

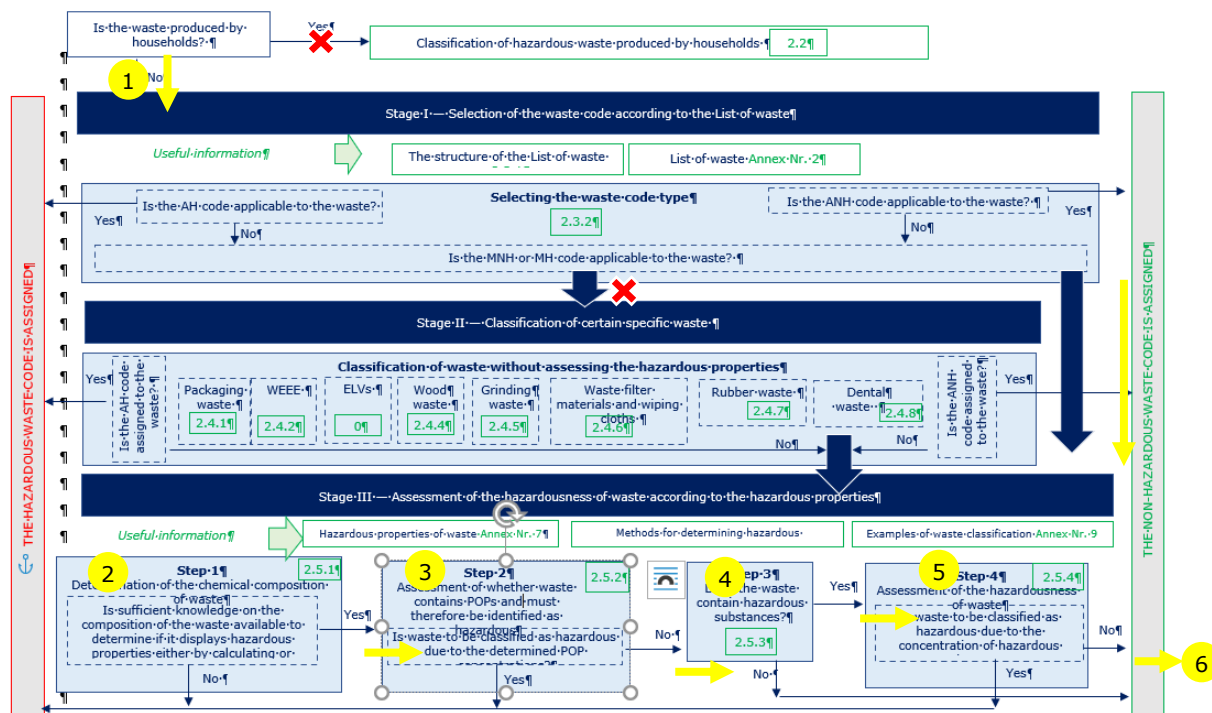
*HAZARDOUS WASTE IDENTIFICATION GUIDE*

*ANNEX 9-3*

*EXAMPLE OF THE CLASSIFICATION OF CONSTRUCTION WASTE  
FROM CONTAMINATED SOILS*

This Annex gives an example of the classification of waste from contaminated soils<sup>1</sup>. It is known (e.g. based on the prior testing of the contaminated site) that waste may contain heavy metals. The purpose of this example is to provide a description of the steps necessary for the identification of hazardous waste, where the results of the waste composition tests are used for the assessment of hazardous properties.

The steps for the identification of waste based on the flowchart shown in Figure 1 of the Guide are described below (they are marked by yellow arrows in the figure).



**Steps for the identification of waste**

1

First, Stage I steps are performed to determine which type of waste code is to be attributed to the waste. Waste has been generated during the construction process and should therefore be classified under one of the entries in *Chapter 17 of the List of Waste (Construction and demolition wastes (including excavated soil from contaminated sites))*. This chapter of the List of Waste consists of several sub-chapters, the most suitable of which is *17 05 Soil (including excavated soil from contaminated sites), stones and dredging spoil* containing the following entries suitable for the waste in question:

17 05	<b>soil (including excavated soil from contaminated sites), stones and dredging spoil</b>	
17 05 03*	soil and stones containing hazardous substances	MH
17 05 04	soil and stones other than those mentioned in 17 05 03	MNH

Since the appropriate entries are mirror entries, it is necessary to assess whether the waste has hazardous properties in order to determine which waste code is to be assigned, i.e. to proceed to Stages II and/or III of the Guide. As waste from contaminated soils does not fall

<sup>1</sup> The example is based on the *Europese afvalstoffenlijst EURAL. Handleiding* (Belgium).

within any of the waste streams listed in Stage II of the Guide, it is proceeded to the Stage III steps.

2

First, Step 1 of Stage III is performed, i.e. information on the waste composition is collected. As indicated above, since it is known that waste from contaminated soils may contain heavy metals, tests on the composition of the waste have been carried out to determine the concentration of certain heavy metals in the waste (see the table below).

Element/ Parameter		Identified concentration of the element, mg/kg
Name	Labelling	
Cadmium	Cd	1.10
Chromium	Cr	52
Copper	Cu	23
Lead	Pb	60
Nickel	Ni	18
Zinc	Zn	120

3

As there is no information on the possible presence of POPs in the waste, Step 2 of Stage III is not performed.

4

The objective of Step 3 of Stage III is to determine whether the substances contained in waste identified by testing are hazardous (i.e. whether there is information of one or more hazard statements being assigned) and, if so, to collect information on their hazardousness. Various sources of information may be used for this purpose, as specified in point 2.5.3 of the Guide.

Since the heavy metals test results are determined at the element level and given that metals are mostly present in the composition of other chemical compounds, a 'worst case' compound has been selected for each metal (see Annex 7-3 to the Guide for possible worst case compound examples); this data is used for subsequent steps. The information on whether the 'worst case' compounds of the heavy metals identified in the waste are classified as hazardous substances, i.e. whether they are assigned hazard statements and, if so, what hazard statements, has been verified against the CLP inventory, <https://echa.europa.eu/information-on-chemicals/cl-inventory-database>. (for the instruction on use of the CLP inventory, see also Annex 7-2 to the Guide; the information on the hazard statements of certain hazardous substances, as well as on the possible 'worst case' compounds according to their respective hazardous properties is also provided in Annex 7-3 to the Guide);

To structure the data collected from the above data sources, it has been listed in the table (see below) containing the following information:

- Name/labelling of the parameter/element identified by testing;
- Concentrations determined during testing, mg/kg;
- Where a 'worst-case' compound is applied to elements, the atomic mass of the element, the molar mass of the compound, i.e. the data required for the recalculation of concentration assuming that the waste contains 'worst-case' compounds;
- Since the concentration limit in Annex III to the WFD is expressed as a percentage, the concentrations (mg/kg) determined by testing have also been converted to a percentage for evaluation purposes (where 'worst case' compounds have been selected, their concentrations have been recalculated).



To convert the concentrations determined in mg/kg into the percentage concentration, the determined value should be divided by 10,000; e.g. 5 mg/kg = 0.0005 %.

The formula used to recalculate the concentration of the 'worst case' compound is as follows: *Compound concentration = (element concentration \* molar mass of the compound)/atomic mass of the element, e.g.:*

*for chromium (Cr atomic mass 51.990, concentration 52 mg/kg), the selected 'worst case' compound is CrO<sub>3</sub> (molar mass 99.990), which means that the 'worst case' compound concentration is*

$$52 * 99.99 / 51.99 = 100 \text{ mg/kg}$$



Information on the possible 'worst case' compounds of certain substances, the atomic masses of the elements and the molar masses of the compounds concerned is provided in Annex 7-3 to the Guide.

The table below provides summary information on the results of the waste composition tests, as well as information on the H statements of the substances contained in waste, by each hazardous property (HP). This data clearly indicates that the substances contained in waste are hazardous; therefore, it should be proceeded to Step 4 of Stage III.

Results of the waste composition tests, 'worst case' compounds, hazard statements and relevant hazardous properties

Element/ Parameter	Identified concentration of the element, mg/kg	Additional data (for the worst case scenario calculations)					Recalculated concentration, %	Hazardous Properties								
		Compound	CAS No.	Atomic mass of the element	Molar mass of the compound	Calculated concentration of the compound, mg/kg		HP4	HP5	HP6	HP7	HP8	HP10	HP11	HP13	HP14
Cd	1.10	CdCl <sub>2</sub>	10108-64-2	112.410	183.310	1.79	0.0002		H372	H301 (3), H330 (2)	H350		H360	H340		H400, H410
Cr	52	CrO <sub>3</sub>	1333-82-0	51.990	99.990	100	0.010	H314	H372	H301 (3), H311 (3), H330 (2)	H350	H314	H361	H340	H317, H334	H400, H410
Cu	23	CuCl <sub>2</sub>	7447-39-4	63.550	134.450	49	0.005	H315, H319		H301						H411
Pb	60	PbCl <sub>2</sub>	7758-95-4	207.2	278.100	81	0.008		H373	H302, H332	H351		H360			H400, H410
Ni	18	NiCl <sub>2</sub>	7718-54-9	58.69	129.590	40	0.004	H315	H372	H301(3), H331	H350		H360		H317, H334	H400, H410
Zn	120	ZnCl <sub>2</sub>	7646-85-7	65.38	136.280	250	0.025	H314		H302		H314				H400, H410

Step 4 of Stage III intended to identify, using the information collected in the previous steps, whether waste has one or several hazardous properties due to the concentration of substances contained in waste. If waste is found to have at least one hazardous property, the waste is identified as hazardous.

*Initial analysis of available data:*

To avoid unnecessary actions, it is plausible to compare the data on the concentrations of substances contained in waste and on the hazard statements, which has been collected in previous steps, with the cut-off values referred to in Regulation No 1357/2014 before starting the assessment of the available data, thus determining which hazardous properties are to be assessed in accordance with the provisions of Regulation (EU) No 1357/2014 and whether all substances identified in the waste (in this case, the 'worst case' compounds) are to be included in the assessment. To this end, the above table has been supplemented with data on cut-off values set out in Regulation (EU) No 1357/2014 (see the green-marked row in the table below) and concentration limits (see the yellow-marked row in the table below) in cases where cut-off values are not set.

**Results of the waste composition tests, 'worst case' compounds, hazard statements and relevant hazardous properties**

Element/ Parameter	Identified concentration of the element, mg/kg	Additional data (for the worst case scenario calculations)					Recalculated concentration, %	Hazardous properties/cut values <sup>2</sup> /concentration limits <sup>3</sup>								
		Compound	CAS No.	Atomic mass of the element	Molar mass of the compound	Calculated concentration of the compound, mg/kg		HP4	HP5	HP6	HP7	HP8	HP10	HP11	HP13	HP14
								1%		min. 0.1%		1%			10%	min. 0.1%
Cd	1.10	CdCl <sub>2</sub>	10108-64-2	112.410	183.310	1.79	0.0002		H372	H301 (3), H330 (2)	H350		H360	H340		<b>H400, H410</b>
Cr	52	CrO <sub>3</sub>	1333-82-0	51.990	99.990	100	0.010	H314	H372	H301 (3), H311 (3), H330 (2)	H350	H314	H361	H340	H317, H334	<b>H400, H410</b>
Cu	23	CuCl <sub>2</sub>	7447-39-4	63.550	134.450	49	0.005	H315, H319		H301						<b>H411</b>
Pb	60	PbCl <sub>2</sub>	7758-95-4	207.2	278.100	81	0.008		H373	H302, H332	H351		H360			<b>H400, H410</b>
Ni	18	NiCl <sub>2</sub>	7718-54-9	58.69	129.590	40	0.004	H315	H372	H301(3), H331	H350		H360		H317, H334	<b>H400, H410</b>
Zn	120	ZnCl <sub>2</sub>	7646-85-7	65.38	136.280	250	0.025	H314		H302		H314				<b>H400, H410</b>

<sup>2</sup> According to Regulation (EU) No 1357/2014; where the table does not include a cut-off value, cut-off values are not used for the assessment of the relevant hazardous property. Note: in the Lithuanian version of Regulation (EU) No 1357/2014, the term 'cut-off value' is used. In some cases, threshold values (cut-off values) are different for various hazard statements, in which case the table shows the minimum concentration limits with the reference 'min.' next to them.

<sup>3</sup> In accordance with Regulation (EU) No 1357/2014; see also Annex 7-1 and Annex 8 to the Guide. In some cases, concentration limits are different for various hazard statements, in which case the table shows the minimum concentration limits with the reference 'min.' next to them. Where cumulative concentration limits are applied, the table indicates 'sum.'.

Based on the information in the table above, the initial analysis of the available data has been performed:

- The test results show that the waste does not contain components with the H statements indicating the possible hazardous properties of the waste, such as HP 1 (explosive), HP 2 (oxidising), HP 3 (flammable), HP 12 (release of an acute toxic gas).



Information on the classification of hazard statements as hazardous properties can also be found in Annex 7-1 to the Guide.

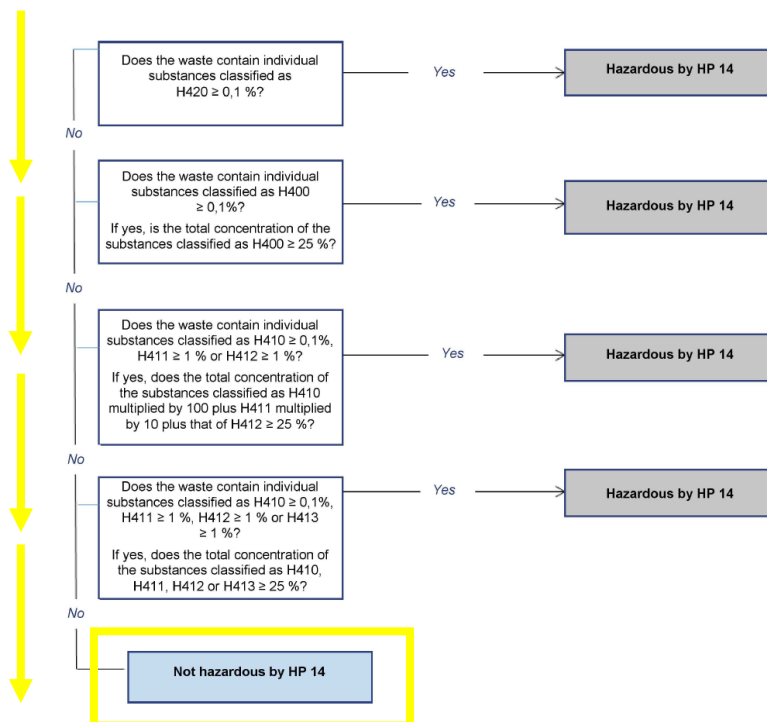


Preliminary assessment of whether waste can have the properties HP 1 (explosive), HP 2 (oxidising), and HP 3 (flammable) can be based by visual examination, which then might be followed by testing for these properties, if suspected. In the case under consideration, there is no indication that the waste could have these properties; therefore, no tests have been carried out.

- Depending on the origin of the waste (waste from contaminated soils is unlikely to be infectious), no assessment is carried out for the hazardous property HP 9 (infectious);
- With regard to the properties HP 4, HP 6, HP 8, and HP 13, none of the substances should be included in the assessment, as the threshold values are not exceeded in none of the cases;
- With regard to the properties HP 5, HP 7, HP 10, and HP 11, no threshold values (cut-off values) are set; however, in all cases the concentration of the substances is below the minimum concentration limit; therefore, no assessment is required to determine whether the waste has these hazardous properties;
- This means that waste can only be classified as hazardous due to the property HP 14 (ecotoxic), i.e. a detailed assessment should only be made for the HP 14.**

### HP 14 (ecotoxicity) assessment of waste

The information in the table above and the diagram in Annex 8 to the Guide (see below) is used for the assessment.





Thus, the steps in Stage III of the Guide have led to the conclusion that the assessment of the hazardous substance concentrations in the waste by the 'worst case' compounds do not reveal the hazardous property HP 14 in the waste.

6

As indicated above, the steps of the Stages I and III of the Guide have revealed that waste contains hazardous substances; however, their concentrations are below the respective thresholds (cut-off values) or concentration limits laid down in Regulation (EU) No 1357/2014; therefore, the waste may be classified as non-hazardous under the code 17 05 04:

<b>17 05</b>	<b>soil (including excavated soil from contaminated sites), stones and dredging spoil</b>	
<del>17 05 03*</del>	<del>soil and stones containing hazardous substances</del>	<del>MH</del>
17 05 04	soil and stones other than those mentioned in 17 05 03	MN