









There were no clear differences between the regions, despite the fact that the Rotterdam/Rijnmond area is much more industrial than e.g. Friesland, in the North of the Netherlands. The data confirm that the levels around Harlingen were not unusual for hens from private owners.

### ***Congener patterns***

Congener patterns are an important tool for obtaining an indication of the potential source of a contamination. Previously we observed e.g. farms with problems specifically related to PCBs. However, as shown in Figure 1, there were no eggs where dl-PCBs contributed primarily to the TEQ-level. On average the contribution of dl-PCBs was 41% with a range of 38 to 49%. When focusing on the PCDD/F-TEQ, the relative contribution of PCDFs was relatively stable, with a median of 41%. This is also reflected in Figure 2, showing the PCDD/F congener patterns for the samples with the highest levels and two deviating patterns. In most cases the pattern reflects the general background pattern in the Netherlands, and very similar to patterns related to burning of waste. This was confirmed by interviews with owners of some of the most contaminated eggs, stating that the hens were foraging on areas where in former times waste was burnt.

The pattern observed in sample M8 showed a relatively high contribution of PCDFs, pointing to a PCB-contamination, but this was not confirmed by the PCB-levels and contribution to the sum-TEQ. Also the pattern observed in M3, with a relatively high PCDD contribution, was not recognized from our database.

### ***Exposure of consumers eating their own eggs***

When asked, participant reported to obtain on average 37 eggs in the week with some seasonal variation during the year. In general, these eggs were consumed by their households and were distributed to family and neighbors. The fat content of the eggs was on average 5.0 gram with a range of 2.0 to 7.2. This implies that consumption of an average egg with 6.1 pg TEQ/g fat amounts to 30 pg TEQ being respectively 11 and 4% of the TWI for a child of 20 kg b.w. and an adult of 60 kg b.w. For the highest observed level of 19 pg TEQ/g fat, these values are about 3-fold higher, i.e. 34 and 13%. This comes on top of the background exposure from other sources. The median background exposure to PCDD/Fs and dl-PCBs for the general population (7-69 years) in the Netherlands was recently<sup>5</sup> estimated to be 0.5 pg TEQ/kg bw per day (or 3.5 pg TEQ/kg bw per week) (median) and the high background exposure (95<sup>th</sup> percentile) 1.0 pg TEQ/kg bw per day (or 7.0 pg TEQ/kg bw per week). For children (2-6 years), these values were 0.9 pg TEQ/kg bw per day (median) and 1.5 pg TEQ/kg bw per day (95<sup>th</sup> percentile). In these calculations, average egg concentrations of 0.6 pg TEQ/g fat were used and eggs contribute only to a small extent to the background exposure. For adults, weekly consumption of a few home produced eggs does not lead to exceedance of the TWI. But children with a high background exposure could exceed the TWI when consuming one egg with the highest TEQ level or two eggs with an average TEQ level per week. Consumption of own eggs with relatively high TEQ concentrations can substantially contribute to the total exposure to PCDD/Fs and dl PCBs.

### ***Conclusion***

Home-produced eggs can be an important source of dioxins and dl-PCBs and owners should attempt to lower the levels by measures to reduce the levels in soil and the uptake of soil by laying hens.

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