

# Hazardous waste classification and re-use (end of waste) by New Waste Directive, CLP and REACH Regulations

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## Abstract

'Hazardous waste' means waste which displays one or more of the hazardous properties H. Attribution of the hazardous properties H is derived from risk phrases R coming from Directives 67/548/EEC and 1999/45/EC. New CLP Regulation (repealing above Directives) in place of risk phrases R introduces hazard statements H. That means, that soon we will derive hazardous properties H (1 or 2-digit) from hazard statements H (3-digit) of its components.

New waste hierarchy on a second place put 'preparing for re-use'. On the other side Reach Regulation claims that "end of waste" comes under this regulation. In a consequence a Registration Obligation appears.

These can strongly influence hazardous waste management soon, if nothing will be done.

## Keywords

Hazardous Waste, CLP, Reach Registration, ADR, waste re-use, "end of waste",

## 1 Polluter Pay Principle (PPP)

One of the core principles of sustainable development is the 'Polluter Pay' Principle" which requires that the costs of pollution be borne by those who cause it. Waste and pollution are strictly connected. In waste management systems information about waste can be transferred (from waste holder - producer or previous possessor) or gained from direct waste examination, which can be very expensive and in some cases inadequate to real waste composition. That's why waste producer (polluter) should be responsible for all available and necessary, for further transport and management, information from very beginning.

## 2 Hazardous waste

A Citation from Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives:

Whereas:

(14) The classification of waste as hazardous waste should be based, inter alia, on the Community legislation on chemicals, in particular concerning the classification of preparations as hazardous, including concentration limit values used for that purpose.

Definition (art. 3.2) 'Hazardous waste' means waste which displays one or more of the hazardous properties H listed in Annex III;

Notes (in Annex III)

1. Attribution of the hazardous properties 'toxic' (and 'very toxic'), 'harmful', 'corrosive', 'irritant', 'carcinogenic', 'toxic to reproduction', 'mutagenic' and 'eco-toxic' is made on the basis of the criteria laid down by Annex VI, to Council Directive 67/548/EEC of 27 June 1967 on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

2. Where relevant the limit values listed in Annex II and III to Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations (2) shall apply.

It is a change in comparison with the old definition of hazardous waste, where characteristic of hazardous waste was made on base of hazardous properties H and waste origin and its composition. Now it is possible to receive information that waste is eco-toxic H14, but without knowledge about what kind and amount of constituent gives this hazardous property to this waste.

To establish hazardous properties of waste it is necessary to do some examination (physical properties) and/or to do some calculations based on concentration and risk phrases R attributed to dangerous substances, constituents of waste. These R phrases are taken from classification of chemicals.

## 2.1 Chemicals classification

On a day of publishing a New Directive on waste, Chemical Directives (67/548/EEC and 1999/45/EC) were still in force, but few days later LCP Regulation was voted through. It entered into force on 20 of January 2009 and stipulates that the classification and labelling of substances must be consistent with CLP on 1 December 2010 and mixtures (former preparations) on 1 June 2015. The old Directives will be totally repealed on 1 June 2015.

## 2.2 CLP

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006, called CLP Regulation, comes to EU legislation as a result of implementation of GHS UN (United Nation The Globally Harmonized System of Classification and Labelling of Chemicals). The GHS includes: harmonized criteria for the classification of substances and mixtures according to their physical, health and environmental hazards; and harmonized hazard communication elements (including requirements for labels and safety data sheets). GHS is a worldwide compromise and brings to EU system a lot of changes: new hazard classes and categories and its evaluation procedures, new hazard pictograms, signal words, hazard statements H (former risk phrases R, equivalent but not always identical) and precautionary statements P (former safety phrases S). Risk phrases which are essential for waste classification as health hazard and eco-toxicity are concerned are announced as 3-digit H statements and transferred to 2-digit H PROPERTIES OF WASTE WHICH RENDER IT HAZARDOUS. It seems to be a source of many errors and misunderstandings in future. Do we really need it? Maybe it is time to say that hazardous substance/ mixture is also hazardous as it becomes waste and leave the same system for hazard communication.

## 2.3 REACH

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC says that registration is compulsory for the manufacturer or the importer of a substance in quantities at or above than 1 Mg per year. It is decided, no registration - a ban on a turnover. One substance – one registration. That means that all producers and manufacturers of a substance join together (SIEFS) and put forward one registration document to ECHA (European Chemicals Agency). In this dossier physicochemical, toxicological, eco-toxicological properties of a substance (with the methodology of all measurements) and classification should be given. If a substance is produced in quantities at or above 10 Mg per year (or identified as PBT – persistent, bioaccumulative, toxic), Chemical Safety Report is necessary and exposure scenarios for identified use should be proposed.

Generally REACH Regulation declares that waste don't come under this low, as far as they are waste. Recovered substances from 'end of waste' products should be pre-

registered and than registered (that was official opinion from REACH helpdesk in November 2008). This interpretation made a lot noise in the world of waste management companies. Doc: CA/24/2008 rev.3 Follow-up to 5th Meeting of the Competent Authorities for the implementation of Regulation (EC) 1907/2006 (REACH) (Concerns: Waste and recovered substances) gave some hope:

Once recovered substances cease to be waste, they are again subject to REACH obligations but can also benefit from a number of exemptions. Article 2(7) (d) of REACH provides the following exemption:

“Substances, on their own, in preparations or in articles, which have been registered in accordance with Title II and which are recovered in the Community if:

- (i) the substance that results from the recovery process is the same as the substance that has been registered in accordance with Title II; and
- (ii) the information required by Articles 31 or 32 relating to the substance that has been registered in accordance with Title II is available to the establishment undertaking the recovery.” (ref. SDS – safety data sheet and exposure scenario if necessary).

Summarizing – to run off from REACH registration: the sameness of the substance must be proofed and legal SDS of registered substance must be shown. Without help of waste producers waste management companies can't do it. Re-use process (which stands on a second place in waste hierarchy now) via REACH registration process won't be economically justified.

### **3 List of Waste (LoW)**

The European List of Waste (LoW) comes from Commission Decision 2000/532/EC1 with the later amendments. ‘The LoW serves as a common encoding of waste characteristics in a broad variety of purposes like transport of waste, installation permits, decisions about recyclability of the waste or as a basis for waste statistics’. That is a quotation from Review of the European List of Waste (Final Report). Executive Summary by Ökopol GmbH in cooperation with ARGUS GmbH (November 2008).

Is that a truth? Partly, yes, as waste statistics and permits are considered. The List of waste is only partly useful as we talk about a transport and recyclability of hazardous waste. The different types of waste in the List are fully defined by a 6-digit code, with two digits each for chapter, sub-chapter and waste type. If a code of waste is accompanied with asterisk that means that this type of waste is hazardous. From more than 900 types of waste (in Poland) nearly half of them are considered as hazardous. About one fourth of hazardous waste types from LoW are described with words ‘containing dangerous substances’. These are mirror entries hazardous waste. Dangerous sub-

stance can be dangerous because of: toxicity, eco-toxicity, flammability and all other existing hazards. As far as is not known exactly what kind of dangerous substances are constituents of waste any transport classification or recyclability evaluation is not possible. To be able to do it an information about this substance quality (for instance its SDS) and its quantity is wanted. It can happen one more unpleasant surprise. For some codes: for instance 06 05 02\* sludges from on-site effluent treatment containing dangerous substances, a few different transport codes can be assigned in a result of ADR classification procedure (depending on a quality and a quantity of dangerous substances in waste). Saying straightforward behind the same code can stand chemically absolutely different mixtures.

## 4 Basic Characterisation of waste

COUNCIL DECISION of 19 December 2002 establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 of and Annex II to Directive 1999/31/EC (2003/33/EC) enters new document – Basic Characterisation of waste. Basic characterisation is the first step in the acceptance procedure and constitutes a full characterisation of the waste by gathering all the necessary information for a safe disposal of the waste in the long term. Basic characterisation is required for each type of waste.

Fundamental requirements for basic characterisation of the waste is listened below:

- (a) Source and origin of the waste
- (b) Information on the process producing the waste (description and characteristics of raw materials and products)
- (c) Description of the waste treatment applied in compliance with Article 6(a) of the Landfill Directive, or a statement of reasons why such treatment is not considered necessary
- (d) Data on the composition of the waste and the leaching behaviour, where relevant
- (e) Appearance of the waste (smell, colour, physical form)
- (f) Code according to the European waste list
- (g) For hazardous waste in case of mirror entries: the relevant hazard properties according to Annex III to Council Directive 91/689/EEC of 12 December 1991 on hazardous waste (2)
- (h) Information to prove that the waste does not fall under the exclusions of Article 5(3) of the Landfill Directive

- (i) The landfill class at which the waste maybe accepted
- (j) If necessary, additional precautions to be taken at the landfill
- (k) Check if the waste can be recycled or recovered.

Looking on it, it is more less SDS for waste. But why it becomes necessary in the very last stage of life cycle of waste. This document should start as waste appears at a waste producer place and grow with every step of a waste management.

## 5 Carriage of hazardous waste (ADR)

European agreement concerning the international carriage of dangerous goods by road (ADR) is part of EU internal low by Directive No 94/55/EC of 21 November 1994 on the approximation of the laws of the Member States with regard to the transport of dangerous goods by road. A Hazardous waste is a dangerous goods if transport by public roads is realized.

By ADR (according to the words of this agreement):

The term “dangerous goods” shall mean those substances and articles the international carriage by road of which is prohibited or authorized on certain conditions by Annexes A and B:

### Annex A

- classification of goods, including classification criteria and relevant test methods;
- use of packagings (including mixed packing);
- use of tanks (including fillings);
- consignment procedures (including marking and labelling of packages and placarding and marking of means of transport as well as documentation and information required);
- provisions concerning the construction, testing and approval of packagings and tanks;
- use of means of transport (including loading, mixed loading and unloading);

### Annex B

- requirements for vehicle crews, equipment, operation and documentation;
- requirements concerning the construction and approval of vehicles.

### Responsibilities

How then, practically, hazardous waste can be transported – according to the rules which can be extracted from Annexes A and B as soon as hazardous waste receives UN number and PG packaging group. Who is responsible for that?

According to ADR (1.4.2.1.1) – The consignor of dangerous goods is required to hand over for carriage only consignments which conform to requirements of ADR. ....in particular:

(a) ascertain that the dangerous goods are classified and authorized for carriage in accordance with ADR...

In the waste world it means a waste producer. So why legal permits for the hazardous waste generation consist only of these waste codes saying nothing about UN and GP even, when it is declared that they are taken away to waste management places via transport ?

In SDS for chemicals in 14 sections is place for transport information – class ADR, UN number and PG.

## **6 Occupational Safety and Health**

Occupational health and safety is a cross-disciplinary area concerned with protecting the safety, health and welfare of people engaged in work or employment. The goal of all occupational health and safety programs is to foster a safe work environment. In the European Union, member states have enforcing authorities to ensure that the basic legal requirements relating to occupational health and safety are met. In 1996 the European Agency for Health and Safety at Work was founded.

What about waste management? Sometimes it seems that there are no human beings working with waste. Hazardous waste are signed with code of LoW (XXXXXX\*) and nothing more. Even if hazardous properties H of waste are known there are no warning signs connected with them. In my practice I “borrow” a hazard communication signs from systems prepared for chemicals and work strictly according to information from SDS to provide my employers with proper individual protection measures.

## **7 Summary**

To summarize my observations I dare to put forward some proposals which can join hazardous waste management with the world of safe work, economical efficiency and sustainable development:

1. Hazardous waste classification is done in the same way as it is defined in CLP Regulation for substance/mixtures. System of hazard communication is also the same.
2. Basic characterisation and ADR classification of waste starts with the first waste appearance according to PPP (polluter pays principle) and grows with every step of waste management. Information about waste must submit “occupational safety and health” demands.
3. A full documentation on waste gives right to ‘re-use’ as product -‘end of waste’ without REACH Registration process.

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