

## I Draft BDE technical guideline, March 4 version

### Table 2

HWE acknowledges that furniture containing POP-BDE flame retardants is included in items “plastic” and “textile”.

Foam for mattresses, sofas, armchairs, etc. frequently contain POP-BDE flame retardants. Thus the word **foam** should be added to the item ‘plastic’ (foam is mentioned in the item ‘buiding materials’.

## II Draft general technical guideline, March 4 version

### Mixing §143

Mixing POP waste with different POP concentrations in order to enable or to optimize disposal may be considered as an environmentally sound practice. But mixing POP waste with different POP concentrations prior to recovery (ie plastic recovery) may lead to pollutant dissemination in the articles containing the recovered material. Thus HWE suggests modifying the wording of §143 as follows:

#### *Mixing*

143. Mixing materials, without blending, prior to waste ~~treatment disposal~~ may be appropriate in order to enable ~~treatment~~ **the disposal process** or to optimize ~~treatment disposal~~ efficiency. However, the mixing of wastes with POP contents above a defined low POP content with other materials **(including other waste with POP contents below this defined low POP content)** solely for the purpose of generating a mixture with a POP content at or below the defined low POP

## III Draft general and POP-BDE technical guidelines, March 4 version

### ASWIs §170 to §187

This section does not demonstrate that advanced solid waste incinerators are able to properly destroy POPs in waste.

Vehlow (2002) article describing the Tamara test refers to a 0,5 MW pilot installation only with a throughput of 200 – 300 kg/hr. The issue of brominated or chlorinated dioxin emissions in the combustion gases is not addressed at all. No monitoring reported on this topic. Therefore this article cannot help deciding whether this pilot is able to properly destroy POPs in waste.

Mark and al article 2015 describes a test in Würzburg incinerator during which HBCD containing polystyrene foam was incinerated. Brominated dioxin and furans (PBDD/F) emissions in the combustion gases after the gas treatment unit is reported to be lower than the limit of

quantification, which is 0,5 ng/Nm<sup>3</sup> (table 7, p.128). This level is 5 times higher than the common PCDD/F emission limit value, 0,1 ng/Nm<sup>3</sup>. Moreover the result is not expressed in ng ITEQ whereas chlorinated dioxin and furans (PCDD/F) are expressed in ng ITEQ. This means that several PBDD/F congeners may be missing in the measure. For these two reasons, the reported results are not sufficient to decide whether this municipal waste incinerator is able to properly destroy POPs in waste.

SIWG members need a well-documented and well-reported full scale test with results on brominated dioxin emissions. Limit on quantification needs to be lower than 0,1 ng/Nm<sup>2</sup> and all congeners need to be taken into account. Semi-continuous dioxin sampling method should be used to determine the emissions of chlorinated and brominated dioxins with sufficient accuracy and reliability when conducting the full scale tests in ASWIs.

As long as this necessary documentation is not available, ASWIs should not be included in the destruction and irreversibly transformations methods of the general technical guideline.

The design of solid waste incinerators aims at maximising recovery of the energy contained in the combustion gases. Such designs (ie grate furnace + boiler) lead to a quite slow cooling speed of the gases. But this circumstance enhances de-novo synthesis of dioxins. To avoid this, quenching the gases would be necessary, a technique which forbids energy recovery from the gases.

#### Cement kiln co-incineration

§215 to §230 provide only very limited information on dioxin/furans concentrations in the gases emitted to the atmosphere. Detailed information on full scale tests of POP-BDE containing waste co-incineration with chlorinated and brominated dioxin monitoring in the emitted gases is necessary. A semi-continuous sampling method should be used to determine the emissions of chlorinated and brominated dioxins with sufficient accuracy and reliability.

As long as this information is not provided to SIWG members, cement kilns should not be considered an environmentally sound method for destroying POP –BDE waste.