

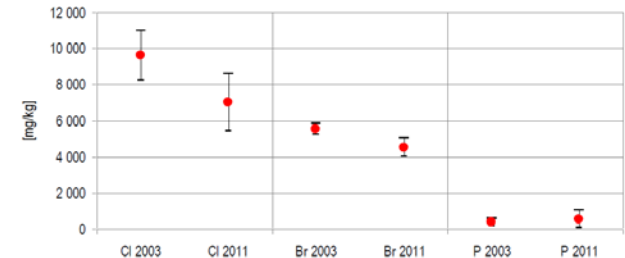
Fact Sheet Brominated Flame Retardants

Part 1 – Elemental Bromine



- ▶ Largest Elemental Bromine stock are the seas and the oceans
 - 65 Gramm per Cubic Meter of sea water (even 5 Kg in the Dead Sea)
- ▶ Bromine is mainly found in salts (as anion) and is not hazardous
 - Our human daily intake is 2 to 8 Mg
- ▶ Elemental Bromine in WEEE plastics is often > 5 000 ppm*
- ▶ Celenec simplified approach > 2 000 ppm elemental Br.
 - Below which the plastics can go anywhere
 - Above which the plastics have to go to special facilities that separate BFR containing plastics
 - No need to do analyses if material goes to these specialized facilities (no added value)
- ▶ Elemental Bromine is not a measure for defining plastics with BFR as “POP” containing material.

Abb. 34 > Vergleich der Gehalte an P, Br und Cl im EEKG-Schrott 2003 und 2011
Mit Angabe des 95%-KI.



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Part 2 – Which BFR's are restricted?



▶ Most Brominated Flame Retardants can still be used and are not restricted

- Penta-, Octa-BDE and HBCDD account for 8% of BFR's in WEEE*
- Deca-BDE for 22%, but thresholds are not fixed yet*.

▶ All PBDE's are not used in EEE since 2004 (RoHS)

- Hence they can hardly be present in Flat Panel Displays

▶ Analyses of BFR substances/congeners are expensive

- Not required if delivered to a specialized plant
- No added value for anyone – refer to Swiss Study*

▶ Often notifications are required for WEEE plastics

- But WEEE plastics with BFR's are not hazardous
- Thresholds for hazardousness for Octa-BDE 0,3% and for Deca-BDE 25%
- These values cannot be found in WEEE plastics
- PBB's and Penta-BDE cannot be found in WEEE and HBCDD only in EPS (expanded PS).

