

# Classification of hazardous waste – a new tool

A short guideline to the classification of hazardous waste and the HWIT

# The HAZTRAIN Project

- The HAZTRAIN Project has developed an ICT-based tool for classification of hazardous waste (HWIT)
- This presentation gives a short introduction to the principles of classification and how the WHIT helps you through
- Two aspects are crucial in classification:
  - The properties of the dangerous substances in the wastes
  - The concentrations of these substances
- Besides the list of hazardous wastes in the European Waste Catalogue gives you a first idea of whether the waste could be hazardous or not – and WHIT helps you in finding the right EWC-catalogue code



# The List of Wastes and the 'Properties'

- According to the European Waste Framework Directive a 'List of Wastes' called the European Waste Catalogue (EWC) is currently being revised
- The present, consolidated version is available at the legislative web-site of EU ('EURLEX')
- Hazardous waste have certain properties, similar to those used in classifying dangerous substances
- All wastes considered hazardous are marked with an asterisk (\*) in the list

# The List of Wastes

- The List of Wastes are divided into 20 chapters of which "1-12" and "17-20" comprise specific sources ('20' for instance is 'Municipal wastes') while "13-15" are for specific waste materials and "16" is 'others'
- The different types of wastes in the list are defined by a six-digit code: two digits for the chapter, two for the sub-chapter and two for the specific waste in the sub-chapter



Example:

Chapter heading

## 10 WASTES FROM THERMAL PROCESSES

### 10 14 Waste from crematoria

Sub-chapter heading



Asteriks (\*) is indicating that the waste is considered hazardous

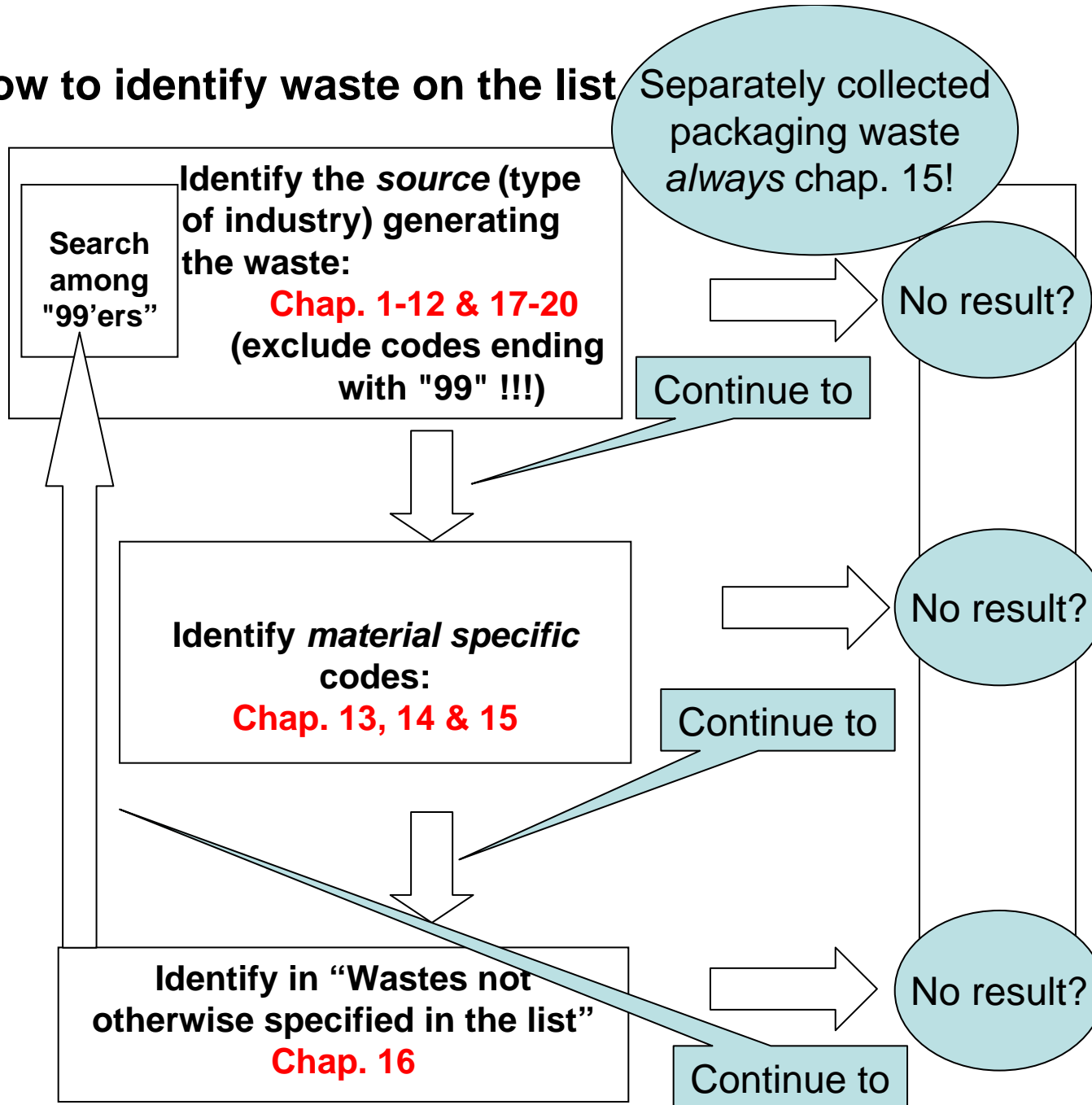
10 14 01\* waste from gas cleaning containing mercury

A six-digit code for each type of waste

**Don't forget the headings!**

Plenty of wastes from gas cleaning contains mercury but using the code 10 14 01 indicates that it originates from... **crematories** – and ONLY that!

# How to identify waste on the list





## Mirror entrances

Search among "99'ers"

Identify the *source* (type of industry) generating the waste:  
**Chap. 1-12 & 17-20**  
(exclude codes ending with "99" !!!)

Identify *material specific* codes:  
**Chap. 13, 14 & 15**

Identify in "Wastes not otherwise specified in the list"  
**Chap. 16**



Example:  
Mirror entrance

02 01 08\* Agrochemical waste containing dangerous substances  
02 01 09 Agrochemical waste other than those mentioned in 02 01 08

Mirror entrances:  
You have to know the properties of the dangerous substances in the waste to make the final classification!  
NOTE! – in principle the properties should always be considered

# 14 properties of wastes which render them hazardous

- According to the EU-legislation on dangerous substances there are certain properties, which render them dangerous
- Of these, 14 are used for classification of hazardous waste according to the directive on hazardous waste
- These properties are named 'H1-H14' in the Annex III of the directive


# What is a 'property'?

- Each property is described and understood in a very specific way, and is expressed in:
  - Words:
    - “Explosive” for instance
  - A classification (single letter(s)):
    - “E” for instance as for “Explosive”
  - In so called “Risk- or R-phrases”:
    - For “Explosive” that will be R1; R2 or R3
- For some properties also a symbol is added, like

‘Substances or preparations which may explode under the effects of flame or which are more sensitive to shock or friction than dinitrobenzene’




The total expression of the property "Explosive":

Symbol	Property <i>(No. in Annex III)</i>	Classification with R-phrase(s)
	Explosive (H1)	E;R1, R2, R3



# Concentration Limits are applied for certain properties

Example: "Toxic" and "Very Toxic" substances render waste hazardous if they are found in concentrations higher than these:

Symbol	Property <i>(No. in Annex III)</i>	Classification with R-phrase(s)	Conc. limit
	Very Toxic (H6)	T <sup>+</sup> ;R26, R27, R28	0,1%
	Toxic (H6)	T;R48/23...25, R39	1%
		T;R23, R24, R25	3%




# The 14 properties






- In the following is presented a few of the 14 properties which render waste hazardous applying:
  - Symbol (if any)
  - Property in word(s)
  - Classification with R-phrase(s)
  - Concentration Limit (if any)

Symbol	Property (No. in Annex III)	Classification with R-phrase(s)	Conc. limit
	Very Toxic (H6)	T <sup>+</sup> ;R26,R27,R28,R39	0,1%
	Toxic (H6)	T;R48/23...25, R39	1%
		T;R23, R24, R25	3%
	Harmful (H5)	Xn;R48/20...22	10%
		Xn;R20, R21, R22	25%
	Infectious (H9)	-	-

Symbol	Property <i>(No. in Annex III)</i>	Classification with R-phrase(s)	Conc. limit
	Carcinogenic (H7)	Carc 1&2;R45, R49	0,1%
		Carc 3;R40	1%
CRM-subs.	Toxic for reproduction (H10)	Rep 1&2;R60, R61	0,5%
		Rep 3;R62, R63	5%
	Mutagenic (H11)	Mut 1&2;R46	0,1%
		Mut 3;R68	1%


## Classification and R-phrases ranked by concentration limit

	Classification and R-phrase(s)	Conc. limit
	T <sup>+</sup> ; R26, R27, R28, R39	0.1%
	Carc 1/2; R45, R49	0.1%
	Mut 1/2; R46	0.1%
	Rep 1/2; R60, R61	0.5%
	T; R48/23...25, R39	1%
	C; R35	1%
	Xn/Xi; R42, R43	1%
	Carc 3; R40	1%

	Classification and R-phrase(s)	Conc. limit
	Mut 3; R68	1%
	T; R23, R24, R25	3%
	C; R34	5%
	Rep3, R62, R63	5%
	Xi; R41	10%
	Xn; R48/20...22	10%
	Xi; R36, R37, R38	20%
	Xn; R20, R21, R22	25%

It is very useful to have in mind the ranking of the different properties as those with the lowest concentration limit typically would be those determining whether the waste is classified or not.

# More than 7.000 substances are already classified

- Pursuant to the EU-directive on classification packaging and labelling of dangerous substances a list of such substances are currently adapted and published, yet covering more than 7.000 substances
- Includes classification of the substances
- Unfortunately, no consolidated list has been published since the 19. adaptation
- 10 more adaptations has followed since and no. 30 is ongoing – BUT..... 

# JRC: Web Based Search Facility!

- The European Chemical Bureau, Joint Research Centre in Italy provides a web-based search facility making it possible to search in a consolidated list of all classified dangerous substances (including the 29. adaptation)
- Available (for free) at:  
[http://ecb.jrc.it/classification-labelling/CLASSLAB\\_SEARCH/classlab/search.php](http://ecb.jrc.it/classification-labelling/CLASSLAB_SEARCH/classlab/search.php)

## Search Annex I to Directive 67/548/EEC on Classification and Labelling of Dangerous Substances

Annex I was latest updated by ATP: 29 - OJ L 152 of 30/04/2004.

Search by...

Language	EN
Index number	<input type="text"/>
EC number	<input type="text"/>
CAS number	124-68-5
Substance Name	<input type="text"/>
Risk Phrases	<ul style="list-style-type: none"><li>1</li><li>10</li><li>11</li><li>12</li><li>14</li></ul> <p>? To select more than one code, keep the CTRL key</p>
Seveso Categories	<ul style="list-style-type: none"><li>0</li><li>1</li><li>2</li><li>3</li><li>4</li></ul> <p>? To select more than one code, keep the CTRL key</p>
ATP	<input type="text"/>

Search

Clear

General Information

Index number	Nota (alphanumeric)	Nota (numeric)
603-070-00-6		

ATP inserted	ATP updated
19	29

Substances					EN
Sub	EC No	Cas No	Other Cas No	Name	Type
1	204-709-8	124-68-5		<a href="#">2-amino-2-methylpropanol</a>	

Classification	Risk phrases	Safety phrases	Indication(s)
Xi; R36/38 R52-53	<a href="#">36/38 - 52/53</a>	<a href="#">2 - 61</a>	


Symbol(s)

Always look for 'Specific Concentration Limits'  
- in this case 10%

[top](#)

Specific Concentration Limits

Concentration	Classification
0 < C < 25 %	Xi; R36/38-52/53
10 % ≤ C < 25 %	Xi; R36/38

General Information					
Index number		Nota (alphanumeric)		Nota (numeric)	
614-008-00-2					
ATP inserted			ATP updated		
19					
Substances <span style="float: right;">EN</span>					
Sub	EC No	Cas No	Other Cas No	Name	Type
1	206-121-7	302-27-2		<a href="#">aconitine</a>	
Classification		Risk phrases	Safety phrases	Indication(s) of danger	
T+; R26/28		<a href="#">26/28</a>	<a href="#">1/2 - 24 - 45</a>	T+	
Symbol(s)					
					


If no 'Specific Concentration Limits' ?

Use classification!

Specific Concentration Limits	
Concentration	Classification

# Identifying the concentration limit of a classified substance

**Example: The substance 'Aconitin' with CAS-no 302-27-2 renders waste hazardous if it is found in a concentration of 0,1% as it is classified as Very Toxic, T+; R26/28**

Symbol	Property	Indication of S- and R-phrase(s)	Conc. limit
	Very Toxic	T+; R26, R27, R28	0,1%
	Toxic	T; R48/23...25, R39	1%
		T; R23, R24, R25	3%

# Outcomes of the tool

- Helps you to identify the EWC-code – indicating whether the waste is considered to be hazardous
- Helps you to classify in details the substances in the waste which could render the waste hazardous
- Gives you the concentration limits for the level at which dangerous substances in the waste render the waste hazardous
- Gives you the opportunity to classify hazardous waste at a scientific basis

# Useful links

- European Waste Catalogue (consolidated):
  - [http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en\\_2000D0532\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/2000/en_2000D0532_do_001.pdf)
- Directive 91/689/EEC on hazardous waste:
  - [http://europa.eu.int/eur-lex/en/consleg/main/1991/en\\_1991L0689\\_index.html](http://europa.eu.int/eur-lex/en/consleg/main/1991/en_1991L0689_index.html)
- The directive on classification of dangerous substances (consolidated):
  - [http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en\\_1999L0045\\_do\\_001.pdf](http://europa.eu.int/eur-lex/en/consleg/pdf/1999/en_1999L0045_do_001.pdf)
- Search facility to the list of hazardous substances: [http://ecb.jrc.it/classification-labelling/CLASSLAB\\_SEARCH/classlab/search.php](http://ecb.jrc.it/classification-labelling/CLASSLAB_SEARCH/classlab/search.php)
- Hazardous Property Assessment (UK EPA): [http://www.environment-agency.gov.uk/commondata/acrobat/4\\_haz\\_waste\\_app\\_c.pdf](http://www.environment-agency.gov.uk/commondata/acrobat/4_haz_waste_app_c.pdf)
- QSAR-modelling: <http://ecb.jrc.it/QSAR/>



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