

Hazardous waste generation in selected European countries

Comparability of classification systems and quantities

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Executive summary

Background & methodology

- The purpose of this report is to review existing data on hazardous waste for the period 1993-1996 and to try to improve the comparability of the data. The report has been prepared by the European Topic Centre on Waste (ETC/W) as part of the work programme of the European Environment Agency (EEA).
- Austria, Denmark and Ireland are included in the comparability study as well as one region in Germany (North Rhine-Westphalia) and two regions in Spain (the Basque Country and Catalonia). These countries and regions produce all together 6.5 million tonnes hazardous waste per year. This is approximately 1/5 of the total hazardous waste generation in all EEA member countries.
- When comparing the generation of hazardous waste across countries, it is very important that the reported figures are based on the same definitions, i.e. that a common classification is applied. However, in the case of Austria, Denmark, Germany, Ireland and Spain different classification systems were applied when the data originally were registered.
- In order to make a comparability possible a common classification has been applied. The common classification used is the Hazardous Waste List, which is a part of the European Waste Catalogue.

Key findings

- Even though it is difficult, the study has proved that it is possible to reclassify most of the hazardous waste, which was originally registered according to a national or regional classification system, according to the Hazardous Waste List and the European Waste Catalogue. Thereby, it has been possible to establish data sets for hazardous waste, which can be compared.
- The variations in hazardous waste generation between Austria, Denmark, Ireland, Germany (North Rhine-Westphalia) and Spain (the Basque Country and Catalonia) can first of all be explained by the fact that, even though the Hazardous Waste List and the European Waste Catalogue have been introduced, they do not sufficiently describe what is regarded and reported as hazardous waste in each country or region. The amounts of hazardous waste that may be related directly to the Hazardous Waste List varies between 27 % and 71 %.
- If the Hazardous Waste List is amended as proposed by the Commission, the amount of hazardous waste that may be related directly to the Hazardous Waste List will increase to 55-80 % for examined countries and regions. This means that the degree of comparability of hazardous waste generation between countries and regions would increase.
- Different types of hazardous waste dominate in the examined countries and regions.
- In each of the examined countries and regions a relatively small number of waste types represent a large proportion of the total hazardous waste generation. On average, the 20 largest generated waste types represent approximately 75 % of the total waste generation.
- In general, the industrial structure is an important factor in explaining the variations of hazardous waste quantities in the different countries and regions.

Significant differences exist within the respective manufacturing industries, energy production sectors and waste incineration activities.

- It has proven difficult to relate hazardous waste classified according to national or regional substance orientated classifications to the Hazardous Waste List and the European Waste Catalogue. Therefore, when the work of comparison is extended to all other EEA member countries, it is recommended to ask for information only on the 20 largest generated waste types in each country.

1. Introduction

1.1. Background

OECD and Eurostat publish data on hazardous waste generation in EU Member States and some accession countries. However, the data are scarce and it is difficult to make valid comparisons between data from different countries. For instance, hazardous waste statistics published by OECD and Eurostat generally provide national total amounts for hazardous waste with no detailed information on the composition of hazardous waste produced (See Table 1). In addition, national totals reported to OECD and Eurostat are generally based on national classifications and definitions which makes it very difficult to draw valid comparisons between data from different countries as the classification systems can be quite different.

Table 1. Total generation of hazardous waste in EEA member countries stated in tonnes. Generation per capita stated in kg

Country	Year	Total Generation in tonnes	Generation per capita in kg	Classification
Austria	1992	423.000	54	National
Austria	1994	513.000	64	National
Austria	1995	¹⁾ 577.000	68	National
Belgium	1994	776.000	77	Basel
Denmark	1990	106.000	21	National
Denmark	1994	194.000	37	National
Denmark	1995	250.000	48	National
Finland	1987	314.000	64	Basel
Finland	1992	359.000	71	National
France	1990	7.000.000	123	National
Germany	1990	8.949.000	113	National
Germany	1993	9.100.000	113	National
Greece	1992	450.000	44	
Iceland	1994	6.000	23	Basel
Ireland	1992	99.000	28	Basel
Ireland	1995	248.000	70	²⁾ HWL
Italy	1990	3.246.000	57	Basel
Italy	1991	3.387.000	59	Basel
Italy	1995	2.708.000	47	Basel
Luxembourg	1992	86.000	220	Basel
Luxembourg	1995	180.000	442	National
Netherlands	1990	1.040.000	70	National
Netherlands	1992	1.513.000	100	National
Netherlands	1993	1.520.000	99	National
Norway	1990	³⁾ 520.000	122	Basel
Norway	1994	⁴⁾ 645.000	150	National
Portugal	1987	1.087.000	109	Basel
Portugal	1990	1.365.000	138	Basel
Portugal	1994	1.356.000	138	Basel
Spain	1987	1.708.000	44	Basel
Spain	1994	⁵⁾ 3.394.353	86	Basel
Sweden	1985	500.000	60	Basel
United Kingdom	1990	2.936.000	51	Basel
United Kingdom	1992/93	2.299.000	40	Basel
United Kingdom	1993/94	1.844.000	32	Basel

Source: OECD, 1997, ¹⁾FEA-Austria, Klagenfurt 1999, ²⁾EPA-Ireland, 1999, 3) and 4) Norsas, Norway, 5) Spanish Ministry of Environment

Taking into consideration that the relative environmental impact of waste is directly related to the degree of hazard associated with the waste, it is surprising that in general waste statistics on hazardous waste are so poor.

Table 1 presents a summary of hazardous waste arisings in a number of countries as reported to OECD and Eurostat. Per capita figures vary significantly from one country to another and appear to have increased substantially in many countries during the nineties. However, whether this increase is a real increase or a function of more comprehensive reporting and/or changes in classification is not clear at all.

In general, it is recognised that, at European level, data on hazardous waste are not comparable. However, it is not possible at this moment to explain to what extent these variations are caused by different

- classifications of hazardous waste;
- systems and obligations for collecting hazardous waste;
- reporting systems on hazardous waste data;
- industrial structures and thereby generation of different amounts;
- levels of application of cleaner technology, etc.

Therefore, comparison of data on hazardous waste from one country to another must be conducted with caution.

1.2. Purpose of the report

Due to the situation described above, the European Environment Agency has asked the European Topic Centre on Waste (ETC/W):

to review the existing data on hazardous waste and make comparability among them.

In order to do this, it is necessary to investigate the member countries' recorded hazardous waste generation in the period 1993-1996 in a more detailed manner than has been done before. The period 1993-96 was chosen, because it was estimated to be a realistic time span to obtain data for. Recognising the fact that the task would be rather complex under all circumstances, the ETC/W decided to restrict the study initially to the countries and regions represented in the ETC/W: Austria, Denmark, Germany, Ireland, and Spain. Due to lack of data only North Rhine-Westphalia is included for Germany. North Rhine-Westphalia represents about 45 % of the total hazardous waste generation of Germany. Similarly, the Basque Country and Catalonia are only included for Spain.

Following this initial assessment, it is planned to extend the scope of this work to all other EEA member countries.

1.3. Structure of the report

To enable comparisons to be made, existing data on hazardous waste reported by different countries must be related to a common structure. Otherwise, it is difficult to arrive at any conclusions about data comparability. Table 1 shows that many countries have reported hazardous waste data according to their own national classification systems. Therefore, an important part of the structure for listing information is to find a common classification for hazardous waste, within

which the existing data can be related. In chapter 2 the common structure developed for the purpose of this study is described.

Chapter 3 contains the general conclusions of the comparison between the countries and regions and the perspectives for having a better comparison in the future. It also includes recommendations on how the study can be extended to other countries.

Individual country or region reports are presented in Chapters 4 to 9. While the purpose of this study is to improve comparability of data, it should be noted that any reaggregated data presented in this report do not supersede officially reported data from each country or region, as presented in chapter 4 to 9. The country reports summarise classification and reporting systems for each country or region and provide a detailed breakdown of hazardous waste arisings related to waste type and industrial activity as well as a listing of any special national/regional hazardous waste types.

2. Common structure

2.1. In relation to the classification of hazardous waste

When comparing the generation of hazardous waste across countries, it is very important that the reported figures are based on the same definitions, i.e. that a common classification is applied. Table 1 demonstrates however, that in the case of Austria, Denmark, Germany, Ireland and Spain different classification systems are applied.

Thus, while Austria, Denmark and Germany have reported according to their own national classifications, Ireland reported according to Basel classification in 1992 but changed over to the Hazardous Waste List descriptions in 1995, while Spain has reported according to the Basel classification, but only for 1987.

For Austria, Denmark and Germany, the national classifications are first of all substance-oriented, causing difficulties to draw any conclusions about the source or process, which has generated the hazardous waste.

2.1.1. *The Basel Classification*

OECD/Eurostat have in their questionnaire for 1996 asked for waste generation according to the Basel classification. Only few countries have given detailed information which has not been published. The Basel classification is therefore not suitable for use in the comparison work.

2.1.2. *European Waste Catalogue and the Hazardous Waste List*

The European Waste Catalogue (EWC) was established in December 1993 by Commission Decision (94/3/EC) and includes 645 waste types. The Hazardous Waste List (HWL) was subsequently established in December 1994 by Council Decision (94/904/EC). The HWL is a subset of the EWC and consists of 236 of the 645 EWC waste types that were considered to be hazardous at the time that the list was agreed. Both EWC and HWL are to be subject to on-going revision, based on practical experience of their use by Member States, with the first amendments to both lists expected to be agreed shortly by the Technical Adaptation Committee responsible for considering proposed changes. It is likely that approximately 100 additions will be made to the HWL resulting from notifications to the Commission from Member States.

In general, the EWC and HWL is a source and process-based listing of wastes. The EWC has three levels.

- a) The highest level with 20 entries (2-digit codes) often describing the source and the branch generating the waste.
- b) Each of the 20 main group has several subgroups (4-digit codes) often describing the process generating the waste
- c) Each subgroup has several waste codes (6-digit codes) describing the substances in the waste. The HWL is stated on this level.

The creation of the EWC and HWL represents the most significant move to date towards harmonising information on waste production and management in Europe and the development of a common European-wide waste classification system for hazardous and non-hazardous waste.

In general, the implementation of the EWC and the HWL has been slow. In some countries the EWC and the HWL have been fully implemented into national legislation. In other countries the EWC and the HWL are used more as reference documents. A major problem for certain Member States has been the fundamental difference between their substance-based waste lists and the source/process approach used for the EWC and HWL. This is because the same waste material can appear several times in the HWL, when it is produced by several sources. For instance, chlorofluorocarbons can be found at different entries (code 14 01 01 and 14 03 01) depending on the source and the process, as illustrated in Table 2. However, because the HWL is now the common classification system for hazardous waste in EU, it is appropriate to be used in this study as the principal classification system.

Table 2. Example showing that the same waste type can be found at different entries in the European Waste Catalogue

14	Wastes from organic substances employed as solvents and coolants	
14 01	Wastes from metal degreasing and machinery maintenance	
	14 01 01	chlorofluorocarbons
	14 01 02	other halogenated solvents and solvent mixes
	14 01 03	other solvents and solvent mixes
	14 01 04	aqueous solvent mixes containing halogens
	14 01 05	aqueous solvent mixes free of halogens
	14 01 06	sludges or solid wastes containing halogenated
	14 01 07	sludges or solid wastes containing organic solvents
.....		
14 03	Wastes from the electronic industry	
	14 03 01	chlorofluorocarbons
	14 03 02	other halogenated solvents
	14 03 03	solvents and solvent mixes free of halogenated
	14 03 04	sludges or solid wastes containing halogenated
	14 03 05	sludges or solid wastes containing other solvents

Source: The European Waste Catalogue, Commission Decision of 20 December 1993.

The time period for this study is 1993-96 for the comparison of the hazardous waste data from different countries. The introduction in late 1994 of the HWL implies, however, that the period 1993-96 is also a transition period in relation to classification of hazardous waste in Europe, as countries began to adapt their systems to the existence of the EWC and HWL.

The EWC and HWL has been used in Ireland since 1995 with both lists incorporated into the national definition of waste and hazardous waste in 1996. Spain implemented the HWL in May 1997 and the EWC in January 1999, whereas the Spanish regions of the Basque Country and Catalonia introduced a classification based in general on the EWC and HWL in the mid nineties. Austria, Denmark and Germany have implemented the EWC and HWL but have so far only registered and reported to Eurostat and the OECD according to national classifications, all of which are substance-oriented.

2.1.3. Substance Based Aggregation of Information

When the same waste fraction can be found at different codes in the EWC and HWL, it complicates its use for statistical purposes. This problem was recognised by Eurostat in 1994. Eurostat has therefore proposed a more substance-oriented classification EWC/STAT based on an aggregation of 6-digit EWC codes, but the classification can be directly related to the EWC (6-digit codes). This classification is used in the Commission's proposal for a Council Regulation on Waste Management Statistics of 27th January 1999 (COM(1999) 31 final).

EWC/STAT has three different aggregation levels. The classification does not itself include a differentiation between hazardous waste and non hazardous waste. Hazardous waste is defined, according to EWC/STAT, by relating the three different aggregation levels to 6-digit HWL codes in the EWC.

2.1.4. Conclusion on use of a common classification

Valuable information can be achieved from both a source/process-oriented as well as a substance-oriented classification. The source/process based classification system is useful for waste minimisation and cleaner technology purposes as well as comparability of waste from specific branches. A substance oriented classification will provide information on overall amounts, how to treat the waste once it is produced and the need for treatment capacity.

It has been concluded that setting up a main structure for listing existing information on hazardous waste will require that each country's/region's existing classification is related, in the first instance, to HWL.

Relating national hazardous waste types to EWC/STAT would only be possible as a second step after having related to HWL. Several countries do not currently collate information at the 6-digit level of HWL, which complicates further translation to EWC/STAT. Given these practical reasons, it was decided to restrict the current comparability analysis to the HWL and the structure of the EWC.

2.2. In relation to classification of economic activity

Depending on the industrial structure in a country or region, the amounts and types of hazardous waste will vary. When explaining variations in hazardous waste generation, it is therefore relevant to consider economic activities.

2.2.1. NACE

In EU the common classification for economic activity is NACE (Nomenclature générale des Activités économiques dans les Communautés Européennes). The amounts of hazardous waste generation will therefore be related, where possible, to NACE-codes. NACE has 4 levels. The classification used in this study is presented in Table 3. It is based mainly on NACE level 2.

Table 3. NACE classification

Nace	Name	Nace	Name
A	Agriculture	E	Electricity, gas and water supply
B	Fishing	F	Construction
C	Quarrying	G 50.2	Maintenance and repair of motor vehicles
DA	Manufacturing (Mfr.) of food, beverages and tobacco	G total	Wholesale and retail trade, repair work except motor vehicles
DB	Mfr. of textiles, wearing, apparel	H	Hotels, restaurants
DC	Mfr. of leather	I 61	Shipping
DD	Mfr. of wood products	I total	Transport, storage and communication
DE	Mfr. of printing and publishing	K 74.81	Photographic activities
DF	Mfr. of refined petroleum products etc.	J+K Total	Financial intermediation, business act.
DG	Mfr. of chemicals	L	Public and personal services
DH	Mfr. of rubber and plastic products	M	Education
DI	Mfr. of other non-metallic mineral products	N	Human health activities
DJ	Mfr. and processing of basic metals	O	Refuse disposal
DK	Mfr. of machinery and equipment	X	Activity not stated
DL	Mfr. of electrical and optical equipment		
DM	Mfr. of transport equipment		
DN	Mfr. of furniture, manufacturing n.e.c.		
(D total)	Incl. Amount which can not be related to a specific D-category)		

2.3. The information list

In order to compare the differences in hazardous waste generation between the different member countries and regions, the ETC/W has proceeded to obtain from each of the involved countries and regions the following information:

a) A list of all the optional combinations between the national hazardous waste classification codes and the national implementation of HWL-codes in the EWC

The national implementation of HWL-codes in the EWC will include 3 parts:

- Waste types already included in the HWL (referred to here as ‘H- codes’);
- waste types included in the EWC but not contained in HWL, which in the national implementation of the EWC and HWL are classified as hazardous. (referred to here as ‘E-codes’);
- waste types not contained in the EWC. In the national implementation of the EWC and the HWL, these waste types have been added as new hazardous codes and they follow the structure of EWC /referred to here as ‘A-codes’).

This overview will not include figures but will only show the possible relations to the EWC and the HWL for each waste type according to the national/regional classification. In this way it is a theoretical model showing that for each existing registered waste fraction according to the national/regional classification, several sources and processes listed in the EWC could have generated the waste.

b) Identification of the additional national hazardous waste codes introduced by each country/region

First of all, ‘E’ and ‘A’ codes will be identified, as notified by each country to the Commission, stated at a 6-digit level. The identification will also include the ‘E’ and ‘A’ codes, which have been used by a region or country, even if these codes have not been notified.

c) The numbers of the national hazardous waste codes and the total amounts of hazardous waste in tonnes, which are:

1. Directly related to HWL (H-codes).
2. Related to other EWC codes stated as hazardous in each country/region (E-codes).
3. Related to additional national EWC codes defined in each country/region and following the structure of the EWC (A-codes).

d) The amounts of hazardous waste for each of the 20 main entries (2-digit level)

e) The amounts of hazardous waste for each of the used 6- digit levels

The amounts on 6-digit level will be stated for each waste type according to H-codes, E-codes or A-codes. If it is not possible to make a clear relation to 6-digit codes , alternatively the 4-digit level subgroup will be stated. It is recognised that this is not ideal due to the fact that a HWL entry requires a 6 digit code; however, when converting from substance-based national classifications to the HWL, at this stage, it is in certain cases, the best that can be achieved.

The general conclusions are described in chapter 3. Details of information for each country and region are provided in chapters 4 to 9.

3. General findings and conclusions

In this chapter some conclusions drawn from the information provided by the participating countries and regions are presented. Detailed information for each country and region is presented in chapters 4 to 9.

Due to lack of information it has not been possible to include North Rhine-Westphalia in all of the general findings and conclusions. For example, even if 60 % of the generated hazardous waste in North Rhine-Westphalia can be related to the European Waste Catalogue and the Hazardous Waste List it is only possible to give detailed information on 15 of the largest hazardous waste types due to consideration of discretion in relation to the producers of the waste.

3.1. Trends in hazardous waste quantities

Information related to more than one year was available from three countries/regions. Therefore, it is difficult to quantify the development of trends in all of the countries and regions between 1993 and 1996. For Austria, Spain/Catalonia and Denmark, the data show increasing quantities of hazardous waste in the period 1993-96 (see table 5, page 20) with higher rates of increase for Austria and Spain/Catalonia and smaller rates for Denmark. However, increasing amounts of hazardous waste can be the result of positive developments such as better collection and registration of waste and not necessarily as a result of a real increase in waste generation.

Altogether, Austria, Denmark, Germany (North Rhine-Westphalia), Ireland and Spain (the Basque Country and Catalonia) generate approximately 6.5 million tonnes of hazardous waste per year. The 18 EEA member countries generate a total of about 31 million tonnes of hazardous waste per year (OECD 1997).

3.2. Difficulties in reclassifying hazardous waste according to the EWC

It has proven difficult to reclassify hazardous waste, which was originally reported according to a national or regional classification system, according to the EWC and the HWL. One of the difficulties is that, in relating from the national or regional codes to HWL and EWC codes, there is often more than one choice. Table 4 shows an example of this problem for Austria: the waste type 'Paper filter mainly with noxious organic contaminants' can be related to 15 different HWL or EWC codes.

Another uncertainty is that Catalonia implemented its own waste classification system before the EWC was finally adopted in 1994. Similarly, the classification developed for the Basque Country is based on a temporary edition of the Basque implementation of the EWC. In each case, uncertainties exist in relating the regional classifications to the EWC.

Therefore, it is important to emphasise that uncertainties exist in relating national or regional quantities of hazardous waste to EWC or HWL codes.

Table 4. Austrian Waste Catalogue (Example)

No.	National Code	National language	English	EWG code	English	H: HWL E: EWG
3	18710	Papier mit schädlichen Verunreinigungen, vorwiegend organisch	Paper filter mainly with noxious organic contaminants	07 01 09	Halogenated filter cakes, spent absorbents	H
				07 01 10	Other filter cakes, spent absorbents	H
				07 02 09	Halogenated filter cakes, spent absorbents	H
				07 02 10	Other filter cakes, spent absorbents	H
				07 03 09	Halogenated filter cakes, spent absorbents	H
				07 03 10	Other filter cakes, spent absorbents	H
				07 04 09	Halogenated filter cakes, spent absorbents	H
				07 04 10	Other filter cakes, spent absorbents	H
				07 05 09	Halogenated filter cakes, spent absorbents	H
				07 05 10	Other filter cakes, spent absorbents	H
				07 06 09	Halogenated filter cakes, spent absorbents	H
				07 06 10	Other filter cakes, spent absorbents	H
				07 07 09	Halogenated filter cakes, spent absorbents	H
				07 07 10	Other filter cakes, spent absorbents	H
15 02 01	Absorbents, filter materials, wiping cloths, protective clothing	E				

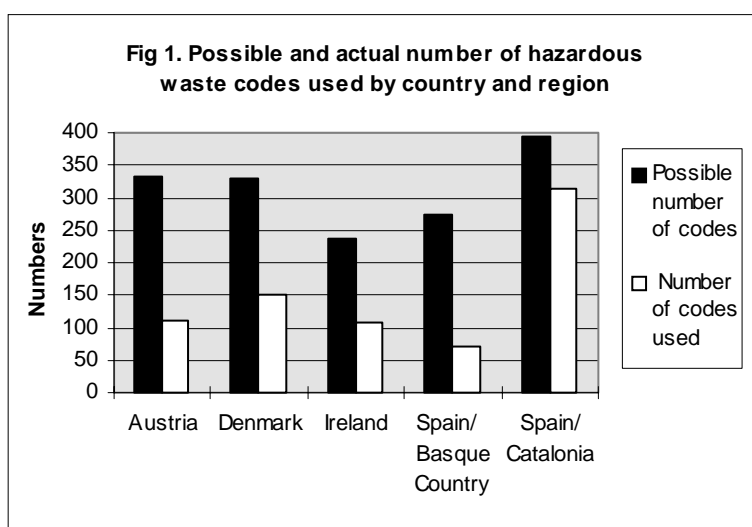
Source: FEA-Austria, 1999

3.3. Number of waste codes used

The HWL consists of 236 different codes. Austria, Denmark and Germany have notified additional hazardous waste codes to the Commission. Ireland has not notified any. Spain has not notified any additional hazardous waste codes to the Commission. However, in the Basque Country and Catalonia, additional codes were used during the period considered (1993-1996).

Figure 1 and table 5 state the total number of codes which can be used in a country or region and the number of codes actually used. The ‘possible number of codes’ includes H-codes, E-codes and A-codes, (see chapter 2.3). Fig.1 shows that apart from Catalonia, each country or region applies less than 50 % of the available codes.

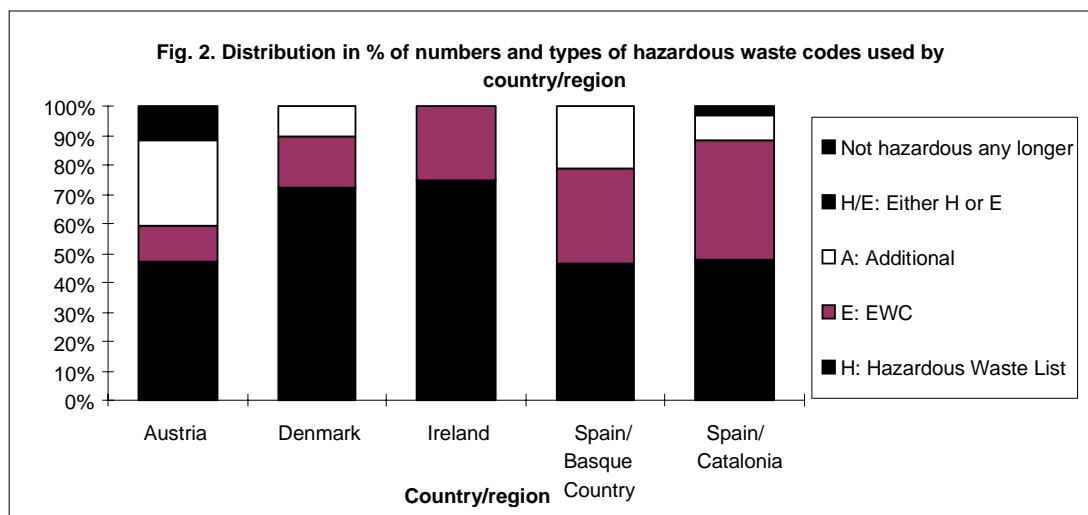
This is not surprising as such since different industrial and other activities generating various types of hazardous waste are established in the respective countries and regions.



Source: Information from FEA-Austria, ETC/W-DK, EPA-Ireland, Juntas de Residus-Catalonia, IHOBE-the Basque Country.

Figure 2 shows, in percentage terms, the hazardous waste codes used by the countries and regions. Denmark (72 %) and Ireland (77 %) report a large proportion of their hazardous waste using Hazardous Waste List codes (H-codes). For Austria (47 %), the Basque Country (46 %) and Catalonia (48 %) the number of HWL codes as a proportion of the total codes used is less than 50 %.

This means that all countries and regions have used a large amount of additional codes either from the EWC (E-codes) or additional codes defined as hazardous following the structure of EWC (A-codes). In fact, the total number of E- and A-codes varies between 25 and 53 % of the total number of codes used by a country or region to register hazardous waste.



Sources: Information from FEA-Austria, ETC/W-DK, EPA-Ireland, Juntas de Residus-Catalonia, IHOBE-the Basque Country. The use of EWC-codes in Ireland represents the way in which waste arisings were reported to the Irish EPA. The waste was recognised as hazardous, even though it was not assigned a Hazardous Waste List code. Since 1.3.1998 some of the used EWC-codes for Austria are not hazardous any longer, but they were at the time of registration.

3.4. Quantities of hazardous waste related to each type of waste code

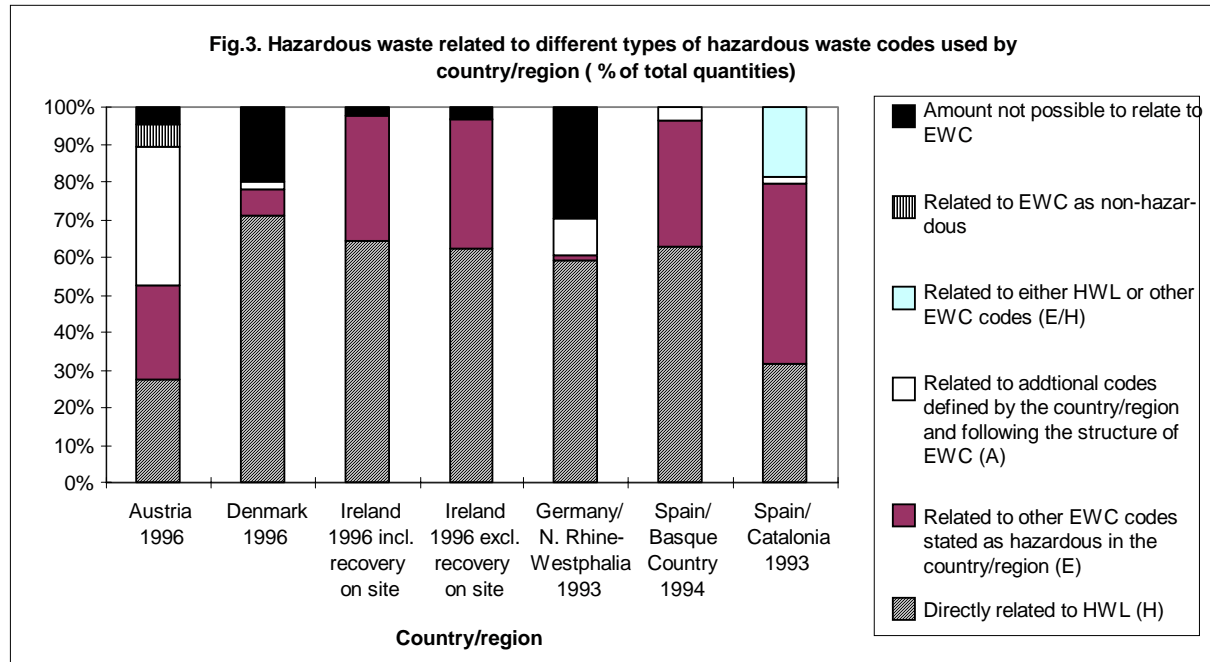
Although a large number of hazardous waste codes are defined as E-codes or A-codes, this does not necessarily mean that large quantities of waste are registered according to these codes. A large number of E-codes and A-codes may represent relatively small amounts of hazardous waste. In such cases it may be possible to compare hazardous waste generation amongst the countries and regions. On the other hand, if E-codes and A-codes relate to large quantities of waste, then it may be difficult to compare hazardous waste generation.

Table 5 shows (see page 19) the amounts of hazardous waste classified according to the different types of waste codes. Fig. 3. shows this distribution in percentage terms. Table 5 and Figure 3 demonstrate that for Austria and Catalonia only between 27 % and 32 % of hazardous waste quantities can be directly related to the Hazardous Waste List. For the Basque Country, Denmark, Ireland and North Rhine-Westphalia the percentage is higher, between 59 % and 71 %.

The figures show that a significant proportion of the hazardous waste generated in each country and region cannot be readily compared because of the different classifications used. For example, in 1996 only 165,635 tonnes out of a total of 605,813 tonnes of hazardous waste generated in Austria could be classified

according to the HWL. The rest of the hazardous waste generated in Austria is classified according to what is notified to the Commission as hazardous waste (E- or A-codes).

The quantity of hazardous waste which can be related to E-codes varies between 1 % and 48 %, with an average of 25 % of each country's or region's total hazardous waste generation. The quantity related to A-codes varies between 0 and 37 %, with an average of 9 %.



Sources: Information from FEA-Austria, ETC/W-DK, Ministry of Environment in North Rhine-Westphalia, EPA-Germany; EPA-Ireland, Juntas de Residus-Catalonia, IHOBE-the Basque Country.

3.5. Conclusion on comparability of the present classification systems for hazardous waste

Concerning comparability, the Hazardous Waste List consists of too few codes to cover what has been regarded or reported as hazardous waste in each country or region. Therefore, when comparing the quantities of hazardous waste between the countries and regions, the variations can be explained first of all by the fact that, even though the Hazardous Waste List has been introduced, the list does not cover sufficiently what is regarded and registered as hazardous waste in each country or region.

3.6. Similarity in the type of hazardous waste generated

To compare whether hazardous waste generation is dominated by the same waste types in the participating countries and regions, table 6 shows (see page 20) a top 5 list of waste codes for each country or region selected on the basis of hazardous waste quantity. A total of 29 different codes are used. Of the 29 codes, 13 are H-codes, 9 are E-codes and 6 are A-codes. The table shows that different types of hazardous waste dominate in different countries.

A top 20 list would consist of a total of 86 different codes. Of the 86 codes, 43 are H-codes, 27 are E-codes and 16 are A-codes. Such a list reflects the same conclusion that the same hazardous waste types do not dominate in each country or region.

Table 5. Hazardous waste generation in Austria, Denmark, Ireland, Germany (N. Rhine-Westphalia) and Spain (the Basque Country and Catalonia), related to the hazardous Waste List (HWL), the European Waste Catalogue (EWC) and additional national/regional codes (EWC (A))

Country/ region	Year		Total amount/ codes of hazardous waste	Directly related to HWL (H)	Related to other EWC codes stated as hazardous in the country/region (E)	Related to additional codes defined by the country/region and following the structure of EWC (A)	Related to either HWL or other EWC codes (E/H)	Total amount related to HWL codes, EWC codes or additional EWC codes	Amount related to EWC (not hazardous any longer)	Amount not related to EWC
Austria		<i>Possible number of codes</i>	325	236	26	63				
	1993	<i>Number of codes used</i>	105	50	14	28			13	
	1994	<i>Number of codes used</i>	104	49	14	30			11	
	1995	<i>Number of codes used</i>	106	49	14	30			13	
	1996	<i>Number of codes used</i>	111	52	14	32			13	
	1993	Amount in tonnes	499.455	120.254	160.866	158.181		439.301	25.846	34.308
	1994	Amount in tonnes	513.191	124.157	161.051	169.739		454.947	28.380	29.864
	1995	Amount in tonnes	576.878	139.134	159.416	216.091		514.641	31.299	30.938
	1996	Amount in tonnes	605.813	165.635	152.134	224.475		542.244	34.161	29.408
	1993	Amount in %	100	24,1	32,2	31,7		88,0	5,2	6,9
	1994	Amount in %	100	24,2	31,4	33,1		88,7	5,5	5,8
	1995	Amount in %	100	24,1	27,6	37,5		89,2	5,4	5,4
1996	Amount in %	100	27,3	25,1	37,1		89,5	5,6	4,9	
Denmark		<i>Possible number of codes</i>	329	236	72	21				
	1995	<i>Number of codes used</i>	150	108	27	15				
	1996	<i>Number of codes used</i>	136	99	26	11				
	1995	Amount in tonnes	247.235	184.285	19.595	4.504		208.384		38.851
	1996	Amount in tonnes	263.987	188.163	18.622	4.074		210.859		53.128
	1995	Amount in %	100	74,5	7,9	1,8		84,3		15,7
	1996	Amount in %	100	71,3	7,1	1,5		79,9		20,1
Ireland		<i>Possible number of codes</i>	236	236						
	1996	<i>Number of codes used</i>	108	83	25					
	1996	Amount in tonnes incl. recovery on site	229.560	147.414	77.289			224.703		4.857
	1996	Amount in tonnes excl. recovery on site	143.860	89.397	49.606			139.003		4.857
	1996	Amount in % incl. recovery on site	100	64,2	33,7			97,9		2,1
	1996	Amount in % excl. recovery on site	100	62,1	34,5			96,6		3,4
Germany/ North Rhine- Westphalia		<i>Possible number of codes</i>	254	236		19				
	1993	<i>Number of codes used</i>								
	1993	Amount in tonnes	4.076.400	2.405.353	54.191	412.337				1.204.519
	1993	Amount in %	100	59,0	1,3	10,1				29,6
Spain/ The Basque Country		<i>Possible number of codes</i>	274	236	23	15				
	1994	<i>Number of codes used</i>	71	33	23	15				
	1994	Amount in tonnes	468.806	295.172	155.859	17.775		468.806		
	1994	Amount in %	100,0	63,0	33,2	3,8		100,0		
Spain/ Catalonia		<i>Possible number of codes</i>	393	236	128	29				
	1994	<i>Number of codes used</i>	315	150	128	26	11			
	1995	<i>Number of codes used</i>	315	150	128	26	11			
	1996	<i>Number of codes used</i>	315	150	128	26	11			
	1994	Amount in tonnes	787.296	256.756	331.839	8.870	189.831	787.296		
	1995	Amount in tonnes	831.712	272.958	374.419	12.551	171.784	831.712		
	1996	Amount in tonnes	893.511	284.406	425.313	16.555	167.237	893.511		
	1994	Amount in %	100	32,6	42,1	1,1	24,1	100		
	1995	Amount in %	100	32,8	45,0	1,5	20,7	100		
	1996	Amount in %	100	31,8	47,6	1,9	18,7	100		

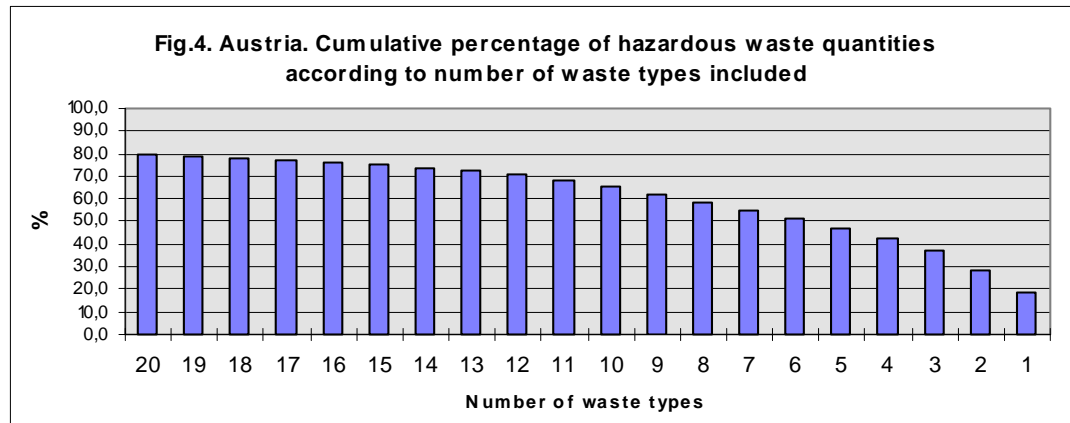
Table 6. Top 5 of each country's and region's hazardous waste generation related to EWC on 6-digit level and stated in tonnes.

		Austria	Denmark	Ireland incl. recovery on site	Ireland excl. recovery on site	Germany (North Rhine-Westphalia)	Spain (the Basque Country)	Spain (Catalonia)
01 03 99	Wastes not otherwise specified			20.900	20.900			
02 01 02	Animal tissue waste							40.835
05 05 01	Waste containing sulphur						45.532	
05 08 99 01	Alkalines containing oil or tars	36.342						
06 01 02	Hydrochloric acid						39.260	
07 01 02	Sludges from on-site effluent treatment							42.137
07 01 99	Wastes not otherwise specified							51.254
07 05 04	Other organic solvents, washing liquids and mother liquors			31.067	19.814			
07 05 99	Wastes not otherwise specified			49.244	21.561			
07 07 04	Other organic solvents, washing liquids and mother liquors			37.689	3.569			
10 01 02	Coal fly ash							125.513
10 01 09 00	Sulphuric acid		22.000					
10 02 03	Solid wastes from gas treatment		10.487				62.920	
10 03 04	Primary smelting slags/white drosses					154.810		
11 01 04	Cyanide-free wastes containing chromium					130.573		
11 01 05	Acidic pickling solutions						64.200	
12 01 09	Waste machining emulsions free of halogens						69.425	
13 02 02 00	Non-chlorinated engine, gear and lubricating oils		34.120					
13 05 03	Interceptor sludges			14.349	14.349			
16 01 04 01	Discarded vehicles, not de-polluted	50.372						
16 06 01 00	Lead batteries		14.200					
17 01 99 D1	Bricks, concret, tiles and gypsum based or asbestos based materials with noxious contaminants					147.973		
17 02 99 D1	Wood, glass and plastic with noxious contaminants					112.524		
17 05 01 01	Soil and stones, hazardous contaminated	60.344						
19 01 00 00	Wastes from incineration or pyrolysis of municipal and similar commercial, industrial and institutional wastes		71.900					
19 01 01	Bottom ash and slag	112.784						
19 01 03	Fly ash	25.557						
19 01 06	Aqueous liquid waste from gas treatment and other aqueous liquid waste					292.883		
19 03 01	Wastes stabilised/solidified with hydraulic binders							77.964

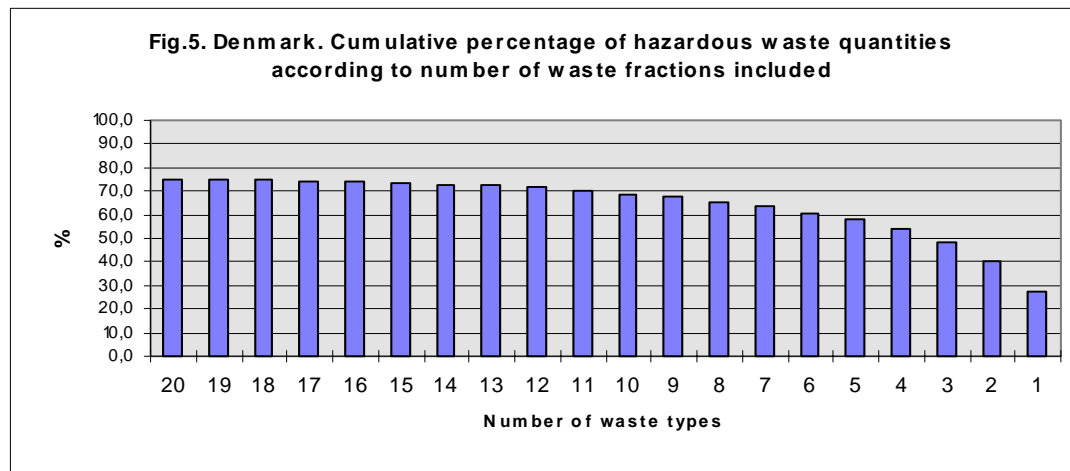
The different waste oil types included in main group 13 on 2-digit level (oil wastes) are often collected by the same collector and are mixed in the same tank lorry. Therefore, it can often be difficult to register the individual waste oil types properly on 6-digit level. If all waste oil types on 6-digit level in main group 13 are counted together apart from oil containing PCB or PC, it means that Austria, Denmark and Ireland will have this amount included in the Top 5 list. The Basque Country, Catalonia and North Rhine Westphalia will have these oil wastes included in the top 10 list.

3.7. Domination of the major waste types

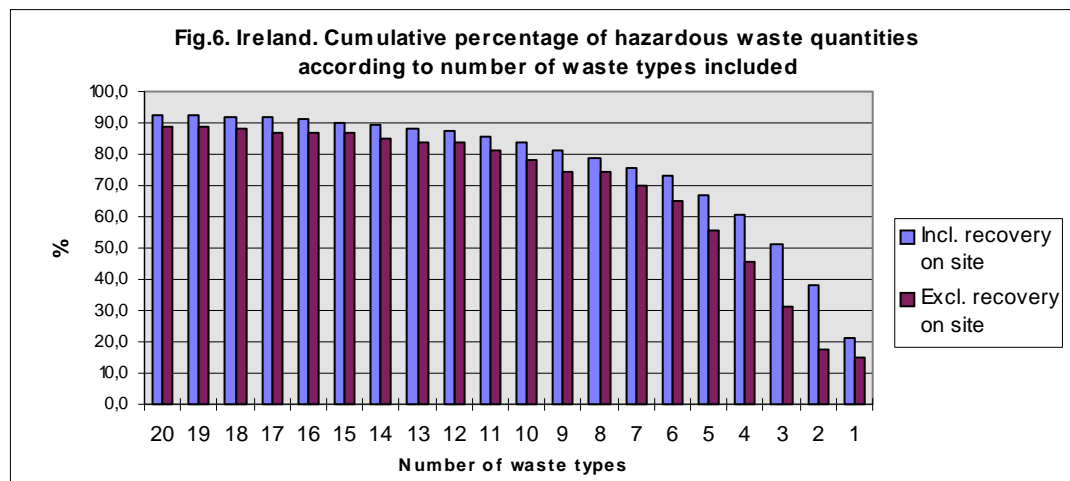
Figures 4-9 show a cumulative percentage of hazardous waste quantities for each country and region according to the top 20 waste codes. For example, Fig. 4 shows that for Austria, the 20 largest waste codes represent 80 % of total hazardous waste generation. Figures 5 to 9 show a similar trend for each of the other countries and regions. In general, the top 20 list covers between 39 % and 93 % of the generated hazardous waste in each country and region, with an average of 75 %. The low percentage (39 %) for North Rhine-Westphalia includes only the 15 largest waste codes.



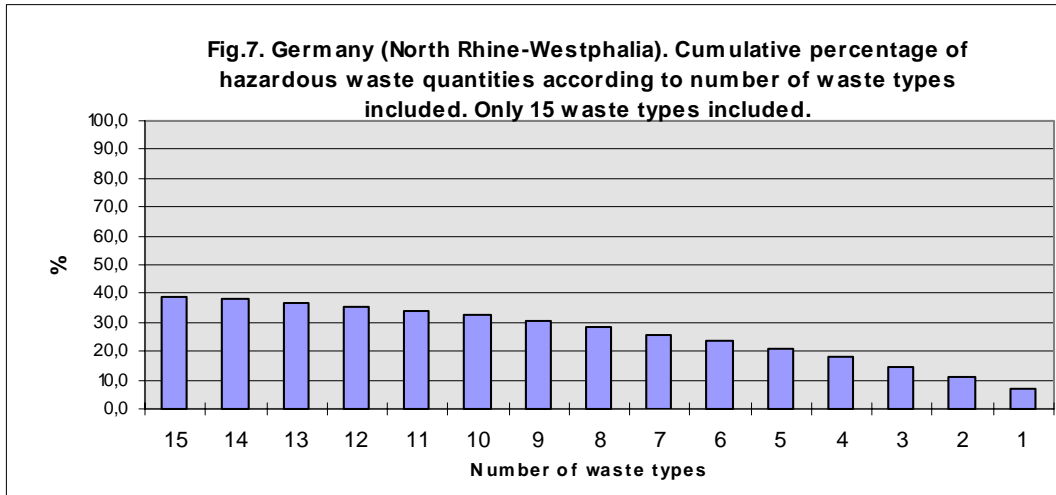
Source: FEA-Austria



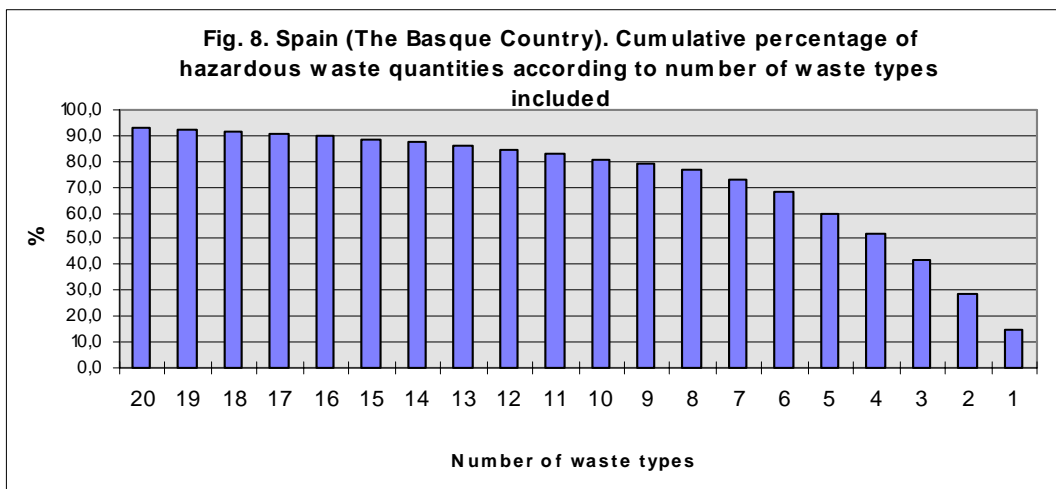
Source: ETC/W-DK



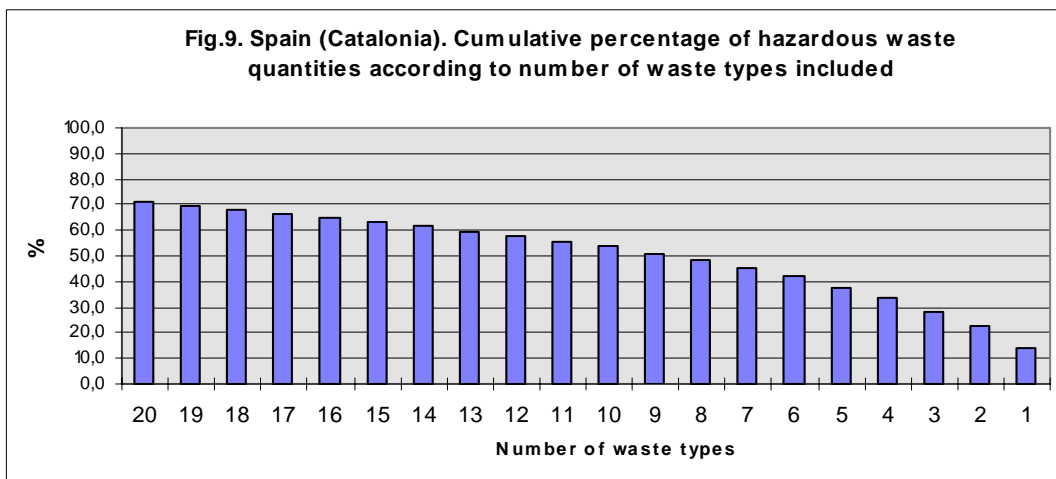
Source: EPA-Ireland



Source: Ministry of Environment in North Rhine-Westphalia and EPA-Germany



Source: IHOBE, 1998



Source: Juntas de Residus, Catalonia

If figures 4 to 9 reflect a general trend for other EEA member countries, it seems sufficient for the purpose of making a comparison to have information on the 20 largest generated hazardous waste types.

3.8. Revision of the Hazardous Waste List

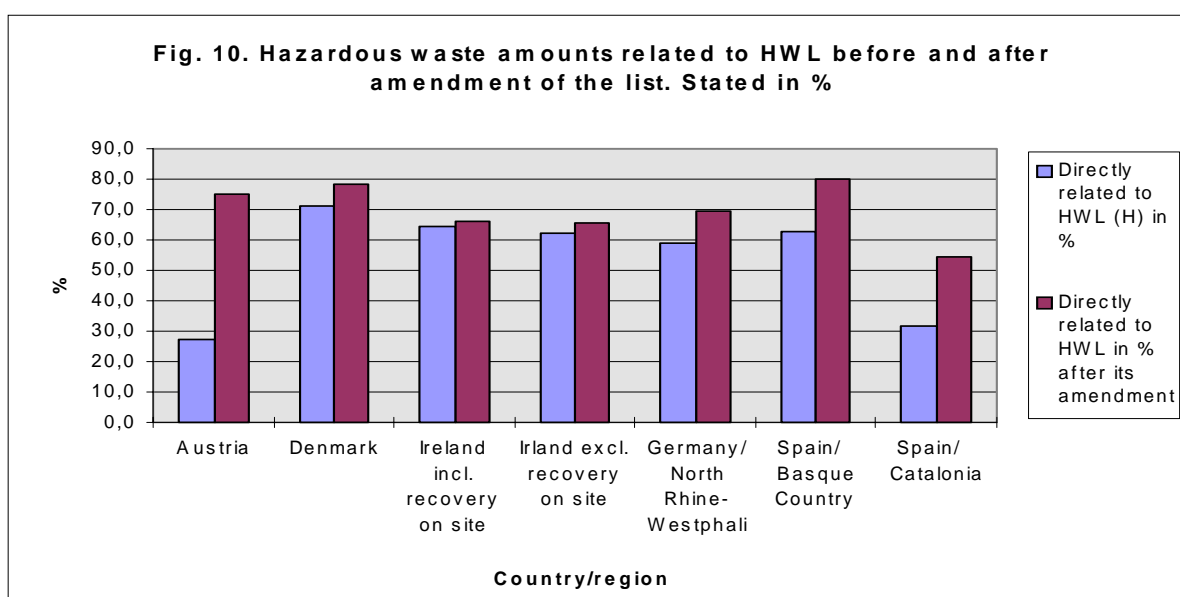
For the last two years the Technical Adaptation Committee for Waste (see Article 18 of the Framework Directive on Waste (75/442/EEC)) has discussed how the European Waste Catalogue can be amended to include revisions to the Hazardous Waste List.

A proposal from the Commission will be voted upon at the next Adaptation Committee meeting in December 1999. Up to the end of 1998 the Commission had received 471 notifications from Member States on waste. To date 282 of these notifications have been examined. Of these, 242 are included in the proposal from the Commission and 40 have either been withdrawn by the Member States or have been rejected. Many of the 242 notifications are not represented by new EWC codes but instead are redefinitions of existing EWC codes.

For the remaining 189 notifications, no decision has yet been made. These notifications, together with future notifications will be examined for a second amendment to the European Waste Catalogue.

3.9. Implications of changes to the European Waste Catalogue

If the proposal from the Commission is passed by the Technical Adaptation Committee, the total number of hazardous waste codes will increase from the present 236 to almost 300. This decision will influence how many tonnes of hazardous waste from Austria, Denmark, Ireland, Germany (North Rhine-Westphalia) and Spain (the Basque Country and Catalonia) can be directly related to the HWL. Fig. 10 shows that, at the moment, for ETC/W-countries and regions, the amount directly related to the HWL varies between 27 % to 71 %, with an average of 52 %. After an amendment the percentage would vary between 55 % to 80 %, with an average of 71 %. Therefore, if the amendment of the hazardous waste list is passed, it will also mean that in future, the comparability of hazardous waste data between the countries and regions will be improved.



Source: Sources: Information from FEA-Austria, ETC/W-DK, Ministry of Environment in North Rhine -Westphalia, EPA-Ireland, Juntas de Residus-Catalonia, IHOBE-the Basque Country, Working Document for the meeting on Technical Adaptation Committee on 12 February 1999

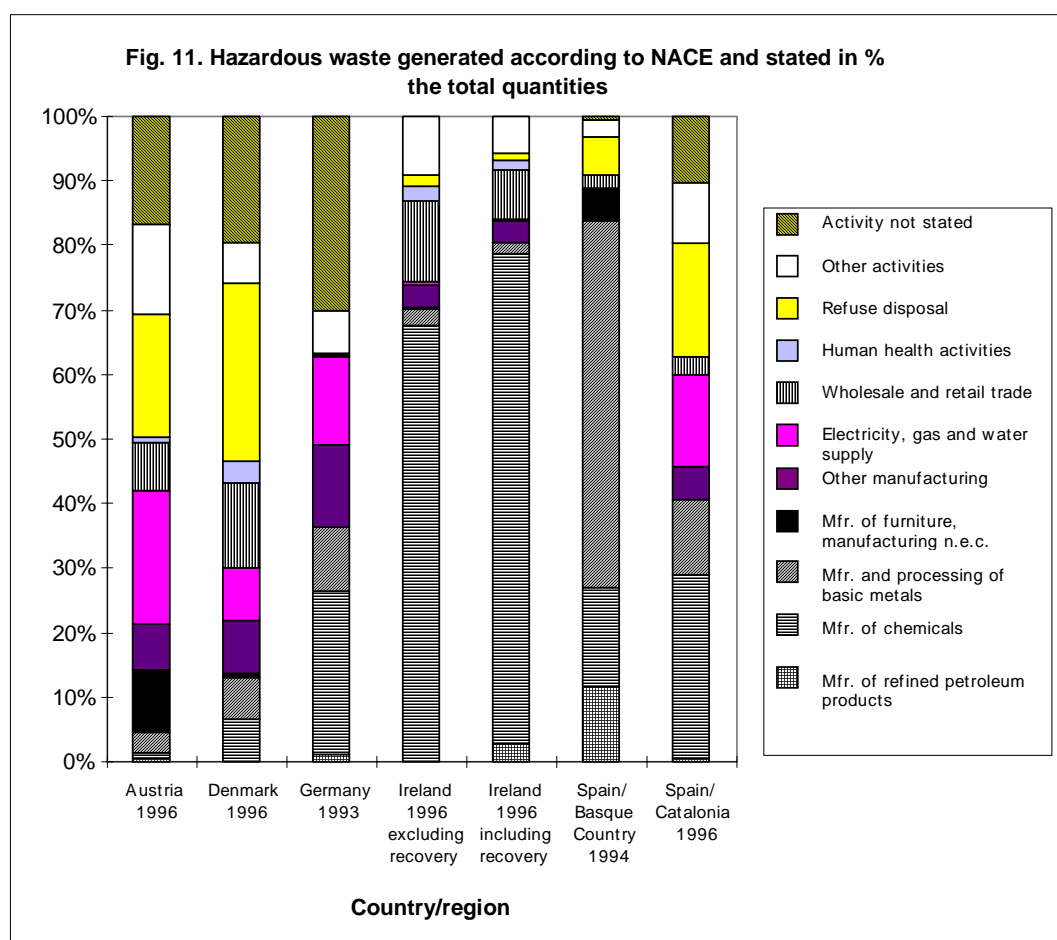
3.10. Hazardous waste generation according to NACE activities

Table 7 shows the quantities and Fig. 11 the percentage of hazardous waste generation classified according to NACE activity. It has to be emphasised that for Austria, Denmark and Germany between 17 % and 32 % of the NACE activities is not stated. Please note the figures for Germany are covering not only North Rhine-Westphalia, but Germany as such.

In all countries and regions manufacturing industry produces a significant proportion of the total hazardous waste quantity. This is especially the case for Ireland (74-84 %) and the Basque Country (89 %).

In each country or region, apart from Austria, a considerable proportion of all hazardous waste arises from the manufacture of chemicals. This is especially the case for Germany (25 %), Ireland (68-76 %) and Spain/Catalonia (28 %). Also the manufacture and processing of basic metals constitutes a considerable proportion, especially in Spain/the Basque Country (57 %).

In Austria, Denmark, Germany and Spain (Catalonia) 8-21 % of hazardous waste is generated by energy, gas and water supply activities. Hazardous wastes from refuse disposal activities constitute a large part in Austria (19 %), Denmark (28 %) and Spain/Catalonia (18 %). This is mainly made up of residues, including flue gas cleaning, from waste incineration.



Source: Information from FEA-Austria, ETC/W-DK, Ministry of Environment in Germany, EPA-Ireland, IHOBE-the Basque Country, Juntas de Residuos-Catalonia, and the statistical offices in Austria, Denmark, Germany, Ireland, the Basque Country and Catalonia, Please note the figures for Germany are covering not only North Rhine-Westphalia, but Germany as such.

Table 7. Hazardous waste generated in Austria, Denmark, Germany, Ireland and Spain (the Basque Country and Catalonia) according to NACE. Stated in tonnes and in % of the total generation of hazardous waste. Please note Germany is included as such.

NACE	Economic area	Austria 1996	% 1996	Denmark 1996	% 1996	Germany 1993	% 1993	Ireland 1996 excluding recovery on site	% 1996	Ireland 1996 including recovery on site	% 1996	Spain/ Basque Country 1994	% 1994	Spain/ Catalonia 1996	% 1996
A	Agriculture	14.168	2,3	165	0,1									40.981	4,6
B	Fishing	1	0,0												
C	Quarrying	20.469	3,4			105.000	1,2	7	0,0	8	0,0			27.593	3,1
DA	Manufacturing (Mfr.) of food, beverages and tobacco	5.625	0,9	285	0,1	144.000	1,6	163	0,1	164	0,1	462	0,1	19.434	2,2
DB	Mfr. of textiles, wearing, apparel	6.927	1,1	105	0,0			7	0,0	7	0,0			669	0,1
DC	Mfr. of leather	232	0,0	193	0,1			22	0,0	22	0,0	1.010	0,2	5.207	0,6
DD	Mfr. of wood products	1.849	0,3	429	0,2			34	0,0	34	0,0				0,0
DE	Mfr. of printing and publishing	4.027	0,7	1.449	0,5			47	0,0	2.250	1,0	318	0,1	3.594	0,4
DF	Mfr. of refined petroleum products	3.314	0,5	311	0,1	108.000	1,2	122	0,1	6.642	2,9	55.071	11,7	5.665	0,6
DG	Mfr. of chemicals	5.757	1,0	17.927	6,6	2.291.000	25,2	97.155	67,5	174.040	75,8	71.212	15,2	250.477	28,3
DH	Mfr. of rubber and plastics products	338	0,1	858	0,3			1.568	1,1	1.568	0,7	107	0,0	750	0,1
DI	Mfr. of other non-metallic mineral products	1.746	0,3	494	0,2			366	0,3	366	0,2			106	0,0
DJ	Mfr. and processing of basic metals	17.769	2,9	17.355	6,4	908.000	10,0	3.555	2,5	3.555	1,5	266.151	56,8	104.878	11,8
DK	Mfr. of machinery and equipment	5.506	0,9	3.933	1,4	455.000	5,0		0,0		0,0				
DL	Mfr. of electrical and optical equipment	7.450	1,2	1.164	0,4			1.977	1,4	1.977	0,9			15.798	1,8
DM	Mfr. of transport equipment	9.285	1,5	1.732	0,6	552.000	6,1	1.014	0,7	1.014	0,4				
DN	Mfr. of furniture, manufacturing n.e.c.	58.887	9,7	1.299	0,5			337	0,2	445	0,2	23.049	4,9		
D Total	Total	128.710	21,2	59.690	21,8	4.458.000	49,0	106.367	73,9	192.083	83,7	417.380	89,0	406.578	45,9
E	Electricity, gas and water supply	125.522	20,7	22.589	8,3	1.257.000	13,8	661	0,5	661	0,3			125.632	14,2
F	Construction	8.402	1,4	8.383	3,1	490.000	5,4	159	0,1	159	0,1			1.855	0,2
G50.2	Maintenance and repair of motor vehicles	25.356		34.233	12,5							858	0,2	17.764	2,0
G Total	Wholesale and retail trade	45.105	7,4	36.000	13,2			18.180	12,6	18.180	7,9	9.358	2,0	23.130	2,6
H	Hotel, restaurants	3.374	0,6	55	0,0										
I61	Shipping	5						6.906		6.906		8.450	1,8	371	
I Total	Transport, storage and communication	22.695	3,7	1.545	0,6			12.688	8,8	12.688	5,5	8.529	1,8	14.518	1,6
K74.81	Photographic activities											4.250	0,9	200	
J+K Total	Financial intermediation, business act.	12.722	2,1	5.989	2,2			61	0,0	61	0,0	4.250	0,9	200	0,0
L	Public and personal services	1.897	0,3	1.089	0,4			8	0,0	8	0,0				
M	Education	556	0,1	318	0,1			5	0,0	5	0,0				
N	Human health activities	6.113	1,0	8.864	3,2	32.000	0,4	3.017	2,1	3.017	1,3			64	0,0
O	Refuse disposal	115.323	19,0	75.173	27,5	11.000	0,1	2.691	1,9	2.691	1,2	26.813	5,7	155.917	17,6
X	Activity not stated	100.760	16,6	53.336	19,5	2.739.000	30,1		0,0		0,0	2.476	0,5	89.773	10,1
	Total	605.817	100	273.196	100	9.092.000	100	143.844	100	229.561		468.806	100	886.241	100

3.10.1. Hazardous waste generation per employee

The industrial structure varies within each country and region. The relative size of manufacturing industries is approximately the same in Denmark and Austria, while its importance in the Basque Country and Germany is greater when measured by the number of full time employed. Therefore, table 8 shows a calculation of hazardous waste generation per employee in the manufacturing and other sectors.

Table 8. Hazardous waste generated per employee in Austria, Denmark, Germany, Ireland and Spain (the Basque Country and Catalonia) according to NACE-code.

NACE-code		Austria (1996) Kg per employee	Denmark (1996) Kg per employee	Germany (1993) Kg per employee	Ireland (1996) excluding recovery on site Kg per employee	Spain/ Basque Country (1994) Kg per employee	Spain/ Catalonia (1996) Kg per employee
	Total	199	132	188		301	304
D	Manufacture total	210	144	372	436	888	156
E - X	Total of trade, service, transport and infrastructure	223	135	129	628	49	1348

The table is calculated with available data on the total amount of Hazardous Waste divided by the number of full time occupied persons related to the same NACE classes. Source: Information from FEA-Austria, ETC/W-DK, Ministry of Environment in Germany, EPA-Ireland, Juntas de Residus-Catalonia, IHOBE-the Basque Country and the statistical offices in Austria, Denmark, Germany, Ireland, the Basque Country and Catalonia,.

Only to a limited extent can the difference in quantities of hazardous waste generated be explained by the number of employees in different industrial sectors. Overall however, the generation of waste seems to be more closely related to number of employees than to total population (see table 1, page 7).

A few dramatic differences in waste/employee may, for certain industries, be explained by the presence of waste types considered as hazardous in only one country.

For a more detailed analysis, it may be appropriate to examine the common classifications of hazardous waste against a more detailed breakdown of industrial structure. For the time being, this is not possible due to the absence of data.

3.10.2. Conclusions according to NACE activities

Hazardous waste generation related to NACE activities shows that, first of all, knowledge of the industrial structure in a particular country or region is important in explaining differences in hazardous waste quantities, especially in the manufacturing industries. Secondly, a significant consideration must be how energy is produced in each country and region. Thirdly, refuse disposal activities give rise to significant hazardous waste generation, especially flue gas cleaning residues from waste incineration. In fact the quantities of hazardous waste from waste incineration seem to be increasing due to higher environmental standards.

3.11. General conclusions on comparability of hazardous waste generation

- The variations in hazardous waste generation between Austria, Denmark, Ireland, Germany (North Rhine-Westphalia) and Spain (the Basque Country and Catalonia), can first of all be explained by the fact that, even though the Hazardous Waste List and the European Waste Catalogue have been

introduced, they do not sufficiently describe what is regarded and reported as hazardous waste in each country or region. The amounts of hazardous waste that may be related directly to the Hazardous Waste List vary from 27 to 71 %.

- If the Hazardous Waste List is amended as proposed by the Commission, the amounts of hazardous waste that may be related directly to the Hazardous Waste List will increase to 55-80 % for examined countries and region. This means that the comparability of hazardous waste generation would increase.
- Different types of hazardous waste dominate in the different countries and regions which were examined.
- In each of the examined countries and regions a relatively small number of waste types represent a large proportion of the total hazardous waste generation. On average, the 20 largest waste types represent about 75 % of the total waste generation.
- In general, the industrial structure is important as a factor in explaining the difference between hazardous waste quantities in the different countries and regions. Significant differences exist between the respective manufacturing industries, energy production sectors and waste incineration activities.
- It has proven difficult to relate hazardous waste classified according to national or regional substance orientated classifications to the Hazardous Waste List and the European Waste Catalogue. Therefore, when the work of comparison is extended to all other EEA member countries, it is recommended to ask for information only on the 20 largest generated hazardous waste types in each of the countries.

4. Austria

4.1. Classification

The contents of the EU Council Decision of Hazardous Waste (94/904 EC) were adopted by virtue of the 1997 Waste Determination Ordinance, which entered into force on March 1st, 1998. Effective from July 1st, 2000, the EU Hazardous Waste List (HWL) will supersede the taxative list of hazardous waste. This is therefore also the date on which the EU system will be formally and completely adopted. An immediate implementation of the EWC/HWL on the basis of the 1997 Waste Determination Ordinance was not considered appropriate, since substantial structural differences exist between the ÖNORM standards and the EWC, furthermore the EWC/HWL system itself is currently being revised. Austria has notified 89 additional waste types to the Commission as a supplement to the HWL.

The 1997 Waste Determination Ordinance is based on the revised 1997 ÖNORM S2100 standard and contains a taxative list of hazardous waste types (Annex 1 of the Ordinance). This waste catalogue has got a substance oriented background and consists of 668 different waste types of which 322 are hazardous. De-classification from the category of hazardous waste is only possible on the basis of comprehensive and standardised examinations and expert opinions. De-classified quantities must be reported to the authority. For this reason Annex 2 of the Ordinance contains a more detailed explanation of the hazardousness criteria, in terms of the classification and/or de-classification of waste within the category of hazardous waste.

4.2. Licensing and reporting obligations

The 1990 Waste Management Act (WMA) defines that any person collecting (coming to collect or receiving) or treating (recycling, sorting or processing) hazardous waste or waste oils shall require an authorisation for this activity by the governor of the respective federal province. Running a waste management facility for hazardous waste requires a licence according to section 28 of the Waste Management Act.

Persons in possession of hazardous waste have to register the type, amount, provenance and treatment by means of the way-bill system. The Austrian Waste Management Act provided for the establishment of a waste database containing way-bill data to assist in controlling hazardous waste from production to treatment and to provide data for planning of waste management facilities.

The waste database was established in 1990 and since then has been managed and operated by the Federal Environment Agency of Austria (FEA). According to the way-bill system consistent figures on hazardous waste generated in Austria are available for the years 1990 up to 1997. The operational centre is the FEA but copies of the database and of relevant data are distributed to the competent waste management authorities of the Austrian provinces. Therefore, the main emphasis is laid on the co-ordination of the requirements and demands of the various database users. A crucial point is to maintain the consistency of the database by means of regular distribution of up-to-date data.

The waste database is also a tool for:

- analysing and evaluating waste data, to provide statistical information for waste management authorities and the public;
- providing analysis of specific waste streams as a contribution to various industrial concepts for waste prevention and recycling potentials;
- assisting the competent authorities in controlling ‘holders’ of hazardous waste (producers, treatment facilities, etc.) by providing specific analysis of way-bill data;
- providing data on transfrontier shipments of waste, which are the basis for the annual report to the OECD on waste exports.

4.3. Characterisation of hazardous waste generation

Evaluations of the waste database for 1996 show that the largest registered amounts of hazardous waste are for ashes and slags from waste incineration facilities, end of life vehicles, oil-contaminated soil and waste oils. In total, 20 different waste types account for 80 % of the total hazardous waste generation.

In 1996 a total of 605 000 t of hazardous waste was registered. The relation to the HWL shows that 51 key-numbers could be related directly to HWL waste types. This constitutes approx. 165 000 t or 27.3 % of the total registered with five waste types each accounting for 20 000 t or greater. This means that many H codes were used which contribute with only small amounts.

In addition, approx. 376 000 t or 62.2 % could be related to 89 (46 used) waste types notified to the Commission, 26 (14 used) of which can be related to other EWC codes stated as hazardous in Austria (approx. 152,000 t or 25.1 %) and 63 (32 used) which can be related to additional Austrian codes following the structure of EWC (approx. 224 000 t or 37.1 %).

In sum approx. 90 % of the hazardous waste generated in 1996 could be related to HWL and EWC including nationally notified waste codes.

14 key-numbers with an amount of approx. 34 000 t were related to EWC as non-hazardous and approx. 29 000 t or 5 % could not be related.

The result of the relation of the hazardous waste generated in Austria in 1996 to economic areas according to NACE codes can be summarised as follows:

- From the sum of 605 000 t only 100 800 t could not be related to NACE codes;
- the economic areas with the biggest amount of hazardous waste are the manufacture of products (21.24 %), the electricity, gas and water supply (20.71 %) and the refuse disposal (19.04 %).

4.4. Description of methods used relating ÖNORM to EWC

On behalf of the Ministry of Environment, Youth and Family Affairs a correlation programme translating waste codes according to the Austrian Waste Catalogue (ÖNORM S 2100,1990) to EWC has been developed.

In the meantime the 1997 Waste Determination Ordinance defining hazardous waste came into force, accordingly 89 waste types were additionally notified to the EC. Therefore a revision of the above mentioned correlation programme has been carried out by experts of the Federal Environment Agency and the Ministry

of Environment, Youth and Family Affairs and has been used for calculating the amounts of hazardous waste according to EWC. A further revision is currently under progress.

The relation of hazardous waste amounts registered in ÖNORM-key-numbers to EWC/HWL could only be carried out with the help of waste management know-how and using existing information about waste production and economic areas.

4.5. Aggregation of codes and amounts of hazardous waste generation in Austria 1993-1996

Aggregation of codes and amounts of hazardous waste generated in Austria 1993 - 1996														
Categories	Possible number of codes	Number of codes used	Amount			Codes used	Amount			Codes used	Amount			
			No. 1996	Tonnes 1996	% 1996		No. 1995	Tonnes 1995	% 1995		No. 1994	Tonnes 1994	% 1994	No. 1993
1	Directly related to HWL: H	236	51	165,635	27.3	48	139,134	24.1	48	124,157	24.2	49	120,254	24.1
2	Related to other EWC codes stated as hazardous in Austria: E	26	14	152,134	25.1	14	159,416	27.6	14	161,051	31.4	14	160,866	32.2
3	Related to additional Austrian codes following the structure of EWC (add. nat. EWC codes): A	63	32	224,475	37.1	30	216,091	37.5	30	169,739	33.1	28	158,181	31.7
4	Total amount related to HWL/EWC/add. nat. EWC (notified)	-		542,244	89.5		514,641	89.2		454,947	89		439,301	87.9
5	Amount related to EWC (not hazardous any longer according to 1997 Waste Determination Ordinance, effective from 1.3.1998)	-	14	34,161	5.6	14	31,299	5.4	12	28,380	5.5	14	25,846	5.2
6	Amount not related to EWC	-		16,009	2.6		15,719	2.7		14,524	2.8		12,831	2.6
7	Total of hazardous waste according to the 1998 Federal Waste Management Plan (Federal Law.Gaz. 49/1991, rounded)	-		592,400	97.8		561,700	97.4		497,900	97.0		478,000	95.7
8	Other wastes not related, but registered in the way-bill system	-		13,399	2.2		15,219	2.6		15,340	3.0		21,477	4.3
9	Total amount of haz. wastes according to the way-bill system (rounded)	325	111	605,800	100.0	106	576,900	100.0	104	513,200	100.0	105	499,500	100.0

4.6. Hazardous waste generated in Austria 1993-1996 related to EWC on 2-digit level and stated in tonnes

Hazardous Waste generated in Austria 1993-1996 related to EWC on 2-digit level and stated in tonnes									
Code	Description	1996	non-hazardous	1995	non-hazardous	1994	non-hazardous	1993	non-hazardous
01	WASTE RESULTING FROM EXPLORATION, MINING, DRESSING AND FURTHER TREATMENT OF MINERALS AND QUARRY	6,813		4,044		1,836		1,419	0
02	WASTE FROM AGRICULTURAL, HORTICULTURAL, HUNTING, FISHING AND AQUACULTURE PRIMARY PRODUCTION, FOOD PREPARATION & PROCESSING	1,155	20,516	1,290	19,506	1,525	18,619	1,880	16,487
04	WASTES FROM THE LEATHER AND TEXTILE INDUSTRIES	352		262		209		237	
05	WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	38,177		39,328		40,117		38,744	
06	WASTES FROM INORGANIC CHEMICAL PROCESSES	11,437		4,885	12	2,451		1,882	0
07	WASTES FROM ORGANIC CHEMICAL PROCESSES	284	813	245	834	235	757	410	886
08	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	12,180	2,792	12,206	2,964	12,000	2,558	12,660	2,629
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	4,903		4,629		4,107		3,446	
10	INORGANIC WASTES FROM THERMAL PROCESSES	54,431	9,276	35,739	6,692	16,085	6,225	24,101	5,194
11	"INORGANIC WASTE WITH METALS FROM METAL TREATMENT AND THE COATING OF METALS; NON-FERROUS HYDRO-METALLURGY"	4,924		4,756		3,757		3,528	
12	WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS	40,757	11	40,158	51	35,706	58	29,678	3
13	OIL WASTES (except edible oils, 05 00 00 and 12 00 00)	32,573		29,815		29,465		29,095	
14	WASTES FROM ORGANIC SUBSTANCES EMPLOYED AS SOLVENTS (except 07 00 00 and 08 00 00)	43		102		48		30	
15	"PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED"	31,984		26,346		22,104		17,924	
16	WASTE NOT OTHERWISE SPECIFIED IN THE CATALOGUE	66,985		66,468		66,736		41,741	
17	CONSTRUCTION AND DEMOLITION WASTE (INCLUDING ROAD CONSTRUCTION)	66,170		68,037		38,057		52,910	
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (excluding kitchen and restaurant wastes which do not arise from immediate health care)	3,387	1	3,368	1	3,326	1	3,315	0
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY	139,590	752	150,159	1,239	156,744	163	153,576	648
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS	26,099		22,804		20,439		22,725	
	Total amount related to HWL/EWC/add. EWC (notified)	542,244	34,161	514,641	31,299	454,947	28,380	439,301	25,846
	<i>Amount related to EWC (not hazardous any longer)</i>	<i>34,161</i>		<i>31,299</i>		<i>28,380</i>		<i>25,846</i>	
	<i>Amount not related to EWC</i>	<i>16,009</i>		<i>15,719</i>		<i>14,524</i>		<i>12,831</i>	
	Total of hazardous waste according to the 1998 Federal Waste Management Plan	592,400		561,700		497,900		478,000	
	Other wastes not related, but registered in the way-bill system	13,399		15,219		15,340		21,477	
	Total amount of haz. wastes according to the way-bill system	605,800		576,900		513,200		499,500	

4.7. Hazardous waste generated in Austria 1993-1996 related to EWC on 6-digit level

Hazardous Waste generated in Austria 1993-1996 related to EWC on 6-digit level (in tonnes)						
Code	Description	H: HWL E: EWL A: add. EWC	1996	1995	1994	1993
01 05 01	oil-containing drilling muds and wastes	E	6,813	4,044	1,836	1,419
02 01 05	agrochemical wastes	H	141	106	108	125
02 03 03 01	wastes from solvent extraction, containing organic solvents	A	1,014	1,183	1,417	1,755
04 01 99 01	tanning auxiliaries/chemicals	A	4		2	
04 02 12 01	non-halogenated wastes from dressing and finishing, containing organic solvents	A	348	262	206	237
05 01 04	acid alkyl sludges	H	29	13		
05 01 07	acid tars	H	119	0	127	117
05 01 99 01	alkalines containing oil or tars	A	84	76	156	451
05 03 02	other spent catalysts	E	196	85	38	27
05 04 01 01	spent filter clays, not free from excess oil	A	617	675	1,014	699
05 06 03	other tars	H	790	848	577	50
05 08 99 01	alkalines containing oil or tars	A	36,342	37,631	38,205	37,399
06 01 99	waste not otherwise specified	H	33	50	66	73
06 03 02 01	saline solutions containing sulphides	A	4,762	2,131	1,225	589
06 03 03 01	solid salts containing soluble sulphides	A	179	132	188	12
06 03 10	solid salts containing ammonium	E	17	10	3	5
06 03 11	salts and solutions containing cyanides	H	1,287	1,477	181	244
06 03 99 01	waste containing soluble salts of toxic heavy metals e.g. cadmium, lead, etc.	A	2,535	444	91	199
06 04 02	metallic salts (except 06 03 00)	H	1,778	65	11	6
06 04 03	wastes containing arsenic	H	52	31	1	0
06 04 05	wastes containing other heavy metals	H	373	279	106	142
06 09 01 01	gypsum with noxious contaminants	A	8			
06 13 01	inorganic pesticides, biocides and wood preserving agents	H	413	266	579	612
07 02 07	halogenated still bottoms and reaction residues	H	155	126	94	122
07 02 08	other still bottoms and reaction residues	H	112	94	88	61
07 06 08	other still bottoms and reaction residues	H	17	23	53	221
07 07 07	halogenated still bottoms and reaction residues	H	0	2	1	6
08 01 02	waste paints and varnish free of halogenated solvents	H	6,406	6,343	5,912	5,972
08 01 08 01	aqueous sludges containing paint and varnish, containing biozides and/or heavy metals and/or metals	A	5,296	5,541	5,831	6,422
08 03 09 01	waste printing toner (including cartridges), containing heavy metal pigments and/or organic solvents	A	478	322	257	266
09 01 01	water based developer and activator solutions	H	3,963	4,169	3,905	3,376
09 01 04	fixer solutions	H	940	460	202	70
10 01 06 01	other solid salt containing wastes from gas treatment	A		7	17	
10 01 08 01	other sludges from gas treatment with noxious contaminants	A	108	29	11	
10 01 12 01	spent linings and refractories with noxious contaminants	A	3	1	0	1
10 02 06 01	spent linings and refractories with noxious contaminants	A	8,855	8,868		1
10 03 08	salt slags from secondary smelting	H	22,703	26,000	15,609	21,960
10 03 09	black drosses from secondary smelting	H	20,977	47	128	562

**Hazardous Waste generated in Austria 1993-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWL A: add. EWC	1996	1995	1994	1993
10 03 11 01	flue gas dust with noxious contaminants	A	282	419	107	1,440
10 04 02	dross and skimmings (1st and 2nd smelting)	H	221	171	28	4
10 04 05	other particulates and dust	H	117	197	186	133
10 06 03	flue gas dust	H	1,165			
11 01 02	cyanidic (alkaline) wastes which do not contain heavy metals	H	24	71	92	247
11 01 03	cyanide-free wastes containing chromium	H	437	689	833	998
11 01 04 01	electroplating sludges	A	3,873	3,375	2,129	1,807
11 02 04 01	sludges containing toxic heavy metals	A	510	504	549	401
11 03 01	wastes containing cyanide	H	40	80	108	41
11 03 02	other wastes	H	40	37	47	34
12 01 03 01	non-ferrous metal filings and turnings containing oil	A	0	45	0	
12 01 06	waste machining oils containing halogens (not emulsioned)	H	136	100	106	80
12 01 09	waste machining emulsions free of halogens	H	15,871	15,649	13,807	10,266
12 01 11	machining sludges	H	44	12	17	11
12 01 12	spent waxes and fats	H	219	133	284	230
12 02 01 01	spent blasting grit with noxious contaminants	A	41	7	4	7
12 02 02	sludges from grinding, honing and lapping	E	3,381	3,038	2,487	1,672
12 02 03	polishing sludges	E	356	853	485	58
12 03 02	steam degreasing wastes	H	20,709	20,320	18,516	17,355
13 01 05	non chlorinated emulsions	H	48	22	11	19
13 01 06	hydraulic oils containing only mineral oil	H	986	1,500	932	1,302
13 01 08	brake fluids	H	264	211	346	204
13 02 02	non-chlorinated engine, gear, lubricating oils	H	354	435	244	319
13 03 01	insulating or heat transmission oils and other liquids containing PCBs or PCTs	H	27	29	11	56
13 05 02	oil/water separator sludges	H	23,493	22,686	24,015	23,324
13 05 03	interceptor sludges	H	6,616	4,358	3,354	3,352
13 06 01	oil waste not otherwise specified	H	785	573	552	519
14 04 03	other solvents and solvent mixes	H	43	102	48	30
15 01 99 01	packaging material with noxious residues and/or contaminants	A	7,934	5,439	4,755	1,410
15 02 01 01	absorbents, filter materials, wiping cloths, protective clothing, with noxious contaminants	A	24,050	20,907	17,349	16,514
16 01 04 01	discarded vehicles, not de-polluted	A	50,372	51,443	50,925	30,348
16 02 01	transformers and capacitors containing PCB or PCTs	H	192	150	132	311
16 02 02 01	other discarded electronic equipment with relevant content on dangerous components	A	8,641	7,236	5,530	4,140
16 02 04	discarded equipment containing free asbestos	E	329	435	887	456
16 04 03	other waste explosives	H	0	1	1	0
16 05 02	other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E	2,495	2,300	2,413	2,444
16 05 03	other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E	10	2	3	1
16 06 05	other batteries and accumulators	E	30	22	25	31
16 06 06	electrolyte from batteries and accumulators	H	224	169	302	243
16 07 03	waste from railway and road transport tank cleaning containing oil	H	3,587	3,948	5,414	3,314

Hazardous Waste generated in Austria 1993-1996 related to EWC on 6-digit level (in tonnes)						
Code	Description	H: HWL E: EWL A: add. EWC	1996	1995	1994	1993
16 09 98	heavy metal containing sludges from chemical-physical treatment	A	528	380	292	19
16 09 99	aqueous concentrates not otherwise specified	A	577	381	812	434
17 01 99 01	concrete, bricks, tiles, ceramics and other building materials contaminated with noxious/hazardous substances	A	5,813	1,268	299	58
17 02 01 01	wood, impregnated with mercury or with non fixated metal salts and saw dust of impregnated wood	A	13	,	,	2
17 05 01 01	soil and stones, hazardous contaminated	A	60,344	66,769	37,759	52,850
18 01 03	other wastes whose collection and disposal is subject to special requirements in view of the prevention of infection	H	3,006	3,071	3,090	3,009
18 01 05 01	discarded chemicals and medicines, toxic and/or water polluting	A	381	297	236	305
18 02 02	other wastes whose collection and disposal is subject to special requirements in view of the prevention of infection	H	0	,	0	1
19 01 01	bottom ash and slag	E	112,784	126,027	132,997	132,677
19 01 03	fly ash	H	25,557	22,905	22,888	19,706
19 01 08	pyrolysis wastes	E	1,247	1,220	858	1,181
19 02 01	metal hydroxide sludges and other sludges from metal insolubilisation treatment	H	2	7	1	12
20 01 09 01	mineral oil	A	8	1	3	0
20 01 12	paint, inks, adhesives and resins	H	,	,	,	531
20 01 14	acids	E	4,990	5,188	4,316	3,598
20 01 15	alkalines	E	4,364	2,938	2,772	6,075
20 01 16 01	detergents, inflammable, harmful, corrosive	A	475	318	371	415
20 01 20	batteries	E	15,009	12,971	11,618	10,986
20 01 21	fluorescent tubes and other mercury containing waste	H	944	1,020	1,007	858
20 01 22	aerosols	E	309	368	352	262
	Total amount related to HWL/EWC/add. national EWC (notified)	-	542,244	514,641	454,947	439,301
	<i>Amount related to EWC (not hazardous any longer)</i>	-	<i>34,161</i>	<i>31,299</i>	<i>28,380</i>	<i>25,846</i>
	<i>Amount not related to EWC</i>		<i>16,009</i>	<i>15,719</i>	<i>14,524</i>	<i>12,831</i>
	Total of hazardous waste according to the 1998 Federal Waste Management Plan (Federal Law.Gaz. 49/1991, rounded)	-	592,400	561,700	497,900	478,000
	Other wastes not related, but registered in the way-bill system	-	13,399	15,219	15,340	21,477
	Total amount of haz. wastes according to the way-bill system (rounded)	-	605,800	576,900	513,200	499,500

4.8. Hazardous waste in Austria according to NACE code

Hazardous waste generated in Austria according to NACE code (in tonnes)			
NACE	Economic area	Austria 1996	% 1996
A	Agriculture	14,168	2.3
B	Fishing	1	0.0
C	Quarrying	20,469	3.37
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	5,625	
DB	<i>Mfr. of textiles, wearing, apparel</i>	6,927	
DC	<i>Mfr. of leather</i>	232	
DD	<i>Mfr. of wood products</i>	1,849	
DE	<i>Mfr. of printing and publishing</i>	4,027	
DF	<i>Mfr. of refined petroleum products</i>	3,314	
DG	<i>Mfr. of chemicals</i>	5,757	
DH	<i>Mfr. of rubber and plastics products</i>	338	
DI	<i>Mfr. of other non-metallic mineral products</i>	1,746	
DJ	<i>Mfr. and processing of basic metals</i>	17,769	
DK	<i>Mfr. of machinery and equipment</i>	5,506	
DL	<i>Mfr. of electrical and optical equipment</i>	7,450	
DM	<i>Mfr. of transport equipment</i>	9,285	
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>	58,887	
D Total	Total	128,710	21.24
E	Electricity, gas and water supply	125,522	20.71
F	Construction	8,402	1.38
G50.2	<i>Maintenance and repair of motor vehicles</i>	25,356	
G Total	Wholesale and retail trade, repair work	45,105	7.43
H	Hotel, restaurants	3,374	0.55
I61	<i>Shipping</i>	5	
I Total	Transport, storage and communication	22,695	3.74
J+K Total	Financial intermediation, business act.	12,722	2.10
L	Public and personal services	1,897	0.31
M	Education	556	0.09
N	Human health activities	6,113	1.00
O	Refuse disposal	115,323	19.04
X	Activity not stated	100,760	16.63
	Total (rounded)	605,800	100

4.9. Austrian waste types notified to the Commission as hazardous waste

Austrian waste types notified to the Commission as hazardous waste			
No.	Code	Description	E: EWC A: add. EWC
1	01 05 01	oil-containing drilling muds and wastes	E
2	02 03 03 01	wastes from solvent extraction, containing organic solvents	A
3	03 03 99 01	spent lye from bleachers, containing hypochlorites	A
4	04 01 99 01	tanning auxiliaries/chemicals	A
5	04 02 12 01	non-halogenated wastes from dressing and finishing, containing organic solvents	A
6	05 01 99 01	alkalines containing oil or tars	A
7	05 03 02	other spent catalysts	E
8	05 04 01 01	spent filter clays, not free from excess oil	A
9	05 08 99 01	alkalines containing oil or tars	A
10	06 03 02 01	saline solutions containing sulphides	A
11	06 03 03 01	solid salts containing soluble sulphides	A
12	06 03 10	solid salts containing ammonium	E
13	06 03 99 01	waste containing soluble salts of toxic heavy metals e.g. cadmium, lead, etc.	A
14	06 09 01 01	gypsum with noxious contaminants	A
15	06 12 02	other spent catalysts	E
16	07 01 06	other spent catalysts	E
17	07 02 06	other spent catalysts	E
18	07 03 06	other spent catalysts	E
19	07 04 06	other spent catalysts	E
20	07 05 06	other spent catalysts	E
21	07 06 06	other spent catalysts	E
22	07 07 06	other spent catalysts	E
23	08 01 03 01	waste from water-based paints and varnishes, containing biozides and/or heavy metals	A
24	08 01 04 01	powder paints, not hardened, containing heavy metal pigments	A
25	08 01 08 01	aqueous sludges containing paint and varnish, containing biozides and/or heavy metals and/or metals	A
26	08 03 09 01	waste printing toner (including cartridges), containing heavy metal pigments and/or organic solvents	A
27	08 04 08 01	aqueous liquid wastes containing adhesives and sealants, containing biozides	A
28	09 01 09 01	single-use cameras with batteries	A
29	10 01 06 01	<i>other solid salt containing wastes from gas treatment</i>	A
30	10 01 08 01	other sludges from gas treatment with noxious contaminants	A
31	10 01 11 01	<i>aqueous sludges from boiler cleansing with noxious contaminants</i>	A
32	10 01 12 01	<i>spent linings and refractories with noxious contaminants</i>	A
33	10 02 06 01	<i>spent linings and refractories with noxious contaminants</i>	A
34	10 03 11 01	flue gas dust with noxious contaminants	A
35	10 03 14 01	sludges from gas treatment with noxious contaminants	A
36	10 04 08 01	<i>spent linings and refractories with noxious contaminants</i>	A
37	10 05 07 01	<i>spent linings and refractories with noxious contaminants</i>	A
38	10 06 08 01	<i>spent linings and refractories with noxious contaminants</i>	A
39	10 07 06 01	<i>spent linings and refractories with noxious contaminants</i>	A
40	10 08 01 01	salt slags	A
41	10 08 02 01	light metal dross and skimmings	A
42	10 08 07 01	spent linings and refractories with noxious contaminants	A
43	10 09 02 01	casting cores containing organic binders which have undergone pouring	A
44	10 09 04 01	furnace dust with noxious contaminants	A
45	10 11 06 01	solid waste from gas treatment with noxious contaminants	A

Austrian waste types notified to the Commission as hazardous			
No	Code	Description	E: EWC A: add. EWC
46	10 11 07 01	sludges from gas treatment with noxious contaminants	A
47	10 11 08 01	furnace dust with noxious contaminants	A
48	10 12 04 01	solid waste from gas treatment with noxious contaminants	A
49	10 12 05 01	sludges from gas treatment with noxious contaminants	A
50	11 01 04 01	electroplating sludges	A
51	11 02 04 01	sludges containing toxic heavy metals	A
52	12 01 01 01	ferrous metal filings and turnings containing oil	A
53	12 01 03 01	non-ferrous metal filings and turnings containing oil	A
54	12 02 01 01	spent blasting grit with noxious contaminants	A
55	12 02 02	sludges from grinding, honing and lapping	E
56	12 02 03	polishing sludges	E
57	15 01 99 01	packaging material with noxious residues and/or contaminants	A
58	15 02 01 01	absorbents, filter materials, wiping cloths, protective clothing, with noxious contaminants	A
59	16 01 04 01	discarded vehicles, not de-polluted	A
60	16 02 02 01	other discarded electronic equipment with relevant content on dangerous components	A
61	16 02 03	equipment containing chlorofluorocarbons	E
62	16 02 04	discarded equipment containing free asbestos	E
63	16 05 01 01	industrial gases in high pressure cylinders, toxic or inflammable	A
64	16 05 02	other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E
65	16 05 03	other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E
66	16 06 04	alkaline batteries	E
67	16 06 05	other batteries and accumulators	E
68	16 09 98	heavy metals containing sludges from chemical-physical treatment	A
69	16 09 99	aqueous concentrates not otherwise specified	A
70	17 01 99 01	concrete, bricks, tiles, ceramics and other building materials contaminated with noxious/hazardous substances	A
71	17 02 01 01	wood, impregnated with mercury or with non fixated metal salts and saw dust of impregnated wood	A
72	17 05 01 01	soil and stones, hazardous contaminated	A
73	18 01 05 01	discarded chemicals and medicines, toxic and/or water polluting	A
74	19 01 01	bottom ash and slag	E
75	19 01 08	pyrolysis wastes	E
76	19 01 99 01	slag from hazardous waste incinerators	A
77	19 01 99 02	fly ash from hazardous waste incinerators and flue gas cleaning residues	A
78	19 08 99 01	waste water treatment sludges with noxious contaminants	A
79	20 01 07 01	wood, impregnated with mercury or with non fixated metal salts and saw dust of impregnated wood	A
80	20 01 09 01	mineral oil	A
81	20 01 14	acids	E
82	20 01 15	alkalines	E
83	20 01 16 01	detergents, inflammable, harmful, corrosive	A
84	20 01 18 01	medicines, water polluting, antitumor drugs and unsorted medicines	A
85	20 01 20	batteries	E
86	20 01 22	aerosols	E
87	20 01 23	equipment containing chlorofluorocarbons	E
88	20 01 24 01	other discarded electronic equipment with relevant content on dangerous components	A
89	20 03 05 01	end of life vehicles, not de-polluted	A

Italic: Withdrawn by Member State according to point 3 of the working document for the meeting of Technical Adaptation Committee on 12 February 1999 (Brussels, 14 January 1999, XIE3/KW D99)

5. Denmark

5.1. Classification

A new Statutory order introduced 30th of June 1996 required hazardous waste to be registered according to HWL by the producers and collectors of hazardous waste. The Statutory order was revised in 1997 and from 1st of January 1998 also the waste treatment plants were required to register hazardous waste according to HWL as well as the national classification ISAG (Information System for Affald og Genanvendelse).

In general the central Danish reporting system on waste is imposed on waste treatment plants. Therefore, the Danish figures on hazardous waste will, up until 1998, only be available according to the national classification and only for the years 1995-1996. The national classification operates with 100 different waste types of which 74 are hazardous. The hazardous waste types are mainly, but not exclusively, substance orientated.

Denmark has notified 93 additional national hazardous waste codes to the Commission as a supplement to the HWL.

5.2. Licensing and reporting obligations

Treatment plants for hazardous waste are required to obtain a general permission according to the Danish Environmental Protection Act. This also applies to producers of hazardous waste, in general.

Producers shall in advance notify the expected amounts of generated hazardous waste to the municipality, who has the responsibility to collect the hazardous waste. The producer of the hazardous waste is obliged to use the municipal collection system, but the municipality may on request exempt from this obligation. Until the 30th of June 1996, the notification for producers followed the national hazardous waste classification, which has now been substituted by the HWL. Thus, the producer is now required to register the actual amount of generated hazardous waste according to the HWL and how the waste is managed. The information shall be kept for 5 years and by request, handed over to the municipality.

Collectors of hazardous waste shall make a registration to the municipality in which they want to collect hazardous waste. The collectors shall register according to the HWL, the amount of hazardous waste collected, the name of the producer and where the hazardous waste is delivered for treatment. By request the collectors shall give the registered information to the municipality.

Previously most hazardous waste was treated by Kommunekemi A/S (Municipal Chemistry), owned by the municipalities in Denmark. Because of the centralised treatment of hazardous waste, detailed information about hazardous waste was relatively easy to obtain. Until 1997 other treatment plants having only an obligation to report a more general information about the received amounts and types of hazardous waste to the Danish EPA. The report obligations were changed, however, in 1997 and from 1998 the treatment plants are obliged to report detailed information to the EPA about received hazardous waste every year. The

registration and the reporting shall include both the detailed national classification for hazardous waste and HWL.

5.3. Characterisation of hazardous waste generation

The four main categories of hazardous wastes constitute 54 % of the total hazardous waste generation and all four are related to the Hazardous Waste List (H-codes). They are generating from flue gas treatment from waste incineration plants, waste oils, sulphuric acids from coal-fired power plants and lead batteries.

It is a characteristic for Denmark that many H-codes are used, but contributing only with small amounts each. The table shows that of the 93 additional hazardous waste codes notified to the Commission, only 1/3 of the number of codes has been identified. This can be due to the fact that the hazardous waste types has originally been registered according to a substance oriented classification and some of this information cannot be related to EWC.

5.4. Description of methods used relating the Danish hazardous waste classification to EWC

Two sources of information on hazardous waste were used: Lists on sources and amounts of hazardous wastes treated at the largest hazardous waste treatment plant, Kommunekemi A/S; and information from the central Danish waste reporting system, ISAG (Informations System for Affald og Genanvendelse). Both sources of information provide data on hazardous waste classified according to the substance oriented Danish waste classification.

In order to relate the two classification systems a computer programme was developed, linking existing data lists on waste amounts and sources to waste types of the HWL and additional Danish codes notified to the Commission. The programme is based on hazardous waste registration software that was developed for hazardous waste treatment plants to facilitate their reporting obligations according to the HWL. The programme relates each substance oriented classification to a variety of possible HWL codes, including those codes that have been notified to the Commission.

The information on the source or process which generated the hazardous waste in question, the existing knowledge of these processes as well as of the physical-chemical properties of the waste in question were crucial in order to choose the appropriate waste code of the HWL or EWC. In case of doubt, additional information on the sources or processes was drawn from the Danish Industrial Classification of All Economic Activities 1993 (Dansk Branchekode 1993), which is the Danish implementation of NACE Rev. 1.

5.5. Aggregation of codes and amounts of hazardous waste generation in Denmark 1995-1996

Aggregation of codes and amounts of hazardous waste generated in Denmark 1995-1996								
Categories		Possible number of codes	Number of codes used	Amount		Codes used	Amount	
				No. 1996	Tonnes 1996		% 1996	No. 1995
1	Directly related to HWL: H	236	99	188,163	71.3	108	184,285	74.5
2	Related to other EWC codes stated as hazardous in Denmark: E	72	26	18,622	7.1	27	19,595	7.9
3	Related to additional Danish codes following the structure of EWC (add. nat. EWC codes): A	21	11	4,074	1.5	15	4,504	1.8
4	Total amount related to HWL/EWC/add. nat. EWC (notified)	329	136	210,859	79.9	150	208,383	84.3
5	Amount not related to EWC	-		53,128	20.1		38,851	15.7
6	Total amount of haz. wastes in Denmark	-		263,987	100.0		247,234	100.0

5.6. Hazardous waste generated in Denmark 1995-1996 related to EWC on 2-digit level and stated in tonnes

Hazardous waste generation in Denmark 1995-1996 related to EWC on 2-digit level and stated in tonnes			
Code	Description	1995	1996
02	WASTE FROM AGRICULTURAL, HORTICULTURAL, HUNTING, FISHING AND AQUACULTURE PRIMARY PRODUCTION, FOOD PREPARATION AND PROCESSING	95	100
03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PAPER, CARDBOARD, PULP, PANELS AND FURNITURE	181	235
04	WASTES FROM THE LEATHER AND TEXTILE INDUSTRIES	266	148
05	WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	26	32
06	WASTES FROM INORGANIC CHEMICAL PROCESSES	2,231	1,575
07	WASTES FROM ORGANIC CHEMICAL PROCESSES	9,488	8,379
08	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATING (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	12,549	11,002
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	7,073	5,259
10	INORGANIC WASTES FROM THERMAL PROCESSES	32,218	32,621
11	INORGANIC WASTE WITH METALS FROM METAL TREATMENT AND THE COATING OF METALS; NON-FERROUS HYDRO-METALLURGY	8,159	7,480
12	WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS	733	562
13	OIL WASTES AND OTHER LIQUIDS (except edible oils 05 00 00 and 12 00 00)	35,578	35,003
14	WASTES FROM ORGANIC SUBSTANCES EMPLOYED AS SOLVENTS AND COOLANTS (except 07 00 00 and 08 00 00)	1,283	1,081
15	PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	276	168
16	WASTE NOT OTHERWISE SPECIFIED IN THE CATALOGUE	13,583	15,551
17	CONSTRUCTION AND DEMOLITION WASTE (including road construction)	7,350	7,902
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH	10,695	8,787
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY	63,380	71,901
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS	3,221	3,073
	Total amount related to HWL/EWC/add. national EWC (notified)	208,383	210,859
	<i>Amount not related to EWC</i>	<i>38,851</i>	<i>53,128</i>
	Total amount of haz. waste generation	247,234	263,987

5.7. Hazardous waste generated in Denmark 1995-1996 related to EWC on 6-digit level

Hazardous waste generation in Denmark 1995-1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC A: add. EWC	1995	1996
02 01 05 00	Agrochemical wastes	H	95	100
03 02 01 00	Non-halogenated organic wood preservatives	H	140	178
03 02 02 00	Organochlorinated wood preservatives	H	10	13
03 02 04 00	Inorganic wood preservatives	H	3	0
03 02 98 00	Sludge from wood preservation	A	23	43
03 03 03 00	Bleaching sludges from hypochlorite and chlorine processes	E	4	1
04 01 03 00	Degreasing wastes containing solvents without a liquid phase	H	49	13
04 01 04 00	Tanning liquor containing chromium	E	11	0
04 01 08 01	Polish dust containing chromium	A	10	0
04 02 11 00	Halogenated wastes from dressing and finishing	H	74	47
04 02 13 00	Dye stuffs and pigments	E	120	41
04 02 98 00	Waste from impregnation	A	1	47
05 01 04 00	Acid alkyl sludges	H	26	24
05 03 02 00	Other spent catalysts	E	0	8
06 01 01 00	Sulphuric acid and sulphurous acid	H	506	478
06 01 03 00	Hydrofluoric acid	H	31	24
06 01 05 00	Nitric acid and nitrous acid	H	57	42
06 01 99 00	Wastes not otherwise specified	H	44	29
06 02 99 00	Wastes not otherwise specified	H	536	459
06 03 11 00	Salts and solutions containing cyanides	H	6	7
06 04 01 00	Metallic oxides	E	945	492
06 04 04 00	Wastes containing mercury	H	75	28
06 13 01 00	Inorganic pesticides, biocides and wood preserving agents	H	31	16
07 01 01 00	Aqueous washing liquids and mother liquors	H	820	749
07 01 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	104	50
07 01 04 00	Other organic solvents, washing liquids and mother liquors	H	229	321
07 01 07 00	Halogenated still bottoms and reaction residues	H	132	134
07 01 08 00	Other still bottoms and reaction residues	H	136	33
07 01 98 00	Filter dust	A	1	22
07 02 01 00	Aqueous washing liquids and mother liquors	H	56	37
07 02 02 00	Sludges from on-site effluent treatment	E	128	87
07 02 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	11	12
07 02 04 00	Other organic solvents, washing liquids and mother liquors	H	645	431
07 02 07 00	Halogenated still bottoms and reaction residues	H	139	118
07 02 08 00	Other still bottoms and reaction residues	H	33	24
07 03 01 00	Aqueous washing liquids and mother liquors	H	72	77
07 03 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	44	27
07 03 04 00	Other organic solvents, washing liquids and mother liquors	H	7	0
07 03 07 00	Halogenated still bottoms and reaction residues	H	6	0
07 03 08 00	Other still bottoms and reaction residues	H	25	32
07 04 01 00	Aqueous washing liquids and mother liquors	H	602	220
07 04 07 00	Halogenated still bottoms and reaction residues	H	3	2
07 05 01 00	Aqueous washing liquids and mother liquors	H	103	98
07 05 02 00	Sludges from on-site effluent treatment	E	452	472
07 05 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	2	0
07 05 04 00	Other organic solvents, washing liquids and mother liquors	H	1,382	1,887
07 05 07 00	Halogenated still bottoms and reaction residues	H	104	104
07 05 08 00	Other still bottoms and reaction residues	H	2,353	1,957

Hazardous waste generation in Denmark 1995-1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC A: add. EWC	1995	1996
07 05 98 00	Filter dust	A	7	0
07 06 01 00	Aqueous washing liquids and mother liquors	H	498	321
07 06 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	2	0
07 06 04 00	Other organic solvents, washing liquids and mother liquors	H	31	25
07 06 08 00	Other still bottoms and reaction residues	H	11	21
07 07 01 00	Aqueous washing liquids and mother liquors	H	58	114
07 07 03 00	Organic halogenated solvents, washing liquids and mother liquors	H	57	73
07 07 04 00	Other organic solvents, washing liquids and mother liquors	H	318	308
07 07 07 00	Halogenated still bottoms and reaction residues	H	64	12
07 07 08 00	Other still bottoms and reaction residues	H	755	506
07 07 98 00	Organic metal compounds	A	98	105
08 01 02 00	Waste paints, varnishes and wood preservatives containing organic solvents	H	5,667	4,950
08 01 03 00	Waste from water-based paints, varnishes and wood preservatives	E	592	794
08 01 04 01	Non-hardened powder paints	A	98	84
08 01 07 00	Sludges from paint, varnish og wood preservatives removal containing organic solvents	H	11	12
08 01 08 00	Aqueous sludges containing paint, varnish or wood preservatives	E	4,624	3,822
08 01 09 00	Waste from paint, varnish or wood preservatives removal (except 08 01 05 and 08 01 06)	E	80	13
08 03 01 00	Waste ink containing halogenated solvents	H	16	18
08 03 02 00	Waste ink containing organic solvents	H	643	615
08 03 05 00	Ink sludges containing halogenated solvents	H	7	5
08 04 01 00	Waste adhesives and sealants containing halogenated solvents	H	107	113
08 04 02 00	Waste adhesives and sealants containing organic solvents	H	63	42
08 04 05 00	Adhesives and sealants sludges containing halogenated solvents	H	1	0
08 04 06 00	Adhesives and sealants sludges containing organic solvents	H	358	243
08 05 98 00	Isocyanates (e.g., toluendiisocyanate (TDI) and methylidiisocyanate (MDI)	A	281	291
09 01 01 00	Waster based developer and activator solutions	H	6,612	4,925
09 01 02 00	Water based offset plate developer solutions	H	385	309
09 01 04 00	Fixer solutions	H	67	22
09 01 05 00	Bleach solutions and bleach fixer solutions	H	9	3
10 01 09 00	Sulphuric acid	H	22,000	22,000
10 02 03 00	Solid wastes from flue gas treatment	E	9,991	10,487
10 02 04 00	Sludges from flue gas treatment	E	2	1
10 02 05 00	Other sludges	E	20	10
10 09 04 00	Furnace dust	E	182	103
10 09 98 00	Organic binding material	A	1	1
10 10 04 00	Furnace dust	E	24	19
11 01 01 00	Cyanidic (alkaline) wastes containing heavy metals other than chromium	H	96	76
11 01 02 00	Cyanidic (alkaline) wastes which do not contain heavy metals	H	4	0
11 01 03 00	Cyanide-free wastes containing chromium	H	336	241
11 01 04 01	Cyanide-free wastes containing other heavy metals	A	42	37
11 01 05 00	Acidic pickling solutions	H	3,551	3,422
11 01 07 00	Alkalis not otherwise specified	H	13	27
11 01 08 00	Phosphatizing sludges	H	423	386
11 01 98 00	Sludges from galvanising processes	A	3,595	3,222
11 02 01 00	Sludges from copper hydrometallurgy	E	25	0
11 03 01 00	Wastes containing cyanide	H	73	69
12 01 07 00	Waste machining oils free of halogens (not emulsioned)	H	25	31
12 01 09 00	Waste machining emulsions free of halogens	H	7	15

**Hazardous waste generation in Denmark 1995-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1995	1996
12 01 10 00	Synthetic machining oils	H	14	0
12 01 11 00	Machining sludges	H	687	516
13 01 01 00	Hydraulic oils, containing PCB's or PCT's	H	5	2
13 01 03 00	Non chlorinated hydraulic oils (not emulsions)	H	27	17
13 01 05 00	Non chlorinated emulsions	H	1	0
13 02 02 00	Non-chlorinated engine, gear and lubricating oils	H	35,011	34,120
13 03 01 00	Insulation or heat transmission oils and other liquids containing PCB's or PCT's	H	15	4
13 03 03 00	Non-chlorinated insulation or heat transmission oils and other liquids	H	0	2
13 05 01 00	Oil/water separator solids	H	391	728
13 06 01 00	Oil waste not otherwise specified	H	128	130
14 01 02 00	Other halogenated solvents and solvent mixes	H	256	258
14 01 03 00	Other solvents and solvent mixes	H	744	588
14 01 04 00	Aqueous solvent mixes containing halogens	H	77	3
14 01 06 00	Sludges or solid wastes containing halogenated solvents	H	3	25
14 01 07 00	Sludges or solid wastes containing organic solvents	H	51	26
14 02 02 00	Solvent mixes or organic liquids free of halogenated solvents	H	6	14
14 02 04 00	Sludges or solid wastes containing other solvents	H	2	0
14 03 02 00	Other halogenated solvents	H	1	1
14 03 03 00	Solvents and solvent mixes free of halogenated solvents	H	18	5
14 04 02 00	Other halogenated solvents and solvent mixes	H	13	13
14 04 03 00	Other solvents and solvent mixes	H	86	134
14 05 03 00	Other solvents and solvent mixes	H	0	1
14 05 04 00	Sludges containing halogenated solvents	H	27	13
15 02 01 01	Absorbents, filter materials, wiping cloths, protective clothing which are contaminated with hazardous waste	A	276	168
16 01 98 00	Liquid waste from automobiles	A	70	54
16 02 01 00	Transformers and capacitors containing PCB's or PCT's	H	3	3
16 05 01 00	Industrial gases in high pressure cylinders, LPG containers and industrial aerosol containers (including halons)	E	972	1,052
16 05 02 00	Other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E	57	59
16 05 03 00	Other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E	50	55
16 06 01 00	Lead batteries	H	12,282	14,200
16 06 03 00	Mercury dry cells	H	41	8
16 06 06 00	Electrolyte from batteries and accumulators	H	4	8
16 07 04 00	Waste from railway and road transport tank cleaning containing chemicals	H	3	6
16 07 05 00	Waste from storage tank cleaning containing chemicals	H	100	106
17 03 03 00	Tar and tar products	E	39	91
17 04 08 01	Cables containing oil and tar	A	0	0
17 06 01 00	Insulation materials containing asbestos	H	7,311	7,811
18 01 01 00	Sharps	E	250	205
18 01 02 00	Body parts and organs including blood bags and blood preserves	E	264	217
18 01 03 00	Other wastes whose collection and disposal is subject to special requirements in view of the prevention of infection	H	9,480	7,780
18 01 05 00	Discarded chemicals and medicines	E	70	70
18 01 98 00	Amalgam waste	A	0	0
18 02 02 00	Other wastes whose collection and disposal is subject to special requirements in view of the prevention of infection	H	620	510
18 02 04 00	Discarded chemicals	H	10	5
19 01 00 00	Wastes from incineration or pyrolysis of municipal and similar commercial, industrial and institutional wastes	H	63,300	71,900

Hazardous waste generation in Denmark 1995-1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC A: add. EWC	1995	1996
19 02 01 00	Metal hydroxide sludges and other sludges from metal insolubilisation treatment	H	80	1
20 01 09 00	Oil and fat	E	5	1
20 01 12 00	Paint, inks, adhesives and resins	H	1,842	2,029
20 01 13 00	Solvents	H	202	165
20 01 14 00	Acids	E	135	58
20 01 15 00	Alkalines	E	147	97
20 01 16 00	Detergents	E	109	115
20 01 17 00	Photo chemicals	H	191	176
20 01 18 00	Medicines	E	297	252
20 01 19 00	Pesticides	H	182	75
20 01 21 00	Florescent tubes and other mercury containing waste	H	109	105
	Total amount related to HWL/EWC/add. national EWC (notified)		208,383	210,859
	<i>Amount not related to EWC</i>		<i>38,851</i>	<i>53,128</i>
	Total amount of hazardous waste generation		247,234	263,987

5.8. Hazardous waste in Denmark according to NACE code

Hazardous waste in Denmark in 1996 according to NACE code (in tonnes)			
NACE	Economic area	Denmark 1996	% 1996
A+B+C	Agriculture, fishing and quarrying	155	0.0
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	285	0.1
DB	<i>Mfr. of textiles, wearing, apparel</i>	105	0.0
DC	<i>Mfr. of leather</i>	193	0.1
DD	<i>Mfr. of wood products</i>	429	0.2
DE	<i>Mfr. of printing and publishing</i>	1,449	0.5
DF	<i>Mfr. of refined petroleum products etc.</i>	311	0.1
DG	<i>Mfr. of chemicals</i>	17,927	6.6
DH	<i>Mfr. of rubber and plastic products</i>	858	0.3
DI	<i>Mfr. of other non-metallic mineral products</i>	494	0.2
DJ	<i>Mfr. and processing of basic metals</i>	17,355	6.4
DK	<i>Mfr. of machinery and equipment</i>	3,933	1.4
DL	<i>Mfr. of electrical and optical equipment</i>	1,164	0.4
DM	<i>Mfr. of transport equipment</i>	1,732	0.6
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>	1,299	0.5
D Total	Incl. amount which can not be related to a specific D-category)	59,690	21.8
E	Electricity, gas and water supply	22,589	8.3
F	Construction	8,383	3.1
G50.20	<i>Maintenance and repair of motor vehicles</i>	34,233	12.5
G Total	Wholesale and retail trade, repair work	36,000	13.2
H	Hotels, restaurants	55	0.0
I	Transport, storage and communication	1,545	0.6
J+K	Financial intermediation, business act.	5,989	2.2
L	Public and personal services	1,089	0.4
M	Education	318	0.1
N	Human health activities	8,864	3.2
O	Refuse disposal	75,173	27.5
U1	Activity not stated	53,336	19.5
	Total	273,030	100

5.9. Danish waste types notified to the Commission as hazardous waste

Danish waste types notified to the Commission as hazardous waste			
No.	Code	Description	E: EWC A: add. EWC
1	03 02 98 00	sludge from wood preservation	A
2	03 03 03 00	bleaching sludges from hypochlorite and chlorine processes	E
3	04 01 04 00	tanning liquor containing chromium	E
4	04 01 06 00	sludges containing chromium	E
5	04 01 08 01	polish dust containing chromium	A
6	04 02 13 00	dye stuffs and pigments	E
7	04 02 98 00	waste from impregnation	A
8	05 01 01 00	sludges from on-site effluent treatment	E
9	05 01 02 00	desalter sludges	E
10	05 01 06 00	sludges from plant, equipment and maintenance operations	E
11	05 03 01 00	spent catalysts containing precious metals	E
12	05 03 02 00	other spent catalysts	E
13	06 04 01 00	metallic oxides	E
14	06 12 01 00	spent catalysts containing precious metals	E
15	06 12 02 00	other spent catalysts	E
16	07 01 02 00	sludges from on-site effluent treatment	E
17	07 01 05 00	spent catalysts containing precious metals	E
18	07 01 06 00	other spent catalysts	E
19	07 01 98 00	filter dust	A
20	07 02 02 00	sludges from on-site effluent treatment	E
21	07 02 05 00	spent catalysts containing precious metals	E
22	07 02 06 00	other spent catalysts	E
23	07 03 02 00	sludges from on-site effluent treatment	E
24	07 03 05 00	spent catalysts containing precious metals	E
25	07 03 06 00	other spent catalysts	E
26	07 03 98 00	filter dust	A
27	07 04 02 00	sludges from on-site effluent treatment	E
28	07 04 05 00	spent catalysts containing precious metals	E
29	07 04 06 00	other spent catalysts	E
30	07 04 98 00	filter dust	A
31	07 05 02 00	sludges from on-site effluent treatment	E
32	07 05 05 00	spent catalysts containing precious metals	E
33	07 05 06 00	other spent catalysts	E
34	07 05 98 00	filter dust	A
35	07 06 02 00	sludges from on-site effluent treatment	E
36	07 06 05 00	spent catalysts containing precious metals	E
37	07 06 06 00	other spent catalysts	E
38	07 07 02 00	sludges from on-site effluent treatment	E
39	07 07 05 00	spent catalysts containing precious metals	E
40	07 07 06 00	other spent catalysts	E
41	07 07 98 00	organic metal compounds	A
42	08 01 03 00	waste from water-based paints, varnishes and wood preservatives	E
43	08 01 04 01	non-hardened powder paints	A
44	08 01 08 00	aqueous sludges containing paint, varnish or wood preservatives	E
45	08 01 09 00	waste from paint, varnish or wood preservatives removal (except 08 01 05 and 08 01 06)	E
46	08 01 10 00	aqueous suspensions containing paint, varnish or wood preservatives	E
47	08 05 98 00	Isocyanates (e.g. toluendiisocyanate (TDI) and methylldiisocyanate (MDI))	A
48	09 01 07 00	photographic film and paper containing silver or silver compounds	E
49	09 01 09 00	single-use cameras with batteries	E

Danish waste types notified to the Commission as hazardous waste			
No	Code	Description	E: EWC A: add. EWC
50	10 01 06 00	other solid wastes from flue gas treatment	E
51	10 01 08 00	other sludges from flue gas treatment	E
52	10 01 10 00	spent catalysts e.g. from removal of NOx	E
53	10 02 03 00	solid wastes from flue gas treatment	E
54	10 02 04 00	sludges from flue gas treatment	E
55	10 02 05 00	other sludges	E
56	10 02 98 00	soil from scrap metal yards	A
57	10 09 04 00	furnace dust	E
58	10 09 98 00	organic binding material	A
59	10 10 04 00	furnace dust	E
60	10 10 98 00	organic binding material	A
61	10 11 04 00	flue gas dust	E
62	11 01 04 01	cyanide-free wastes containing other heavy metals	A
63	11 01 98 00	sludges from galvanising processes	A
64	11 02 01 00	sludges from copper hydrometallurgy	E
65	11 04 01 00	other inorganic wastes with metals not otherwise specified	E
66	12 02 02 00	sludges from grinding, honing and lapping	E
67	12 02 03 00	polishing sludges	E
68	15 02 01 01	absorbents, filter materials, wiping cloths, protective clothing which are contaminated with hazardous waste	A
69	16 01 05 00	light fraction from automobile shredding	E
70	16 01 98 00	liquid waste from automobiles	A
71	16 02 04 00	discarded equipment containing free asbestos	E
72	16 02 08 00	shredder residues	E
73	16 05 01 00	industrial gases in high pressure cylinders, LPG containers and industrial aerosol containers (including halons)	E
74	16 05 02 00	other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E
75	16 05 03 00	other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E
76	17 01 05 01	asbestos based construction materials, dusty	A
77	17 03 03 00	tar and tar products	E
78	17 04 08 01	cables containing oil and tar	A
79	18 01 01 00	sharps	E
80	18 01 02 00	body parts and organs including blood bags and blood preserves	E
81	18 01 05 00	discarded chemicals and medicines	E
82	18 01 98 00	amalgam waste	A
83	18 02 01 00	sharps	E
84	18 02 98 00	body parts and organs	A
85	19 01 09 00	spent catalysts e.g. from NOx removal	E
86	19 08 02 00	wastes from desanding	E
87	20 01 09 00	oil and fat	E
88	20 01 14 00	acids	E
89	20 01 15 00	alkalines	E
90	20 01 16 00	detergents	E
91	20 01 18 00	medicines	E
92	20 01 20 00	batteries (see 16 06 00)	E
93	20	aerosols	E

6. Ireland

6.1. Classification

Hazardous waste is defined in Ireland in section 4 the Waste Management Act, 1996. The definition is as follows:

4 (2) (a) In this Act, 'hazardous waste' means—

(i) hazardous waste for the time being mentioned in the list prepared pursuant to Article 1 (4) of Council Directive 91/689/EEC of 12 December, 1991, being either—

(I) Category I waste that has any of the properties specified in Part III of the Second Schedule, or

(II) Category II waste that—

(A) contains any of the constituents specified in Part II of the Second Schedule, and

(B) has any of the properties specified in Part III of the said Schedule,

(ii) such other waste, having any of the properties specified in Part III of the Second Schedule, as may be prescribed for the purposes of this definition.

(b) For the purposes of the definition in this subsection—

'Category I waste' means waste specified in any of the following paragraphs of Part I of the Second Schedule, namely paragraphs 1 to 18;

'Category II waste' means waste specified in any of the following paragraphs of the said Part I, namely paragraphs 19 to 40.

Generally, this definition follows from the definitions set out in the Framework Directive on Waste and the Directive on Hazardous Waste with:

- Category I approximately equal to Annex I.A of Directive 91/689/EEC
- Category II approximately equal to Annex I.B of Directive 91/689/EEC
- Part II approximately equal to Annex II of Directive 91/689/EEC
- Part III approximately equal to Annex III of Directive 91/689/EEC

Both the European Waste Catalogue and the Hazardous Waste List are therefore mentioned in the Irish definition of waste and hazardous waste which places them on a statutory footing in Ireland. While the inclusion of a material in the EWC or HWL does not automatically mean that it is a waste, the working assumption is that the bulk of wastes arising in the country can be assigned a classification in the lists. This is important from the point of view of collecting and processing information on waste.

In practice, a waste is deemed to be hazardous if it is mentioned in the European Hazardous Waste List **and** satisfies the criteria set out in section 4(2) (a) (i) of the Waste Management Act (see box above). In particular, a waste must have at least one of the properties that render a waste hazardous set out in Part III of the Second Schedule (equivalent to Annex III of Directive 91/689/EEC) such as 'explosive', 'flammable', 'carcinogenic' etc.

The Act also provides a mechanism for the Minister to prescribe other wastes not mentioned in the European Hazardous Waste List, as hazardous wastes. To be prescribed, such wastes must have at least one of the properties that render a waste hazardous. To date, no such wastes have been prescribed in Ireland.

The HWL has been used in Ireland since 1995. However, the data used in this study relates to 1996 and derives from a survey conducted to provide background information for the preparation of a National Hazardous Waste Management Plan (NHWMP). All of the waste listed is considered to be hazardous waste even though, in certain cases, the data as reported, was associated with non-hazardous EWC codes. Ireland may consider the prescription of these wastes types as hazardous and subsequent notification to the Commission following completion of the NHWMP and the compilation of further data for 1998.

Data from 1996 will be used as baseline data for future compilation of information on hazardous waste. Data for 1996 is more detailed and comprehensive than for previous years. Historical data from before 1996 will not be used in this study as it is not possible to make valid comparisons due to differences in definitions and data collection methods. In the future it is also planned, along with EWC/HWL codes, to use a material oriented classification similar to the EWC/STAT for presenting information on hazardous waste arisings.

It should also be noted that data for hazardous waste arisings in Ireland include hazardous waste that is recovered on-site. This waste stream is not included in the figures for the other countries and regions covered by this study.

6.2. Reporting and licensing obligations

6.2.1. Reporting of information on hazardous waste

The most accurate information on hazardous waste in Ireland, as stated above, is from a survey of 1996 data which was carried out for the preparation of the National Hazardous Waste Management Plan. The following sources of information were used:

- On-site treatment records.
- Off-site treatment records.
- Landfill records.
- Transfrontier shipment records.
- Mass flow analysis.
- Extrapolations based on known quantities of hazardous waste.
- Examination of hazardous waste arisings in other countries.

The range of information sources is large and some duplication of data inevitably occurred and had to be accounted for. The information presented here is from this survey.

The EPA maintains a National Waste Database and conducts comprehensive national surveys every three years. The Database is currently being updated and a report will be published later this year which will contain information on hazardous and non-hazardous waste arisings in Ireland for 1998.

There are a number of reporting mechanisms by which information on hazardous waste is now collected in Ireland. These include:

- *Information from producers of hazardous waste.*
All producers of hazardous waste are required to keep appropriate records which can be accessed by the EPA or by local authorities. Activities controlled by the EPA through Integrated Pollution Control licensing, which includes all significant are also required to submit an Annual Environmental Report which includes summary information on waste arisings and waste management.
- *Internal movement of hazardous waste consignment notes.*
All movements of hazardous waste within Ireland are accompanied by a consignment note issued by the relevant local authority.
- *Transfrontier shipment of waste consignment notes.*
Local authorities are the competent authorities of dispatch (export of waste from Ireland). The EPA is the competent authority of destination (import of waste into Ireland) and the competent authority of transit (passage of waste in transit through Ireland).
- *Waste collection permits (for the collection of waste oils).*
- *Waste licensing and permitting records.*

Using all of the above information sources, the circle between generation, transport and recovery and disposal of hazardous waste will be closed. Information from these sources can be cross referenced if necessary and therefore verified. EWC codes are used for all waste reporting.

6.2.2. Licensing of hazardous waste facilities

All hazardous waste facilities in Ireland are now subject to control either by the EPA or a local authority. Generally, facilities with a significant polluting potential require a waste licence from the EPA with smaller facilities either permitted by a local authority or, in the case of temporary storage of hazardous waste, requiring a certificate of authorisation from a local authority.

Waste licences are required from the EPA for all hazardous waste recovery and disposal facilities with the one exception of the recovery of waste which is composed of or contains mercury or its compounds which requires a permit from a local authority.

The temporary storage of hazardous waste on the premises where it is produced and where the quantity exceeds specified limits, other than premises that are controlled by the EPA through IPC licensing, requires a Certificate of Registration from the local authority.

6.3. Characterisation of hazardous waste generation

The hazardous waste quantities in the following Tables relate only to reported hazardous waste, i.e., waste for which there is a defined source such as on-site treatment records, off-site treatment records, off-site disposal records or transfrontier shipment records. This fraction, for the most part, concerns industrial waste. The National Hazardous Waste Management Plan, to be published later this year, will contain figures for estimated total hazardous waste production in Ireland in 1996 which will combine reported figures and estimated un-reported figures based on a variety of sources. Un-reported hazardous waste includes household hazardous waste and agricultural waste such as sheep dip. However, it is difficult to assign specific HWL codes to un-reported waste and this fraction is therefore not included in the Tables that follow which are restricted to reported hazardous waste. Total hazardous waste arisings in Ireland in 1996,

including an estimate of un-reported hazardous wastes, are estimated to be in the region of 328,000 tonnes.

6.4. Aggregation of codes and amounts of hazardous waste generation in Ireland

Aggregation of codes and amounts of hazardous waste generation in Ireland in 1996							
Categories		Possible number of codes	Number of codes used	Amount incl. recovery on-site		Amount excl. recovery on-site	
				No. 1996	Tonnes 1996	% 1996	Tonnes 1996
1	Directly related to HWL: H	236	83	147,414	64.2	89,397	62.1
2	Related to other EWC codes stated as hazardous in Ireland: E		25	77,289	33.7	49,606	34.5
3	Related to additional Irish codes following the structure of EWC (add. nat. EWC codes): A	-	-	-	-	-	0.0
4	Total amount related to HWL/EWC/add. nat. EWC	236	108	224,703	98	139,003	97
5	Amount not related to EWC			4,857	2.1	4,857	3.4
6	Total amount of haz. wastes in Ireland	236	108	229,560	100	143,860	100

6.5. Hazardous waste generated in Ireland in 1996 related to EWC on 2-digit level and stated in tonnes

Hazardous waste generated in Ireland 1996 related to EWC on 2-digit level and stated in tonnes			
Code	Description	1996 incl. recovery on-site	1996 excl. recovery on-site
1	WASTE RESULTING FROM EXPLORATION, MINING, DRESSING AND FURTHER TREATMENT OF MINERALS AND QUARRY	21,141	21,141
3	WASTE FROM WOOD PROCESSING AND THE PRODUCTION OF PAPER, CARDBOARD, PULP PANELS AND FURNITURE	9	9
4	WASTES FROM THE LEATHER AND TEXTILE INDUSTRIES	317	317
5	WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	6,009	9
6	WASTES FROM INORGANIC CHEMICAL PROCESSES	2,766	1463.6
7	WASTES FROM ORGANIC CHEMICAL PROCESSES	145,899	70316.27
8	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	2,245	2,245
9	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	97	97
10	INORGANIC WASTES FROM THERMAL PROCESSES	850	850
11	INORGANIC WASTE WITH METALS FROM METAL TREATMENT AND THE COATING OF METALS; NON-FERROUS HYDRO-METALLURGY	154	154
12	WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS	34	34
13	OIL WASTES (except edible oils, 05 00 00 and 12 00 00)	28,298	28273.1
14	WASTES FROM ORGANIC SUBSTANCES EMPLOYED AS SOLVENTS (except 07 00 00 and 08 00 00)	3,878	1598
15	PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	97	97
16	WASTE NOT OTHERWISE SPECIFIED IN THE CATALOGUE	5,770	5,770
17	CONSTRUCTION AND DEMOLITION WASTE (INCLUDING ROAD CONSTRUCTION)	330	330
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH (excluding kitchen and restaurant wastes which do not arise from immediate health care)	3,031	3,031
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY	3,504	3004
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS	273	273
	Total amount related to HWL	147,414	89,397
	Amount related to EWC	77,289	49,606
	<i>Amount not related to EWC</i>	<i>4,857</i>	<i>4,857</i>
	Total amount of hazardous waste generation	229,560	143,860

6.6. Hazardous waste generation in Ireland in 1996 related to EWC on 6-digit level and stated in tonnes

Hazardous waste generation in Ireland in 1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC	1996 incl. recovery on-site	1996 excl. recovery on-site
01 03 99	wastes not otherwise specified	E	20,900	20,900
01 04 99	wastes not otherwise specified	E	241	241
03 02 04	inorganic wood preservatives	H	9	9
04 01 00	wastes from the leather industry	E	22	22
04 02 00	wastes from textile industry	E	295	295
05 01 03	tank bottom sludges	H	6,001	1
05 02 01	boiler feedwater sludges	E	8	8
06 01 00	waste acidic solutions	H	5	5
06 01 05	nitric acid and nitrous acid	H	0	0
06 01 99	waste not otherwise specified	H	2	
06 02 01	calcium hydroxide	H	200	200
06 02 03	ammonia	H	308	308
06 03 00	waste salts and their solutions	E	22	22
06 03 05	solid salts containing chlorides, fluorides and other halogenated solid salts	E	714	714
06 04 02	metallic salts (except 06 03 00)	H	1,300	
06 04 04	wastes containing mercury	H	180	180
06 04 05	wastes containing other heavy metals	H	25	25
06 04 99	wastes not otherwise specified	E	8	8
06 13 02	spent activated carbon (except 06 07 02)	H	1	1
07 01 03	organic halogenated solvents, washing liquids and mother liquors	H	242	242
07 01 04	other organic solvents, washing liquids and mother liquors	H	16	16
07 01 06	other spent catalysts	E	7	7
07 01 10	other filter cakes, spent absorbents	H	1	1
07 01 99	wastes not otherwise specified	E	40	40
07 02 01	aqueous washing liquids and mother liquors	H	57	57
07 02 03	organic halogenated solvents, washing liquids and mother liquors	H	1	1
07 02 04	other organic solvents, washing liquids and mother liquors	H	26	26
07 03 04	other organic solvents, washing liquids and mother liquors	H	96	
07 03 08	other still bottoms and reaction residues	H	106	
07 05 01	aqueous washing liquids and mother liquors	H	4,431	4,406
07 05 02	sludges from on-site effluent treatment	E	3,400	3,400
07 05 03	organic halogenated solvents, washing liquids and mother liquors	H	14,107	13,300
07 05 04	other organic solvents, washing liquids and mother liquors	H	31,067	19,814
07 05 05	spent catalysts containing precious metals	E	1	1
07 05 07	halogenated still bottoms and reaction residues	H	720	720
07 05 08	other still bottoms and reaction residues	H	820	820
07 05 09	halogenated filter cakes, spent absorbents	H	4	4
07 05 10	other filter cakes, spent absorbents	H	1,064	1,064
07 05 99	wastes not otherwise specified	E	49,244	21,561
07 06 04	other organic solvents, washing liquids and mother liquors	H	22	22
07 06 10	other filter cakes, spent absorbents	H	93	93
07 06 99	wastes not otherwise specified	E	34	34
07 07 01	aqueous washing liquids and mother liquors	H	69	69
07 07 04	other organic solvents, washing liquids and mother liquors	H	37,689	3,569
07 07 08	other still bottoms and reaction residues	H	1,965	472
07 07 10	other filter cakes, spent absorbents	H	428	428

Hazardous waste generation in Ireland in 1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC	1996 incl. recovery on-site	1996 excl. recovery on-site
07 07 99	wastes not otherwise specified	E	149	149
08 01 01	waste paints and varnish containing halogenated solvents	H	282	282
08 01 02	waste paints and varnish free of halogenated solvents	H	55	55
08 01 07	sludges from paint or varnish removal free of halogenated solvents	H	818	818
08 02 01	waste coating powders	E	40	40
08 03 02	waste ink free of halogenated solvents	H	423	423
08 03 06	ink sludges free of halogenated solvents	H	210	210
08 03 99	wastes not otherwise specified	E	162	162
08 04 01	waste adhesives and sealants containing halogenated solvents	H	18	18
08 04 02	waste adhesives and sealants free of halogenated solvents	H	187	187
08 04 99	wastes not otherwise specified	E	51	51
09 01 04	fixer solutions	H	97	97
10 04 02	dross and skimmings (first and second smelting)	H	622	622
10 05 02	dross and skimmings (first and second smelting)	H	87	87
10 08 02	dross and skimmings (first and second smelting)	E	141	141
11 01 01	cyanidic (alkaline) wastes containing heavy metals other than chromium	H	0	0
11 01 06	acids not otherwise specified	H	44	44
11 01 07	alkalis not otherwise specified	H	102	102
11 01 08	phosphatizing sludges	H	6	6
11 04 01	other inorganic wastes with metals not otherwise specified	E	1	1
12 01 09	waste machining emulsions free of halogens	H	0	0
12 01 12	spent waxes and fats	H	19	19
12 01 99	wastes not otherwise specified	E	15	15
13 01 01	hydraulic oils, containing pcbs or pcts	H	6,612	6,612
13 01 03	non chlorinated hydraulic oils (not emulsions)	H	5	5
13 02 03	other engine, gear and lubricating oils	H	26	1
13 03 05	mineral insulating and heat transmission oils	H	0	0
13 04 03	bilge oils from other navigation	H	6,906	6,906
13 05 01	oil/water separator solids	H	100	100
13 05 03	interceptor sludges	H	14,349	14,349
13 06 01	oil waste not otherwise specified	H	300	300
14 00 00	wastes from organic substances employed as solvents (except 07 00 00 and 08 00 00)	H	50	50
14 01 01	chlorofluorocarbons	H	3	3
14 01 02	other halogenated solvents and solvent mixes	H	10	10
14 01 03	other solvents and solvent mixes	H	2,233	23
14 01 06	sludges or solid wastes containing halogenated solvents	H	400	400
14 03 03	solvents and solvent mixes free of halogenated solvents	H	146	66
14 03 04	sludges or solid wastes containing halogenated solvents	H	621	621
14 03 05	sludges or solid wastes containing other solvents	H	415	415
15 02 01	absorbents, filter materials, wiping cloths, protective clothing	E	97	97
16 02 01	transformers and capacitors containing pcb or pcts	H	71	71
16 04 03	other waste explosives	H	2	2
16 06 01	lead batteries	H	5,655	5,655
16 06 02	ni-cd batteries	H	20	20
16 06 06	electrolyte from batteries and accumulators	H	0	0
16 07 05	waste from storage tank cleaning, containing chemicals	H	22	22
17 06 01	insulation materials containing asbestos	H	330	330
18 01 03	other wastes whose collection and disposal is subject to special requirements in view of the prevention of infection	H	2,115	2,115

Hazardous waste generation in Ireland in 1996 related to EWC on 6-digit level (in tonnes)				
Code	Description	H: HWL E: EWC	1996 incl. recovery on-site	1996 excl. recovery on-site
18 01 05	discarded chemicals and medicines	E	908	908
18 02 04	discarded chemicals	H	8	8
19 01 04	boiler dust	H	0	0
19 01 05	filter cake from gas treatment	H	0	0
19 02 01	metal hydroxide sludges and other sludges from metal insolubilisation treatment	H	2,218	2,218
19 04 03	non-vitrified solid phase	H	0	0
19 08 03	grease and oil mixture from oil/waste water separation	H	625	125
19 08 04	sludges from the treatment of industrial waste water	E	571	571
19 08 06	saturated or spent ion exchange resins	H	40	40
19 08 07	solutions and sludges from regeneration of ion exchangers	H	50	50
20 01 00	separately collected fractions	E	218	218
20 01 12	paint, inks, adhesives and resins	H	24	24
20 01 13	solvents	H	5	5
20 01 21	fluorescent tubes and other mercury containing waste	H	26	26
	Amount related to HWL		147,414	89,397
	Amount related to EWC		77,289	49,606
	<i>Amount not related to EWC</i>		<i>4,857</i>	<i>4,857</i>
	Total amount of hazardous waste generation		229,560	143,860

6.7. Hazardous waste in Ireland according to NACE

Hazardous waste generated in Ireland according to NACE code (in tonnes)					
NACE	Economic area	Ireland 1996 excl. recovery on-site	% 1996	Ireland 1996 incl. recovery on-site	% 1996
A	Agriculture				
B	Fishing				
C	Quarrying	7	0.0	8	0.0
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	163	0.1	164	0.1
DB	<i>Mfr. of textiles, wearing, apparel</i>	7	0.0	7	0.0
DC	<i>Mfr. of leather</i>	22	0.0	22	0.0
DD	<i>Mfr. of wood products</i>	34	0.0	34	0.0
DE	<i>Mfr. of printing and publishing</i>	47	0.0	2,250	1.0
DF	<i>Mfr. of refined petroleum products</i>	122	0.1	6,642	2.9
DG	<i>Mfr. of chemicals</i>	97,155	67.5	174,040	75.8
DH	<i>Mfr. of rubber and plastics products</i>	1,568	1.1	1,568	0.7
DI	<i>Mfr. of other non-metallic mineral products</i>	366	0.3	366	0.2
DJ	<i>Mfr. and processing of basic metals</i>	3,555	2.5	3,555	1.5
DK	<i>Mfr. of machinery and equipment</i>		0.0		0.0
DL	<i>Mfr. of electrical and optical equipment</i>	1,977	1.4	1,977	0.9
DM	<i>Mfr. of transport equipment</i>	1,014	0.7	1,014	0.4
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>	337	0.2	445	0.2
D Total	Total	106,367	73.9	192,083	83.7
E	Electricity, gas and water supply	661	0.5	661	0.3
F	Construction	159	0.1	159	0.1
G50.2	<i>Maintenance and repair of motor vehicles</i>				
G Total	Wholesale and retail trade, repair work except motor vehicles	18,180	12.6	18,180	7.9
H	Hotel, restaurants				
I61	<i>Shipping</i>	6,906		6,906	
I Total	Transport, storage and communication	12,688	8.8	12,688	5.5
K74.81	<i>Photographic activities</i>				
J+K Total	Financial intermediation, business act.	61	0.0	61	0.0
L	Public and personal services	8	0.0	8	0.0
M	Education	5	0.0	5	0.0
N	Human health activities	3,017	2.1	3,017	1.3
O	Refuse disposal	2,691	1.9	2,691	1.2
X	Activity not stated		0.0		0.0
	Total	143,844	100	229,561	100

7. Germany/North Rhine-Westphalia

Best information on the relation between the LAGA-classification and the HWL has been evaluated in detail in the 'Bundesland Nordrhein-Westfalen'. North Rhine-Westphalia has approximately 45 % of the hazardous waste generation in Germany. It has not been possible to look at data for Germany as a whole. Therefore, the study is restricted to figures from North Rhine-Westphalia.

7.1. Classification

The new German Waste Law (Kreislaufwirtschafts- und Abfallgesetz) regulates waste disposal and recovery. Due to the higher risk potential hazardous waste data have to be reported to the authority. In Germany the use of EWC/HWL codes is obligatory for waste producers, collectors and treaters since 1st of January 1999 (see Annex 1 of the Waste Determination Ordinance). Germany has notified 19 additional waste types to the Commission as a supplement to the HWL.

Until 31st of December 1998 Germany applies the LAGA-classification (Abfallartenkatalog der Länderarbeitsgemeinschaft Abfall). In the catalogue 584 different waste types are listed, of which 332 are stated as hazardous. The German LAGA-catalogue and the Austrian ÖNORM-catalogue are rather similar.

The relation between LAGA-classification and the HWL codes has been evaluated in general for translation purposes for Germany and in detail for North Rhine-Westphalia. The transcription from the LAGA nomenclature to EWC is problematic because the relation between both catalogues is not unique. Therefore the amounts of hazardous waste in EWC Nomenclature are not available.

7.2. Licensing and reporting obligations

The new Act (KrW-/AbfG) came into force on 7/10/96. With it, a new preventive concept of waste has been created. According to this concept, waste is no longer simply something that the owner wishes to be rid of, but also those substances, surpluses and residues, which are neither deliberately produced nor used for any purpose.

The following directives supplement the new Act:

- Ordinance on Proof Procedures concerning the Recovery and Disposal of Waste (Abfall-Nachweisverordnung)
- Ordinance on the Introduction of the European Waste Catalogue (Verordnung zur Einführung des Europäischen Abfallkataloges)
- Ordinance on the Classification of Waste Requiring Special Supervision (Verordnung zur Bestimmung von besonders überwachungsbedürftigen Abfällen)
- Ordinance on the Classification of Waste for Recovery Requiring Supervision (Verordnung zur Bestimmung überwachungsbedürftiger Abfälle zur Verwertung)
- Ordinance on the Transport Licence (Verordnung zur Transportgenehmigung)
- Ordinance on Waste Management Concepts and Waste Management Balances (Verordnung über Abfallwirtschaftskonzepte und Abfallbilanzen)

- Ordinance on Specialised Waste Management Companies and the Directive on the Operation and Approval of Waste Management Associations (Verordnung über Entsorgungsfachbetriebe und die Richtlinie für die Tätigkeit und Anerkennung von Entsorgungsgemeinschaften)

Data for hazardous waste is available for 1984, 1987, 1990 and 1993. These data are based on statistical surveys. Starting with 1996 hazardous waste figures will be based on data from consignment notes. Due to the different data collection basis (survey – consignment notes) the comparability of waste figures before 1996 and after will be very limited.

Waste data for 1996 based on LAGA will be available in 1999. Starting with 1999 waste data will be based on EWC and on consignment notes.

7.3. Characterisation of hazardous waste generation in North Rhine-Westphalia (NRW)

Results of the 1993 North Rhine-Westphalia statistics on hazardous wastes show that the largest registered amounts are aqueous liquid waste from gas treatment and primary smelting slags/white drosses. In total, 15 different waste types account for 39 % of the total hazardous waste generation based on LAGA classification respectively 56 % based on EWC codes.

In 1993 a total amount of 4,076,400 t of hazardous waste based on LAGA classification was registered. The relation to the HWL shows that 2,405,353 t or 59 % could be related directly to HWL. In addition, 466,528 t or approx. 11 % could be related to 18 waste types notified to the Commission, 9 waste types of which can be related to other EWC codes stated as hazardous in NRW (54,191 t or approx. 1 %) and 9 waste types that can be related to additional codes following the structure of EWC (412,337 t or approx. 10 %).

In total, approx. 70.5 % or an amount of approx. 2,871,888 t of the hazardous waste generated in 1993 could be related to HWL and EWC including nationally notified waste types.

7.4. Description of methods used relating LAGA to EWC

A LAGA workgroup led by the North Rhine-Westphalia State Environment Agency (LUA-NRW) has developed a correlation from LAGA key-numbers to EWC codes. Based on this correlation, the LUA-NRW found a possibility to relate the amounts of hazardous waste registered in LAGA-key-numbers to EWC codes ('Mengenumsteiger').

7.5. Aggregation of codes and amounts of hazardous waste generation in North Rhine-Westphalia in 1993

Aggregation of codes and amounts of hazardous waste generated in North Rhine Westphalia in 1993					
Categories		Possible number of codes	Number of codes used	Amount	
			No. 1993	Tonnes 1993	% 1993
1	Directly related to HWL: H	236		2.405.353	59,0
2	Related to other EWC codes stated as hazardous in NRW (notified): E	9		54.191	1,3
3	Related to additional German codes following the structure of EWC (add. nat. EWC codes) (notified): A	9		412.337	10,1
4	Total amount related to HWL/EWC/add. nat. EWC (notified) (rounded)	-		2.871.881	70,5
5	Amount not related to EWC	-		1.204.519	29,5
6	Total amount of haz. wastes in NRW (related to LAGA classification)	254		4.076.400	100,0

7.6. Hazardous waste generation in North Rhine-Westphalia in 1993 related to EWC on 6-digit level, if the amount is greater than 40 000 tonnes

Hazardous waste generation in North Rhine-Westphalia in 1993 related to EWC on 6-digit level, if the amount is greater than 40,000 tonnes (in tonnes)			
No	Code	Description	1993
1	06 01 02	hydrochloric acid	44.073
2	10 03 04	primary smelting slags/white drosses	154.810
3	11 01 04	cyanide-free wastes containing chromium	130.573
4	11 01 05	acidic pickling solutions	112.491
5	12 01 09	waste machining emulsions free of halogens	107.259
6	13 02 02	non-chlorinated engine, gear, lubricating oils	75.356
7	15 01 99 D1	packaging material with noxious contaminants	68.746
8	15 02 99 D1	absorbents, filter materials, wiping cloths and protective clothing with noxious contaminants	86.846
9	17 01 99 D1	bricks, concret, tiles and gypsum based or asbestos based materials with noxious contaminants	147.973
10	17 02 99 D1	wood, glass and plastic with noxious contaminants	112.524
11	17 05 99 D1	excavated material, dredged spoil and wastes from soil treatment plants with noxious contaminants	57.232
12	19 01 03	fly ash	61.046
13	19 01 06	aqueous liquid waste from gas treatment and other aqueous liquid waste	292.883
14	19 01 99 D2	slags from special waste treatment	43.243
15	19 02 01	metal hydroxide sludges and other sludges from metal insolubilisations treatment	102.616
		39 % of total related to EWC code on 6-digit level	1.597.671
		61 of total amount not related to EWC code on 6-digit level	2.478.729
		Total hazardous waste generation in North Rhine-Westphalia	4.076.400

7.7. Hazardous waste in Germany according to NACE

Hazardous Waste generated in Germany according to NACE code (in tonnes)			
NACE	Economic area	Germany 1993	% 1993
A	Agriculture		
B	Fishing		
C	Quarrying	105,000	1.2
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	144,000	1.6
DB	<i>Mfr. of textiles, wearing, apparel</i>		
DC	<i>Mfr. of leather</i>		
DD	<i>Mfr. of wood products</i>		
DE	<i>Mfr. of printing and publishing</i>		
DF	<i>Mfr. of refined petroleum products</i>	108,000	1.2
DG	<i>Mfr. of chemicals</i>	2,291,000	25.2
DH	<i>Mfr. of rubber and plastics products</i>		
DI	<i>Mfr. of other non-metallic mineral products</i>		
DJ	<i>Mfr. and processing of basic metals</i>	908,000	10.0
DK	<i>Mfr. of machinery and equipment</i>	455,000	5.0
DL	<i>Mfr. of electrical and optical equipment</i>		
DM	<i>Mfr. of transport equipment</i>	552,000	6.1
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>		
D Total	Total	4,458,000	49.0
E	Electricity, gas and water supply	1,257,000	13.8
F	Construction	490,000	5.4
G50.2	<i>Maintenance and repair of motor vehicles</i>		
G Total	Wholesale and retail trade		
H	Hotel, restaurants		
I61	<i>Shipping</i>		
I Total	Transport, storage and communication		
K74.81	<i>Photographic activities</i>		
J+K Total	Financial intermediation, business act.		
L	Public and personal services		
M	Education		
N	Human health activities	32,000	0.4
O	Refuse disposal	11,000	0.1
X	Activity not stated	2,739,000	30.1
	Total	9,092,000	100

7.8. German waste types notified to the Commission as hazardous waste

German waste types notified to the Commission as hazardous waste			
No.	Code	Description	E: EWC A: add. EWC
1	05 01 06	sludges from processing and maintenance	E
2	10 03 13	solid waste from gas treatment	E
3	11 01 04	cyanid-free wastes containing chromium	E
4	15 01 99 D1	packaging material with noxious contaminants	A
5	15 02 99 D1	absorbents, filter materials, wiping cloths and protective clothing with noxious contaminants	A
6	16 05 02	other wastes containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E
7	16 05 03	other wastes containing organic chemicals, e.g. lab chemicals not otherwise specified	E
8	16 07 99	wastes not otherwise specified	E
9	17 01 99 D1	bricks, concret, tiles and gypsum based or asbestos based materials with noxious contaminants	A
10	17 02 99 D1	wood, glass and plastic with noxious contaminants	A
11	17 05 99 D1	excavated material, dredged spoil and wastes from soil treatment plants with noxious contaminants	A
12	17 06 99 D1	other insulating material with noxious contaminants	A
13	18 01 05 D1	cytostatic medicaments	A
14	19 01 08	pyrolysis wastes	E
15	19 01 99 D1	flue ashes from special waste treatment	A
16	19 01 99 D2	slags from special waste treatment	A
17	19 02 04 D1*	pre-mixed wastes for recovery or disposal, containing at least one noxious/hazardous waste	A
18	20 01 14	acids	E
19	20 01 15	alkalines	E

* Since December 1998 new notified waste type

8. Spain/The Basque Country

8.1. Classification

Spain currently uses the European Waste Catalogue (EWC). However, Autonomous Communities may modify the EWC according to their needs and industry.

The Basque Hazardous Waste Inventory for 1994 was based on a Draft of the HWL although some groups and subgroups were added or removed according to the specific conditions in the Basque Country. The 1994 Hazardous Waste Inventory comprises 15 hazardous waste groups out of a total of 20 groups (hazardous and non-hazardous). It contains 106 waste types compared to the 84 considered in the previous 1992 Inventory. However, some of the wastes listed in the inventory, in spite of being characterised as hazardous, were not taken into account when summing up the total amount of hazardous waste. This is due to the fact that the wastes in question do not strictly correspond to the definition of hazardous waste, but show characteristics that exclude them from being considered as municipal solid wastes.

At present in the Basque Country, the European Waste Catalogue is applied without any modification. Thus, additional codes are no longer used.

8.2. Licensing and reporting obligations

The Basque Country has not developed its own legislation on licensing and reporting, but applies Spanish national regulations.

Law 20/1986 on Hazardous Wastes and Decree 833/88 on Hazardous Waste drawing up Law 20/1986 establish the license and reporting obligations for waste producers or owners and waste management activities. The latter include transport activities.

Any activity that generates, owns, transports or treats hazardous wastes is subject to authorisation by the competent authorities.

Waste producers or owners have to maintain records on the type and quantity of wastes produced, as well as on destination and treatment method used. The records have to be made available to the competent authorities upon request.

Waste management enterprises have to keep records on types and quantities of wastes received and/or shipped and treated.

The treatment of waste requires an Acceptance Protocol to be completed prior to transport. In this Protocol the waste producer or owner has to apply for authorisation to transport waste to a treatment facility. In the application document he has to describe the type, quantity and characteristics of the wastes to be treated, attaching any specific information required to ensure adequate treatment. Subsequently the waste management facility notifies the acceptance or refusal of the waste. Copies of the Acceptance Protocol have to be kept with the records of the waste producer and of the treatment facility.

The shipment of hazardous waste for treatment has to be notified in advance to the competent authority of the Autonomous Community or, when several Autonomous Communities are affected, to the Ministry of Environment.

The transport of hazardous waste has to be accompanied by shipment documents. Copies of these documents have to be kept with the records of the waste producer or owner, the transporter, the treatment facility and the competent authority.

Before March 1st of each year, waste producers or owners have to submit an Annual Waste Declaration to the competent authority. This declaration has to specify the type and quantity of waste produced during the previous year, as well as its destination and method of treatment.

Waste management facilities have to submit an Annual Report to the competent authority which provides information on wastes received and treated at the facility.

8.3. Characterisation of hazardous waste generation

Hazardous waste generation in the Basque Country is dominated by three principal waste streams, namely group 10 'Inorganic wastes from thermal processes', group 11 'Inorganic waste with metals from metal treatment and the coating of metals; non-ferrous hydro-metallurgy' and group 12 'Wastes from surface treatment of metals and plastics'. In 1994 these three groups were responsible for about 55 % of the total amount of hazardous waste. A closer look at the 6 digit waste codes and the amounts stated for them leads to the conclusion that the metallurgical industry, primary and secondary metal producers and the metal processing industry are the main waste producers. This is confirmed by the NACE codes of the waste producers.

As only data for 1994 are included in the tables, no statement on trends in waste generation can be made.

According to the introductory chapter of the Basque Inventory, comparison with a previous inventory for 1992 is difficult, as increases in the amounts of waste are largely due to better reporting. On the other hand, possible decreases cannot be evaluated properly, for the same reason.

The amount of hazardous waste being subject to controlled elimination increased from 108,000 tonnes in 1992 to 150,000 tonnes in 1994. Controlled elimination includes physico-chemical treatment and controlled landfilling.

It is stated that in 1994 about 44 % of all hazardous waste was destined for recycling and recovery, while 32 % were subject to controlled elimination. 24 % of the wastes were not managed adequately.

The substitution of a traditional process for the production of sulphuric acid resulted in a reduction of 150,000 tonnes of hazardous wastes with respect to 1992.

8.4. Description of methods used relating the Basque Inventory of Hazardous Waste to EWC

The codification in the Basque Inventory of Hazardous Wastes for 1994 sticks closely to the European Waste Catalogue. Where more specific codes are applied in the Basque Inventory, the corresponding EWC code is extended by adding more digits. Thus, it appeared reasonable to relate the 6 digit EWC code directly to the extended Basque codes. The NACE codes were assigned according to the corresponding EWC code.

8.5. Aggregation of codes and amounts of hazardous waste generation in the Basque Country in 1994

Aggregation of codes and amounts of hazardous waste generated in the Basque Country 1994					
Categories		Possible number of codes	Number of codes used	Amount	
			No. 1994	Tonnes 1994	% 1994
1	Directly related to HWL: H	236	33	295,172	63.0
2	Related to other EWC codes stated as hazardous in the Basque Country: E	23	23	155,859	33.2
3	Related to additional Basque codes following the structure of EWC (add. EWC codes): A	15	15	17,775	3.8
4	Total amount related to HWL/EWC/add. EWC	274	71	468,806	100
5	Amount not related to EWC	-	0	0	0.0
6	Total amount of haz. wastes in the Basque Country	-	71	468,806	100

**8.6. Hazardous waste generated in the Basque Country in 1994
related to EWC on 2-digit level and stated in tonnes**

Hazardous waste generated in the Basque Country 1994 related to EWC on 2-digit level and stated in tonnes		
Code	Description	1994
02	WASTE FROM AGRICULTURAL, HORTICULTURAL, HUNTING, FISHING AND AQUACULTURE PRIMARY PRODUCTION, FOOD PREPARATION AND PROCESSING	462
04	WASTES FROM THE LEATHER AND TEXTILE INDUSTRIES	1,010
05	WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	55,071
06	WASTES FROM INORGANIC CHEMICAL PROCESSES	54,464
07	WASTES FROM ORGANIC CHEMICAL PROCESSES	16,845
08	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATING (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	1,318
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	4,250
10	INORGANIC WASTES FROM THERMAL PROCESSES	104,134
11	INORGANIC WASTE WITH METALS FROM METAL TREATMENT AND THE COATING OF METALS; NON-FERROUS HYDRO-METALLURGY	92,592
12	WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS	69,425
13	OIL WASTES AND OTHER LIQUIDS (except edible oils 05 00 00 and 12 00 00)	16,950
14	WASTES FROM ORGANIC SUBSTANCES EMPLOYED AS SOLVENTS AND COOLANTS (except 07 00 00 and 08 00 00)	881
15	PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	1,230
16	WASTE NOT OTHERWISE SPECIFIED IN THE CATALOGUE	564
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY	39,770
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS	9,840
	Total related to HWL/EWC/add. EWC	468,806

8.7. Hazardous waste generation in the Basque Country in 1994 related to EWC on 6-digit level and stated in tonnes

Hazardous waste generated in the Basque Country 1994 related to EWC on 6-digit level (in tonnes)			
Code	Description	H: HWL E: EWC A: add. EWC	1994
020301	Sludges from washing, cleaning, peeling, centrifuging and separation	E	117
020399.1	Farinaceous wastes	A	179
020399.2	Lactic wastes	A	48
020399.3	Solid grease and fat wastes	A	118
040104	Tanning liquor containing chromium	E	970
040106	Sludges containing chromium	E	40
050101	Sludges from on-site effluent treatment	E	5,575
050103	Tank bottom sludges	H	15
050302	Other spent catalysts	E	564
050501	Waste containing sulphur	E	45,532
050601	Acid tars	H	3,360
050699.2	Waste from desulphurisation of coke gas	A	25
060101	Sulphuric acid and sulphurous acid	H	1,043
060102	Hydrochloric acid	H	39,260
060199.3	Acidic solutions (mixture of xCl + xF)	H	3,166
060201	Calcium hydroxide	H	6,025
060401	Metallic oxides	E	3,200
060405	Wastes containing other heavy metals	H	550
060601	Waste containing sulphur	E	660
060799.1	Brine depuration sludges	A	525
060799.4	Concentrated antimon sludges	A	20
060799.5	Water containing antimon	A	15
070199.1.1	Phenols	A	5,330
070199.1.2	Sludges from treatment of waters containing phenols	A	20
070199.2	Ammoniacal waste water containing phenols and cyanides	A	6,700
070299.1	Latex waste	A	40
070299.2	Plasticiser and synthetic rubber wastes	A	67
070499.1	Sludges from the production of organic pesticides	A	138
070499.2	Concentrated sulphuric acid sludges	A	50
070499.3	Waste from lindane production	A	4,500
080101	Waste paints and varnish containing halogenated solvents	H	10
080102	Waste paints and varnish free of halogenated solvents	H	127
080105	Hardened paints and varnishes	E	13
080108	Aqueous sludges containing paint or varnish	E	85
080109	Waste from paint or varnish removal (except 080105 and 080106)	E	765
080302	Waste ink free of halogenated solvents	H	100
080304	Dried ink	E	93
080306	Ink sludges free of halogenated solvents	H	60
080307	Aqueous sludges containing ink	E	65
090101	Water based developer and activator solutions	H	2,100
090104	Fixer solutions	H	1,300
090105	Bleach solutions and bleach fixer solutions	H	850
100203	Solid wastes from gas treatment	E	62,920
100304	Primary smelting slags / white drosses	H	4,159
100308	Salt slags from secondary smelting	H	37,055
110101	Cyanidic (alkaline) wastes containing heavy metals other than chromium	H	398
110103	Cyanide-free wastes containing chromium	H	3,660

Hazardous waste generated in the Basque Country 1994 related to EWC on 6-digit level (in tonnes)			
Code	Description	H: HWL E: EWC A: add. EWC	1994
110104	Cyanide-free wastes not containing chromium	E	4,768
110105	Acidic pickling solutions	H	64,200
110107	Alkalis not otherwise specified	H	12,850
110108	Phosphatizing sludges	H	3,800
110201	Sludges from copper hydrometallurgy	E	2,800
110301	Wastes containing cyanide	H	39
110302	Other wastes	H	77
120109	Waste machining emulsions free of halogens	H	69,425
130202	Non chlorinated engine, gear and lubricating oils	H	8,500
130402	Bilge oils from jetty sewers	H	8,450
140102	Other halogenated solvents and solvent mixes	H	858
140201	Halogenated solvents and solvent mixes	H	23
150104	Metallic	E	1,230
160201	Transformes and capacitors containing PCB or PCTs	H	252
160602	Ni-Cd batteries	H	18
160604	Alkaline batteries	E	15
160605	Other batteries and accumulators	E	200
160706	Waste from storage tank cleaning, containing oil	H	79
190201	Metal hydroxide sludges and other sludges from metal insolubilisation treatment	H	23,049
190301	Wastes stabilized/solidified with hydraulic binders	E	16,721
200116	Detergents	E	8,470
200118	Medicines	E	320
200120	Batteries	E	736
200121	Fluorescent tubes and other mercury containing waste	H	314
Total related to HWL/EWC/add. EWC			468,806

8.8. Hazardous waste in the Basque Country according to NACE code

Hazardous waste generated in the Basque Country according to NACE code (in tonnes)			
NACE	Economic area	Basque Country 1994	% 1994
A	Agriculture		
B	Fishing		
C	Quarrying		
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	462	0.1
DB	<i>Mfr. of textiles, wearing, apparel</i>		
DC	<i>Mfr. of leather</i>	1,010	0.2
DD	<i>Mfr. of wood products</i>		
DE	<i>Mfr. of printing and publishing</i>	318	0.1
DF	<i>Mfr. of refined petroleum products</i>	55,071	11.7
DG	<i>Mfr. of chemicals</i>	71,212	15.2
DH	<i>Mfr. of rubber and plastics products</i>	107	0.0
DI	<i>Mfr. of other non-metallic mineral products</i>		
DJ	<i>Mfr. and processing of basic metals</i>	266,151	56.8
DK	<i>Mfr. of machinery and equipment</i>		
DL	<i>Mfr. of electrical and optical equipment</i>		
DM	<i>Mfr. of transport equipment</i>		
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>	23,049	4.9
D Total	Total	417,380	89.0
E	Electricity, gas and water supply		
F	Construction		
G50.2	<i>Maintenance and repair of motor vehicles</i>	858	0.2
G Total	Wholesale and retail trade, repair work except motor vehicles	9,358	2.0
H	Hotel, restaurants		
I61	<i>Shipping</i>	8,450	1.8
I Total	Transport, storage and communication	8,529	1.8
K74.81	<i>Photographic activities</i>	4,250	0.9
J+K Total	Financial intermediation, business act.	4,250	0.9
L	Public and personal services		
M	Education		
N	Human health activities		
O	Refuse disposal	26,813	5.7
X	Activity not stated	2,476	0.5
	Total	468,806	100

8.9. Basque additional hazardous waste types

Basque additional hazardous waste types			
No	Code	Description	E: EWC A: add. EWC
1	020301	Sludges from washing, cleaning, peeling, centrifuging and separation	E
2	020399.1	Farinaceous wastes	A
3	020399.2	Lactic wastes	A
4	020399.3	Solid grease and fat wastes	A
5	040104	Tanning liquor containing chromium	E
6	040106	Sludges containing chromium	E
7	050101	Sludges from on-site effluent treatment	E
8	050302	Other spent catalysts	E
9	050501	Waste containing sulphur	E
10	050699.2	Waste from desulphurisation of coke gas	A
12	060401	Metallic oxides	E
13	060601	Waste containing sulphur	E
14	060799.1	Brine depuration sludges	A
15	060799.4	Concentrated antimon sludges	A
16	060799.5	Water containing antimon	A
17	070199.1.1	Phenols	A
18	070199.1.2	Sludges from treatment of waters containing phenols	A
19	070199.2	Ammoniacal waste water containing phenols and cyanides	A
20	070299.1	Latex waste	A
21	070299.2	Plasticiser and synthetic rubber wastes	A
22	070499.1	Sludges from the production of organic pesticides	A
23	070499.2	Concentrated sulphuric acid sludges	A
24	070499.3	Waste from lindane production	A
26	080105	Hardenend paints and varnishes	E
27	080108	Aqueous sludges containing paint or varnish	E
28	080109	Waste from paint or varnish removal (except 08 01 05 and 08 01 06)	E
30	080304	Dried ink	E
31	080307	Aqueous sludges containing ink	E
32	100203	Solid wastes from gas treatment	E
34	110104	Cyanide-free wastes not containing chromium	E
35	110201	Sludges from copper hydrometallurgy	E
36	150104	Metallic	E
37	160604	Alkaline batteries	E
38	160605	Other bateries and accumulators	E
39	190301	Wastes stabilized/solidified with hydraulic binders	E
40	200116	Detergents	E
41	200118	Medicines	E
42	200120	Batteries	E

9. Spain/Catalonia

9.1. Classification

Spain currently uses the European Waste Catalogue (EWC). However, Autonomous Communities may modify the EWC according to their needs and industry.

Until 1993 the Catalan waste classification was based on a French codification. A new Catalan waste classification was developed in 1994 in order to meet the new requirements of Law 6/1993 and the fact that the codification used until then was incomplete and ambiguous.

This Catalogue was developed according to the framework directives on waste management and it is based on the European Waste Catalogue. It has the same structure as the EWC, groups and subgroups, using a 6-digit codification.

According to Law 6/93, regulating waste, Catalan wastes are classified according to three categories: hazardous, non hazardous and inert. Hazardous waste is any waste included in the scope of Directive 91/689/EEC. Non-hazardous waste is any waste not classified as hazardous or inert. Inert waste is waste which, when deposited in a landfill, does not undergo significant physical, chemical or biological deformation and which complies with the lixiviation/leaching criteria laid down by regulation.

The Catalan Waste Catalogue was developed prior to introduction of the HWL and classifies more wastes as hazardous than does the HWL.

In 1999 a new Catalan Waste Catalogue will be introduced. In general this catalogue classification remains closer to the EWC classification so that practically all waste classified as hazardous in Catalonia is considered hazardous in the EWC.

9.2. Licensing and reporting obligations

Any person that owns, produces, transports and treats industrial hazardous waste needs authorisation by JUNTA DE RESIDUS. The authorisation goes along with the inscription in the respective Inventories of JUNTA DE RESIDUS.

Art. 3 of Decree 142/1984 obliges any persons that produce, transport, treat, eliminate or own industrial wastes to provide to the competent authority any information that the Authority considers necessary to comply with the provisions adopted in application of the legal dispositions on waste.

Producers or owners of industrial hazardous wastes have to maintain records on the origin, the amount and the characteristics of the waste. This information has to be made accessible to the competent authority.

Any shipment of industrial hazardous wastes has to be accompanied by shipment documents which contain data on the type, amount, hazard, origin and

destination of the waste being transported. Copies of the shipment forms remain with the producer, the transporter, the treatment facility, JUNTA DE RESIDUS and the acting municipality, which keep them with their records accessible for consultation by JUNTA DE RESIDUS.

A Protocol of Acceptance must be completed prior to any shipment of industrial hazardous waste from its origin to a waste management facility. The waste producer must provide information to the treatment facility relating to the origin, amount, type and analysis of the waste and any other information necessary to ensure adequate treatment.

Copies of the acceptance form have to be kept with the records of the waste producer, the treatment facility, JUNTA DE RESIDUS and the municipal authorities. The holder of the treatment facility is obliged to return any waste to its origin that does not correspond with the data given in the acceptance form.

The most important tool for the reporting of waste quantities is the annual Waste Declaration by producers and owners to JUNTA DE RESIDUS by March 1st of each year.

The declaration should contain the information required under Art. 2 of the Decree 2/1991 for waste produced during the previous year. The waste has to be described according to its characteristics and composition rather than to the process of origin. Each waste has to be identified by a waste code contained in the Catalan Waste Catalogue. The quantities have to be specified in metric tonnes per year.

The Waste Declaration also has to include information on on-site disposal and recovery systems, as well as on contingency plans for hazardous incidents.

9.3. Description of hazardous waste generation

An analysis of the waste generation in Catalonia has to take into account some general issues.

First of all, an increase in the total hazardous waste generation is partly due to improved reporting and control. As changes in the declaration system took place during the early and mid nineties, it is difficult to decide for this period to what extent the real waste amounts have increased.

The second important factor to take into account is that the Catalan population is relatively small and the number of waste generators is small as well. This is of importance when fluctuations between years are analysed. A lot of wastes types are produced mainly by very few companies. Thus, production or process changes in only one enterprise may cause an overall increase or decrease of a certain waste type from one year to the other.

The main waste streams generated in Catalonia correspond to group 07 'Wastes from organic chemical processes' and group 10 'Inorganic wastes from thermal processes'. These two groups make up nearly 50 % of the total hazardous wastes generated in 1994 and 1995. Within group 07 the most important wastes are aqueous and non-aqueous washing liquids, solvents and mother liquors. The most important amounts within group 10 consist of fly ashes and metallurgic slags.

In 1994 and 1995 these two groups are followed by group 06 'Wastes from inorganic chemical processes'. The most important wastes in this group are liquid and solid saline wastes.

Group 19 'Wastes from waste treatment facilities, off-site waste water treatment plants and the water industry' matches more or less group 06 with respect to waste amounts generated. The amounts generated by this group show a tendency to increase. This may be due to the fact that the total waste amounts are rising, but may also be due to the installation of new treatment facilities. The improved control of waste management has also to be taken into account.

For 1996 the total amount of hazardous waste was 1,108,565 tonnes according to the official Catalan figures. This figure includes a large amount of leachate (214,954 t) from landfills for non-hazardous wastes. In 1996 the reporting of this waste type was required for the first time. This caused an important increment of wastes generated in group 19. However, the leachates are not treated in their totality, but rather fed back to the waste mass in order to promote the biological degradation of the wastes. The new Catalan Waste Catalogue, which will come into force in 1999, does not consider the leachates as hazardous waste any longer. Therefore, in order to get more coherent data for the years 1994-1996 the leachates are taken out of the calculations in the tables below.

Trends for the four main waste groups can be described as follows: groups 07 and 10 show relatively small fluctuations, maintaining more or less their magnitude. Group 06 shows a slight decreasing trend, but this interpretation should be taken with caution as structural changes in the generating industries may influence this tendency. Group 19 shows a tendency to increase.

9.4. Description of methods used relating the Catalan Waste Catalogue to EWC

The Catalan Waste Catalogue based on the EWC was elaborated in close co-operation with industry, including mailings and company visits, in order to find a classification which best reflected the waste types generated in Catalonia. The findings were that some groups of the EWC did not adequately reflect the Catalan situation.

Sometimes it was considered convenient to create more specific codes. This was especially the case for wastes generated in activities which are not very common in the European Union, but of importance in Catalonia.

In other cases, wastes with identical or very similar characteristics, which have several occurrences in the EWC according to different sources, were taken together in one code. The source then was specified by the NACE code assigned.

In general the Catalan waste codes correspond directly to one specific code of the EWC. The translation was therefore performed by comparing the waste description.

When more specific codes were applied in the translation of the Catalan Waste Catalogue to the EWC, these wastes can be related to an unspecific code (..99) as well as to an EWC code which is quite similar to the Catalan code, though not matching totally.

When identical and similar waste of the EWC were taken together in one code in the translation from the Catalan Waste Catalogue to the EWC, one Catalan waste code can appear related to several EWC codes. It can be found that their description is identical, though their source may vary.

9.5. Aggregation of codes and amounts of hazardous waste generation in Catalonia 1994-1996

Aggregation of codes and amounts of hazardous waste generated in Catalonia 1995-1996												
Categories		Possible number of codes	Number of codes used		Amount		Codes used	Amount		Codes used	Amount	
			No. 1996	Tonnes 1996	% 1996	No. 1995		Tonnes 1995	% 1995		No. 1994	Tonnes 1994
1	Directly related to HWL: H	236	150	284,406	31.8	150	272,958	32.8	150	256,756	32.6	
2	Related to other EWC codes stated as hazardous in Catalonia: E	128	128	425,313	47.6	128	374,419	45.0	128	331,839	42.1	
3	Related to additional Catalan codes following the structure of EWC (add. EWC codes): A	29	26	16,555	1.9	26	12,551	1.5	26	8,870	1.1	
4	Related to either HWL or other EWC codes: E/H	-	11	167,237	18.7	11	171,784	20.7	11	189,831	24.1	
5	Total amount related to HWL/EWC/add. EWC	393	315	893,511	100.0	315	831,712	100.0	315	787,296	100.0	
6	Amount not related to EWC	-										
7	Total amount of haz. wastes in Catalonia	-		893,511	100.0		831,712	100.0		787,296	100.0	

9.6. Hazardous waste generated in Catalonia 1993-1996 related to EWC on 2-digit level and stated in tonnes

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 2-digit level and stated in tonnes				
Code	Description	1994	1995	1996
01	WASTE RESULTING FROM EXPLORATION, MINING, DRESSING AND FURTHER TREATMENT OF MINERALS AND QUARRY	918	4.791	27.593
02	WASTE FROM AGRICULTURAL, HORTICULTURAL, HUNTING, FISHING AND AQUACULTURE PRIMARY PRODUCTION, FOOD PREPARATION AND PROCESSING	36.403	51.343	60.415
03	WASTES FROM WOOD PROCESSING AND THE PRODUCTION OF PAPER, CARDBOARD, PULP, PANELS AND FURNITURE	46	5	44
04	WASTES FROM THE LEATHER AND TEXTILE INDUSTRIES	3.043	4.345	5.876
05	WASTES FROM PETROLEUM REFINING, NATURAL GAS PURIFICATION AND PYROLYTIC TREATMENT OF COAL	13.684	13.384	5.686
06	WASTES FROM INORGANIC CHEMICAL PROCESSES	83.209	67.678	56.165
07	WASTES FROM ORGANIC CHEMICAL PROCESSES	172.542	214.350	198.019
08	WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATING (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS	19.612	22.929	19.697
09	WASTES FROM THE PHOTOGRAPHIC INDUSTRY	281	102	200
10	INORGANIC WASTES FROM THERMAL PROCESSES	200.516	187.713	185.780
11	INORGANIC WASTE WITH METALS FROM METAL TREATMENT AND THE COATING OF METALS; NON-FERROUS HYDRO-METALLURGY	47.070	40.053	39.427
12	WASTES FROM SHAPING AND SURFACE TREATMENT OF METALS AND PLASTICS	2.534	3.611	5.406
13	OIL WASTES AND OTHER LIQUIDS (except edible oils 05 00 00 and 12 00 00)	32.552	18.862	25.149
14	WASTES FROM ORGANIC SUBSTANCES EMPLOYED AS SOLVENTS AND COOLANTS (except 07 00 00 and 08 00 00)	42.593	49.835	97.529
15	PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING NOT OTHERWISE SPECIFIED	46.534	47.834	47.015
16	WASTE NOT OTHERWISE SPECIFIED IN THE CATALOGUE	23.281	17.416	21.287
17	CONSTRUCTION AND DEMOLITION WASTE (including road construction)	971	688	887
18	WASTES FROM HUMAN OR ANIMAL HEALTH CARE AND/OR RELATED RESEARCH	3	164	64
19	WASTES FROM WASTE TREATMENT FACILITIES, OFF-SITE WASTE WATER TREATMENT PLANTS AND THE WATER INDUSTRY	57.618	78.648	95.701
20	MUNICIPAL WASTES AND SIMILAR COMMERCIAL, INDUSTRIAL AND INSTITUTIONAL WASTES INCLUDING SEPARATELY COLLECTED FRACTIONS	3.885	7.962	1.571
	Total amount related to HWL/EWC/add. EWC	787.295	831.713	893.511

Note: The official Catalan figures for hazardous waste generated in 1996 include the amount of 214,954 tonnes of landfill leachate (within 2-digit waste group 19). In order to ensure greater comparability this amount is not included in the table, since this type of waste was not registered before 1996 and since landfill leachate is not considered hazardous any more according to the new 1998 Catalan Waste Catalogue.

9.7. Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level (in tonnes)					
Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
010501	Oil-containing drilling muds and wastes	E	917	2,447	27,553
010502	Barite-containing drilling muds and wastes	E	1	2,344	40
010503	Chloride-containing drilling muds and wastes	E			
020102	Animal tissue waste	E	22,153	38,260	40,835
020105	Agrochemical wastes	H	32	7	0
020106	Animal feces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site	E	4,000	8	139
020199	Wastes not otherwise specified	E		2,893	7
020301	Sludges from washing, cleaning, peeling, centrifuging and separation	E	2,336	2,542	13,456
020399	Wastes not otherwise specified	E			
020299	Wastes not otherwise specified	E	0	0	185
020499	Wastes not otherwise specified	E			
020699	Wastes not otherwise specified	E			
020702	Wastes from spirits distillation	E	7,882	7,633	5,793
030201	Non-halogenated organic wood preservatives	H	5	5	0
030202	Organochlorinated wood preservatives	H			
030203	Organometallic wood preservatives	H			
030204	Inorganic wood preservatives	H			
030303	Bleaching sludges from hypochlorite and chlorine processes	E	41	0	0
030399	Wastes not otherwise specified	E	0	0	44
040103	egreasing wastes containing solvents without a liquid phase	H	3	35	131
040106	Sludges containing chromium	E	1	0	3,910
040107	Sludges free of chromium	E	148	279	587
040199.1	Leather preservation salts	A	193	358	580
040210	Organic matter from natural products (e.g. grease, wax)	E	23	0	1
040213	Dye stuffs and pigments	E	2,675	3,673	669
050101	Sludges from on-site effluent treatment	E	4,321	1,986	2,154
050105	Oil spills	H	41	1,147	993
050106	Sludges from plant, equipment and maintenance operations	E	8,971	9,972	2,257
050107	Acid tars	H	65	23	21
050108	Other tars	H			
050199	Wastes not otherwise specified	E	245	26	44
050302	Other spent catalysts	E	14	202	197
050401	Spent filter clays	H	25	0	0
050803	Other tars	H	4	14	0
050899.1	Effluent treatment sludges (pretreatment, treatment plants)	A	0	13	21
060101	Sulphuric acid and sulphurous acid	H	623	643	213
060102	Hydrochloric acid	H	29	199	1,625
060103	Hydrofluoric acid	H	20	22	91
060104	Phosphoric and phosphorous acid	H	0	2	1
060105	Nitric acid and nitrous acid	H	11	8	6
060199	Waste not otherwise specified	H	211	206	166
060201	Calcium hydroxide	H	11,013	7,248	8,366
060202	Soda	H	385	1,752	824
060203	Ammonia	H	2,006	2,198	2,027
060299	Wastes not otherwise specified	H	2,600	129	832
060302	Saline solutions containing sulphates, sulphites or sulphides	E	30	46	462
060303	Solid salts containing sulphates, sulphites or sulphides	E	3,799	2,501	1,726

**Hazardous waste generated in Catalonia 1994-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
060304	Saline solutions with chlorides, fluorides and halides	E	9,718	1,671	1,036
060305	Solid salts containing chlorides, fluorides and other halogenated solid salts	E	2,364	610	306
060306	Saline solutions containing phosphates and related solid salts	E	7,078	7,108	91
060307	Phosphates and related solid salts	E	146	3,344	4,052
060308	Saline solutions containing nitrates and related compounds	E	8	8	0
060310	Solid salts containing ammonium	E	1,648	1,691	2,136
060311	Salts and solutions containing cyanides	H	56	17	11
060312	Salts and solutions containing organic compounds	E	9,873	11,097	18,045
060399	Wastes not otherwise specified	E			
060312	Salts and solutions containing organic compounds	E	6	60	44
060399	Wastes not otherwise specified	E			
060402	Metallic salts (except 06 03 00)	H			
060499	Wastes not otherwise specified	E			
060399.1	Ammoniacal (saline) solutions	A	26	39	27
060399.2	Mother liquors, baths and contaminated liquid solutions containing heavy metals	A	10	13	88
060499.2	Mother liquors, baths and contaminated liquid solutions containing heavy metals	A			
060399.3	Mother liquors, baths and contaminated liquid solutions without heavy metals	A	15	17	171
060499.3	Mother liquors, baths and contaminated liquid solutions without heavy metals	A			
060399.4	Distillates & distillands, sludges and other wastes containing heavy metals	A	252	2	6
060499.4	Distillates & distillands, sludges and other wastes containing heavy metals	A			
060399.5	Distillates & distillands, sludges and other wastes without heavy metals	A	61	63	19
060499.5	Distillates & distillands, sludges and other wastes without heavy metals	A			
060401	Metallic oxides	E	185	1,164	145
060403	Wastes containing arsenic	H	0	0	1
060404	Wastes containing mercury	H	12	18	83
060405	Wastes containing other heavy metals	H	957	228	216
060501	Sludges from on-site effluent treatment	E	17,135	14,130	10,504
060601	Waste containing sulphur	E	8	31	901
060702	Activated carbon from chlorine production	H	0	0	18
061302	Spent activated carbon (except 06 07 02)	H			
061201	Spent catalysts containing precious metals	E	30	0	0
061202	Other spent catalysts	E	9	31	0
061301	Inorganic pesticides, biocides and wood preserving agents	H	0	7	0
061399	Wastes not otherwise specified	E	9,942	9,358	35
061399.1	Elutions from regeneration of ionic exchange resins	A	2,053	639	213
061399.2	Washing waters	A	892	1,377	1,680
070101	Aqueous washing liquids and mother liquors	H	17,102	23,646	18,130
070201	Aqueous washing liquids and mother liquors	H			
070301	Aqueous washing liquids and mother liquors	H			
070401	Aqueous washing liquids and mother liquors	H			
070501	Aqueous washing liquids and mother liquors	H			
070601	Aqueous washing liquids and mother liquors	H			
070701	Aqueous washing liquids and mother liquors	H			
070101	Aqueous washing liquids and mother liquors	H	46,703	52,262	8,540
070104	Other organic solvents, washing liquids & mother liquors	H			
070201	Aqueous washing liquids and mother liquors	H			
070204	Other organic solvents, washing liquids & mother liquors	H			

**Hazardous waste generated in Catalonia 1994-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
070301	Aqueous washing liquids and mother liquors	H			
070304	Other organic solvents, washing liquids & mother liquors	H			
070401	Aqueous washing liquids and mother liquors	H			
070404	Other organic solvents, washing liquids & mother liquors	H			
070501	Aqueous washing liquids and mother liquors	H			
070504	Other organic solvents, washing liquids & mother liquors	H			
070601	Aqueous washing liquids and mother liquors	H			
070604	Other organic solvents, washing liquids & mother liquors	H			
070701	Aqueous washing liquids and mother liquors	H			
070704	Other organic solvents, washing liquids & mother liquors	H			
070102	Sludges from on-site effluent treatment	E	45,020	30,654	42,137
070202	Sludges from on-site effluent treatment	E			
070302	Sludges from on-site effluent treatment	E			
070402	Sludges from on-site effluent treatment	E			
070502	Sludges from on-site effluent treatment	E			
070602	Sludges from on-site effluent treatment	E			
070702	Sludges from on-site effluent treatment	E			
070103	Organic halogenated solvents, washing liquids & mother liquors	H	3,369	4,775	4,234
070104	Other organic solvents, washing liquids & mother liquors	H			
070203	Organic halogenated solvents, washing liquids & mother liquors	H			
070204	Other organic solvents, washing liquids & mother liquors	H			
070303	Organic halogenated solvents, washing liquids & mother liquors	H			
070304	Other organic solvents, washing liquids & mother liquors	H			
070403	Organic halogenated solvents, washing liquids & mother liquors	H			
070404	Other organic solvents, washing liquids & mother liquors	H			
070503	Organic halogenated solvents, washing liquids & mother liquors	H			
070504	Other organic solvents, washing liquids & mother liquors	H			
070603	Organic halogenated solvents, washing liquids & mother liquors	H			
070604	Other organic solvents, washing liquids & mother liquors	H			
070703	Organic halogenated solvents, washing liquids & mother liquors	H			
070704	Other organic solvents, washing liquids & mother liquors	H			
070104	Other organic solvents, washing liquids & mother liquors	H	12,758	20,230	23,798
070108	Other still bottoms and reaction residues	H			
070204	Other organic solvents, washing liquids & mother liquors	H			
070208	Other still bottoms and reaction residues	H			
070304	Other organic solvents, washing liquids & mother liquors	H			
070308	Other still bottoms and reaction residues	H			
070404	Other organic solvents, washing liquids & mother liquors	H			
070408	Other still bottoms and reaction residues	H			
070504	Other organic solvents, washing liquids & mother liquors	H			
070508	Other still bottoms and reaction residues	H			
070604	Other organic solvents, washing liquids & mother liquors	H			
070608	Other still bottoms and reaction residues	H			
070704	Other organic solvents, washing liquids & mother liquors	H			
070708	Other still bottoms and reaction residues	H			
070105	Spent catalysts containing precious metals	E	2	6	25
070205	Spent catalysts containing precious metals	E			
070305	Spent catalysts containing precious metals	E			
070405	Spent catalysts containing precious metals	E			

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level (in tonnes)					
Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
070505	Spent catalysts containing precious metals	E			
070605	Spent catalysts containing precious metals	E			
070705	Spent catalysts containing precious metals	E			
070106	Other spent catalysts	E	452	359	455
070206	Other spent catalysts	E			
070306	Other spent catalysts	E			
070406	Other spent catalysts	E			
070506	Other spent catalysts	E			
070606	Other spent catalysts	E			
070706	Other spent catalysts	E			
070107	Halogenated still bottoms and reaction residues	H	12,639	15,009	17,657
070207	Halogenated still bottoms and reaction residues	H			
070307	Halogenated still bottoms and reaction residues	H			
070407	Halogenated still bottoms and reaction residues	H			
070507	Halogenated still bottoms and reaction residues	H			
070607	Halogenated still bottoms and reaction residues	H			
070707	Halogenated still bottoms and reaction residues	H			
070108	Other still bottoms and reaction residues	H	17,603	13,514	14,710
070208	Other still bottoms and reaction residues	H			
070308	Other still bottoms and reaction residues	H			
070408	Other still bottoms and reaction residues	H			
070508	Other still bottoms and reaction residues	H			
070608	Other still bottoms and reaction residues	H			
070708	Other still bottoms and reaction residues	H			
070109	Halogenated filter cakes, spent absorbents	H	4	0	0
070209	Halogenated filter cakes, spent absorbents	H			
070310	Other filter cakes, spent absorbents	H			
070410	Other filter cakes, spent absorbents	H			
070510	Other filter cakes, spent absorbents	H			
070610	Other filter cakes, spent absorbents	H			
070710	Other filter cakes, spent absorbents	H			
070110	Other filter cakes, spent absorbents	H	1,241	1,368	2,105
070210	Other filter cakes, spent absorbents	H			
070310	Other filter cakes, spent absorbents	H			
070410	Other filter cakes, spent absorbents	H			
070510	Other filter cakes, spent absorbents	H			
070610	Other filter cakes, spent absorbents	H			
070710	Other filter cakes, spent absorbents	H			
070199	Wastes not otherwise specified	E	10,458	43,655	51,105
070199.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A	74	81	1,715
070299.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070399.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070499.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070599.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070699.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070799.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A			
070199.2	Dispersions and polymeric dissolutions with acrylic monomers	A	486	584	6,134
070299.2	Dispersions and polymeric dissolutions with acrylic monomers	A			
070399.2	Dispersions and polymeric dissolutions with acrylic monomers	A			

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level (in tonnes)					
Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
070499.2	Dispersions and polymeric dissolutions with acrylic monomers	A			
070599.2	Dispersions and polymeric dissolutions with acrylic monomers	A			
070699.2	Dispersions and polymeric dissolutions with acrylic monomers	A			
070799.2	Dispersions and polymeric dissolutions with acrylic monomers	A			
070199.3	Other aqueous polymeric dispersions and dissolutions	A	1,287	832	1,495
070299.3	Other aqueous polymeric dispersions and dissolutions	A			
070399.3	Other aqueous polymeric dispersions and dissolutions	A			
070499.3	Other aqueous polymeric dispersions and dissolutions	A			
070599.3	Other aqueous polymeric dispersions and dissolutions	A			
070699.3	Other aqueous polymeric dispersions and dissolutions	A			
070799.3	Other aqueous polymeric dispersions and dissolutions	A			
070199.4	Other non-aqueous polymeric dispersions and dissolutions	A	226	477	1,772
070299.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070399.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070499.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070599.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070699.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070799.4	Other non-aqueous polymeric dispersions and dissolutions	A			
070199.5	Pesticides and biocides	A	24	14	109
070299.5	Pesticides and biocides	A			
070399.5	Pesticides and biocides	A			
070499.5	Pesticides and biocides	A			
070599.5	Pesticides and biocides	A			
070699.5	Pesticides and biocides	A			
070799.5	Pesticides and biocides	A			
070199.6	Out of date & off-normalisation medicaments and cosmetics	A	2,325	5,580	2,474
070299.6	Out of date & off-normalisation medicaments and cosmetics	A			
070399.6	Out of date & off-normalisation medicaments and cosmetics	A			
070499.6	Out of date & off-normalisation medicaments and cosmetics	A			
070599.6	Out of date & off-normalisation medicaments and cosmetics	A			
070699.6	Out of date & off-normalisation medicaments and cosmetics	A			
070799.6	Out of date & off-normalisation medicaments and cosmetics	A			
070199.7	Solid dyes and pigments	A	71	62	63
070299.7	Solid dyes and pigments	A			
070399.7	Solid dyes and pigments	A			
070499.7	Solid dyes and pigments	A			
070599.7	Solid dyes and pigments	A			
070699.7	Solid dyes and pigments	A			
070799.7	Solid dyes and pigments	A			
070199.8	Elutions from regeneration of ionic exchange resins	A	21	268	149
070303	Organic halogenated solvents, washing liquids & mother liquors	H	615	939	1,169
070103	Organic halogenated solvents, washing liquids & mother liquors	H			
070107	Halogenated still bottoms and reaction residues	H			
070203	Organic halogenated solvents, washing liquids & mother liquors	H			
070207	Halogenated still bottoms and reaction residues	H			
070307	Halogenated still bottoms and reaction residues	H			
070403	Organic halogenated solvents, washing liquids & mother liquors	H			
070407	Halogenated still bottoms and reaction residues	H			
070503	Organic halogenated solvents, washing liquids & mother liquors	H			

**Hazardous waste generated in Catalonia 1994-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
070507	Halogenated still bottoms and reaction residues	H			
070603	Organic halogenated solvents, washing liquids & mother liquors	H			
070607	Halogenated still bottoms and reaction residues	H			
070703	Organic halogenated solvents, washing liquids & mother liquors	H			
070707	Halogenated still bottoms and reaction residues	H			
070399.8	Aqueous liquid dyes and pigments	A	22	30	12
070399.9	Non-aqueous liquid dyes and pigments	A	40	5	31
080101	Waste paints and varnish containing halogenated solvents	H	209	549	324
080102	Waste paints and varnish free of halogenated solvents	H	3,964	7,040	6,653
080103	Waste from water-based paints and varnishes	E	881	1,009	780
080104	Powder paints	E	218	643	460
080105	Hardened paints and varnishes	E	321	347	220
080106	Sludges from paint or varnish removal containing halogenated solvents	H	2	6	3
080107	Sludges from paint or varnish removal free of halogenated solvents	H	1,887	2,818	514
080108	Aqueous sludges containing paint or varnish	E	346	616	1,288
080110	Aqueous suspensions containing paint or varnish	E	369	605	1,432
080199	Wastes not otherwise specified	E	302	459	453
080109	Waste from paint or varnish removal (except 08 01 05 and 08 01 06)	E			
080199.1	Effluent treatment sludges (pretreatments & treatment plants)	A	1,503	1,619	1,818
080301	Waste ink containing halogenated solvents	H	152	163	140
080302	Waste ink free of halogenated solvents	H	1,174	1,368	1,357
080303	Waste from water-based ink	E	119	113	276
080306	Ink sludges free of halogenated solvents	H	353	282	242
080307	Aqueous sludges containing ink	E	2	60	78
080308	Aqueous liquid waste containing ink	E	2,547	567	383
080399	Wastes not otherwise specified	E	292	465	984
080399.1	Effluent treatment sludges (pretreatments & treatment plants)	A	1,486	425	91
080401	Waste adhesives and sealants containing halogenated solvents	H	1	12	25
080402	Waste adhesives and sealants free of halogenated solvents	H	515	965	680
080403	Wastes from water-based adhesives and sealants	E	199	172	191
080405	Adhesives and sealants sludges containing halogenated solvents	H	0	0	7
080406	Adhesives and sealants sludges free of halogenated solvents	H	0	1	1
080407	Aqueous sludges containing adhesives and sealants	E	60	22	1
080408	Aqueous liquid wastes containing adhesives and sealants	E	1,927	1,824	521
080499	Wastes not otherwise specified	E	598	525	337
080499.1	Effluent treatment sludges (pretreatments & treatment plants)	A	186	254	438
090101	Water based developer and activator solutions	H	7	11	65
090102	Water based offset plate developer solutions	H			
090103	Solvent based developer solutions	H			
090104	Fixer solutions	H	189	9	46
090105	Bleach solutions and bleach fixer solutions	H			
090106	Waste containing silver from on-site treatment of photographic waste	H	0	0	1
090199	Wastes not otherwise specified	E	4	16	21
090199.1	Stabiliser or chemical washing baths	A	80	65	65
090199.2	Stabiliser or washing baths with water	A	1	1	1
100102	Coal fly ash	E	149,398	131,392	125,513
100104	Oil fly ash	H			
100105	Calcium based reaction wastes from flue gas desulphurisation in solid form	E	44	0	0
100107	Calcium based reaction wastes from flue gas desulphurisation in sludge form	E			

**Hazardous waste generated in Catalonia 1994-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
100108	Other sludges from gas treatment	E			
100106	Other solid wastes from gas treatment	E			
100110	Spent catalysts e.g. from removal of NOx	E			
100199	Wastes not otherwise specified	E	57	129	120
100203	Solid wastes from gas treatment	E	14,764	13,979	17,390
100204	Sludges from gas treatment	E			
100904	Furnace dust	E			
100299	Wastes not otherwise specified	E	0	0	3
100308	Salt slags from secondary smelting	H	19,607	24,058	22,700
100309	Black drosses from secondary smelting	H			
101003	Furnace slag	E			
100311	Flue gas dust	E	1,845	3,682	3,077
100312	Other particulates and dust (including ball mill dust)	E			
101004	Furnace dust	E			
100401	Slags (1st and 2nd smelting)	H	775	877	228
101003	Furnace slag	E			
100404	Flue gas dust	H	288	347	362
100405	Other particulates and dust	H			
101004	Furnace dust	E			
100503	Flue gas dust	H	247	226	167
100603	Flue gas dust	H			
100604	Other particulates and dust	E			
100703	Solid waste from gas treatment	E			
100704	Other particulates and dust	E			
100804	Other particulates and dust	E			
101004	Furnace dust	E			
100901	Casting cores and moulds containing organic binders which have not undergone pouring	E	11,484	10,825	10,722
100902	Casting cores and moulds containing organic binders which have undergone pouring	E			
101001	Casting cores and moulds containing organic binders which have not undergone pouring	E	881	911	5,394
101002	Casting cores and moulds containing organic binders which have undergone pouring	E			
101104	Flue gas dust	E	16	18	50
101105	Other particulates and dust	E			
101202	Flue gas dust	E			
101203	Other particulates and dust	E			
101199.1	Smelting sands with chemical binders (chemical molding)	A	0	20	20
101299.1	Smelting sands with chemical binders (chemical molding)	A			
101399.1	Smelting sands with chemical binders (chemical molding)	A			
101302	Wastes from asbestos-cement manufacture	E	1,112	1,250	36
101306	Other particulates and dust	E			
110101	Cyanidic (alkaline) wastes containing heavy metals other than chromium	H	6,098	436	267
110102	Cyanidic (alkaline) wastes which do not contain heavy metals	H	80	2,118	17
110103	Cyanide-free wastes containing chromium	H	4,289	4,373	2,441
110104	Cyanide-free wastes not containing chromium	E	14,117	8,770	11,734
110105	Acidic pickling solutions	H	8,569	6,776	3,741
110107	Alkalis not otherwise specified	H	6,428	7,234	7,802
110108	Phosphatizing sludges	H	2,259	3,004	5,746

**Hazardous waste generated in Catalonia 1994-1996
related to EWC on 6-digit level (in tonnes)**

Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
110203	Wastes from the production of anodes for aqueous electrolytical processes	E			
110204	Sludges not otherwise specified	E			
110401	Other inorganic wastes with metals not otherwise specified	E			
110201	Sludges from copper hydrometallurgy	E	5,003	7,099	7,624
110202	Sludges from zinc hydrometallurgy (incl. jarosite, goethite)	H			
110301	Wastes containing cyanide	H	213	49	46
110302	Other wastes	H	14	195	10
120108	Waste machining emulsions containing halogens	H	2,248	3,485	5,272
120109	Waste machining emulsions free of halogens	H			
120111	Machining sludges	H			
120199	Wastes not otherwise specified	E	0	0	14
120202	Sludges from grinding, honing and lapping	E	286	126	120
120203	Polishing sludges	E			
130101	Hydraulic oils, containing PCBs or PCTs	H	398	23	13
130102	Other chlorinated hydraulic oils (not emulsions)	H	79	15	1
130103	Non chlorinated hydraulic oils (not emulsions)	H	7,085	1,361	1,617
130104	Chlorinated emulsions	H	80	8	0
130105	Non chlorinated emulsions	H	11,480	10,310	10,548
130601	Oil waste not otherwise specified	H	127	92	40
050899	Wastes not otherwise specified	E			
130108	Brake fluids	H	9	4	10
130201	Chlorinated engine, gear, & lubricating oils	H	281	197	20
130202	Non-chlorinated engine, gear, lubricating oils	H	9,820	5,586	5,554
130301	Insulating or heat transmission oils and other liquids containing PCBs or PCTs	H	251	48	499
130302	Other chlorinated insulating and heat transmission oils and other liquids	H	1		0
130303	Non-chlorinated insulating and heat transmission oils and other liquids	H	2,645	472	460
130304	Synthetic insulating and heat transmission oils and other liquids	H	36	80	9
130401	Bilge oils from inland navigation	H	1	48	371
130402	Bilge oils from jetty sewers	H			
130501	Oil/water separator solids	H	0	20	766
130502	Oil/water separator sludges	H			
130502	Oil/water separator sludges	H	100	305	260
130601	Oil waste not otherwise specified	H	159	293	4,980
140101	Wastes from metal degreasing and machinery maintenance	H	1	1	3
140301	Other solvents and solvent mixes	H			
140401	Chlorofluorocarbons	H			
140102	Other halogenated solvents and solvent mixes	H	3,350	3,128	31,545
140201	Halogenated solvents and solvent mixes	H			
140302	Other halogenated solvents	H			
140402	Other halogenated solvents and solvent mixes	H			
140103	Other solvents and solvent mixes	H	6,380	8,522	10,528
140202	Solvent mixes or organic liquids free of halogenated solvents	H			
140303	Solvents and solvent mixes free of halogenated solvents	H			
140403	Other solvents and solvent mixes	H			
140104	Aqueous solvent mixes containing halogens	H	34	18	26
140105	Aqueous solvent mixes free of halogens	H	6,202	4,781	5,341
140105	Aqueous solvent mixes free of halogens	H	168	55	6
140107	Sludges or solid wastes free of halogenated solvents	H			

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level (in tonnes)					
Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
140106	Sludges or solid wastes containing halogenated solvents	H	17	28	81
140203	Sludges or solid wastes containing halogenated solvents	H			
140304	Sludges or solid wastes containing halogenated solvents	H			
140404	Sludges or solid wastes containing halogenated solvents	H			
140106	Sludges or solid wastes containing halogenated solvents	H	0	628	148
140107	Sludges or solid wastes free of halogenated solvents	H			
140203	Sludges or solid wastes containing halogenated solvents	H			
140204	Sludges or solid wastes containing other solvents	H			
140404	Sludges or solid wastes containing halogenated solvents	H			
140405	Sludges or solid wastes containing other solvents	H			
140504	Sludges containing halogenated solvents	H			
140505	Sludges containing other solvents	H			
140204	Sludges or solid wastes containing other solvents	H	27	25	409
140305	Sludges or solid wastes containing other solvents	H			
140401	Chlorofluorocarbons	H			
140405	Sludges or solid wastes containing other solvents	H			
140501	Chlorofluorocarbons	H	1	1	0
140502	Halogenated solvents and solvent mixes	H	4,146	5,723	9,151
140503	Other solvents and solvent mixes	H	13,542	21,265	36,524
140504	Sludges containing halogenated solvents	H	3,576	2,931	994
140503	Other solvents and solvent mixes	H	2,250	172	1
140505	Sludges containing other solvents	H			
140107	Sludges or solid wastes free of halogenated solvents	H			
140505	Sludges containing other solvents	H	2,899	2,558	2,772
150101	Paper and cardboard	E	11,100	9,417	10,523
150102	Plastic	E	12,860	9,610	9,937
150103	Wooden	E	8,421	5,259	5,628
150104	Metallic	E	11,948	20,154	16,373
150105	Composite packaging	E	359	1,080	2,074
150106	Mixed	E	650	787	898
150201	Absorbents, filter materials, wiping cloths, protective clothing	E	1,196	1,527	1,584
160103	Used tyres	E	5,721	6,494	8,806
160199.1	Purges and sludges from boilers and cooler circuits	A	2,254	2,740	0
160201	Transformers and capacitors containing PCB or PCTs	H	46	437	130
160203	Equipment containing chlorofluorocarbons	E	0	0	72
160401	Waste ammunition	H	0	0	0
160402	Fireworks waste	H	0	8	8
160403	Other waste explosives	H	0	0	0
160501	Industrial gases in high pressure cylinders, LPG containers and industrial aerosol containers (including halons)	E	7	3	4
160502	Other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E	43	126	93
160503	Other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E			
160601	Lead batteries	H	185	965	4,032
160602	Ni-Cd batteries	H			
160701	Waste from marine transport tank cleaning, containing chemicals	H	11,970	4,598	4,810
160704	Waste from railway and road transport tank cleaning containing chemicals	H			
160705	Waste from storage tank cleaning, containing chemicals	H			
160707	Solid wastes from ship cargoes	E			

Hazardous waste generated in Catalonia 1994-1996 related to EWC on 6-digit level (in tonnes)					
Code	Description	H: HWL E: EWC A: add. EWC	1994	1995	1996
160702	Waste from marine transport tank cleaning, containing oil	H	201	260	121
160702	Waste from marine transport tank cleaning, containing oil	H	1,124	408	1,913
160703	Waste from railway and road transport tank cleaning containing oil	H			
160706	Waste from storage tank cleaning, containing oil	H			
160702	Waste from marine transport tank cleaning, containing oil	H	1,730	1,378	1,298
160703	Waste from railway and road transport tank cleaning containing oil	H			
160706	Waste from storage tank cleaning, containing oil	H			
170105	Asbestos based construction materials	E	152	31	5
170601	Insulation materials containing asbestos	H	819	657	882
170601	Insulation materials containing asbestos	H			
180105	Discarded chemicals and medicins	E	1	155	56
180204	Discarded chemicals	H	2	9	8
190103	Fly ash	H	8,352	15,343	14,779
190199	Wastes not otherwise specified	E	3	0	0
190201	Metal hydroxide sludges and other sludges from metal insolubilisation treatment	H	1,014	584	531
190301	Wastes stabilised/solidified with hydraulic binders	E	40,060	60,991	77,964
190302	Wastes stabilised/solidified with organic binders	E			
190303	Wastes stabilised by biological treatment	E			
190302	Wastes stabilised/solidified with organic binders	E	476	985	18
190803	Grease and oil mixture from oil/ waste water separation	H	1,716	746	2,408
190899	Wastes not otherwise specified	E	5,996	0	0
200101	Paper and cardboard	E	76	0	0
200102	Glass	E			
200103	Small plastics	E			
200105	Small metals (cans etc.)	E			
200108	Organic compostable kitchen waste (including frying oil and kitchen waste from canteens and restaurants)	E			
200108	Organic compostable kitchen waste (including frying oil and kitchen waste from canteens and restaurants)	E			
200109	Oil and fat	E			
200112	Paint, inks, adhesives and resins	H	13	7	35
200116	Detergents	E	123	1,498	586
200118	Medicines	E	2,580	5	9
200119	Pesticides	H	9	8	0
200120	Batteries	E	7	9	15
200121	Fluorescent tubes and other mercury containing waste	H	2	3	3
200122	Aerosols	E	2	4	10
200123	Equipment containing chlorofluorocarbons	E	10	541	762
200305	End of life vehicles	E	1,045	826	10
	Total related to HWL/EWC/add. EWC	-	787,295	831,711	893,511

Note 1: The official Catalan figures for hazardous waste generated in 1996 include the amount of 214,954 tonnes of landfill leachate (EWC code 190701). In order to ensure greater comparability this amount is not included in the table, since this type of waste was not registered before 1996 and since landfill leachate is not considered hazardous any more according to the new 1998 Catalan Waste Catalogue.

Note 2: A variety of E and A codes, which are *-marked in the list over Catalan additional hazardous waste types (cf. table 6.9 below), are not contained in the account of *Possible number of codes*, cf. table 5 in chapter 3 and table 6.5 above. These E and A codes show the complexity of the relation work, where a certain amount of a Catalan waste type cannot be directly related to one single 6-digit EWC code belonging to a certain process, but may stem from different processes. Since Spain has not yet notified additional national hazardous waste codes to the Commission, it was chosen to regard only one of these hazardous waste codes as a *possible* code.

9.8. Hazardous waste in Catalonia according to NACE code

Hazardous Waste generated in Catalonia according to NACE code (in tonnes)							
NACE	Economic area	Catalonia 1994	% 1994	Catalonia 1995	% 1995	Catalonia 1996	% 1996
A	Agriculture	26,185	3.3	41,168	5.0	40,981	4.6
B	Fishing						
C	Quarrying	918	0.1	4,791	0.6	27,593	3.1
DA	<i>Manufacturing (Mfr.) of food, beverages and tobacco</i>	10,218	1.3	10,175	1.2	19,434	2.2
DB	<i>Mfr. of textiles, wearing, apparel</i>	2,698	0.3	3,673	0.4	669	0.1
DC	<i>Mfr. of leather</i>	345	0.0	0.0	0.0	5,207	0.6
DD	<i>Mfr. of wood products</i>	5	0.0	5	0.0		0.0
DE	<i>Mfr. of printing and publishing</i>	6,164	0.8	3,442	0.4	3,594	0.4
DF	<i>Mfr. of refined petroleum products</i>	13,661	1.7	13,356	1.6	5,665	0.6
DG	<i>Mfr. of chemicals</i>	252,481	32.2	276,416	33.6	250,477	28.3
DH	<i>Mfr. of rubber and plastics products</i>	560	0.1	637	0.1	750	0.1
DI	<i>Mfr. of other non-metallic mineral products</i>	1,128	0.1	1,288	0.2	106	0.0
DJ	<i>Mfr. and processing of basic metals</i>	99,532	12.7	98,601	12.0	104,878	11.8
DK	<i>Mfr. of machinery and equipment</i>	13,278	1.7	18,925	2.3	15,798	1.8
DL	<i>Mfr. of electrical and optical equipment</i>						
DM	<i>Mfr. of transport equipment</i>						
DN	<i>Mfr. of furniture, manufacturing n.e.c.</i>						
D Total	Total	400,070	51.1	426,518	51.8	406,578	45.9
E	Electricity, gas and water supply	149,499	19.1	131,520	16.0	125,632	14.2
F	Construction	3,904	0.5	1,289	0.2	1,855	0.2
G50.2	<i>Maintenance and repair of motor vehicles</i>	35,470	4.5	22,303	2.7	23,130	2.6
G Total	Wholesale and retail trade	35,470	4.5	22,303	2.7	23,130	2.6
H	Hotel, restaurants						
I61	<i>Shipping</i>	1	0.0	48	0.0	371	0.0
I Total	Transport, storage and communication	15,284	2.0	7,309	0.9	14,518	1.6
K74.81	<i>Photographic activities</i>	281	0.0	102	0.0	200	0.0
J+K Total	Financial intermediation, business act.	281	0.0	102	0.0	200	0.0
L	Public and personal services						
M	Education						
N	Human health activities	3	0.0	164	0.0	64	0.0
O	Refuse disposal	92,673	11.8	128,184	15.6	155,917	17.6
X	Activity not stated	58,854	7.5	60,484	7.3	89,773	10.1
	Total	783,141	100	823,832	100	886,241	100

9.9. Catalan additional hazardous waste types

Catalan additional hazardous waste types		
Code	Description	E: EWC A: add. EWC
010501	Oil-containing drilling muds and wastes	E
010502	Barite-containing drilling muds and wastes	E
010503	Chloride-containing drilling muds and wastes	E
020102	Animal tissue waste	E
020106	Animal feces, urine and manure (including spoiled straw), effluent, collected separately and treated off-site	E
020199	Wastes not otherwise specified	E
020299	Wastes not otherwise specified	E
020301	Sludges from washing, cleaning, peeling, centrifuging and separation	E
020399	Wastes not otherwise specified	E
020499	Wastes not otherwise specified	E
020699	Wastes not otherwise specified	E
020702	Wastes from spirits distillation	E
030303	Bleaching sludges from hypochlorite and chlorine processes	E
030399	Wastes not otherwise specified	E
040106	Sludges containing chromium	E
040107	Sludges free of chromium	E
040199.1	Leather preservation salts	A
040210	Organic matter from natural products (e.g. grease, wax)	E
040213	Dye stuffs and pigments	E
050101	Sludges from on-site effluent treatment	E
050106	Sludges from plant, equipment and maintenance operations	E
050199	Wastes not otherwise specified	E
050302	Other spent catalysts	E
050899	Wastes not otherwise specified	E
050899.1	Chlor neutralising salts	A
050899.2	Effluent treatment sludges (pretreatments & treatment plants)	A
060302	Saline solutions containing sulphates, sulphites or sulphides	E
060303	Solid salts containing sulphates, sulphites or sulphides	E
060304	Saline solutions with chlorides, fluorides and halides	E
060305	Solid salts containing chlorides, fluorides and other halogenated solid salts	E
060306	Saline solutions containing phosphates and related solid salts	E
060307	Phosphates and related solid salts	E
060308	Saline solutions containing nitrates and related compounds	E
060310	Solid salts containing ammonium	E
060312	Salts and solutions containing organic compounds	E
060399	Wastes not otherwise specified	E
060399.1	Quicklime (CaO)	A
060399.2	Ammoniacal (saline) solutions	A
060399.3	Mother liquours, baths and contaminated liquid solutions containing heavy metals	A
060399.4	Mother liquours, baths and contaminated liquid solutions without heavy metals	A
060399.5	Distillates & distillands, sludges and other wastes containing heavy metals	A
060399.6	Distillates & distillands, sludges and other wastes without heavy metals	A
060401	Metallic oxides	E
060499	Wastes not otherwise specified	E
060499.3	Mother liquours, baths and contaminated liquid solutions containing heavy metals	A*
060499.4	Mother liquours, baths and contaminated liquid solutions without heavy metals	A*
060499.5	Distillates & distillands, sludges and other wastes containing heavy metals	A*
060499.6	Distillates & distillands, sludges and other wastes without heavy metals	A*
060501	Sludges from on-site effluent treatment	E
060601	Waste containing sulphur	E
061201	Spent catalysts containing precious metals	E
061202	Other spent catalysts	E
061399	Wastes not otherwise specified	E
061399.1	Elutions from regeneration of ionic exchange resins	A
061399.2	Washing waters	A
070102	Sludges from on-site effluent treatment	E
070105	Spent catalysts containing precious metals	E
070106	Other spent catalysts	E
070199	Wastes not otherwise specified	E

Catalan additional hazardous waste types		
Code	Description	E: EWC A: add. EWC
070199.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A
070199.2	Dispersions and polymeric dissolutions with acrylic monomers	A
070199.3	Other aqueous polymeric dispersions and dissolutions	A
070199.4	Other non-aqueous polymeric dispersions and dissolutions	A
070199.5	Pesticides and biocides	A
070199.6	Out of date & off-normalisation medicaments and cosmetics	A
070199.7	Solid dyes and pigments	A
070199.8	Elutions from regeneration of ionic exchange resins	A
070202	Sludges from on-site effluent treatment	E*
070205	Spent catalysts containing precious metals	E*
070206	Other spent catalysts	E*
070299.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070299.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070299.3	Other aqueous polymeric dispersions and dissolutions	A*
070299.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070299.5	Pesticides and biocides	A*
070299.6	Out of date & off-normalisation medicaments and cosmetics	A*
070299.7	Solid dyes and pigments	A*
070302	Sludges from on-site effluent treatment	E*
070305	Spent catalysts containing precious metals	E*
070306	Other spent catalysts	E*
070399.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070399.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070399.3	Other aqueous polymeric dispersions and dissolutions	A*
070399.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070399.5	Pesticides and biocides	A*
070399.6	Out of date & off-normalisation medicaments and cosmetics	A*
070399.7	Solid dyes and pigments	A*
070399.8	Aqueous liquid dyes and pigments	A
070399.9	Non-aqueous liquid dyes and pigments	A
070402	Sludges from on-site effluent treatment	E*
070405	Spent catalysts containing precious metals	E*
070406	Other spent catalysts	E*
070499.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070499.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070499.3	Other aqueous polymeric dispersions and dissolutions	A*
070499.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070499.5	Pesticides and biocides	A*
070499.6	Out of date & off-normalisation medicaments and cosmetics	A*
070499.7	Solid dyes and pigments	A*
070502	Sludges from on-site effluent treatment	E*
070505	Spent catalysts containing precious metals	E*
070506	Other spent catalysts	E*
070599.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070599.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070599.3	Other aqueous polymeric dispersions and dissolutions	A*
070599.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070599.5	Pesticides and biocides	A*
070599.6	Out of date & off-normalisation medicaments and cosmetics	A*
070599.7	Solid dyes and pigments	A*
070602	Sludges from on-site effluent treatment	E*
070605	Spent catalysts containing precious metals	E*
070606	Other spent catalysts	E*
070699.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070699.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070699.3	Other aqueous polymeric dispersions and dissolutions	A*
070699.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070699.5	Pesticides and biocides	A*
070699.6	Out of date & off-normalisation medicaments and cosmetics	A*
070699.7	Solid dyes and pigments	A*
070702	Sludges from on-site effluent treatment	E*

Catalan additional hazardous waste types		
Code	Description	E: EWC A: add. EWC
070705	Spent catalysts containing precious metals	E*
070706	Other spent catalysts	E*
070799.1	Dispersions and polymeric dissolutions with <i>Vinyl chloride</i>	A*
070799.2	Dispersions and polymeric dissolutions with acrylic monomers	A*
070799.3	Other aqueous polymeric dispersions and dissolutions	A*
070799.4	Other non-aqueous polymeric dispersions and dissolutions	A*
070799.5	Pesticides and biocides	A*
070799.6	Out of date & off-normalisation medicaments and cosmetics	A*
070799.7	Solid dyes and pigments	A*
080103	Waste from water-based paints and varnishes	E
080104	Powder paints	E
080105	Hardened paints and varnishes	E
080108	Aqueous sludges containing paint or varnish	E
080109	Waste from paint or varnish removal (except 08 01 05 and 08 01 06)	E
080110	Aqueous suspensions containing paint or varnish	E
080199	Wastes not otherwise specified	E
080199.1	Effluent treatment sludges (pretreatments & treatment plants)	A
080303	Waste from water-based ink	E
080307	Aqueous sludges containing ink	E
080308	Aqueous liquid waste containing ink	E
080399	Wastes not otherwise specified	E
080399.1	Effluent treatment sludges (pretreatments & treatment plants)	A*
080403	Wastes from water-based adhesives and sealants	E
080407	Aqueous sludges containing adhesives and sealants	E
080408	Aqueous liquid wastes containing adhesives and sealants	E
080499	Wastes not otherwise specified	E
080499.1	Effluent treatment sludges (pretreatments & treatment plants)	A*
090199	Wastes not otherwise specified	E
090199.1	Stabiliser or chemical washing baths	A
090199.2	Stabiliser or washing baths with water	A
100102	Coal fly ash	E
100105	Calcium based reaction wastes from flue gas desulphurisation in solid form	E
100106	Other solid wastes from gas treatment	E
100107	Calcium based reaction wastes from flue gas desulphurisation in sludge form	E
100108	Other sludges from gas treatment	E
100110	Spent catalysts e.g. from removal of NOx	E
100199	Wastes not otherwise specified	E
100203	Solid wastes from gas treatment	E
100204	Sludges from gas treatment	E
100299	Wastes not otherwise specified	E
100311	Flue gas dust	E
100312	Other particulates and dust (including ball mill dust)	E
100604	Other particulates and dust	E
100703	Solid waste from gas treatment	E*
100704	Other particulates and dust	E
100804	Other particulates and dust	E
100901	Casting cores and moulds containing organic binders which have not undergone pouring	E
100902	Casting cores and moulds containing organic binders which have undergone pouring	E
100904	Furnace dust	E
101001	Casting cores and moulds containing organic binders which have not undergone pouring	E
101002	Casting cores and moulds containing organic binders which have undergone pouring	E
101003	Furnace slag	E
101004	Furnace dust	E
101104	Flue gas dust	E
101105	Other particulates and dust	E
101199.1	Smelting sands with chemical binders (chemical molding)	A
101202	Flue gas dust	E
101203	Other particulates and dust	E
101299.1	Smelting sands with chemical binders (chemical molding)	A
101302	Wastes from asbestos-cement manufacture	E
101306	Other particulates and dust	E

Catalan additional hazardous waste types		
Code	Description	E: EWC A: add. EWC
101399.1	Smelting sands with chemical binders (chemical molding)	A
110104	Cyanide-free wastes not containing chromium	E
110201	Sludges from copper hydrometallurgy	E
110203	Wastes from the production of anodes for aqueous electrolytical processes	E
110204	Sludges not otherwise specified	E
110401	Other inorganic wastes with metals not otherwise specified	E
120199	Wastes not otherwise specified	E
120202	Sludges from grinding, honing and lapping	E
120203	Polishing sludges	E
150101	Paper and cardboard	E
150102	Plastic	E
150103	Wooden	E
150104	Metallic	E
150105	Composite packaging	E
150106	Mixed	E
150201	Absorbents, filter materials, wiping cloths, protective clothing	E
160103	Used tyres	E
160199.1	Purges and sludges from boilers and cooler circuits	A
160203	Equipment containing chlorofluorocarbons	E
160501	Industrial gases in high pressure cylinders, LPG containers and industrial aerosol containers (including halons)	E
160502	Other waste containing inorganic chemicals, e.g. lab chemicals not otherwise specified, fire extinguishing powders	E
160503	Other waste containing organic chemicals, e.g. lab chemicals not otherwise specified	E
160707	Solid wastes from ship cargoes	E
170105	Asbestos based construction materials	E
180105	Discarded chemicals and medicins	E
190199	Wastes not otherwise specified	E
190199.1	Effluent treatment sludges (pretreatments & treatment plants)	A
190301	Wastes stabilised/solidified with hydraulic binders	E
190302	Wastes stabilised/solidified with organic binders	E
190303	Wastes stabilised by biological treatment	E
190899	Wastes not otherwise specified	E
200101	Paper and cardboard	E
200102	Glass	E
200103	Small plastics	E
200105	Small metals (cans etc.)	E
200108	Organic compostable kitchen waste (including frying oil and kitchen waste from canteens and restaurants)	E
200109	Oil and fat	E
200116	Detergents	E
200118	Medicines	E
200120	Batteries	E
200122	Aerosols	E
200123	Equipment containing chlorofluorocarbons	E
200305	End of life vehicles	E

Note: The *-marked E and A codes are not contained in the account of *Possible number of codes*, cf. table 5 in chapter 3 and table 6.5 above. These E and A codes show the complexity of the relation work, where a certain amount of a Catalan waste type cannot be directly related to one single 6-digit EWC code belonging to a certain process, but may stem from different processes. Since Spain has not yet notified additional national hazardous waste codes to the Commission, it was chosen to regard only one of these hazardous waste codes as a *possible* code.

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