

**Workshop - "Practical implications of the application of CLP-concentration limits on the hazardous properties on waste"  
Vienna, 25<sup>th</sup> October 2011**

**MINUTES of the WORKSHOP**

The purpose of this workshop in Vienna at the Austrian Federal Economic Chamber was to highlight the consequences of aligning all hazard criteria of the EWL to the CLP Regulation, especially focussing on the hazardous properties HP4/HP8 (irritant/corrosive), HP13 (sensitizing), HP14 (ecotoxic) and HP15 (after disposal, yielding another substance showing hazardous characteristics), and to promote an open dialogue among the stakeholders.

**KEY SUBJECT 1: HP4 (irritant) and HP8 (corrosive)**

After the welcome addresses of Ms. Wolfslehner from the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management and Mr. Gründling from the Austrian Federal Economic Chamber, Mr. Wolff from the European Commission gave an overview on the time schedule and stressed that the revision of the EWL and the hazardous properties should be finalised by end of 2011 and an adoption in 2012 would be foreseen.

Mr. Gruending explained in his speech on "CLP classification and methodologies" the main principles of CLP-classification. The question arose how waste can be defined according to the chemicals legislation, as it is explicitly excluded there. Although materials were maybe formerly "articles" for the purposes of CLP, to which labelling and classification did not apply, resulting wastes normally were mixtures, requiring appropriate classification as hazardous or non-hazardous waste.

He mentioned that Annex VI of the CLP-Regulation comprised the harmonised classification of substances but the main part of classification was based on self-classification by importers and producers, requiring consideration, as all available information on knowledge on effects on humans had to be taken into account. He pointed out that the transport regulations for dangerous goods in class 8 intentionally did not consider the pH-value as a criterion as otherwise cement would have to be transported under class 8.

Mr. Wirth of Oekopol gave an overview on the state of discussion in the Expert Working Group "EU Waste List" with regard to the hazardous properties HP4 (irritant) and HP8 (corrosive) and pointed out that alignment with CLP would take place where considered appropriate. The pH-value was not considered in the former chemicals legislation but is now introduced as classification criterion in CLP. This fact stimulated a discussion in the WG with the aim to keep the current status quo that pH does not trigger classification. A reason for not considering pH was the favourable effects in various uses of such waste and the avoidance of leaching of hazardous substances such as heavy metals.

Ms Margareta Wahlström from the VTT Technical Research Centre in Finland held a lecture on the difficulties of applying pH-limits of the CLP Regulation with regard to the hazardous properties HP4 and HP8. She especially pointed out that there were no standards for measurement of pH of waste and she thought that measurement of the pH of the waste was a risk based approach. Furthermore, she mentioned that many wastes needed to be pretreated (e.g. grinded) prior to characterization which significantly changed the properties of the waste. The high buffer capacity of a waste against pH decrease was generally regarded as a favourable property (e.g. the neutralization potential of extractive waste is recognized as a key property in safe management and also used for classification of waste as inert). Several alkaline wastes contain calcium compounds (e.g. CaO) whose behaviour is strongly influenced by the carbonation process (reaction of CaO with water to Ca(OH)<sub>2</sub> and formation of CaCO<sub>3</sub> with CO<sub>2</sub> from the air thus lowering the pH-level over time).

Concerns were expressed referring to the classification of waste streams as hazardous due to their CaO-content such as concrete, steel slag, fly ash and ashes used as fertilizers. Residues from all types of power plants, even wood ash and peat ash would be rendered hazardous waste, when applying the CLP-criteria. This would counteract the encouragement of energy recovery from renewable energy sources (see targets of the Directive on renewable energy (2001/77/EC).

Mr. Daul as representative of Lafarge cement and Cembureau gave a presentation on the implications of the alignment of HP4 and HP8 with the CLP Regulation with regard to recycling activities in the cement and concrete sectors. Cement was a mass product with application almost everywhere in the construction industry and as an article it needed no registration according to REACH Regulation. Referring to the required recycling quotas for C&D waste in the Waste Framework Directive, he raised fundamental concerns about legal compliance of many existing recycling plants within the existing legal frame (Environmental Impact Assessment-Directive, Industrial Emissions-Directive) in case of classification of cement and C&D wastes as hazardous waste.

### **Discussion**

A representative of industry pointed out that biomass ashes showed a pH-value of >13, therefore a deviation from the CLP Regulation for the purpose of waste classification would be useful.

A representative of Oekopol took the view that this different classification (cp. exemption of cement from class 8) would not solve waste management problems. If pH-limits were deleted as a criterion and cement were ground / milled, then the fact would have to be faced that reactions with eyes and skin could take place.

A representative of industry expressed concerns of the cement industry with regard to the classification of concrete and C&D waste including fly and bottom ash as hazardous (HP4 or HP8); as recovery would be influenced; practically no recycling would take place any more due to the "image problem" of hazardous waste and all the legal consequences. In case of classification of concrete wastes as hazardous, a concrete recycling plant would require an Environmental Impact Assessment and recycling activities would drastically decrease. This opinion was supported by some industrial representatives, pointing out that permits for intermediate storage facilities for hazardous wastes and for handling of these hazardous wastes would be required.

A representative of the Federation Internationale Du Recyclage (FIR) explained that recycled aggregates did not leach pollutants and that the pH-level was not a strict parameter as it changed due to the reaction of  $\text{CaO}/\text{Ca}(\text{OH})_2$  with  $\text{CO}_2$ . He stressed that in practice no buyers would be found in the case of classification of C&D wastes as hazardous waste. Another stakeholder mentioned that biomass ashes classified as hazardous waste could not be used as fertilizer substitutes any more, as presently organic farming prohibited the use of hazardous wastes, although in this specific case the alkaline reaction of the ashes was useful for pH-adjustment of acidic soils.

A representative of Oekopol took the view that standards for fertilizing would require some adaptation in the future in order to overcome the problem.

Representatives of industry held the view that wastes were managed by experts (or trained personnel) and re-classification of huge amounts of waste as hazardous waste would not be useful. If conditions and time scenario (carbonation) were considered this would mean a shifting from the hazard approach to a risk approach.

Ms. Wolfslehner summarized that if there was strict alignment of the waste management legislation with the chemicals legislation (CLP Regulation) a lot of wastes would match the criteria for hazardous waste, which would entail consequences for waste management.

**KEY SUBJECT 2: HP13 sensitizing, HP 14 ecotoxic, HP15 waste capable by any means after disposal of yielding another substance e.g. a leachate which possesses any of the hazardous characteristics and HP6 toxic.**

The representatives of Oekopol, Mr. Olaf Wirth and Mr. Knut Sander explained the state of play of the discussions referring to HP13, HP14, HP6, and HP15 (proposed change of the definition).

Ms. Heidrun Moser from the EPA Dessau gave a lecture on HP14 - Ecotoxicological characterisation of waste using biotests. Only ecotoxicity tests showed all the effects of the pollutants in the sample, even interactions. She made clear that biological effects can only be detected by biotests, e.g. for contaminated soils or waste material. She showed an overview on the test-organisms used and the costs of the test-batteries based on the European ring test for H14 and additional investigations.

Ms. Moser explained that bio-testing was necessary to describe the ecotoxicity of waste as an intrinsic property, independently from the fate of the waste in the later treatment or use. In the discussion she answered that the classification of waste as hazardous did not automatically influence the use of the waste. Ms. Moser shared experiences from the investigation of municipal waste incineration ashes and described the need of a state-of-the-art ash aging/treating management in order to stabilize the ashes and to avoid ecotoxic behaviour of ashes. Based on the given Oekopol proposal she underlined the need to establish proven biotest methods for the characterisation of waste, in order to give waste authorities and waste owners the same basis for the classification of waste and for an improvement of the waste treatment. Ms. Moser informed about a running project in which 25 wastes from EWL mirror entries classified as non-hazardous have been analysed with biotests. She gave notice about a technical guidance document which summarized the scientific experience in ecotoxicological waste characterisation for the use in waste authorities.

Mr. Hennebert from INERIS gave a presentation on the analysis of 32 industrial wastes by substances and classification of hazardous properties HP6, HP13 and HP14 based on CLP calculation. He explained pre-treatment of samples, analytical protocol for the knowledge of waste by substances, the conceptual scheme of waste composition and the stoichiometric approach. Referring to the tentative classification of wastes for HP13 (sensitizing) he showed that no organic sensitizing substances had been found in 32 wastes at concentrations >0.1%. 19 from 32 wastes met the criterion HP14 due to heavy metals and PAH. He pointed out that the results of biotests had shown that a lot of industrial wastes needed no classification as ecotoxic.

Mr Hemström from the Swedish Environmental Research Institute (IVL) held a lecture on CLP biotest concentration limits – implications for H14 classification test procedures. He pointed out that classification of H14 based on concentration limits in CLP required other test strategies than those commonly used for characterization of waste. In CLP, classification of hazards to the aquatic environment was done on eluates prepared at L/S ratios  $\geq 10\ 000$  l/kg while waste eluates usually were prepared at much lower L/S-ratios ( $\leq 10$  l/kg). A test procedure for waste that largely harmonize with CLP was presented, including e.g. leaching at L/S 100-1000 followed by an aquatic biotest battery including both acute and (sub)chronic endpoints. Since the properties of waste often differed from substances, some waste specific adjustments of test procedures compared to CLP would be needed. Experience from biotesting in Sweden of ash eluates generated at lower L/S (L/S 10) was also presented

showing that there was a risk of misclassification of waste as ecotoxic when using this test procedure due to the toxic effects caused by substances not classified as hazardous in CLP, e.g. Ca, K and Al (even at moderated pH).

Ms. Franka Boldog from the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management gave an overview on the legal consequences of classification of wastes as hazardous waste, especially pointing out labelling of hazardous waste in accordance with the Waste Framework Directive as well as requirements according to the Landfill Decision, Industrial Emissions Directive, Environmental Impact Assessment Directive, Seveso II Directive, permits for waste treatment, record-keeping of hazardous wastes, End of Waste Regulation for scrap (non-hazardous materials) and the Waste Incineration Directive.

Ms. Loew from the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management demonstrated in her lecture that besides ashes, concrete, and some C&D waste also iron slags would become hazardous waste, due to their contents of CaO forming  $\text{Ca}(\text{OH})_2$  with water. As "ageing" depended on different factors the formation of  $\text{CaCO}_3$  could take from several weeks to several years. Furthermore a lot of other wastes such as zinc ash ( $\text{ZnO}$  – classified as aquatotoxic), red mud, slags and particulates from other non-ferrous thermal metallurgy, tanning liquors (glutaraldehyde, salts, Cr), all types of batteries, residues of food preserving agents would meet hazardous properties (mirror entries needed). She pointed out that a deviation from the present wording of HP15 was problematic in case of exports from the EU to non-EU member states as the definition had been derived from the Basel Convention and from OECD.

### **Discussion**

Mr. Hennebert and some delegates took the view that the Swedish approach on H14 widened the subject using different dilution levels.

An industrial representative expressed great concerns about the costs of all necessary bio-tests of approx. 5000. - € for the service of testing the criterion HP14.

Another industrial representative questioned the necessity of aquatic biotests, if the waste was not used in the aquatic environment.

The question was posed by representatives of the industry why the waste management sector should go beyond the CLP Regulation which did not require terrestrial testing.

The representatives of Oekopol summarized that testing would not be necessary in all situations. Classification on CLP calculations based on waste composition (including knowledge gaps) would be sufficient. Only if a waste owner was convinced that his/her waste was non-ecotoxic a test with a test-battery should be applied as an alternative to show the waste is not hazardous. Mr. Wolff from the European Commission pointed out that ecotoxicity tests were being developed at EU level.

Representatives of the industry asked about figures on how much waste would finally be tested for HP14. The representative of the EPA Berlin estimated roughly approx. 5% based on the present experience. She explained that in Germany incineration ash was tested after an "ageing phase" of 12 weeks and this seemed to be useful; this time might be different for different waste streams.

Some stakeholders asked how to manage specific waste streams classified as hazardous e.g. due to their  $\text{CaO}/\text{Ca}(\text{OH})_2$  content during the time of ageing" (carbonation). One participant expressed the wish that sampling for testing and bio-testing should be standardized in the EU as it is a great source of mistakes.

The Commission summarised that the definition of hazardous properties was linked to the list of waste, which might require mirror entries.

A participant proposed to limit the classification of substances in the field of waste management only to the harmonised Annex VI, and to delete the pH for alkalinity. A representative of Oekopol responded to this that the harmonised classification of the Annex would not be sufficient for classification as not all endpoints are covered there.

Mr. Gruending asked for the possibility to introduce an intermediate solution, as maybe other industries would be affected by the alignment of the HPs with CLP as well, as 50% of mineral wastes had to be classified as ecotoxic after testing referring to the heavy metal content as pointed out in the presentation of Mr. Hennebert.

Ms. Wolfslehner summarized that a strict alignment of the HPs with the CLP Regulation would cause problems and that appropriate solutions should be found. Even an adjustment of the Waste Framework Directive should be considered.

Link to the presentations:

[http://portal.wko.at/wk/format\\_detail.wk?stid=643461&dstid=234&angid=1](http://portal.wko.at/wk/format_detail.wk?stid=643461&dstid=234&angid=1)

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