

## Investigation of Selected Persistent Organic Pollutants in Farmed Atlantic Salmon (*Salmo salar*), Salmon Aquaculture Feed, and Fish Oil Components of the Feed

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There is extensive literature documenting the bioaccumulation of persistent organic pollutants in the marine environment, but relatively little data are available on contamination pathways in aquaculture systems such as that for farmed salmon. In recent years, the salmon industry has grown significantly in Europe. This study reports on the determination of a wide range of polychlorinated biphenyls (PCBs), organochlorine pesticides, and polybrominated diphenyl ethers (PBDEs) in farmed and wild European Atlantic salmon fish, aquaculture feeds, and fish oils used to supplement the feeds. The study confirms previous reports of relatively high concentrations of PCBs and indicates moderate concentrations of organochlorine pesticides and PBDEs in farmed Scottish and European salmon. Concentrations of the selected persistent organic pollutants varied among the samples: PCBs (salmon, 145–460 ng/g lipid; salmon feeds, 76–1153 ng/g lipid; fish oils, 9–253 ng/g lipid), S DDTs (salmon, 5–250 ng/g lipid; salmon feeds, 34–52 ng/g lipid; fish oils, 11–218 ng/g lipid), and PBDEs (salmon, 1–85 ng/g lipid; salmon feeds, 8–24 ng/g lipid; fish oils, ND–13 ng/g lipid). Comparison of the samples for all groups of contaminants, except for HCHs, showed an increase in concentration in the order fish oil < feed < salmon. Homologue profiles were similar, with an increase in contribution of hepta- and octa-PCBs in the fish, and profiles of DDTs were similar in all three types of samples. With a constant contribution to the total PCB content, the ICES 7 PCBs appear to be reliable predictors of the PCB contamination profile through all the samples. For PBDEs, BDE 47 dominated the profiles, with no significant difference in the PBDE profiles for the three matrixes. Samples with higher PCB contents generally showed higher levels of the pesticide residues, but this was not the case with the PBDEs, indicating the existence of different pollution sources.