A (mean 11.22 pgWHO-TE/g). A more detailed evaluation of contributors to toxicity and preliminary source apportionment can be obtained by looking at PCDD/F:dl-PCB ratio. For Zone A, whose bottom-mussels are the most contaminated, a 1:5 ratio is observed, while for the less contaminated area (Zone B) a 1:2.5 ratio is found. Samples collected in Zones C and D appear to be somewhat less homogeneous. An interesting case is Zone E, whose PCDD/Fs values are the lowest (mean 0.46 pg WHO-TE/g) while dl-PCBs remain quite high with a mean value of 4.54 pg WHO-TE/g, resulting in an average 1:10 ratio. This result could suggest that while Zone E shows the lowest PCDD/Fs values because it is the most segregated from the PCDD/F sources located in the industrial area (that is in the upper left corner of Figure 1a), a significant source of PCBs (like the discharge of dielectric fluid) could have been in the nearby. Congener profile for sample 5 Zone A, the most contaminated, is shown in Figure 2 and presents a PCDD/Fs profile with 2378-TCDF as the most abundant congener, that is consistent with the known more pronounced bioaccumulation for congeners with the least chlorine atoms.[9]

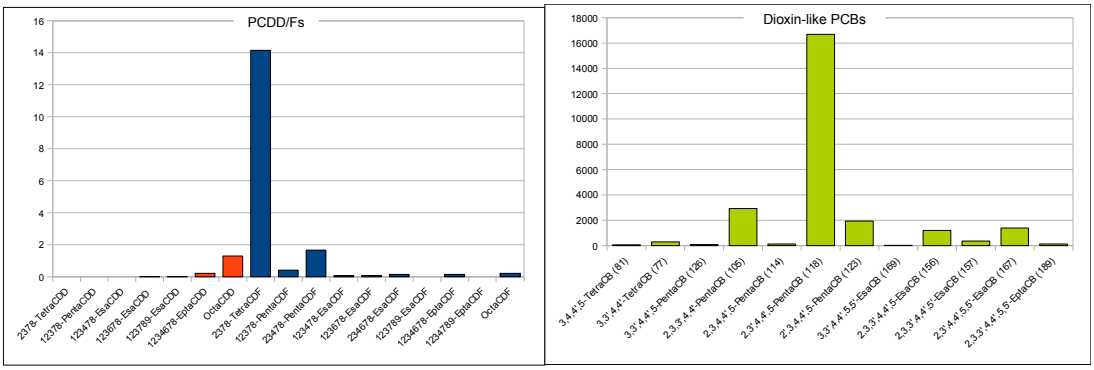

Figure 2

Conclusions

POPs bioaccumulation is a useful tool in assessing the ecological health status of the marine ecosystem. For the area under investigation, the Gulf of Taranto, Zone A appears to be the most contaminated with highest values for both PCDD/Fs and PCBs and this appears to be consistent with the proximity of the 5-decades old industrial area, that operated well before the ban on PCBs use entered into force (late 1970) and well before restrictions in the discharge of industrial waste to water basins were promulgated (mid 1970). Present releases to water could include washout of contaminated soil as well as continuing percolation from discharge to inadequate landfills. Actions to reduce those emissions to water should be undertaken in order to decrease PCDD/Fs and PCBs levels in the marine environment. As a continuing effort to monitor the insurgence of any potential risk related to the food-chain, the local Health Authority has communicated that all samples of reared rope-mussels collected during their Official Control activities have so far shown POPs levels within EU legal limits (Reg 1881/2006).

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