristics. The intended reuse must include full telephony capability.

**Repairing:** a process of only fixing a specified fault or series of faults in a mobile phone.

**Reuse:** a process of using again a used mobile phone or a functional component from a used mobile phone, possibly after repair, refurbishment or upgrading.

**SAR:** stands for Specific Absorption Rate, which is the amount of Radio Frequency (RF) absorbed by the body. The unit of measurement is in Watts per Kilogram (W/Kg). SAR is determined, in laboratory conditions, at the highest certified power level of the mobile phone. When in use, the actual SAR can be well below this value due to automatic power control by the mobile phone. The SAR of each model of mobile phone is measured as part of the safety standard compliance process.

**Segregation:** sorting out mobile phones from other (electronic) wastes for possible reuse or for treatment in specific recycling processes.

**Separation:** removing certain components/constituents (e.g. batteries) or materials from a mobile phone by manual or mechanical means.

**Transport of Dangerous Goods:** UN Recommendations on the transport of dangerous goods which deals with classification, placarding, labeling, record keeping, etc. to protect public safety during transportation.

**Treatment:** means any activity after the end-of-life mobile phone has been handed over to a facility for disassembly, shredding, recovery, recycling or preparation for disposal.

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**Upgrading:** the process by which used mobile phones are modified by the addition of the latest software or hardware.

**Used Mobile Phone:** a mobile phone, which its owner does not intend to use it any longer.

**WEEE Directive:** Directive of the European Parliament and the Council on Waste Electrical and Electronic Equipment.

**Wastes:** substances or objects which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law.

## Appendix 2

### CATEGORIES OF WASTES CONTROLLED UNDER THE BASEL CONVENTION<sup>24</sup>

#### Waste Streams

- Y1 Clinical wastes from medical care in hospitals, medical centers and clinics
- Y2 Wastes from the production and preparation of pharmaceutical products
- Y3 Waste pharmaceuticals, drugs and medicines
- Y4 Wastes from the production, formulation and use of biocides and phytopharmaceuticals
- Y5 Wastes from the manufacture, formulation and use of wood preserving chemicals
- Y6 Wastes from the production, formulation and use of organic solvents
- Y7 Wastes from heat treatment and tempering operations containing cyanides
- Y8 Waste mineral oils unfit for their originally intended use
- Y9 Waste oils/water, hydrocarbons/water mixtures, emulsions
- Y10 Waste substances and articles containing or contaminated with polychlorinated biphenyls (PCBs) and/or polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)
- Y11 Waste tarry residues arising from refining, distillation and any pyrolytic treatment
- Y12 Wastes from production, formulation and use of inks, dyes, pigments, paints, lacquers, varnish
- Y13 Wastes from production, formulation and use of resins, latex, plasticizers, glues/adhesives
- Y14 Waste chemical substances arising from research and development or teaching activities which are not identified and/or are new and whose effects on man and/or the environment are not known
- Y15 Wastes of an explosive nature not subject to other legislation
- Y16 Wastes from production, formulation and use of photographic chemicals and processing materials
- Y17 Wastes resulting from surface treatment of metals and plastics
- Y18 Residues arising from industrial waste disposal operations

#### Wastes having as constituents:

- Y19 Metal carbonyls
- Y20 Beryllium; beryllium compounds
- Y21 Hexavalent chromium compounds
- Y22 Copper compounds
- Y23 Zinc compounds
- Y24 Arsenic; arsenic compounds
- Y25 Selenium; selenium compounds
- Y26 Cadmium; cadmium compounds
- Y27 Antimony; antimony compounds
- Y28 Tellurium; tellurium compounds
- Y29 Mercury; mercury compounds
- Y30 Thallium; thallium compounds
- Y31 Lead; lead compounds
- Y32 Inorganic fluorine compounds excluding calcium fluoride

<sup>24</sup>

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- Y33 Inorganic cyanides
- Y34 Acidic solutions or acids in solid form
- Y35 Basic solutions or bases in solid form
- Y36 Asbestos (dust and fibres)
- Y37 Organic phosphorous compounds
- Y38 Organic cyanides
- Y39 Phenols; phenol compounds including chlorophenols
- Y40 Ethers
- Y41 Halogenated organic solvents
- Y42 Organic solvents excluding halogenated solvents
- Y43 Any congener of polychlorinated dibenzo-furan
- Y44 Any congener of polychlorinated dibenzo-p-dioxin
- Y45 Organohalogen compounds other than substances referred to in this Annex (e.g. Y39, Y41, Y42, Y43, Y44).

(a) To facilitate the application of this Convention, and subject to paragraphs (b), (c) and (d), wastes listed in Annex VIII are characterized as hazardous pursuant to Article 1, paragraph 1 (a), of this Convention, and wastes listed in Annex IX are not covered by Article 1, paragraph 1 (a), of this Convention.

(b) Designation of a waste on Annex VIII does not preclude, in a particular case, the use of Annex III to demonstrate that a waste is not hazardous pursuant to Article 1, paragraph 1 (a), of this Convention.

(c) Designation of a waste on Annex IX does not preclude, in a particular case, characterization of such waste as hazardous pursuant to Article 1, paragraph 1 (a), of this Convention if it contains Annex I material to an extent causing it to exhibit an Annex III characteristic.

(d) Annexes VIII and IX do not affect the application of Article 1, paragraph 1 (a), of this Convention for the purpose of characterization of wastes<sup>25</sup>.

### CATEGORIES OF WASTES REQUIRING SPECIAL CONSIDERATION<sup>26</sup>

- Y46 Wastes collected from households
- Y47 Residues arising from the incineration of household

<sup>25</sup> Decision IV/9 adopted by COP 4 in 1998 amended the Annex I by adding these four paragraphs (a, b, c and d) at the end of Annex I, and added two additional Annexes to the Convention, Annex VIII and Annex IX

<sup>26</sup> Annex II of the Basel Convention

## Appendix 3

### LIST OF HAZARDOUS CHARACTERISTICS<sup>27</sup>

UN Class*	Code	Characteristics
1	H1	<b>Explosive</b> An explosive substance or waste is a solid or liquid substance or waste (or mixture of substances or wastes) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings.
3	H3	<b>Flammable liquids</b> The word "flammable" has the same meaning as "inflammable". Flammable liquids are liquids, or mixtures of liquids, or liquids containing solids in solution or suspension (for example, paints, varnishes, lacquers, etc., but not including substances or wastes otherwise classified on account of their dangerous characteristics) which give off a flammable vapour at temperatures of not more than 60.5 deg. C, closed-cup test, or not more than 65.6 deg C, open-cup test. (Since the results of open-cup tests and of closed-cup tests are not strictly comparable and even individual results by the same test are often variable, regulations varying from the above figures to make allowance for such differences would be within the spirit of this definition.)
4.1	H4.1	<b>Flammable solids</b> Solids, or waste solids, other than those classed as explosives, which under conditions encountered in transport are readily combustible, or may cause or contribute to fire through friction.
4.2	H4.2	<b>Substances or wastes liable to spontaneous combustion</b> Substances or wastes which are liable to spontaneous heating under normal conditions encountered in transport, or to heating up on contact with air, and being then liable to catch fire.
4.3	H4.2	Substances or wastes which, in contact with water emit flammable gases Substances or wastes which, by interaction with water, are liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.
5.1	H5.1	<b>Oxidizing</b> Substances or wastes which, while in themselves not necessarily combustible, may, generally by yielding oxygen cause, or contribute to, the combustion of other materials.
5.2	H5.2	<b>Organic Peroxides</b> Organic substances or wastes which contain the bivalent-o-o-structure are thermally unstable substances which may undergo exothermic self-accelerating decomposition.
6.1	H6.1	<b>Poisonous (Acute)</b> Substances or wastes liable either to cause death or serious injury or to harm human health if swallowed or inhaled or by skin contact.
6.2	H6.2	<b>Infectious substances</b> Substances or wastes containing viable micro organisms or their toxins which are known or suspected to cause disease in animals or humans.
8	H8	<b>Corrosives</b>

<sup>27</sup>

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\*

Corresponds to the hazard classification system included in the United Nations Recommendations on the Transport of Dangerous Goods (ST/SG/ AC.10/1/Rev.5, United Nations, New York, 1988).

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UN Class*	Code	Characteristics
		Substances or wastes which, by chemical action, will cause severe damage when in contact with living tissue, or, in the case of leakage, will materially damage, or even destroy, other goods or the means of transport; they may also cause other hazards.
9	H10	<b>Liberation of toxic gases in contact with air or water</b> Substances or wastes which, by interaction with air or water, are liable to give off toxic gases in dangerous quantities.
9	H11	<b>Toxic (Delayed or chronic)</b> Substances or wastes which, if they are inhaled or ingested or if they penetrate the skin, may involve delayed or chronic effects, including carcinogenicity.
9	H12	<b>Ecotoxic</b> Substances or wastes which if released present or may present immediate or delayed adverse impacts to the environment by means of bioaccumulation and/or toxic effects upon biotic systems.
9	H13	Capable, by any means, after disposal, of yielding another material, e.g., leachate, which possesses any of the characteristics listed above.

### Tests

The potential hazards posed by certain types of wastes are not yet fully documented; tests to define quantitatively these hazards do not exist. Further research is necessary in order to develop means to characterize potential hazards posed to man and/or the environment by these wastes. Standardized tests have been derived with respect to pure substances and materials. Many countries have developed national tests which can be applied to materials listed in Annex 1, in order to decide if these materials exhibit any of the characteristics listed in this Annex.