REPORT

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Interlaboratory Comparison on POPs in Food 2023

The twenty-fourth round of an international study

NIPH
Norwegian Institute of Public Health

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Contents

Summary

The 24th round of the Interlaboratory Comparison on POPs in Food was conducted in 2023 by the Norwegian Institute of Public Health (NIPH). The study included the determination of the 2,3,7,8-chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs), as well as dioxin-like non-ortho and mono-ortho chlorinated biphenyls (PCBs) in three different food items. Additionally, the participating laboratories could determine the concentrations of six indicator PCBs, polybrominated diphenyl ethers (PBDEs) and hexabromocyclododecanes (HBCDs) in the same food samples.

A fourth matrix was also accessible to the participants, designated for the determination of the following poly- and perfluoroalkyl substances (PFASs): perfluorooctanesulfonate (PFOS), perfluorohexanesulfonate (PFHxS), perfluorooctanoate (PFOA), perfluorononanoate (PFNA), perfluorodecanoate (PFDA) and perfluoroundecanoate (PFUnDA).

The objectives of this interlaboratory comparison study were

A. To offer a tool for quality assurance to the participating laboratories
B. To assess the between-laboratory reproducibility
C. To assess the readiness of expert laboratories worldwide to determine levels of chlorinated and brominated persistent organic pollutants, as well as for PFASs, in regular foodstuffs.

With respect to PCDDs/PCDFs, non-ortho PCBs, mono-ortho PCBs, indicator PCBs, PBDEs and α-HBCD, the 2023 round of this study was performed on unfortified homogenates of Reindeer, Herring and Fish oil. An unfortified homogenate of Fish was offered for the determination of PFASs.

If desired, the laboratories could also determine the concentrations of PCDDs/PCDFs, non-ortho PCBs, mono-ortho PCBs, indicator PCBs, PBDEs and α-HBCD in standard solutions from Cambridge Isotope Laboratories, provided by NIPH. The results for these Analytes are reported in Appendix 1.

The test materials were sent to 59 laboratories worldwide in March-April 2023 and results were returned from 58 of these.

A draft report was made available on our webpage www.fhi.no/ILC in December 2023 and the deadline for commenting on the published results was set to January10th, 2024.

This report presents the reported results for all seventeen 2,3,7,8-substituted PCDDs/PCDFs, the four non-ortho substituted PCBs #77, 81, 126 and 169 and the eight mono-ortho substituted PCBs #105, 114, 118, 123, 156, 157, 167, 189 in the three food items on a fresh weight and lipid weight basis.

The results of six indicator PCBs #28, 52, 101, 138, 153 and 180, eight PBDEs #28, 47, 99, 100, 153, 154, 183 and 209, and total HBCDs as well as the α-, β- and γ-isomers are also presented.

The results of PFOS, PFHxS, PFOA, PFNA, PFDA and PFUnDA in a sample of Fish are also included.

The consensus concentration (assigned value) for each analyte in the four food samples was determined as follows: For the seventeen 2,3,7,8-substituted PCDDs/PCDFs, the four non-ortho substituted PCBs and the eight mono-ortho substituted PCBs non-detected congeners

were assigned a concentration corresponding to the reported detection limits. The median of all reported concentrations for each analyte was then calculated. All values above twice the median were removed from the calculations. The consensus median and consensus mean as well as standard deviation (SD) were calculated from the remaining data and this second median was called consensus value.

For the PBDEs, the indicator PCBs and HBCDs the non-detects were removed from the data set. The median of all reported concentrations for each analyte was then calculated. All values above twice the median were removed from the calculation. The consensus median (consensus value) and consensus mean as well as standard deviation (SD) were calculated from the remaining data.

When calculating the results for PFASs in the sample of Fish, we adopted the same approach as we used for the indicator PCBs and PBDEs.

Toxic equivalents (TEQs) were calculated from the consensus medians of individual congeners using the toxic equivalency factors (TEFs) derived by WHO 2006 (from 2012: WHO2006TEQs as well as WHO1998TEQs, as opposed to only WHO1998TEQs in the reports published before 2012).

Z-scores for the PCDD/PCDF TEQs were calculated for each laboratory using ±20% of the consensus TEQs as a value for target standard deviation (σ=0.2), on both fresh weight and lipid weight basis. Further, Z-scores were calculated for the non-ortho PCB TEQ, the mono-ortho PCB TEQs, the total TEQ, the sum of six indicator PCBs, the sum of eight PBDEs, total HBCD and the three isomers of HBCD, and for each individual congener in all three matrices of Reindeer, Herring and Fish oil (σ=0.2, both on a fresh weight and a lipid weight basis). The z-scores for PFASs were calculated in the same way, but on fresh weight basis only.

The consensus values of the standard solutions were calculated as mentioned above except for the removal of all values exceeding ±50% of the median prior to the final calculations of the consensus median and mean.

The consensus values for the lipid contents were calculated by first excluding results deviating more than two SD from the mean of all values and then re-calculating the median, mean and SD.

The sample of Fish oil was the sample in this study with the highest total TEQ (5.6 pg TE/g fresh weight, WHO_{2006}TEFs). For this sample, Z-scores within ±1 were obtained by 90% of the participating laboratories and Z-scores within ±2 were achieved by 98% of the participants (Z scores within ±1 and ±2, corresponds to a trueness of ±20% and ±40%, respectively). The Fish oil sample was followed by the sample of Herring, with a consensus total TEQ of 1.4 pg TE/g fresh weight (WHO_{2006}TEFs). For this sample, 70% of the participants achieved Z-scores within ±1 and 90% achieved Z-scores within ±2. For the sample of Reindeer, total TEQ was 0.4 pg TE/g fresh weight (WHO_{2006}TEFs) and Z-scores within ±1 were obtained by 72% of the reporting participants and Z-scores within ±2 were achieved by 85% of the participants.

The relative standard deviation (RSD) calculated for the total TEQ after removal of outliers was 10% for the sample that had the highest levels of contaminants (Fish oil). For the less contaminated Reindeer and Herring samples, the corresponding RSD values were 10% and 13%. Considering the levels of contamination in the three food samples in this study, it may be concluded that the ability and performance of laboratories worldwide in determining dioxin-like compounds are generally good.

Across the three food samples, 34-42 laboratories reported results for the six indicator PCBs. The total consensus concentrations (median) on fresh weight basis for six indicator PCBs were 456 pg/g (16%) in Reindeer, 8650 pg/g (14%) in Herring and 34869 pg/g (12%) in Fish oil, with % of total RSDs given in parentheses.

For the three food samples, 16-23 laboratories reported concentrations for all seven of the tetra- to hepta-PBDEs and 14-18 laboratories reported concentrations for PBDE-209. The consensus concentrations of the sum of the PBDEs without PBDE-209 were on fresh weight basis 7.7 (19%), 511 (16%) and 2909 (7%) pg/g in Reindeer, Herring and Fish oil, respectively, with total RSDs given in parentheses. The consensus concentrations for PBDE-209 were 9.0 (n=14, RSD=96%), 8.9 (n=18, RSD=82%) and 9.7 (n=14, RSD=143%) pg/g fresh weight in Reindeer, Herring and Fish oil, respectively.

The consensus concentrations calculated for HBCDs are only indicative, as only a few laboratories reported results across the three food samples (n=5-6, including α-, β- and γ-HBCD).

Among the laboratories, 20-21 reported results for the different PFASs in the sample of Fish. The sample was known to be contaminated with PFOS. For PFOS (consensus concentration 12375 pg/g fresh weight), 71% of the laboratories obtained a Z-score ±2. For PFUnDA (consensus concentration 226 pg/g fresh weight), 65% of the laboratories obtained z-scores ±2, and for PFDA (consensus concentration 158 pg/g fresh weight), 60% of the participants obtained z-scores ±2. For PFNA (consensus concentration 59 pg/g fresh weight), 50% obtained z-scores ±2. The consensus values for PFHxS and PFOA are only indicative due to few reported results (many NDs).

Introduction

Maximum residue limits and official food control systems are established in many countries for the monitoring of levels of dioxins and dioxin-like PCBs in food and feed, both to map and to reduce human and animal exposure to these highly toxic pollutants. For the same reasons, the European Union introduced levels of legislation in 2014 for the indicator PCBs as well. New tolerable daily intakes (TDIs) for dioxins were introduced by EFSA in 2018 and for PFASs (more specifically; PFOS, PFOA, PFHxS and PFNA), tolerable weekly intakes (TWIs) were established in 2020. To meet these requirements, there is a large demand for chemical analytical laboratories with the skills and abilities to determine these contaminants at very low concentrations and in complex matrixes.

Additionally, it is usually required by the authorities that laboratories performing such measurements are accredited according to ISO standards and prove their competence by successful participation in interlaboratory studies.

This is the 24th round of the world-wide interlaboratory comparison study on dioxin-like compounds, eight PBDEs, six indicator PCBs and HBCD in food, organized by the Department of Food Safety at the Norwegian Institute of Public Health (NIPH), Oslo, Norway. From 2019, a food sample designated for the determination of six selected PFASs was also added.

The main objective of this exercise is to assess the between-laboratory reproducibility of dioxin-like compound analyses in foods and to provide a QA/QC instrument for each participating laboratory to contribute to its proficiency.

The exercise took place from March 2023, when the samples were shipped to the laboratories for analysis, until the reporting deadline 15th July, 2023, when the last reports with results were received. A draft report was made available to the participants on our webpage (http://www.fhi.no/ILC) in December 2023.

All participants from previous rounds in this series of Interlaboratory Comparisons on POPs in Food were invited to participate. In addition, several other laboratories announced their interest and were invited to participate. There was no limit to the total number of participating laboratories. The 58 laboratories that submitted results, and thereby contributed to the study results, are presented in Table 1.

Table 1. Participants that reported results in the 24th round of the Interlaboratory Comparison on POPs in Food 2023

Laboratory of SGS Bulgaria Ltd. Varna, Bulgaria	**ALS Czech Republic, s.r.o.** Pardubice, Czech Republic
ALS Environmental - Burlington Burlington, Ontario, Canada	**AsureQuality Limited** Wellington, New Zealand
Australian Ultra Trace Laboratory National Measurement Institute Sydney, NSW, Australia	**BC Food Laboratory, Regulatory Operations and Regions Branch/Health Canada** Burnaby, Canada
Bureau Veritas Canada (2019) Inc. Mississauga, Ontario, Canada	**Canadian Food Inspection Agency (CFIA)** Calgary, Alberta, Canada
CARSO-LSEHL Vénissieux, France	**Chemisches und Veterinäruntersuchungsamt (CVUA) Freiburg** Freiburg, Germany
China National Center for Food Safety Risk Assessment Beijing, P. R. China	**CSIR-National Institute for Interdisciplinary Science & Technology (CSIR-NIIST)** Thiruvananthapuam, India
CVUA MEL Münster, Germany	**Danish Veterinary and Food Administration** Ringsted, Denmark
Environmental Laboratory - IQS Barcelona, Spain	**Eurofins BioPharma Product Testing Hamburg GmbH** Hamburg, Germany
Eurofins GfA Lab Service GmbH Hamburg, Germany	**Eurofins Sun Dream Environmental Technology Corporation** Taichung City, Taiwan, R.O.C.
Institute of Marine Research Bergen, Norway	**Hubei Dioxin, Hubei Provincial Center for Disease Control and Prevention** Wuhan, P. R. China
Istitito Zooprofilattico Sperimentale Della Lombardia E Dell'Emilia Romagna "Bruno Ubertini" - Brescia (Izsler)/Laboratorio Contaminanti Ambientali Brescia, Italy	**Istituto Zooprofilattico Sperimentale Lombardia Emilia Romagna** Bologna, Italy
Japan Food Research Laboratories Tokyo, Japan	**Laboratoire de l'Environnement et de l'Alimentation de la Vendée** La Roche sur Yon, France
Laboratory of SGS Bulgaria Ltd. Varna, Bulgaria	**MicroPolluants Technologie SAS** Saint Julien Les Metz, France

NofaLab B.V. Schiedam, The Netherlands	**POP Lab, Shenzhen Center for Disease Control & Prevention** Shenzhen, Guangdong, P.R. China
Taiwan Agricultural Chemicals and Toxic Substances Research Institute, Council of Agriculture, Executive Yuan Taichung, Taiwan, R.O.C.	**Central Laboratory of Residue Analysis of Pesticides and Heavy Metals in Foods** Giza, Arabic Republic of Egypt (ARE)
Landesuntersuchungsamt, Institut für Lebensmittelchemie Speyer Speyer, Germany	**La Drome Laboratoire** Valence, France
Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit Oldenburg, Germany	**Marchwood Scientific Services** Southampton, England (UK)
National Cheng Kung University Tainan, Taiwan, R.O.C.	**Oekometric** Bayreuth, Germany
Pacific Rim Laboratories Inc. Surrey, BC, Canada	**Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences** Beijing, P.R. China
SGS Institut Fresenius GmbH Bayreuth, Germany	**SGS Institut Fresenius GmbH - Berlin** Berlin, Germany
SGS Analytics Germany GmbH Jena Jena, Germany	**SINTEF Industri** Trondheim, Norway
Super Micro Mass Research & Technology Center, Cheng Shiu University Niaosong District, Kaohsiung City, Taiwan, R.O.C.	**T.L.R. International Laboratories Rotterdam** Ridderkerk, The Netherlands
The State Laboratory - Ireland Celbridge, Ireland	**Finnish Institute for Health and Welfare** Kuopio, Finland
Wessling GmbH Altenberge, Germany	**Worthies Engineering Consultants Corp. Environmental & Ultra Trace Testing Lab** Taichung, Taiwan, R.O.C.
Government Laboratory **Hong Kong SAR Government Additives, Contaminants and Composition Section** Hong Kong, P.R. China	**National Research Center for Environmental Analysis and Measurements** Shanghai, P.R. China
Norwegian Institute for Air Research Kjeller, Norway	**Shanghai Academy of Agricultural Sciences** Shanghai, P.R. China

Shanghai Municipal Center for Disease Control and Prevention Shanghai, P.R. China	**Institute of Quality Standard & Testing Technology for Agro-Products, The Chinese Academy of Agricultural Sciences** Beijing, P.R. China
Shimadzu Techno-Research, Inc. Kyoto, Japan	**Umeå University, Department of Chemistry** Umeå, Sweden
Swiss Federal Institute for Materials Science and Research (Empa) Dübendorf, Switzerland	**Arkansas Laboratory (ARKL)** Jefferson, AR, USA

Design and practical implementation

Study design and reporting of results: PCDDs/PCDFs, non-ortho substituted PCBs, mono-ortho substituted PCBs, indicator PCBs, PBDEs and HBCDs

As in the previous rounds of this interlaboratory comparison study, the test material chosen represented naturally contaminated food items. The analytes to be determined were all seventeen 2,3,7,8-substituted PCDDs/PCDFs, the four non-ortho substituted PCBs #77, 81, 126 and 169 and the eight mono-ortho substituted PCBs #105, 114, 118, 123, 156, 157, 167 and 189. If desired, the laboratories could also determine eight PBDEs #28, 47, 99, 100, 153, 154, 183 and 209, six indicator PCBs #28, 52, 101, 138, 153 and 180, total HBCD and its three isomers (α-, β-, γ-HBCD). The six PCB congeners belong together with the mono-ortho PCB #118 to the selection of PCBs commonly referred to as ICES-7 (ICES-7: Report of the ICES Advisory Committee, 2010; Book 7).

The analysis should be performed using the laboratories' own methods for sample preparation and instrumental analysis, their own quantification standards and quantification procedures and their own method for lipid determination.

It was recommended that laboratories determined as many as possible of the 2,3,7,8-substituted PCDDs/PCDFs, dioxin-like PCBs, PBDEs, indicator PCBs and HBCD in the samples of Reindeer, Herring and Fish oil.

The laboratories were to report the concentration of each detected congener (e.g. S/N≥3) in the food items on fresh weight basis, as well as the limit of detection (LOD, e.g. S/N=3). Non-detected congeners (e.g. S/N<3) were to be marked "ND" in the comments' column of the Report forms. As the report was to include the determination of lipid percent in the food samples, the laboratories should also include the determined lipid percentage of the samples as well as sample amount used for the analysis.

In addition to the food samples, six standard solutions containing known concentrations of the analytes could be analysed, using the laboratories' own quantification standards and methods. The provided standard solutions consisted of the following components:

1) Seventeen 2,3,7,8-substituted PCDDs/PCDFs (2:5:10 pg/µl for tetra:penta-hexa-hepta:octa chlorinated dibenzo-p-dioxins/-dibenzo furans, respectively)
2) Four non-ortho PCBs (10 pg/µl)
3) Eight mono-ortho PCBs (100 pg/µl)
4) Eight PBDEs (100 pg/µl)
5) Six indicator PCBs (100 pg/µl)
6) α-HBCD (500 pg/µl)

The test materials consisted of homogenates of Reindeer, Herring and Fish oil. The laboratories could choose to analyse one, two or all three food samples.

Study design and reporting of results: PFASs

For the 24th round of the Norwegian POPs in Food study, we also offered a food sample for the determination of the following PFASs: PFOS, PFHxS, PFOA, PFNA, PFDA and PFUnDA.

The sample material consisted of Fish caught in an area well known to be contaminated by PFOS. As for the other matrices, the Fish sample was not fortified.

The laboratories' own methods for sample preparation and instrumental analysis, as well as their own quantification standards should be used for the analysis of the sample.

The laboratories were to report the concentration of each detected congener (e.g. S/N≥3) in the Fish on fresh weight basis as well as the limit of detection (LOD, e.g. S/N=3). Non-detected congeners (e.g. S/N<3) were to be marked "ND" in the comments' column of the Report forms.

Confidentiality

Each participating laboratory was given an exclusive laboratory code by the coordinators. In the present report, the participants are presented in the tables and figures by their unique codes. The participants have access to their own code only and laboratory codes were not revealed to any third parties.

When received by the coordinators, the raw data from the laboratories were entered into a database. A draft report was generated and made available to all participants on the web page www.fhi.no/ILC in December 2023.

Collection, preparation and distribution of samples

Samples shipped to the participants consisted of one to four of the following:

- Reindeer (~100 g)
- Herring (~100 g)
- Fish oil (~50 g)
- Fish (~25 g)

The test materials were produced from natural products and were not fortified with standards.

The Reindeer sample was bought from Finnmark Rein AS. The Herring sample was bought from a local store, and the herring was caught along the south coast of Norway/Skagerak. The Fish oil was a kind gift from Vedde AS, a Norwegian producer of Fish oil. The Fish sample was Perch from a lake in Sweden called Fysingen and given to us by the Department of Environmental Research and Monitoring at the Swedish Museum of Natural History. The perch was mixed with a fish material expected to have low levels of PFASs.

The Reindeer arrived as whole peaces of meat. The material was grinded, pooled, mixed and homogenized before distribution into sub-samples.

The Herring arrived as whole fish. The fish were fileted, then pooled and grinded, and finally homogenized thoroughly.

The Fish oil arrived as one big frozen sample from the same production batch. Upon arrival to the Norwegian Institute of Public Health, the oil was defrosted and homogenized by continious stirring, while it was heated gently.

The contaminated fish material arrived as whole, frozen Perch fish. The Perch was filleted before being mixed with commercial available non-toxic fish material, pooled and homogenized.

Sub-samples of at least 100 g of Reindeer (Reindeer-2023), 100 g of Herring (Herring-2023), 50 g of Fish oil (Fish oil-2023) and 25 g of Fish (Fish-2023) were placed into screw-cap polystyrene bottles. The bottles were all carefully washed, rinsed with methanol and dried before use. All samples were stored at –20°C until shipment to the participating laboratories.

Statistical analysis

As for previous rounds, this is the approach for the calculation of the consensus concentrations (assigned value) for each of the congeners included in the study:

For PCDDs/PCDFs and dioxin-like PCBs: Congener-by-congener medians were calculated from the food sample data of all reporting laboratories. The detection limits were used as concentration for non-detected congeners (upper bound concentration).

For PBDEs, indicator PCBs and HBCD: Non-detected congeners in the food samples were removed from the data set prior to consensus calculation. The same approach was used for the calculation of the PFASs.

Outliers for all congeners were defined as those values which exceeded twice the median of all values and thus removed from the data set.

The consensus values were defined as the median of the remaining data for each congener. The consensus mean and SD were calculated from this data set for each congener. The congener data that were removed prior to consensus calculations are marked accordingly in the tables presenting the individual results.

For the standard solutions, outliers were defined as those values outside ±50% of the median of all reported values and were removed from the data set before the median, mean and SD were calculated from the remaining data. The consensus of the lipid content was calculated as the mean after removal of values outside ±2 x SD.

TEQs were calculated from the consensus medians for PCDDs/PCDFs, non-ortho PCBs and mono-ortho PCBs, using the toxic equivalency factors derived by WHO in 1998 and 2006. As the detection limit was used for the concentration of non-detects, these TEQs represent upper bound concentrations.

Z-scores on both fresh weight and lipid weight basis for PCDD/PCDF TEQ, as well as for the non-ortho PCB TEQ, the mono-ortho PCB TEQ, the total TEQ (WHO_{2006}TEFs), the sum of six indicator PCBs, the sum of eight PBDEs, total HBCD and for each HBCD congener were calculated for each laboratory according to the following equation:

$$\mathbf{Z = (x - X)/\sigma}$$

Where x = reported value; X = consensus value (assigned value); σ = target value for standard deviation. A σ of 0.2 multiplied by the consensus value was used, i.e. Z-scores between +1 and -1 reflect a deviation of ±20% from the consensus value.

The final report and certificate

The draft of the final report was prepared by the coordinators and published electronically in December 2023.

The final report was available to the participants in pdf format at www.fhi.no/ILC.

A certificate of participation, stating the participant's laboratory code, will be sent to each participating laboratory that has contributed to the results by the end of March 2024.

Coordination

The study was initiated and carried out by the Department of Food Safety, Norwegian Institute of Public Health, Oslo, Norway. Members of the coordination committee were:

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Results

Presentations in the report

Fifty-eight laboratories worldwide submitted their results within the deadline and the results are presented in the following chapters. All participating laboratories will be able to compare their own performance, congener by congener, with the other laboratories. Since variations in performance are based on several factors, it is recommended that each laboratory carefully evaluate the factors that, favourably or unfavourably, may have contributed to its performance.

Readers of the report can without being participants in the study or without access to laboratory codes, get a general overview of the analytical performance of laboratories worldwide on the determination on dioxins, dioxin-like PCBs, indicator PCBs, PBDEs, HBCD and PFAS in regular foodstuffs.

In Appendix E, the consensus statistics are given on fresh and lipid weight basis for concentrations of individual congeners and TEQ values, a summary of TEQ values for each food item and the Z-score plots on both fresh and lipid weight basis, based on a target deviation of ±20% from the consensus TEQ_{2006}-values.

Individual results reported by the laboratories for each congener are given for Reindeer, Herring and Fish oil in Appendices 2, 3 and 4, respectively. The results for PFAS in the sample of Fish are presented in Appendix 5 and results of the lipid determinations are presented in Appendix 6.

Summarizing comments on results

PCDDs/PCDFs

Analyte solution-2023

Concentrations of PCDDs/PCDFs were reported by 46 laboratories. The mean RSD for the 17 congeners was 6.2% ranging from 4.6% for 2,3,4,6,7,8-HxCDF to 7.4% for both 1,2,3,4,7,8,9-HpCDF and 1,2,3,4,6,7,8,9-OCDF. The calculation of Z-scores for the TEQs (target 12.5 pg TEQ/µL based on TEF_{2006}-values) of the PCDD/PCDF standard solution showed that 100% of the laboratories were within the range of ±20% of the consensus value. This clearly demonstrates that the calibration solutions for PCDDs/PCDFs used by the laboratories generally are of high quality.

Reindeer-2023

For the sample of Reindeer, PCDD/PCDF results from 37-38 laboratories were received. From these results, the calculated consensus TEQ (PCDD/PCDF TEQ based on WHO_{2006}-TEFs) was 0.16 pg TE/g fresh weight and 1.6 pg TE/g lipid weight.

The mean RSD was 36%, ranging from 20% for 1,2,3,6,7,8-HxCDF to 71% for 1,2,3,7,8,9-HxCDF. Z-scores for the TEQs within ±1 were obtained by 61% of the laboratories and 87% of the laboratories had Z-scores within ±2 (fresh weight basis).

Herring-2023

PCDD/PCDF concentrations in the Herring sample were reported by 49 laboratories. The consensus TEQ was 0.68 pg TEQ/g fresh weight and 4.5 pg TEQ/g lipid weight (PCDD/PCDF TEQ based on WHO_{2006}TEFs). The mean RSD was 31% ranging from 19-56% (for 2,3,7,8-TCDF and 1,2,3,7,8,9-HxCDF, respectively). Z-scores were within ±1 for 78% of the laboratories and within ±2 for 88% of the laboratories (fresh weight basis).

Fish oil-2023

PCDD/PCDF concentrations in the sample of Fish oil were determined by 47 laboratories. The consensus TEQ for PCDD/PCDF based on WHO_{2006}TEFs was 2.2 pg TEQ/g both on fresh weight and lipid weight basis (PCDD/PCDF TEQ based on WHO_{2006}TEFs). The mean RSD was 32% ranging from 10% to 63% (2,3,7,8-TCDF and 1,2,3,4,7,8,9-HpCDF, respectively). Z-scores for PCDD/PCDF TEQ within ±1 were obtained by 94% of the laboratories and 100% had Z-scores within ±2 (fresh weight basis).

Dioxin-like PCBs

Analyte solution-2023

The 12 dioxin-like PCBs in the analyte solution were analysed and reported by 46 laboratories. The RSDs for the different congeners were ranging from 4.8% for PCB-118 to 8.9% for PCB-167, with a mean of 6.1%.

Reindeer-2023

Dioxin-like PCB concentrations in the sample of Reindeer were reported from 39 laboratories. The concentrations of the 12 congeners varied between 0.16 pg/g fresh weight (PCB-81) and 105 pg/g fresh weight (PCB-118). The mean RSD for concentrations of individual dioxin-like PCB congeners was 26%, ranging from 15% for PCB-126 to 40% for PCB-123.

The dioxin-like PCBs contributed 57% to the total TEQ (WHO TEF_{2006}) in the sample with PCB-126 as the main contributor (53%).

Herring-2023

Of the participating laboratories, 50 measured and reported dioxin-like PCB concentrations in the Herring sample. The concentrations ranged from 0.55 pg/g fresh weight for PCB-81 to 1089 pg/g fresh weight for PCB-118. The mean RSD for concentrations of individual dioxin-like PCB congeners on fresh weight basis was 21%, ranging from 12% for PCB-105 to 36% for PCB-123.

The dioxin-like PCBs contribute to about 52% of the total TEQ in the sample with PCB-126 as the main contributor (44%).

Fish oil-2023

Dioxin-like PCBs in Fish oil were reported by 48 laboratories. Levels were ranging from 1.9 pg/g fresh weigh for PCB-81 to 5627 pg/g fresh weight for PCB-118. The mean RSD for concentrations of individual dioxin-like PCB congeners on fresh weight basis was 20%, ranging from 16% for PCB-105 and PCB-156 to 28% for PCB-81.

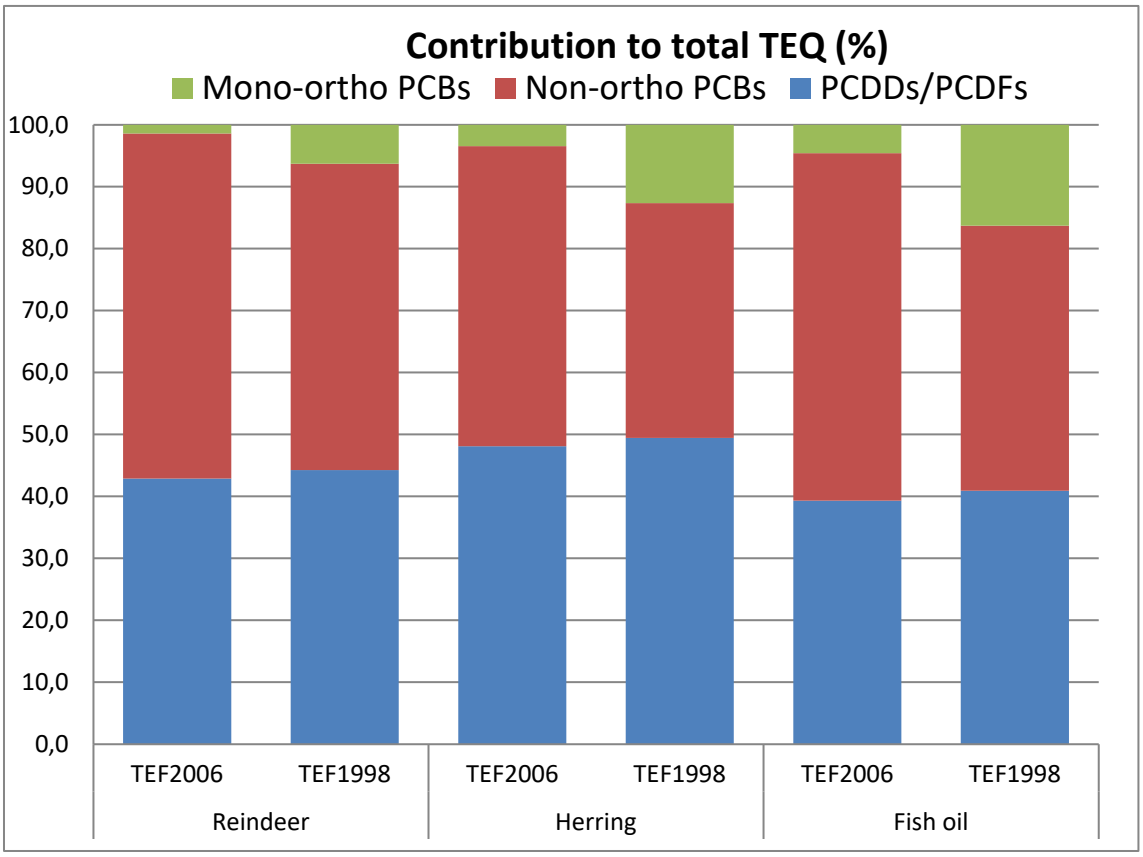
The contribution of the dioxin-like PCBs to the total TEQ was about 61% with PCB-126 as the main contributor (50% of total TEQ).

Total TEQ

The total TEQ for the sample of Reindeer was 0.37 pg TEQ/g fresh weight and 3.8 pg TEQ/g lipid weight (WHO TEF_{2006}). The total TEQ of the Herring sample was 1.4 pg TEQ/g fresh weight and 9.4 pg TEQ/g lipid weight, and the Fish oil contained 5.6 pg TEQ/g both on fresh weight basis and lipid weight basis.

In Figure 1, the percentage contribution to the TEQ values for the three groups of compounds is depicted based on WHO TEF_{2006} and WHO TEF_{1998}, respectively. For the selection of food items included in this study, the dioxin-like PCBs contributed from 52% to 61% to the total TEQ (using WHO TEF_{2006}), demonstrating the variation in contribution, and the importance of the PCBs for the determination of the total TEQs related to the toxic potency of food samples.

Figure 1. The percentage contribution of PCDDs/PCDFs, non-ortho PCBs and mono-ortho PCBs to the total TEQ calculated, using both the WHO_{2006} TEFs and WHO_{1998} TEFs, in the three food samples



Indicator PCBs

Analyte solution-2023

In all, 39 laboratories reported indicator PCBs in the analyte solution. The mean RSD was 8.8%, ranging from 5.9% to 10%.

Reindeer-2023

For the sample of Reindeer, results for indicator PCBs were received from 34 laboratories. The consensus concentrations varied between 34 pg/g fresh weight (PCB-28) and 180 pg/g fresh weight (PCB-153). The RSDs ranged from 28% to 36% for PCB-52 and PCB-28, respectively, with a mean of 30% for all indicator PCBs. The consensus median for the sum of indicator PCBs was 456 pg/g fresh weight.

Herring-2023

For the sample of Herring, 42 laboratories reported results for indicator PCBs. The consensus concentrations ranged from 304 pg/g fresh weight (PCB-28) to 3452 pg/g fresh weight (PCB-153) with a consensus median for the sum of indicator PCBs of 8650 pg/g fresh weight. The mean RSD was 28%, ranging from 23% for PCB-52 to 30% for PCB-138 and PCB-180.

Fish oil-2023

For the sample of Fish oil, results were obtained from 42 laboratories for indicator PCBs. The concentrations of indicator PCBs in Fish oil ranged from 1608 pg/g fresh weight (PCB-28) to 10885 pg/g (PCB-153) and the consensus median for the sum was 34869 pg/g fresh weight. The mean RSD was 28%, ranging from 26% to 34% for PCB-153 and PCB-28, respectively.

PBDEs

Analyte solution-2023

The tri- to hepta-PBDE standard solution was analysed by 22-23 laboratories and 17 laboratories reported values for PBDE-209. The RSDs were between 6.6% and 11% for all congeners, with a mean of 8.3% including PBDE-209.

Reindeer-2023

The PBDE concentrations in Reindeer were reported by 16-17 laboratories, except for PBDE-209, for which 14 results were received. The consensus concentrations were in the range of 0.14 pg/g fresh weight for PBDE-28 to 2.5 pg/g fresh weight for PBDE-47. The consensus concentration for PBDE-209 was 9.0 pg/g fresh weight. The sum of tri- to hepta-PBDEs was 7.7 pg/g fresh weight. The range of RSDs on fresh weight basis was 31% to 96%, with a mean of 55% including PBDE-209.

Herring-2023

Of the laboratories, 23-24 reported results for tri- to hepta-PBDEs in Herring and 18 reported results for PBDE-209. The consensus concentrations varied between 1.4 pg/g fresh weight (PBDE-183) and 287 pg/g fresh weight (PBDE-47). The concentration for PBDE-209 was 8.9 pg/g fresh weight. The sum of tri- to hepta-PBDEs was 511 pg/g fresh weight.

The RSD calculated from the concentrations on fresh weight ranged from 16% to 82%, with a mean of 34% for PBDEs including PBDE-209.

Fish oil-2023

Among the laboratories, 20-21 reported results for tri- to hepta-PBDEs in Fish oil and 14 reported results for PBDE-209. The concentrations (varied between 4.5 pg/g fresh weight (PBDE-183) and 1908 pg/g (PBDE-47). The concentration for PBDE-209 was 9.7 pg/g. The sum of tri- to hepta-PBDEs was 2909 pg/g fresh weight. The RSDs for the individual congeners were ranging from 9% to 143%, with a mean of 34% including PBDE-209.

HBCD

Also, in this round of the study, total HBCD and the isomers α-, β- and γ-HBCD could be determined and reported. A total of 5 laboratories reported α-HBCD in the standard solution and 5-6 laboratories reported one or more of the three isomers in the food samples. The consensus concentrations for the sum of individual HBCD isomers were 14 pg/g fresh weight for the sample of Reindeer, 148 pg/g fresh weight for the Herring sample and 1641 pg/g fresh weight for the Fish oil sample. Since only a few laboratories reported HBCD, these results must be regarded as indicative values only.

PFASs

A sample of Fish known to be contaminated with PFOS was offered to the participants for the determination of PFASs. The participating laboratories were asked to report their results for as many as possible of the following PFASs: PFOS, PFHxS, PFOA, PFNA, PFDA and PFUnDA. Results on PFAS were reported by 20-21 laboratories.

For the reported analyses of PFAS, we subsequently also asked for information from the laboratories on whether the reported concentrations were for linear PFASs, branched PFASs or the sum of both. However, the information we received were not sufficient to report the linear and branched PFASs separately in this report, and thus, the results are given as provided by the participating laboratories without separation into the two groups.

The consensus concentration of the sum of individual PFASs was 12854 pg/g fresh weight, with PFOS as the main contributor (12375 pg/g fresh weight, n=21). The concentrations of PFUnDA, PFDA and PFNA in the sample were 226, 158 and 59 pg/g fresh weight, respectively. The consensus values for PFHxS and PFOA (20 and 16 pg/g fresh weight, respectively) are only indicative due to many reported non-detects.

Lipid content

The mean lipid % and % RSDs (in parentheses) for the lipid contents of the food samples were calculated to be 9.6% (15%) for the sample of Reindeer, 15% (11%) for the Herring sample and 100% (0.38%) for the sample of Fish oil.

Acknowledgements

The laboratories are acknowledged for their participation in this interlaboratory comparison and in their interest in its overall objectives, thereby making it clear that they value good analytical performance. All the individual analysts are acknowledged for their contributions to the results.

We thank Suzanne Faxnel at the Swedish Museum of Natural History for the contaminated Perch used in the Fish sample, Vedde AS for the kind gift of Fish oil and Cambridge Isotope Laboratories, Inc. for providing the standard solutions for this interlaboratory study.

Appendix A:

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Appendix B:

Study announcement and instructions for participants

NIPH
Norwegian Institute of Public Health

February 2023

Announcement for Interlaboratory Comparison on POPs in Food 2023

Introduction

We hereby announce the 24th round of the Interlaboratory Comparison on the Determination of POPs in Food ("The Norwegian POPs in Food-study"). The study is open for academic, regulatory as well as commercial laboratories world-wide. The organizer of this study is Department of Food Safety at the Norwegian Institute of Public Health, Oslo, Norway. The study is scheduled to take place from March to June 2023.
A draft report will be available by September 2023, and the final report will be available to the participants by December 2023. All participants who have contributed to the results will receive a certificate of participation in the study.

Objectives

One of the main objectives of this exercise is to assess the interlaboratory consistency in results from analyses of dioxins, PCBs, PBDEs, HBCDs and PFAS in regular food items known to contribute to the intake in the general population. Further, the world-wide readiness and capacity in analysing halogenated persistent organic pollutants in food will be demonstrated. The study also serves as a tool of quality assurance for the participating laboratories.

Participants

We encourage all laboratories working in this field to participate and assess their analytical performance. To do this, participants are requested to completely fill out the Registration Form and mark the desired sample types and what analyte solutions they intend to determine.

Analytical requirements

In this interlaboratory comparison, all the seventeen 2, 3, 7, 8-substituted PCDDs and PCDFs, the four non-ortho PCBs, CB-77, 81, 126 and 169 as well as the eight mono-ortho PCBs, PCB-105, 114, 118, 123, 156, 157, 167, and 189 will be assessed.
In addition, the participants are invited to determine six marker PCBs, eight PBDEs and HBCDs. The concentration of the following congeners can be reported: PCB-28, 52, 101, 138, 153 and 180 and PBDE-28, 47, 99, 100, 153, 154, 183 and 209.
The concentration of α-HBCD, β-HBCD and γ-HBCD as well as the total of these isomers will also be assessed.

For the matrix intended for the determination of PFASs, the participants are asked to report one or more of the following components: Perfluorooctanesulfonate (PFOS), perfluorohexanesulfonate (PFHxS), perfluorooctanoate (PFOA), perfluorononanoate (PFNA), perfluorodecanoate (PFDA) and perfluoroundecanoate (PFUnDA).

The test materials for the lipophilic POPs consist of three fresh food homogenates. You can choose to analyse one, two or all three of the food items. We encourage you to determine as many analytes as possible. You are further requested to determine and report the lipid content of the foods, except for the sample for PFAS.

We also include standard solutions of all analytes, except PFAS, that should be analysed as solutions of known concentration, which may be used to check your own calibration solutions.

Test material
The test materials consist of three unfortified natural food product homogenates:

- Reindeer (labelled "Reindeer-2023") ~100 g
- Herring (labelled "Herring-2023") ~100 g
- Fish oil (labelled "Fish oil-2023") ~50 g

- Fish (PFASs only) (labelled "Fish-2023")

The samples will be distributed by an international courier service to the participating laboratories.

Please note:
In order to avoid delay or retention of the samples at customs, please inform us if there are import restrictions in your country for any of the samples.

Instructions for analysis and reporting

In short, the participating laboratories should:
- use their own standard operation procedures for extraction, clean-up and instrumental determination
- use their own reference standards for identification and quantification
- report one single concentration for each analyte in each food matrix determined on fresh weight basis
- report limits of detection for all measured analytes in each food item
- report the lipid content

Further detailed instructions and reporting forms will be sent by e-mail simultaneously with the dispatch of the samples in April.

Time schedule

Announcement	**February 2023**
Return of registration form	**March 15th, 2023**
Shipment of test material	**From April 01th, 2023**
Confirmation of receipt of test material by participant	**Within 7 days after receivement**
Reporting of test results	**June 30th, 2023**
Publication of draft report on website	**September 2023**
Final report available to all participants	**December 2023**

Participation fee
All laboratories that have received the test materials will receive a corresponding invoice in Norwegian kroner (NOK). The participation fee for any combination of the analytes in one food item is 13 700 NOK, in two food items 14 700 NOK, 15 700 NOK for three food items and for the complete set of all four food items 16 700 NOK.

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NIPH
Norwegian Institute of Public Health

Interlaboratory Comparison on Dioxins in Food 2023

Instructions for participants

March 2023

1. Introduction

This is the 24th Round of the Interlaboratory Comparison Study on the Determination of POPs in Food organised by the Section for Food Safety, Norwegian Institute of Public Health, Oslo, Norway.

The objective of this exercise is to assess the interlaboratory comparability of the results from analyses of all dioxins and dioxin-like PCBs included in the WHO-TEF schemes in regular foods. Participants may also determine and report concentrations of six marker PCBs, eight polybrominated diphenylethers (PBDEs) and hexabromocyclododecane (HBCD). The exercise serves as a quality assurance instrument for the participating laboratories. A further purpose is to assess the world-wide readiness and capacity for the determination of dioxin-like compounds, marker PCBs, PBDEs and HBCD in food. Instructions for the analysis and submission of results are given below.

Additionally, we also offer a sample of perch for the determination of PFAS.

Please read these instructions carefully before starting the experimental work.

The participating laboratories will contribute to the interlaboratory comparability in the analytical performance for determination of

- dioxins and furans: all seventeen 2,3,7,8-substituted PCDDs and PCDFs
- non-ortho PCBs: CB-77, 81, 126 and 169
- mono-ortho PCBs: CB-105, 114, 118, 123, 156, 157, 167 and 189
- indicator PCBs: CB-28, 52, 101, 138, 153 and 180
- PBDEs: BDE-28, 47, 99, 100, 153, 154, 183 and 209
- HBCD α-HBCD, β-HBCD, γ-HBCD and total HBCD

in the following samples:

- Reindeer (Reindeer-2023)
- Herring (Herring-2023)
- Fish oil (Fish oil-2023)

The mentioned analytes can also be determined in the respective six standard solutions. For HBCD, concentrations of α-HBCD, β-HBCD and γ-HBCD as well as the total of these isomers will be assessed.

The participants also are given the opportunity to determine

- perfluorooctanesulfonate (PFOS)
- perfluorohexanesulfonate (PFHxS)
- perfluorooctanoate (PFOA)
- perfluorononanoate (PFNA)
- perfluorodecanoate (PFDA)
- perfluoroundecanoate (PFUnDA).

in the following sample:
- Fish (Fish-2023)

2. Participants

A list of participants is attached. 56 laboratories have so far announced their participation in the study.

3. Design of the study

3.1 Test materials

Samples
One standard solution of each:
- EDF-5008-50 with PCDDs/PCDFs at concentrations 2:5:10 pg/µl for tetra:penta-hexa-hepta:octa chlorinated dibenzo-p-dioxins/-dibenzo furans respectively
- EC-4986/1000 with non-ortho PCBs at concentration 10 pg/µl
- EC-4987/100 with mono-ortho PCBs at concentration 100 pg/µl
- EC-5179/50 with marker PCBs at concentration 100 pg/µl
- EO-5103/100 with PBDEs at concentration 25 pg/µl, except BDE-209 at 100 pg/µl
- ULM-4834-S/100 with α-HBCD at a concentration 500 pg/µl

One sample of each
- approx. 100 g of Reindeer
- approx. 100 g Herring
- approx. 50 g fish oil
- approx. 25 g fish (PFAS only)

We do not provide any standard solution for the determination of PFAS.

Fortification
The samples are prepared from regular market foods. There is no fortification or spiking of the target analytes in the food samples.

Shipment
The samples are fresh frozen food homogenates. They are distributed by international courier and should reach the receiving laboratory in good condition within a few days.

3.2 Coding

Coding of laboratories
Upon arrival of the samples in the participant's laboratory, the Microsoft excel file named "Participant confirmation", shall be filled in and returned to the coordinators by e-mail. The code of the laboratory will then be given by the co-ordinators. The laboratory codes will not be revealed to the other participants or to any third parties.

Coding of samples

Reindeer	Reindeer-2023
Halibut	Herring-2023
Fish oil	Fish oil-2023
Fish (PFAS only)	Fish-2023

The above sample coding is marked on the sample bottles.

3.3 Analytical procedure

Storage of the samples
The samples are fresh, frozen homogenates of natural food items. They are shipped frozen and should be stored frozen until they are analysed.

Methods to be used
Laboratories shall use
- their own methods for sample preparation and instrumental analysis
- their own internal- and quantification standards
- their own lipid determination procedure

Standard solutions
The standard solutions should be analysed using the laboratory's own quantification standards and methods and the results shall be reported.

General
Beware of the high risk of background contamination and positive blank values when analysing food samples with levels of dioxins, PCBs, PBDEs and HBCD in the low ppt range.

Use sample size according to expected levels of dioxins for the determinations in order to achieve a detection level that leaves as few as possible analytes as non-detected. The sample amount dispatched is not meant for replicate analyses.

The samples might become inhomogeneous during freezing and transport. Re-homogenise all received material of each food item before any portion is taken out for analysis.

An estimate of the lipid content in the samples follows below:

- Reindeer: 2-5 %
- Herring: 10-15 %
- Fish oil: 95-99 %

4. Reporting

4.1 Results to be reported

Laboratories are recommended to report as many as possible of the congeners mentioned in chapter 1.

The reports **should** include the determined lipid percent for the samples, with the exception of the fish-sample designated for the analysis of PFAS.

The analytical report must include concentrations for all the congeners in all the samples on fresh weight basis, see Report forms B, C, D for PCDD/PCDF and dioxin-like PCBs and Report form 2, 3, 4 for marker PCBs, PBDEs and HBCD, and the Report Form "PFAS-2022" for PFASs.

Laboratories must report concentration on fresh weight basis for each congener which is detected (S/N ≥3), **as well as** the limit of determination (LOD, S/N =3) for each sample. Non-detected congeners (S/N <3) must be marked ND in the Comments column of the Report form. **Please note that the LOD will be used as concentration of non-detected congeners.**

For the reporting of PFAS: The results should be reported as the anion, not the salt! Also, be aware that PFAS should be reported as pg/g, not ng/g!

4.2 Checklist

Please use the attached checklist before returning the Report forms with your results.

4.3 Submitting results

Four Microsoft Excel files are provided to each participant comprising:

Participants confirmation
- Confirmation of receiving test materials

Report form dioxins and dioxinlike PCBs
- analytical data, Report forms A, B, C and D

Report form marker PCBs, PBDEs and HBCD
- analytical data, Report forms 1, 2, 3 and 4

Report form for PFASs

Participants are requested to submit their reports electronically to avoid possible transcription errors.

Please, do not alter rows or columns in the original Report forms!

The electronic report shall be sent to dioxin@fhi.no within the deadline.

Deadline

The reports must be in our hands no later than June 30th, 2023 to enable us to prepare the draft report to be published by the end of September 2023. There will normally be no extension of this deadline. A confirmation for the receipt of your results will be sent to you by e-mail within a week.

5. Statistical evaluations

Prior to the final report, a draft version will be prepared based on the data reported by the end of September 2023. The co-ordinators will calculate mean, median and between-laboratory standard deviations for each congener. Outliers will be removed, and consensus values will be calculated. In case of extreme deviation from normal distribution, appropriate procedures will be used to get the best estimate of the true value as possible. For the dioxin-like compounds, TEQ values will be calculated for each laboratory and a consensus TEQ value based on the consensus of the congeners. Z-scores will be calculated for laboratories' results for all congeners, and for PCDD/PCDF TEQs and PCB TEQs as well.

6. Final report

The final report will be prepared by the co-ordinators and published in December 2023 and will then be made available for all interested parties in an electronic version on http://www.fhi.no.
All participants will be presented by their laboratory code. Prior to this, a draft will be published on the Internet by the end of October.
Certificates of participation in the study will be given to all laboratories submitting results.

7. Fee

To all laboratories that have received the materials, an invoice will be sent. The participation fee for any combination of the 29 dioxin-like congeners, six marker PCBs, 8 PBDEs, HBCD and PFAS is

- NOK 13 700 for one food item
- NOK 14 700 for two food items
- NOK 15 700 for three food items.
- NOK 16 700 for four food items

Up to six standard solutions will be distributed free of charge to all participants, dependent on which analytes the participating laboratories intend to determine.

Invoices will be sent out after we have received the Participant confirmation from the participants.

8. Time schedule

Announcement	**February 2023**
Return of registration form	**March 15th, 2023**
Shipment of test material	**From April 01th, 2023**
Confirmation of receipt of test material by participant	**Within 7 days after receivement**
Reporting of test results	**June 30th, 2023**
Publication of draft report on web-site	**September 2023**
Final report available to all participants	**December 2023**

Please make sure that your results are reported in time as there normally will be no extension of the deadline.

NIPH
Norwegian Institute of Public Health

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Checklist

In order to avoid possible misunderstandings and errors when reporting your results, we here give a list of possible pitfalls. Please, check this list and your Report forms before reporting your results.

- ☐ Are the results for each congener filled out in the correct order? Be especially aware of 2,3,4,6,7,8- and 1,2,3,7,8,9-HxCDF, and PCB 81.
- ☐ Are all congener results reported in **pg/µl** for standards and **pg/g** for samples?
- ☐ Did you remember to report the lipid percent of the samples?
- ☐ Are the results of the samples reported on a *fresh weight basis*?
- ☐ Are both concentration and LOD reported for each congener?

☐ Are sample amount and measured lipid content filled in?

☐ Are not detected congeners marked with ND in the Comments column?

Appendix C:

WHO TEFs for human risk assessment

WHO TEFs for human risk assessment based on the conclusions of the World Health Organisation Meeting in Stockholm, Sweden, 15-18 June 1997 and International Programme on Chemical Safety expert meeting in Geneva, June 2005 *(M. van den Berg et al., Environ Health Perspect 1998;106:775-792; M. van den Berg et al., Toxicological sciences 93(2), 223-241 (2006))*

Congener	**WHO 1998 TEF**	**WHO 2005 TEF**
chlorinated dibenzo-p-dioxiner		
2,3,7,8-TCDD	1	1
1,2,3,7,8-PeCDD	1	1
1,2,3,4,7,8-HxCDD	0.1	0.1
1,2,3,6,7,8-HxCDD	0.1	0.1
1,2,3,7,8,9-HxCDD	0.1	0.1
1,2,3,4,6,7,8-HpCDD	0.01	0.01
OCDD	0.0001	0.0003
Chlorinated dibenzofuraner		
2,3,7,8-TCDF	0.1	0.1
1,2,3,7,8-PeCDF	0.05	0.03
2,3,4,7,8-PeCDF	0.5	0.3
1,2,3,4,7,8-HxCDF	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01
OCDF	0.0001	0.0003
non-orhto substituted PCBs		
PCB 77	0.0001	0.0001
PCB 81	0.0001	0.0003
PCB 126	0.1	0.1
PCB 169	0.01	0.03
mono-ortho substituted PCBs		
PCB 105	0.0001	0.00003
PCB 114	0.0005	0.00003
PCB 118	0.0001	0.00003
PCB 123	0.0001	0.00003
PCB 156	0.0005	0.00003
PCB 157	0.0005	0.00003
PCB 167	0.00001	0.00003
PCB 189	0.0001	0.00003

Abbreviations used:

T = tetra; Pe = penta; Hx = hexa; Hp = hepta; O = octa;

CDD = chlorodibenzo-p-dioxin; CDF= chlorodibenzofuran; CB= chlorobiphenyl.

Appendix D:

Homogeneity testing

Homogeneity testing of test materials for "Interlaboratory Comparison on Dioxins in Food" organised by the Norwegian Institute of Public Health

Introduction

The International Harmonized Protocol for the Proficiency Testing of Analytical Chemistry Laboratories (Pure Appl Chem 2006;78:145-96) states that "The bulk material prepared for the proficiency test must be sufficient homogeneous and stable, in respect of each analyte, to ensure that all laboratories receive distribution units that do not differ to any consequential degree in mean analyte concentration. The scheme provider must clearly state the procedure used to establish the homogeneity of the test material".

The protocol requires that the variation in composition among the distributed units is negligible in relation to variation introduced by the measurements conducted by the participants of the proficiency test (PT). The estimated variation between the samples (s_{sam}) should be less than 30 % of the target standard deviation (σ_p), i.e., $s_{sam} < 0.3\ \sigma_p$.

Further the protocol states that homogeneity testing is required to reassure the participants in proficiency testing schemes that the distributed units of the test material are sufficiently similar. The test specified calls for the selection of ten or more units at random after the putative homogenized material has been split and packaged into discrete samples for distribution. The material from each sample is then analyzed in duplicate, under randomized repeatability conditions (that is, all in one run) using a method with sufficient analytical precision. The value of σ_{sam} is then estimated from the mean squares after one-way analysis of variance (ANOVA).

The quality of the analytical method used for homogenity testing has a large impact on the results. If the analytical precision (σ_{an}) of the homogeneity test is not small, important sampling variation may be obscured by analytical variation. We may get a non-significant result when testing for heterogeneity, not because it is not present, but the test has no power to detect it. It is recommended that the analytical (repeatability) precision of the method used in the
homogeneity test should satisfy $\sigma_{an} < 0.5\ \sigma_p$

Consequences for the Interlaboratory Comparison on Dioxins in Food

Below follows the consequences for the Interlaboratory Comparison on Dioxin in Food;

1.
The protocol recommends duplicate analysis of at least 10 distribution units. Due to limited amount of test material in each distribution unit and the requirement for sufficiently low analytical standard deviation, the test analysis has to be restricted to PCB, e.g., 6 indicator PCB or CB-153. It is, however, questionable whether analysis of indicator PCB also reflects the distribution of dioxins and other contaminants in the sample, as the test material is often prepared by mixing specifically contaminated material with background contaminated material in order to achieve a sufficient contamination level. Therefore, the distribution of PCBs in the sample might not be relevant for the distribution of dioxins in the sample.
The analytical precision of the method used in the homogeneity test should be less than half of the target standard deviation, i.e., $\sigma_{an} < 0.5\ \sigma_p$. For determination of dioxins, the target standard deviation may be approximated by the requirement for trueness (Commission Regulation (EC) No 1883/2006) of ± 20 % for total TEQ, i.e., the analytical precision should be less than 10 %. This is unrealistic to achieve for the determination of dioxins.

2.
The homogeneity testing using, e.g., the determination of indicator PCBs, requires the analysis of at least 60 samples prior to shipment of the distribution units to the participants. This causes problems for the time schedule of the sample preparation and involves high costs.

3.
The laboratory conducting the homogeneity test on PT analytes would have access to the test material and knowledge of contamination levels prior to the start of the PT and would therefore not be qualified for participation in the PT.

Conclusion
A valid testing of homogeneity of the test materials of the Interlaboratory Comparison (ILC) on Dioxins in Food with respect to the distribution of dioxins and dioxin-like PCBs is not guaranteed using indicator PCBs. It is doubtful that the analytical precision is small enough to detect a lack in sufficient homogeneity. Given the need for annually testing three different matrices for homogeneity, alternative, rapid and low cost homogeneity tests using surrogate should be applied.

Present approach for homogeneity testing for the ILC on Dioxins in Food
The Harmonized Protocol states under Chapter Testing for sufficient homogeneity: "Tests for sufficient homogeneity are in practice never wholly satisfactory… However, given that sufficient homogeneity is a reasonable prior assumption (because proficiency testing scheme providers do their best to ensure it), and that the cost [and time-consumption] of testing for it is often high, it is sensible to make the main emphasis the avoidance of "Type 1 errors" (that is, false rejection of a satisfactory material).

Having this in mind and the facts that it is impossible to determine all analytes for homogeneity testing of food test material and that a single indicator analyte not necessarily reflects the distribution of the other analytes, we have developed an approach that ensures that the test material is thoroughly blended and evenly distributed among the individual test bottles. The homogeneity testing of solid samples is based on the principle of measuring electrolytic conductivity after addition of sodium chloride to a small portion of the coarsely blended test material. A demonstration of homogeneous distribution of the added salt in the sub samples would indicate our ability to evenly blend the food matrix, i.e., with this approach we ensure the efficiency of our blending procedure. This is especially of importance when blending highly contaminated food matrices with background contaminated food matrices.

When testing homogeneity of the food samples, sodium chloride was added to about 10% of the test material in such an amount that the conductivity was about doubled compared to the natural conductivity. This sub-sample was added to the total sample. For example, to 1 kg of homogenised chicken meat, 150 g NaCl were added resulting in an addition of 1 % NaCl to the final test material of 15 kg. Conductivity measurements are performed as follows: boiling water is added to 10.0 g of the test material, and the resulting dispersion is ultrasonicated. After centrifugation, the extract is filtered through folded paper filters and allowed to cool to room temperature. The electrolytic conductivity of the water extract is measured using a conductivity meter.

Homogeneity of the test material was demonstrated by comparing the conductivity in water extracts of 10 samples from the same bottle (variation within bottles), and in extracts from 10 different bottles (variation between bottles).

Example

As an example, the relative standard deviation (RSD) of 10 conductivity measurements within a sample bottle containing chicken meat homogenate was 2 %. The RSD for the measurement of samples from 10 different, randomly selected bottles was 3 %. The contribution of the inhomogeneity to the total variation, calculated from $RSD^2_{inhomogeneity} = RSD^2_{between} - RSD^2_{within}$[1] was 2.2 % and hence small and acceptable. The total uncertainty for the determination of PCDD/Fs is usually considerably larger, so the measured contribution of inhomogeneity to the total uncertainty can be neglected

[1] G. Becher, L.S. Haug, C. Thomsen, World-wide comparison on the quality of analytical determinations of PCDDs/PCDFs and dioxin-like PCBs in food, Talanta 63 (2004) 1115-1122.

Appendix E:

Summary results

Consensus of congener concentrations
Consensus of TEQ values
Consensus statistics
Laboratories´ reported TEQs
Laboratories´ Z-scores
Z-score plots

Consensus of congener concentrations

	Reindeer		Herring		Fish oil	
	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.
2,3,7,8-TCDD	0,019	0,19	0,066	0,44	0,14	0,14
1,2,3,7,8-PeCDD	0,074	0,76	0,18	1,2	0,44	0,44
1,2,3,4,7,8-HxCDD	0,087	0,89	0,032	0,21	0,080	0,080
1,2,3,6,7,8-HxCDD	0,092	0,94	0,12	0,79	0,35	0,35
1,2,3,7,8,9-HxCDD	0,012	0,12	0,028	0,19	0,090	0,090
1,2,3,4,6,7,8-HpCDD	0,10	1,0	0,066	0,44	0,17	0,17
1,2,3,4,6,7,8,9-OCDD	0,28	2,9	0,065	0,43	0,14	0,14
2,3,7,8-TCDF	0,023	0,24	1,5	10	6,2	6,2
1,2,3,7,8-PeCDF	0,010	0,10	0,23	1,5	0,84	0,84
2,3,4,7,8-PeCDF	0,095	1,0	0,78	5,1	2,8	2,8
1,2,3,4,7,8-HxCDF	0,064	0,66	0,070	0,46	0,21	0,21
1,2,3,6,7,8-HxCDF	0,047	0,48	0,071	0,47	0,29	0,29
2,3,4,6,7,8-HxCDF	0,024	0,25	0,092	0,61	0,32	0,32
1,2,3,7,8,9-HxCDF	0,0034	0,035	0,0072	0,047	0,044	0,044
1,2,3,4,6,7,8-HpCDF	0,028	0,29	0,045	0,30	0,12	0,12
1,2,3,4,7,8,9-HpCDF	0,0049	0,051	0,0076	0,051	0,028	0,028
1,2,3,4,6,7,8,9-OCDF	0,011	0,11	0,013	0,086	0,048	0,048
PCB-77	0,93	10	20	133	56	56
PCB-126	1,9	20	6,2	41	28	28
PCB-169	0,36	3,8	2,1	14	12	12
PCB-81	0,16	1,7	0,55	3,6	1,9	1,9
PCB-105	41	418	312	2067	1877	1877
PCB-114	2,7	28	14	91	113	113
PCB-118	105	1081	1089	7220	5627	5627
PCB-123	0,78	8,0	11	74	65	65
PCB-156	14	146	99	660	435	435
PCB-157	3,7	39	31	205	137	137
PCB-167	5,2	53	68	452	261	261
PCB-189	1,4	14	10	69	38	38

fw. - fresh weight

lw. - lipid weight

Consensus of congener concentrations

	Reindeer		Herring		Fish oil	
	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.
PCB- 28	34	351	304	2013	1608	1608
PCB- 52	43	447	639	4237	4785	4785
PCB- 101	65	670	1604	10638	7034	7034
PCB- 138	81	834	2210	14655	8095	8095
PCB- 153	180	1854	3452	22891	10885	10885
PCB- 180	53	543	441	2924	2462	2462
PBDE- 28	0,14	1,4	20	129	129	129
PBDE- 47	2,5	26	287	1906	1908	1908
PBDE- 99	1,9	19	54	357	113	113
PBDE- 100	0,62	6,4	94	620	417	417
PBDE- 153	1,8	19	10	67	33	33
PBDE- 154	0,31	3,2	45	299	304	304
PBDE- 183	0,45	4,6	1,4	9,1	4,5	4,5
PBDE- 209	9,0	92	8,9	59,0	10	10
α-HBCD*	12	119	142	941	1593	1593
β-HBCD*	8	87	**	**	32,7	32,7
γ-HBCD*	13	134	14	93	47	47
Tot HBCD*	14	147	148	982	1641	1641
Sum PCB	456	4699	8650	57359	34869	34869
Sum BDE without 209	7,7	80	511	3387	2909	2909
Sum BDE	17	172	520	3446	2918	2918

fw. - fresh weight

lw. - lipid weight

* : Indicative value due to few reported values

**Unable to calculate consensus value due to few submitted results

Fish 2023: PFAS, consensus values

	Fish pg/g fw.
PFOS	12375
PFHxS *	20
PFOA*	16
PFNA	59
PFDA	158
PFUnDA	226
Sum PFAS	12854

fw. - fresh weight

*: Indicative value due to few reported values

Consensus of TEQs

TEF_{2006}

	Reindeer		Herring		Fish oil	
	pg TE/g fw.	pg TE/g lw.	pg TE/g fw.	pg TE/g lw.	pg TE/g fw.	pg TE/g lw.
2,3,7,8-TCDD	0,019	0,19	0,066	0,44	0,14	0,14
1,2,3,7,8-PeCDD	0,074	0,76	0,18	1,2	0,44	0,44
1,2,3,4,7,8-HxCDD	0,0087	0,089	0,0032	0,021	0,0080	0,0080
1,2,3,6,7,8-HxCDD	0,0092	0,094	0,012	0,079	0,035	0,035
1,2,3,7,8,9-HxCDD	0,0012	0,012	0,0028	0,019	0,0090	0,0090
1,2,3,4,6,7,8-HpCDD	0,0010	0,010	0,00066	0,0044	0,0017	0,0017
1,2,3,4,6,7,8,9-OCDD	0,000084	0,00087	0,000020	0,00013	0,000043	0,000043
2,3,7,8-TCDF	0,0023	0,024	0,15	1,0	0,62	0,62
1,2,3,7,8-PeCDF	0,00029	0,0029	0,0070	0,046	0,025	0,025
2,3,4,7,8-PeCDF	0,028	0,29	0,23	1,5	0,84	0,84
1,2,3,4,7,8-HxCDF	0,0064	0,066	0,0070	0,046	0,021	0,021
1,2,3,6,7,8-HxCDF	0,0047	0,048	0,0071	0,047	0,029	0,029
2,3,4,6,7,8-HxCDF	0,0024	0,025	0,0092	0,061	0,032	0,032
1,2,3,7,8,9-HxCDF	0,00034	0,0035	0,00072	0,0047	0,0044	0,0044
1,2,3,4,6,7,8-HpCDF	0,00028	0,0029	0,00045	0,0030	0,0012	0,0012
1,2,3,4,7,8,9-HpCDF	0,000049	0,00051	0,000076	0,00051	0,00028	0,00028
1,2,3,4,6,7,8,9-OCDF	0,0000032	0,000033	0,0000039	0,000026	0,000014	0,000014
PCB-77	0,000093	0,0010	0,0020	0,013	0,0056	0,0056
PCB-126	0,19	2,0	0,62	4,1	2,8	2,8
PCB-169	0,011	0,11	0,062	0,41	0,36	0,36
PCB-81	0,000048	0,00050	0,00016	0,0011	0,00056	0,00056
PCB-105	0,0012	0,013	0,0094	0,062	0,056	0,056
PCB-114	0,000082	0,00084	0,00041	0,0027	0,0034	0,0034
PCB-118	0,0032	0,032	0,033	0,22	0,17	0,17
PCB-123	0,000023	0,00024	0,00033	0,0022	0,0020	0,0020
PCB-156	0,00043	0,0044	0,0030	0,020	0,013	0,013
PCB-157	0,00011	0,0012	0,00093	0,0061	0,0041	0,0041
PCB-167	0,00016	0,0016	0,0020	0,014	0,0078	0,0078
PCB-189	0,000041	0,00043	0,00031	0,0021	0,0011	0,0011
PCDDs/PCDFs	0,16	1,6	0,68	4,5	2,2	2,2
Non-ortho PCBs	0,21	2,1	0,69	4,5	3,1	3,1
Mono-ortho PCBs	0,0052	0,054	0,049	0,33	0,26	0,26
Total TEQ	0,37	3,8	1,4	9,4	5,6	5,6

fw. - fresh weight

lw. - lipid weight

Consensus of TEQs

TEF_{1998}

	Reindeer		Herring		Fish oil	
	pg TE/g fw.	pg TE/g lw.	pg TE/g fw.	pg TE/g lw.	pg TE/g fw.	pg TE/g lw.
2,3,7,8-TCDD	0,019	0,19	0,066	0,44	0,14	0,14
1,2,3,7,8-PeCDD	0,074	0,76	0,18	1,2	0,44	0,44
1,2,3,4,7,8-HxCDD	0,0087	0,089	0,0032	0,021	0,0080	0,0080
1,2,3,6,7,8-HxCDD	0,0092	0,094	0,012	0,079	0,035	0,035
1,2,3,7,8,9-HxCDD	0,0012	0,012	0,0028	0,019	0,0090	0,0090
1,2,3,4,6,7,8-HpCDD	0,0010	0,010	0,00066	0,0044	0,0017	0,0017
1,2,3,4,6,7,8,9-OCDD	0,000028	0,00029	0,0000065	0,000043	0,000014	0,000014
2,3,7,8-TCDF	0,0023	0,024	0,15	1,0	0,62	0,62
1,2,3,7,8-PeCDF	0,00048	0,0049	0,012	0,077	0,042	0,042
2,3,4,7,8-PeCDF	0,047	0,49	0,39	2,6	1,4	1,4
1,2,3,4,7,8-HxCDF	0,0064	0,066	0,0070	0,046	0,021	0,021
1,2,3,6,7,8-HxCDF	0,0047	0,048	0,0071	0,047	0,029	0,029
2,3,4,6,7,8-HxCDF	0,0024	0,025	0,0092	0,061	0,032	0,032
1,2,3,7,8,9-HxCDF	0,00034	0,0035	0,00072	0,0047	0,0044	0,0044
1,2,3,4,6,7,8-HpCDF	0,00028	0,0029	0,00045	0,0030	0,0012	0,0012
1,2,3,4,7,8,9-HpCDF	0,000049	0,00051	0,000076	0,00051	0,00028	0,00028
1,2,3,4,6,7,8,9-OCDF	0,0000011	0,000011	0,0000013	0,0000086	0,0000048	0,0000048
PCB-77	0,000093	0,0010	0,0020	0,013	0,0056	0,0056
PCB-126	0,19	2,0	0,62	4,1	2,8	2,8
PCB-169	0,0036	0,038	0,021	0,14	0,12	0,12
PCB-81	0,000016	0,00017	0,000055	0,00036	0,00019	0,00019
PCB-105	0,0041	0,042	0,031	0,21	0,19	0,19
PCB-114	0,0014	0,014	0,0069	0,045	0,057	0,057
PCB-118	0,011	0,11	0,11	0,72	0,56	0,56
PCB-123	0,000078	0,00080	0,0011	0,0074	0,0065	0,0065
PCB-156	0,0071	0,073	0,050	0,33	0,22	0,22
PCB-157	0,0019	0,019	0,015	0,10	0,069	0,069
PCB-167	0,000052	0,00053	0,00068	0,0045	0,0026	0,0026
PCB-189	0,00014	0,0014	0,0010	0,0069	0,0038	0,0038
PCDDs/PCDFs	0,18	1,8	0,84	5,6	2,8	2,8
Non-ortho PCBs	0,20	2,0	0,64	4,3	2,9	2,9
Mono-ortho PCBs	0,025	0,26	0,21	1,4	1,1	1,1
Total TEQ	0,40	4,1	1,7	11	6,8	6,8

fw. - fresh weight

lw. - lipid weight

Consensus statistics

2023

Consensus statistics

Analyte solution

	Target value pg/µl	Consensus median, pg/µl	Median all values pg/µl	Consensus mean, pg/µl	Standard deviation, pg/µl	Relative standard deviation, %	No. of values reported	No. of values removed
2,3,7,8-TCDD	2,0	2,0	2,0	2,0	0,14	7	46	0
1,2,3,7,8-PeCDD	5,0	5,0	5,0	5,0	0,29	6	46	0
1,2,3,4,7,8-HxCDD	5,0	5,0	5,0	5,0	0,35	7	46	0
1,2,3,6,7,8-HxCDD	5,0	4,8	4,8	4,8	0,31	6	46	0
1,2,3,7,8,9-HxCDD	5,0	4,9	4,9	4,9	0,32	6	46	0
1,2,3,4,6,7,8-HpCDD	5,0	5,0	5,0	4,9	0,28	6	46	1
1,2,3,4,6,7,8,9-OCDD	10,0	9,8	9,8	9,7	0,57	6	46	0
2,3,7,8-TCDF	2,0	2,0	2,0	2,0	0,12	6	46	0
1,2,3,7,8-PeCDF	5,0	5,0	5,0	5,0	0,29	6	46	0
2,3,4,7,8-PeCDF	5,0	5,0	5,0	4,9	0,28	6	46	0
1,2,3,4,7,8-HxCDF	5,0	5,0	5,0	4,9	0,34	7	46	0
1,2,3,6,7,8-HxCDF	5,0	5,0	5,0	5,0	0,27	5	46	1
2,3,4,6,7,8-HxCDF	5,0	4,9	4,9	4,9	0,23	5	46	0
1,2,3,7,8,9-HxCDF	5,0	5,0	5,0	5,0	0,31	6	46	0
1,2,3,4,6,7,8-HpCDF	5,0	5,0	5,0	4,9	0,31	6	46	0
1,2,3,4,7,8,9-HpCDF	5,0	4,9	4,9	4,9	0,37	7	46	0
1,2,3,4,6,7,8,9-OCDF	10,0	9,9	9,9	9,8	0,72	7	46	0
PCB 77	10,0	10,0	10,0	10,0	0,55	5	46	1
PCB 126	10,0	10,0	10,0	10,1	0,54	5	46	1
PCB 169	10,0	9,9	9,9	10,0	0,50	5	46	1
PCB 81	10,0	10,0	9,9	9,9	0,66	7	46	1
PCB 105	100,0	100,1	100,0	100,2	5,80	6	46	1
PCB 114	100,0	100,0	99,8	100,1	5,21	5	46	1
PCB 118	100,0	100,3	100,2	100,7	4,83	5	46	1
PCB 123	100,0	101,7	101,6	101,6	5,82	6	46	1
PCB 156	100,0	99,9	99,9	100,6	5,70	6	46	1
PCB 157	100,0	100,0	99,9	100,0	6,01	6	46	1
PCB 167	100,0	100,0	100,0	99,1	8,86	9	46	1
PCB 189	100,0	100,0	100,0	99,2	8,32	8	46	0

Consensus statistics

2023

Analyte solution

	Target value pg/µl	Median, pg/µl all values	Median, pg/µl outliers removed	Mean, pg/µl all values	Mean, pg/µl outliers removed
PCB-28	100	100	100	97	100
PCB-52	100	99	99	96	99
PCB-101	100	100	100	96	98
PCB-138	100	100	100	97	101
PCB-153	100	100	100	96	100
PCB-180	100	100	100	95	98
PBDE-28	25	25	25	26	26
PBDE-47	25	25	25	25	25
PBDE-99	25	25	25	25	25
PBDE-100	25	25	25	26	26
PBDE-153	25	25	25	25	25
PBDE-154	25	25	25	25	25
PBDE-183	25	25	25	25	25
PBDE-209	100	97	97	96	96
α-HBCD *	500	501	501	516	516

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	No. of values reported values	No. of reported outliers
PCB-28	19	9,2	39	1
PCB-52	19	10,2	39	1
PCB-101	19	10,2	39	1
PCB-138	19	5,9	39	2
PCB-153	20	7,0	39	2
PCB-180	19	10,3	39	1
PBDE-28	9,9	9,9	22	0
PBDE-47	6,6	6,6	23	0
PBDE-99	6,9	6,9	23	0
PBDE-100	8,4	8,4	23	0
PBDE-153	7,5	7,5	23	0
PBDE-154	7,1	7,1	23	0
PBDE-183	9	9	22	0
PBDE-209	11	11	17	0
α-HBCD *	11	11	5	0

NDs: Non-detects

* : Indicative value due to few reported values

Consensus statistics

2023

Reindeer, fresh weight

	Consensus median, pg/g	Median all values pg/g	Consensus mean, pg/g	Standard deviation, pg/g	Relative standard deviation, %	No. of values reported	No. of values removed	No. of reported non-detects
2,3,7,8-TCDD	0,019	0,019	0,018	0,0056	31	38	5	10
1,2,3,7,8-PeCDD	0,074	0,075	0,073	0,022	30	38	2	5
1,2,3,4,7,8-HxCDD	0,087	0,088	0,087	0,020	23	38	2	3
1,2,3,6,7,8-HxCDD	0,092	0,092	0,091	0,021	23	38	2	3
1,2,3,7,8,9-HxCDD	0,012	0,013	0,011	0,0040	36	38	10	11
1,2,3,4,6,7,8-HpCDD	0,10	0,10	0,099	0,026	26	38	4	3
1,2,3,4,6,7,8,9-OCDD	0,28	0,28	0,27	0,070	26	38	5	4
2,3,7,8-TCDF	0,023	0,026	0,025	0,0095	38	38	8	7
1,2,3,7,8-PeCDF	0,010	0,010	0,0095	0,0035	37	38	9	11
2,3,4,7,8-PeCDF	0,095	0,10	0,091	0,026	29	38	2	3
1,2,3,4,7,8-HxCDF	0,064	0,065	0,062	0,016	26	38	2	3
1,2,3,6,7,8-HxCDF	0,047	0,047	0,045	0,0090	20	38	3	6
2,3,4,6,7,8-HxCDF	0,024	0,025	0,024	0,0072	30	38	6	8
1,2,3,7,8,9-HxCDF	0,0034	0,0070	0,0051	0,0036	71	37	12	24
1,2,3,4,6,7,8-HpCDF	0,028	0,029	0,030	0,011	37	38	4	5
1,2,3,4,7,8,9-HpCDF	0,0049	0,0072	0,0060	0,0035	59	38	12	20
1,2,3,4,6,7,8,9-OCDF	0,011	0,017	0,013	0,0086	66	37	10	22
PCB-77	0,93	0,94	1,0	0,29	29	39	3	1
PCB-126	1,9	2,0	1,9	0,28	15	39	1	1
PCB-169	0,36	0,37	0,35	0,10	27	39	3	4
PCB-81	0,16	0,16	0,15	0,056	37	39	5	4
PCB-105	41	41	39	6,5	17	39	0	0
PCB-114	2,7	2,8	2,7	0,64	23	39	4	4
PCB-118	105	105	100	23	24	39	0	0
PCB-123	0,78	0,83	0,82	0,32	40	39	7	7
PCB-156	14	14	14	2,4	18	39	0	0
PCB-157	3,7	3,7	3,6	0,80	22	39	2	3
PCB-167	5,2	5,2	4,9	1,6	32	39	2	4
PCB-189	1,4	1,4	1,3	0,37	28	39	3	5

Consensus statistics

2023

Reindeer, fresh weight

	Median, pg/g all values	Median, pg/g outliers removed	Median, pg/g outliers and NDs removed	Mean, pg/g all values	Mean, pg/g outliers removed	Mean, pg/g outliers and NDs removed
PCB-28	34	34	34	37	33	33
PCB-52	44	43	43	44	40	41
PCB-101	65	65	65	62	62	61
PCB-138	83	83	81	80	80	81
PCB-153	176	176	180	165	165	170
PCB-180	53	53	53	52	52	51
PBDE-28	0,42	0,16	0,14	63	0,24	0,21
PBDE-47	2,7	2,7	2,5	87	2,6	2,5
PBDE-99	2,2	1,9	1,9	75	1,8	1,8
PBDE-100	0,7	0,61	0,62	65	0,61	0,61
PBDE-153	2,0	1,7	1,8	74	1,9	1,9
PBDE-154	0,49	0,40	0,31	62	0,43	0,40
PBDE-183	0,71	0,55	0,45	64	0,58	0,55
PBDE-209	26	6,0	9,0	3636	14	17
α-HBCD *	12	5	12	30	7	12
β-HBCD *	8	5	8	30	6	8
γ-HBCD *	13	5	13,0	31	8	13,0
Tot HBCD *	14	6	14	33	11	14

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	No. of values reported	No. of reported outliers	No. of reported NDs
PCB-28	56	41	36	34	2	4
PCB-52	44	33	28	34	2	4
PCB-101	36	36	29	34	0	3
PCB-138	34	34	30	34	0	3
PCB-153	35	35	29	34	0	1
PCB-180	40	40	30	34	0	4
PBDE-28	394	79	68	16	6	6
PBDE-47	283	42	43	17	4	2
PBDE-99	322	33	35	17	4	2
PBDE-100	372	34	36,1	17	5	3
PBDE-153	330	32	31	17	3	3
PBDE-154	391	62	56	17	4	5
PBDE-183	389	70	73	16	3	7
PBDE-209	367	112	96	14	5	5
α-HBCD *	133	53	**	5	2	4
β-HBCD *	137	32	**	5	2	4
γ-HBCD *	131	60	**	5	2	4
Tot HBCD *	135	91	86	4	1	2

NDs: Non-detects

* : Indicative value due to few reported values

** : Not possible to calculate results due to few reported result

Consensus statistics

2023

Herring, fresh weight

	Consensus median, pg/g	Median all values pg/g	Consensus mean, pg/g	Standard deviation, pg/g	Relative standard deviation, %	No. of values reported	No. of values removed	No. of reported non-detects
2,3,7,8-TCDD	0,066	0,066	0,065	0,014	22	49	4	5
1,2,3,7,8-PeCDD	0,18	0,18	0,17	0,043	25	49	4	3
1,2,3,4,7,8-HxCDD	0,032	0,035	0,033	0,011	32	49	10	12
1,2,3,6,7,8-HxCDD	0,12	0,12	0,12	0,025	21	49	4	5
1,2,3,7,8,9-HxCDD	0,028	0,030	0,028	0,012	44	49	10	14
1,2,3,4,6,7,8-HpCDD	0,066	0,069	0,069	0,022	32	49	7	5
1,2,3,4,6,7,8,9-OCDD	0,065	0,071	0,064	0,024	38	49	14	10
2,3,7,8-TCDF	1,5	1,5	1,5	0,28	19	49	0	0
1,2,3,7,8-PeCDF	0,23	0,23	0,22	0,055	24	49	2	3
2,3,4,7,8-PeCDF	0,78	0,78	0,77	0,16	21	49	1	2
1,2,3,4,7,8-HxCDF	0,070	0,070	0,074	0,017	23	49	5	6
1,2,3,6,7,8-HxCDF	0,071	0,074	0,075	0,018	24	49	4	6
2,3,4,6,7,8-HxCDF	0,092	0,093	0,089	0,021	23	49	4	5
1,2,3,7,8,9-HxCDF	0,0072	0,010	0,0078	0,0044	56	49	17	31
1,2,3,4,6,7,8-HpCDF	0,045	0,050	0,050	0,016	31	49	8	6
1,2,3,4,7,8,9-HpCDF	0,0076	0,010	0,0080	0,0036	45	49	14	29
1,2,3,4,6,7,8,9-OCDF	0,013	0,018	0,014	0,0060	43	49	18	25
PCB-77	20	20	20	2,7	14	50	0	1
PCB-126	6,2	6,2	6,6	1,6	24	50	1	1
PCB-169	2,1	2,1	2,1	0,40	19	50	1	1
PCB-81	0,55	0,58	0,54	0,18	34	50	11	6
PCB-105	312	312	311	39	12	50	0	0
PCB-114	14	14	14	4,3	30	50	5	3
PCB-118	1089	1089	1102	177	16	50	0	0
PCB-123	11	13	12	4,3	36	50	10	4
PCB-156	99	99	99	14	14	50	0	0
PCB-157	31	31	30	4,4	15	50	1	0
PCB-167	68	68	69	12	17	50	1	0
PCB-189	10	10	11	1,8	17	50	0	1

Consensus statistics

2023

Herring, fresh weight

	Median, pg/g all values	Median, pg/g outliers removed	Median, pg/g outliers and NDs removed	Mean, pg/g all values	Mean, pg/g outliers removed	Mean, pg/g outliers and NDs removed
PCB-28	304	304	304	304	304	304
PCB-52	639	639	639	639	639	639
PCB-101	1604	1604	1604	1604	1604	1604
PCB-138	2210	2210	2210	2210	2210	2210
PCB-153	3452	3452	3452	3452	3452	3452
PCB-180	444	444	441	444	444	441
PBDE-28	20	20	20	20	20	20
PBDE-47	291	287	287	291	287	287
PBDE-99	55	54	54	55	54	54
PBDE-100	95	94	94	95	94	94
PBDE-153	10	10	10	10	10	10
PBDE-154	47	45	45	47	45	45
PBDE-183	1,6	1,4	1,4	1,6	1,4	1,4
PBDE-209	34	8,9	8,9	34	8,9	8,9
α-HBCD *	142	142	142	142	142	142
β-HBCD *	10,0	8,0	#NUM!	10,0	8,0	#NUM!
γ-HBCD *	14	12	14	14	12,0	14
Tot HBCD *	148	148	148	148	148	148

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	No. of values reported	No. of reported outliers	No. of reported NDs
PCB-28	34	34	28	42	0	2
PCB-52	30	30	23	42	0	2
PCB-101	29	29	29	42	0	0
PCB-138	30	30	30	42	0	0
PCB-153	26	26	26	42	0	0
PCB-180	30	30	30	42	0	1
PBDE-28	315	25	25	23	2	1
PBDE-47	390	25	25	24	2	1
PBDE-99	356	32	27	24	2	2
PBDE-100	384	25	25	24	2	1
PBDE-153	309	25	16	24	3	2
PBDE-154	371	38	38	24	2	1
PBDE-183	445	36	33	23	5	5
PBDE-209	400	132	82	18,0	7	8
α-HBCD *	11	11	11	6	0	0
β-HBCD *	75	67	**	5	1	5
γ-HBCD *	54	41	**	5	1	4
Tot HBCD *	13	13	13	6	0	0

NDs: Non-detects

* : Indicative value due to few reported values

** : Not possible to calculate results due to few reported result

Consensus statistics

2023

Fish oil, fresh weight

	Consensus median, pg/g	Median all values pg/g	Consensus mean, pg/g	Standard deviation, pg/g	Relative standard deviation, %	No. of values reported	No. of values removed	No. of reported non-detects
2,3,7,8-TCDD	0,14	0,14	0,14	0,035	26	47	1	3
1,2,3,7,8-PeCDD	0,44	0,44	0,43	0,11	26	47	0	1
1,2,3,4,7,8-HxCDD	0,080	0,087	0,084	0,034	40	47	6	8
1,2,3,6,7,8-HxCDD	0,35	0,35	0,35	0,079	22	47	0	2
1,2,3,7,8,9-HxCDD	0,090	0,090	0,093	0,034	37	47	3	8
1,2,3,4,6,7,8-HpCDD	0,17	0,17	0,18	0,044	25	47	3	6
1,2,3,4,6,7,8,9-OCDD	0,14	0,19	0,16	0,079	50	47	12	12
2,3,7,8-TCDF	6,2	6,2	6,3	0,60	10	47	0	0
1,2,3,7,8-PeCDF	0,84	0,84	0,87	0,17	19	47	0	0
2,3,4,7,8-PeCDF	2,8	2,8	2,9	0,33	11	47	0	0
1,2,3,4,7,8-HxCDF	0,21	0,21	0,20	0,059	29	47	0	2
1,2,3,6,7,8-HxCDF	0,29	0,29	0,29	0,074	26	47	0	2
2,3,4,6,7,8-HxCDF	0,32	0,32	0,32	0,086	27	47	0	2
1,2,3,7,8,9-HxCDF	0,044	0,050	0,046	0,022	48	47	7	30
1,2,3,4,6,7,8-HpCDF	0,12	0,12	0,13	0,040	31	47	3	6
1,2,3,4,7,8,9-HpCDF	0,028	0,040	0,034	0,021	63	47	12	31
1,2,3,4,6,7,8,9-OCDF	0,048	0,054	0,050	0,025	50	47	15	27
PCB-77	56	56	56	10	18	48	0	0
PCB-126	28	28	28	5,3	19	48	0	0
PCB-169	12	12	11	2,4	21	48	1	0
PCB-81	1,9	2,0	2,0	0,55	28	48	8	4
PCB-105	1877	1877	1859	290	16	48	0	0
PCB-114	113	116	117	29	25	48	1	0
PCB-118	5627	5627	5741	1022	18	48	0	0
PCB-123	65	67	66	18	27	48	6	2
PCB-156	435	435	435	68	16	48	0	0
PCB-157	137	137	137	24	18	48	0	0
PCB-167	261	262	259	50	19	48	1	0
PCB-189	38	38	36	7,2	20	48	0	0

Consensus statistics

2023

Fish oil, fresh weight

	Median, pg/g all values	Median, pg/g outliers removed	Median, pg/g outliers and NDs removed	Mean, pg/g all values	Mean, pg/g outliers removed	Mean, pg/g outliers and NDs removed
PCB-28	1608	1608	1608	1601	1601	1601
PCB-52	4785	4785	4785	4575	4575	4575
PCB-101	7034	7034	7034	6881	6881	6881
PCB-138	8095	8095	8095	8009	8009	8009
PCB-153	10885	10885	10885	10604	10604	10604
PCB-180	2462	2462	2462	2356	2356	2356
PBDE-28	132	129	129	185	129	129
PBDE-47	1917	1908	1908	3653	1908	1908
PBDE-99	115	113	113	258	115	115
PBDE-100	419	417	417	875	409	409
PBDE-153	35	33	33	102	35	35
PBDE-154	305	304	304	621	340	340
PBDE-183	4,9	4,5	4,5	63	4,5	4,7
PBDE-209	102	11	10	4146	43	29
α-HBCD *	1593	1593	1593	1561	1561	1561
β-HBCD *	28,3	28,3	32,7	25,7	25,7	32,7
γ-HBCD *	37	37	47	45	45	47
Tot HBCD *	1641	1641	1641	1604	1604	1604

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	No. of values reported	No. of reported outliers	No. of reported NDs
PCB-28	34	34	34	42	0	0
PCB-52	27	27	27	42	0	0
PCB-101	28	28	28	42	0	0
PCB-138	28	28	28	42	0	0
PCB-153	26	26	26	42	0	0
PCB-180	27	27	27	42	0	0
PBDE-28	108	17	17	20	2	1
PBDE-47	219	9,0	9,0	21	1	0
PBDE-99	191	18	18	21	2	1
PBDE-100	229	10,3	10,3	21	2	1
PBDE-153	223	21	22	21	2	2
PBDE-154	185	27	27	21	2	1
PBDE-183	351	29	26	20	5	7
PBDE-209	320	109	143	14	5	6
α-HBCD *	6	6	6	6	0	0
β-HBCD *	49	49	29	5	0	3
γ-HBCD *	33	33	34	5	0	1
Tot HBCD *	6	6	6	6	0	0

NDs: Non-detects

* : Indicative value due to few reported values

Consensus statistics

Fish PFAS, fresh weight

2023

	Median, pg/g all values	Median, pg/g outliers removed	Median, pg/g outliers and NDs removed	Mean, pg/g all values	Mean, pg/g outliers removed	Mean, pg/g outliers and NDs removed
PFOS	12300	12375	12375	11133	12302	12302
PFHxS*	50	43	20	90	39	28
PFOA*	50	50	16	93	45	18
PFNA	73	61	59	295	63	60
PFDA	158	154	158	502	143	156
PFUnDA	226	225	226	723	204	216

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	No. of reported values	No. of outliers	No. of reported NDs
PFOS	44	27	27	21	0	0
PFHxS*	139	65	71	20	5	12
PFOA*	153	71	41	21	4	15
PFNA	302	42	28	20	5	7
PFDA	286	40	29	20	4	3
PFUnDA	319	40	30	20	3	2

NDs: Non-detects.

Laboratories' reported TEQs, sum indicator PCB and sum PBDE without PBDE 209

TEF_{2006}	Median pg/g	Mean pg/g	Standard deviation, pg/g	Relative standard deviation, %	Min pg/g	Max pg/g	Reporting laboratories
Reindeer, fresh weight							
PCDD/PCDF TEQ	0,16	0,51	1,8	350	0,070	11	38
Non-ortho PCB TEQ	0,21	0,23	0,18	78	0,11	1,3	39
Mono-ortho PCB TEQ	0,0053	0,0051	0,0010	19	0,0026	0,0067	39
Total TEQ	0,38	0,69	2,0	290	0,20	13	39
Sum indicator PCB	470	439	144	33	0,25	740	34
Sum PBDE without PBDE-209	8,9	482	1687	350	4,0	7000	17
Herring, fresh weight							
PCDD/PCDF TEQ	0,69	1,1	1,6	140	0,17	11	49
Non-ortho PCB TEQ	0,69	0,75	0,22	30	0,49	1,6	50
Mono-ortho PCB TEQ	0,049	0,050	0,0069	14	0,033	0,078	50
Total TEQ	1,4	1,7	1,6	100	0,97	13	50
Sum indicator PCB	8854	8330	2103	25	7,5	11096	42
Sum PBDE without PBDE-209	518	3136	11442	360	308	56492	24
Fish oil, fresh weight							
PCDD/PCDF TEQ	2,2	2,8	0,23	8,3	1,6	2,7	47
Non-ortho PCB TEQ	3,2	3,2	0,59	19	0,89	4,9	48
Mono-ortho PCB TEQ	0,26	0,26	0,042	16	0,068	0,38	48
Total TEQ	5,6	5,6	0,66	12	3,1	7,3	48
Sum indicator PCB	35233	34026	8565	25	34	49038	42
Sum PBDE without PBDE-209	2948	5746	11675	200	2459	56480	21

Laboratories' reported TEQs, sum indicator PCB and sum PBDE without PBDE 209

TEF_{1998}	Median pg/g	Mean pg/g	Standard deviation, pg/g	Relative standard deviation, %	Min pg/g	Max pg/g	Reporting laboratories
Reindeer, fresh weight							
PCDD/PCDF TEQ	0,18	0,51	2,0	390	0,078	12	38
Non-ortho PCB TEQ	0,20	0,22	0,15	68	0,11	1,1	39
Mono-ortho PCB TEQ	0,026	0,025	0,0051	20	0,013	0,042	39
Total TEQ	0,41	0,74	2,1	280	0,21	14	39
Sum indicator PCB	470	439	144	33	0,25	740	34
Sum PBDE without PBDE-209	8,9	482	1687	350	4,0	7000	17
Herring, fresh weight							
PCDD/PCDF TEQ	0,86	1,1	1,7	150	0,19	13	49
Non-ortho PCB TEQ	0,65	0,70	0,21	30	0,47	1,6	50
Mono-ortho PCB TEQ	0,22	0,22	0,030	14	0,15	0,32	50
Total TEQ	1,7	2,0	1,8	88	1,2	14	50
Sum indicator PCB	8854	8330	2103	25	7,5	11096	42
Sum PBDE without PBDE-209	518	3136	11442	360	308	56492	24
Fish oil, fresh weight							
PCDD/PCDF TEQ	2,8	2,8	0,28	10	2,1	3,5	47
Non-ortho PCB TEQ	2,9	2,9	0,55	19	0,85	4,6	48
Mono-ortho PCB TEQ	1,1	1,1	0,18	16	0,29	1,6	48
Total TEQ	6,8	6,8	0,76	11	3,9	8,5	48
Sum indicator PCB	35233	34026	8565	25	34	49038	42
Sum PBDE without PBDE-209	2948	5746	11675	200	2459	56480	21

Laboratories' Z-scores: Analyte solution

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5	0,48	0,52	0,0028	0,063		0,092	0,026
6							
7	-0,033	-0,032	-0,078	0,13			
8							
9							
10							
11	-0,046	-0,044	-0,078	-0,0021	0,12		
12	0,12	0,12	0,20	-0,13	-0,0032	0,59	0,19
13							
14							
15	0,045	0,070	-0,25	-0,024			
16							
17	-0,46	-0,47	-0,34	-0,38	-0,37	-0,29	-0,19
18	-0,18	-0,17	-0,29	-0,30	-5,0		
19							
20	-0,40	-0,44	0,0017	0,27	0,43	-1,9	-0,22
21							
22							
23							
24							
25							
26	-0,054	-0,045	-0,14	-0,19	-0,10		
27							
28							
29	0,13	0,13	0,10	0,14	-0,11	0,062	-0,045
30	0,099	0,12	-0,18	-0,035			
31							
32							
33							
34	-0,27	-0,32	0,26	0,41	0,47	-0,11	-0,35
35	-0,062	-0,060	-0,19	0,55	-0,16		
36							
37	0,096	0,091	0,18	-0,026	0,048		
38							
39							
40							
41							
42							
43	-0,079	-0,11	0,25	0,18	0,33	0,014	-0,052
44							
45	-0,21	-0,22	-0,14	0,28	0,20		
46							
47							
48							
49	0,43	0,49	-0,32	0,17	-0,072	-0,31	-0,10
50	0,015	0,026	-0,10	-0,094	0,51		
51							
52	0,063	0,063	0,084	-0,070	0,040		
53							
54	0,040	0,035	0,19	-0,46	-0,032	-0,19	-0,015
55							
56							
57							
58							
59	0,00024	-0,0012	0,017	0,0063	0,0016		
60							
61							
62							
63	0,36	0,37	0,30	-0,090	-0,086	-1,8	0,029
64							
65	0,11	0,080	0,51	0,31	0,61	-0,27	-0,12
66	0,078	0,080	0,057	0,041	0,029		
67							
68	0,24	0,27	-0,11	-0,24	-0,73		
69							
70	-0,28	-0,30	-0,0076	-0,031	-0,11	0,50	0,77

Laboratories' Z-scores: Analyte solution (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71	-0,15	-0,17	0,058	-0,011			
72							
73	0,018	0,013	0,074	0,0025	-0,10	0,072	0,023
74							
75							
76							
77							
78							
79							
80	-0,053	-0,081	0,23	0,27	-0,015	-0,17	-0,15
81							
82	0,083	0,097	-0,0058	-0,39	0,16	-0,16	-0,11
83							
84	-0,53	-0,55	-0,37	-0,23	-0,23	-1,5	0,49
85							
86							
87	0,10	0,087	0,34	-0,072	-0,12		
88							
89							
90	0,13	0,11	0,36	0,089		-0,18	0,29
91							
92							
93	-0,63	-0,43	-2,7	-2,7	-2,4		
94							
95	-0,11	-0,18	0,64	0,36	0,20		
96							
97							
98							
99							
100							
101							
102	-0,24	-0,19	-0,75	-0,37	-0,17	-1,7	0,16
103	0,061	0,051	0,19	0,056	0,0079		
104	0,15	0,18	-0,16	-0,075	-0,12	-0,16	0,029
105							
106	0,027	0,028	-0,000091	0,14	0,22	0,11	-0,0047
107	0,090	0,075	0,25	0,27	-0,23		
108							
109	0,0	0,0	0,0	0,0			
110	-0,47	-0,52	0,14	-0,31	-0,29	-2,0	-0,36
111							
112							
113							
114	-0,053	-0,054	-0,030	-0,067	-0,32		
115	0,12	0,099	0,38	0,37	-0,17		
116							
117	-0,018	-0,059	0,42	0,35	0,28	-0,034	-0,28
118							
119							
120	0,014	0,025	-0,10	-0,093	0,071	-2,7	-1,4

Laboratories' Z-scores: Reindeer, fresh weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5	1,1	1,7	0,65	0,039		11	0,74
6							
7	-0,0086	0,10	-0,092	0,089	0,53		
8							
9							
10							
11	-2,3	-2,3	-2,3	-2,4	-2,4		
12	-0,18	-0,13	-0,22	-0,18	-0,32	5,4	0,59
13							
14							
15	0,38	1,1	-0,19	0,30			
16							
17	0,76	1,4	0,24	0,085	0,081	-0,88	1,0
18	-2,0	-2,0	-2,1	-1,7	-5,0		
19							
20	0,58	0,35	0,77	0,35	-0,20	-3,8	-2,4
21							
22							
23	0,46	1,6	-0,40	0,51	0,36		
24							
25							
26	-0,057	-0,075	-0,049	0,15	0,32		
27							
28							
29	-0,52	-0,55	-0,49	-0,72	-0,53	-0,27	-0,58
30	0,25	0,29	0,23	-0,075			
31							
32							
33							
34							
35	0,28	0,12	0,41	0,19	0,38		
36	-0,80	-1,6	-0,23	-0,66	0,030		
37	3,2	6,2	0,98	-0,60	0,58		
38							
39							
40							
41							
42							
43	-0,0044	-0,19	0,13	0,33	0,089	21	2,6
44							
45							
46							
47							
48							
49	0,63	0,98	0,37	0,57	-0,045	64	3,4
50							
51							
52	0,21	0,20	0,23	0,063	0,36		
53							
54	-0,025	-0,10	0,042	-0,39	0,30	176	205
55							
56	-1,5	-2,8	-0,50	0,99	-0,48		
57							
58							
59							
60							
61	0,41	0,085	0,66	0,57	0,22	17051	4520
62							
63							
64							
65	-0,063	-0,23	0,049	0,64	0,89		
66	-0,12	0,67	-0,72	-0,14	-0,29		
67							
68	-1,1	-1,0	-1,1	-1,6	-2,1		
69							
70	3,9	10	-0,39	1,0	0,22	-0,65	0,51

Laboratories' Z-scores: Reindeer, fresh weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71							
72							
73	-0,33	-1,0	0,19	0,28	0,51	-2,9	-0,63
74							
75							
76							
77							
78							
79							
80							
81							
82	1,3	1,2	1,3	-0,11	0,64	100	88
83							
84	0,15	0,14	0,17	-0,30	-0,27	-1,0	3,6
85							
86							
87							
88	167	354	27	1,5			
89							
90							
91							
92							
93	-2,2		-0,095	-0,47	-0,015	-2,6	-0,85
94							
95	-1,4	-1,3	-1,4	-2,2	-2,0		
96							
97	0,22	0,66	-0,13	0,80	-5,0		
98							
99							
100							
101							
102							
103	0,14	0,15	0,14	0,13	0,39		
104	0,33	0,66	0,14	-2,5	1,3	-0,71	0,58
105							
106							
107							
108							
109							
110							
111	0,50	0,31	0,64	0,71			
112							
113							
114	-0,35	0,63	-1,1	-0,48	2,1		
115	0,76	0,71	0,80	0,63	3,1		
116							
117	-0,31	-0,81	0,077	-0,58	-0,53	4,1	-2,2
118							
119							
120	0,066	0,78	-0,49	0,36	0,21	180	395

Laboratories' Z-scores: Reindeer, lipid weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5	0,51	1,0	0,12	-0,44		10	0,25
6							
7	-0,20	-0,10	-0,28	-0,11	0,16		
8							
9							
10							
11	-0,82	-0,81	-0,81	-1,0	-1,2		
12	-0,59	-0,54	-0,62	-0,59	-0,84	4,6	0,17
13							
14							
15	2,2	3,2	1,4	2,1			
16							
17	1,2	2,0	0,67	0,50	0,33	-0,52	1,6
18	-0,87	-0,82	-0,92	-0,49	-5,0		
19							
20	-0,12	-0,32	0,043	-0,32	-0,93	-3,9	-2,7
21							
22							
23	2,5	4,0	1,3	2,6	2,1		
24							
25							
26	0,095	0,077	0,10	0,31	0,32		
27							
28							
29	0,12	0,082	0,15	-0,11	-0,040	0,44	0,10
30	0,31	0,35	0,29	-0,018			
31							
32							
33							
34							
35	-0,26	-0,41	-0,15	-0,35	-0,32		
36	-0,93	-1,7	-0,38	-0,79	-0,27		
37	3,4	6,5	1,2	-0,47	0,58		
38							
39							
40							
41							
42							
43	-0,24	-0,42	-0,10	0,083	-0,29	20	2,4
44							
45							
46							
47							
48							
49	0,38	0,71	0,13	0,32	-0,41	62	3,1
50							
51							
52	0,23	0,22	0,25	0,079	0,22		
53							
54	1,2	1,1	1,3	0,73	1,4	222	259
55							
56	-1,5	-2,8	-0,52	0,96	-0,64		
57							
58							
59							
60							
61	-0,017	-0,32	0,21	0,13	-0,34	15800	4203
62							
63							
64							
65	0,0	-0,18	0,11	0,70	0,78		
66	-0,94	-0,29	-1,4	-0,96	-1,2		
67							
68	0,58	0,69	0,50	-0,19	-0,97		
69							
70							

Laboratories' Z-scores: Reindeer, lipid weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71							
72							
73	-1,3	-1,9	-0,91	-0,84	-0,79	-3,4	-1,5
74							
75							
76							
77							
78							
79							
80							
81							
82	0,87	0,85	0,91	-0,42	0,13	94	83
83							
84	0,45	0,43	0,47	-0,026	-0,14	-0,79	4,1
85							
86							
87							
88	167	355	27	1,5			
89							
90							
91							
92							
93	-2,2		-0,10	-0,47	-0,16	-2,6	-0,81
94							
95	-0,71	-0,62	-0,75	-1,7	-1,6		
96							
97	-3,7	-3,5	-3,7	-3,5	-5,0		
98							
99							
100							
101							
102							
103	0,15	0,16	0,14	0,13	0,24		
104	-0,62	-0,34	-0,77	-3,0	0,059	-1,5	-0,37
105							
106							
107							
108							
109							
110							
111	0,039	-0,14	0,17	0,23			
112							
113							
114	-1,0	-0,15	-1,7	-1,1	0,89		
115	0,41	0,36	0,45	0,29	2,4		
116							
117	0,29	-0,27	0,73	-0,010	-0,11	5,3	-1,8
118							
119							
120	-0,13	0,56	-0,67	0,15	-0,13	174	383

Laboratories' Z-scores: Herring, fresh weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5	-0,15	0,43	-0,75	0,11		-0,66	-0,70
6							
7	-0,41	-0,33	-0,52	0,18	0,38		
8							
9							
10							
11	-0,71	-0,67	-0,76	-0,43	-0,35		
12							
13							
14							
15	-0,17	0,39	-0,74	-0,025			
16							
17	2,5	0,56	4,6	-0,053	0,13	-0,13	-0,13
18	-1,6	-1,8	-1,4	-0,032	-5,0		
19							
20	-1,4	-3,7	0,83	-0,069	-0,32	0,024	0,11
21							
22							
23	0,32	0,59	0,060	0,23	0,10		
24							
25							
26	-0,36	-0,24	-0,49	-0,070	0,22		
27							
28							
29	0,12	0,11	0,12	0,083	0,29	-0,062	0,024
30	-0,059	0,064	-0,15	-0,45			
31							
32							
33							
34	1,4	2,0	0,78	1,6	1,4	11	1,1
35	-0,029	-0,038	-0,014	-0,13	-0,40		
36	0,53	0,22	0,86	0,20	0,35		
37	2,3	4,0	0,78	0,68	0,50		
38							
39							
40							
41							
42							
43	-0,38	-0,51	-0,29	0,14	0,35	0,24	-0,31
44							
45	1,4	3,1	-0,18	0,23	0,31		
46							
47							
48	-0,10	-0,43	0,22	-0,045	-0,025	0,072	0,16
49	0,20	0,092	0,31	0,31	-0,15	8,0	4,8
50							
51							
52	-0,21	-0,063	-0,36	-0,23	-0,27		
53							
54	0,23	0,29	0,19	-0,033	-0,12	7,0	1,1
55							
56	-0,53	-1,2	-0,019	1,4	0,21		
57							
58							
59	0,57	0,71	0,47	0,12	-0,35		
60							
61	0,034	0,077	-0,056	0,71	0,40	543	64
62							
63	-0,34	-0,49	-0,18	-0,37	0,34	-0,75	-0,67
64							
65	-0,51	-0,42	-0,68	0,73	0,50	1,8	-0,055
66	3,7	0,34	7,0	2,9	-1,1		
67							
68							
69							
70	3,0	4,4	1,7	1,1	1,2	0,78	0,84

Laboratories' Z-scores: Herring, fresh weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71	1,5	-0,42	3,6	-0,58			
72							
73	0,21	-0,20	0,64	-0,21	-0,082	-0,12	-0,045
74							
75							
76							
77	-0,055	-0,085	-0,0053	-0,33			
78							
79							
80	0,30	0,69	-0,032	-0,40	-0,21	-0,31	-2,0
81							
82	0,23	0,22	0,32	-0,93	-0,18	-0,36	-0,75
83							
84	0,61	0,81	0,43	0,22	0,48	0,91	1,0
85							
86							
87	0,10	0,13	0,086	-0,033	-0,22		
88	40	79	4,5	0,66			
89							
90	0,28	0,58	-0,0037	0,14		3,0	0,21
91							
92							
93	-1,3		2,2	0,22	0,77	-0,48	-0,42
94							
95	-0,95	-0,81	-1,0	-1,6	-1,26		
96							
97	-1,0	-0,83	-1,2	-0,83	-5,0		
98							
99							
100							
101							
102							
103	-0,21	-0,050	-0,36	-0,20	-0,25		
104	-0,032	0,20	-0,28	0,20	0,56	0,094	0,12
105							
106	0,26	0,049	0,45	0,49	0,18	0,028	0,021
107	0,59	1,0	0,15	0,71	-0,36		
108							
109							
110	-1,6	-1,9	-1,3	-1,1	-1,1	0,82	0,92
111	-0,076	0,015	-0,17	-0,018			
112							
113							
114	-0,60	-0,18	-1,0	-0,66	-0,70		
115	0,063	-0,25	0,36	0,38	0,63		
116							
117	2,0	0,94	3,2	-0,068	0,21	-0,035	-0,15
118							
119							
120	1,7	3,1	0,32	0,58	0,18	538	548

Laboratories' Z-scores: Herring, lipid weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5	0,21	0,84	-0,43	0,49		-0,33	-0,38
6							
7	-0,33	-0,26	-0,45	0,26	0,46		
8							
9							
10							
11	-0,77	-0,74	-0,83	-0,50	-0,42		
12							
13							
14							
15	0,78	1,5	0,10	0,96			
16							
17	1,8	0,019	3,7	-0,53	-0,37	-0,60	-0,60
18	-1,2	-1,5	-1,0	0,55	-5,0		
19							
20	-1,7	-3,8	0,36	-0,47	-0,70	-0,38	-0,30
21							
22							
23	0,73	1,0	0,45	0,63	0,50		
24							
25							
26	-0,24	-0,12	-0,37	0,057	0,35		
27							
28							
29	0,14	0,14	0,15	0,11	0,31	-0,036	0,051
30	-0,22	-0,11	-0,31	-0,60			
31							
32							
33							
34	1,2	1,8	0,66	1,4	1,3	10	0,94
35	-0,22	-0,23	-0,20	-0,31	-0,58		
36	0,50	0,19	0,82	0,17	0,31		
37	3,0	4,9	1,3	1,2	0,99		
38							
39							
40							
41							
42							
43	-0,19	-0,33	-0,086	0,36	0,58	0,46	-0,12
44							
45	1,5	3,2	-0,10	0,31	0,40		
46							
47							
48							
49	0,52	0,40	0,63	0,63	0,14	8,8	5,4
50							
51							
52	-0,16	-0,013	-0,31	-0,18	-0,22		
53							
54	0,39	0,45	0,35	0,12	0,025	7,4	1,3
55							
56	0,076	-0,66	0,65	2,3	0,91		
57							
58							
59	0,17	0,30	0,069	-0,25	-0,69		
60							
61	-0,20	-0,16	-0,29	0,44	0,15	517	60
62							
63	-0,55	-0,70	-0,40	-0,58	0,10	-0,94	-0,87
64							
65	0,38	0,48	0,17	1,9	1,6	3,1	0,92
66	3,4	0,21	6,7	2,8	-1,2		
67							
68							
69							
70							

Laboratories' Z-scores: Herring, lipid weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71	1,5	-0,44	3,6	-0,60			
72							
73	-0,54	-0,88	-0,17	-0,90	-0,78	-0,82	-0,75
74							
75							
76							
77							
78							
79							
80	-0,13	0,23	-0,43	-0,77	-0,60	-0,69	-2,2
81							
82	0,60	0,59	0,70	-0,64	0,16	-0,022	-0,44
83							
84	-0,12	0,055	-0,27	-0,46	-0,24	0,14	0,23
85							
86							
87	-2,4	-2,4	-2,5	-2,5	-2,6		
88	40	78	4,3	0,56			
89							
90	0,14	0,43	-0,14	0,0		2,8	0,067
91							
92							
93	-1,2		2,4	0,41	1,0	-0,32	-0,25
94							
95	0,36	0,54	0,25	-0,50	-0,051		
96							
97	-3,3	-3,2	-3,4	-3,2	-5,0		
98							
99							
100							
101							
102							
103	-0,59	-0,45	-0,74	-0,58	-0,63		
104	-0,35	-0,13	-0,58	-0,13	0,20	-0,23	-0,21
105							
106	0,019	-0,18	0,20	0,24	-0,057	-0,20	-0,21
107							
108							
109							
110	0,83	0,34	1,3	1,6	1,6	4,9	5,1
111	-0,15	-0,057	-0,24	-0,090			
112							
113							
114	-0,67	-0,26	-1,1	-0,73	-0,77		
115	1,1	0,68	1,4	1,4	1,7		
116							
117	2,4	1,3	3,6	0,20	0,50	0,24	0,12
118							
119							
120	1,7	3,1	0,35	0,61	0,21	541	551

Laboratories' Z-scores: Fish oil, fresh weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5							
6							
7	-0,60	-0,69	-0,58	-0,12	0,21		
8							
9							
10							
11	-0,33	0,44	-0,87	-0,31	-0,33		
12							
13							
14							
15	-0,094	0,80	-0,73	-0,039			
16							
17	1,6	-0,014	2,8	-0,24	-0,10	-0,34	-0,34
18	-0,44	0,40	-1,1	0,40	-5,0		
19							
20	0,032	-0,36	0,33	-0,17	-0,18	-0,17	-0,15
21							
22							
23	-0,11	0,18	-0,34	0,13	-0,083		
24							
25							
26	-0,36	-0,29	-0,45	0,066	0,14		
27							
28							
29	0,027	0,068	0,0077	-0,10	0,45	0,051	0,068
30	0,42	0,83	0,19	-0,43			
31							
32							
33							
34							
35	-0,18	-0,046	-0,27	-0,16	-0,40		
36							
37	0,72	0,87	0,63	0,45	0,41		
38							
39							
40	0,027	-0,025	0,021	0,55	-0,15		
41							
42							
43	-0,039	-0,20	0,023	0,56	0,46	0,58	-0,085
44							
45	0,13	1,1	-0,65	1,1	0,71		
46							
47							
48	-0,37	-0,72	-0,15	-0,036	0,091	0,26	0,28
49	0,22	-0,018	0,36	0,47	0,14	1,5	0,029
50	-0,012	0,11	-0,12	0,31	0,71		
51							
52	0,15	0,28	0,077	0,048	-0,28		
53							
54	0,76	1,2	0,47	0,34	0,41	9,4	0,21
55							
56	-0,24	-1,3	0,36	1,9	0,78		
57							
58							
59	0,15	-0,056	0,32	-0,065	-0,38		
60							
61	-0,41	-0,072	-0,58	-1,3	-0,45	94	8,4
62							
63	-0,040	-0,23	0,087	0,060	0,36	-0,79	-0,77
64							
65	0,090	0,071	-0,026	1,7	2,0	3,2	1,5
66	-2,2	-0,089	-3,6	-3,7	-1,2		
67							
68	0,43	0,52	0,40	0,088	-0,41		
69							
70	-0,45	-0,47	-0,46	-0,18	0,20	0,29	0,29

Laboratories' Z-scores: Fish oil, fresh weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71	0,44	-0,55	1,2	-0,46			
72							
73	-0,17	-1,0	0,40	-0,073	0,013	-0,18	-0,18
74							
75							
76							
77							
78							
79							
80							
81							
82	0,49	0,50	0,53	-0,084	0,51	0,025	-0,14
83							
84	0,053	0,22	-0,054	-0,10	0,17	0,92	0,94
85							
86							
87							
88							
89							
90	-0,10	-0,12	-0,12	0,32		0,33	0,18
91							
92							
93	-1,1		1,6	0,033	0,57	-0,36	-0,36
94	0,026	-0,039	0,037	0,45	1,2		
95	0,061	-0,0086	0,12	-0,053	-0,15		
96							
97	1,1	0,92	1,1	2,3	-5,0		
98							
99							
100							
101							
102	-0,54	0,34	-1,2	-0,29	-0,21	0,29	0,31
103	0,089	0,15	0,056	-0,033	-0,25		
104	-0,32	0,0042	-0,57	-0,015	0,37	0,11	0,052
105							
106	0,24	0,77	-0,17	0,84	0,65	-0,00020	0,017
107	0,15	0,30	0,030	0,41	-0,57		
108							
109	0,55	-0,60	1,4	-0,36			
110							
111	-0,11	-0,023	-0,19	0,072			
112							
113							
114	-0,68	-0,26	-0,98	-0,69	-0,71		
115	-0,16	-0,32	-0,11	0,65	-0,031		
116							
117	1,4	0,27	2,3	-0,26	0,24	0,27	0,11
118							
119							
120	0,39	0,57	0,27	0,22	-0,026	92	92

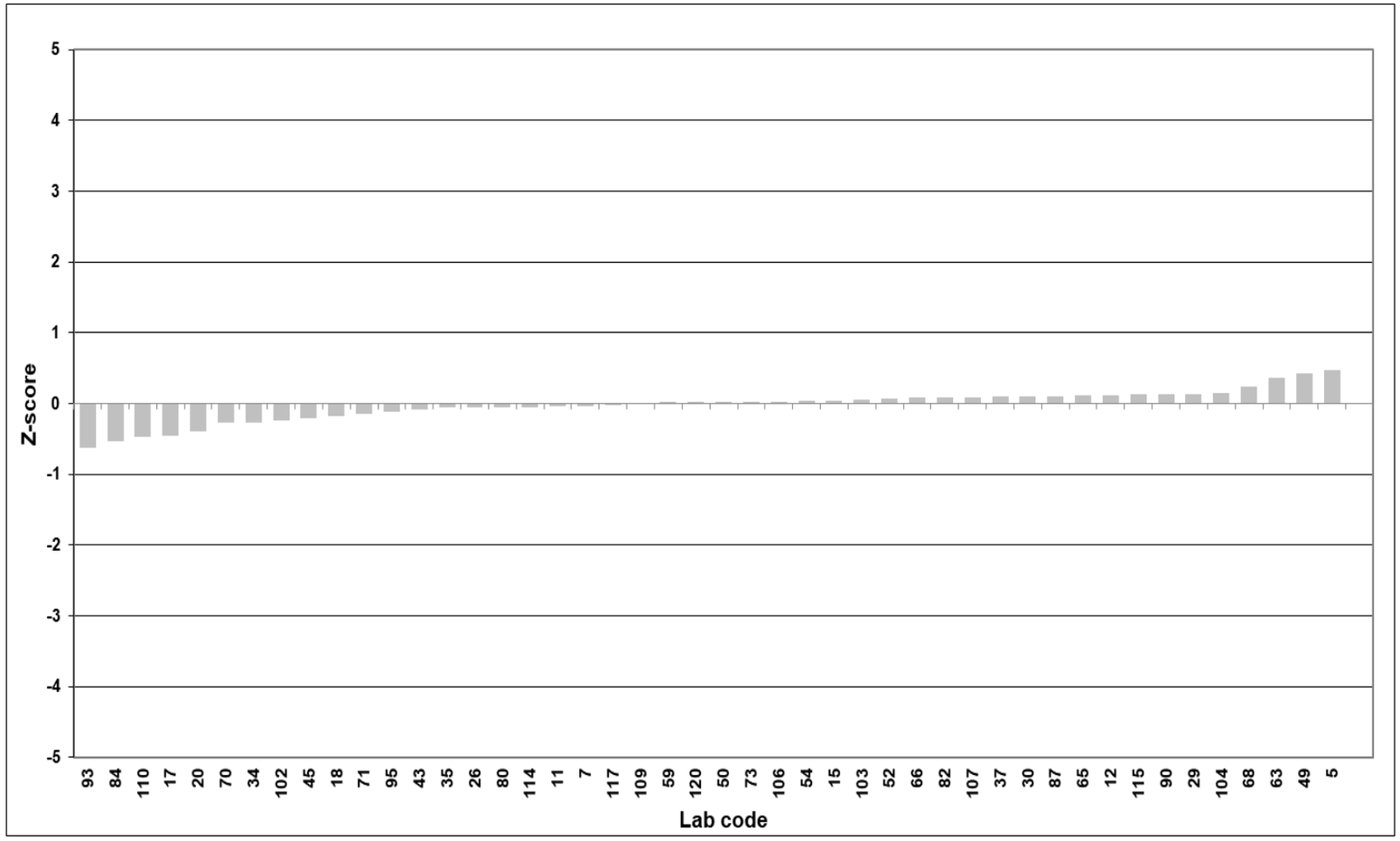
Laboratories' Z-scores: Fish oil, lipid weight

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
1							
2							
3							
4							
5							
6							
7	-0,60	-0,69	-0,58	-0,12	0,21		
8							
9							
10							
11	-0,33	0,44	-0,87	-0,31	-0,33		
12							
13							
14							
15	-0,094	0,80	-0,73	-0,039			
16							
17	1,6	-0,014	2,8	-0,24	-0,10	-0,34	-0,34
18	-0,44	0,40	-1,1	0,40	-5,0		
19							
20	0,032	-0,36	0,33	-0,17	-0,18	-0,17	-0,15
21							
22							
23	-0,11	0,18	-0,34	0,13	-0,083		
24							
25							
26	-0,36	-0,29	-0,45	0,066	0,14		
27							
28							
29	0,027	0,068	0,0077	-0,10	0,45	0,051	0,068
30	0,42	0,83	0,19	-0,43			
31							
32							
33							
34							
35	-0,18	-0,046	-0,27	-0,16	-0,40		
36							
37	0,72	0,87	0,63	0,45	0,41		
38							
39							
40	0,027	-0,025	0,021	0,55	-0,15		
41							
42							
43	-0,039	-0,20	0,023	0,56	0,46	0,58	-0,085
44							
45	0,13	1,1	-0,65	1,1	0,71		
46							
47							
48	-0,37	-0,72	-0,15	-0,036	0,091	0,26	0,28
49	0,22	-0,018	0,36	0,47	0,14	1,5	0,029
50	-0,012	0,11	-0,12	0,31	0,71		
51							
52	0,15	0,28	0,077	0,048	-0,28		
53							
54	0,76	1,2	0,47	0,34	0,41	9,4	0,21
55							
56	-0,24	-1,3	0,36	1,9	0,78		
57							
58							
59	0,15	-0,056	0,32	-0,065	-0,38		
60							
61	-0,41	-0,072	-0,58	-1,3	-0,45	94	8,41
62							
63	-0,040	-0,23	0,087	0,060	0,36	-0,79	-0,77
64							
65	0,090	0,071	-0,026	1,7	2,0	3,2	1,5
66	-2,2	-0,089	-3,6	-3,7	-1,2		
67							
68	0,43	0,52	0,40	0,088	-0,41		
69							
70	-0,45	-0,47	-0,46	-0,18	0,20	0,29	0,29

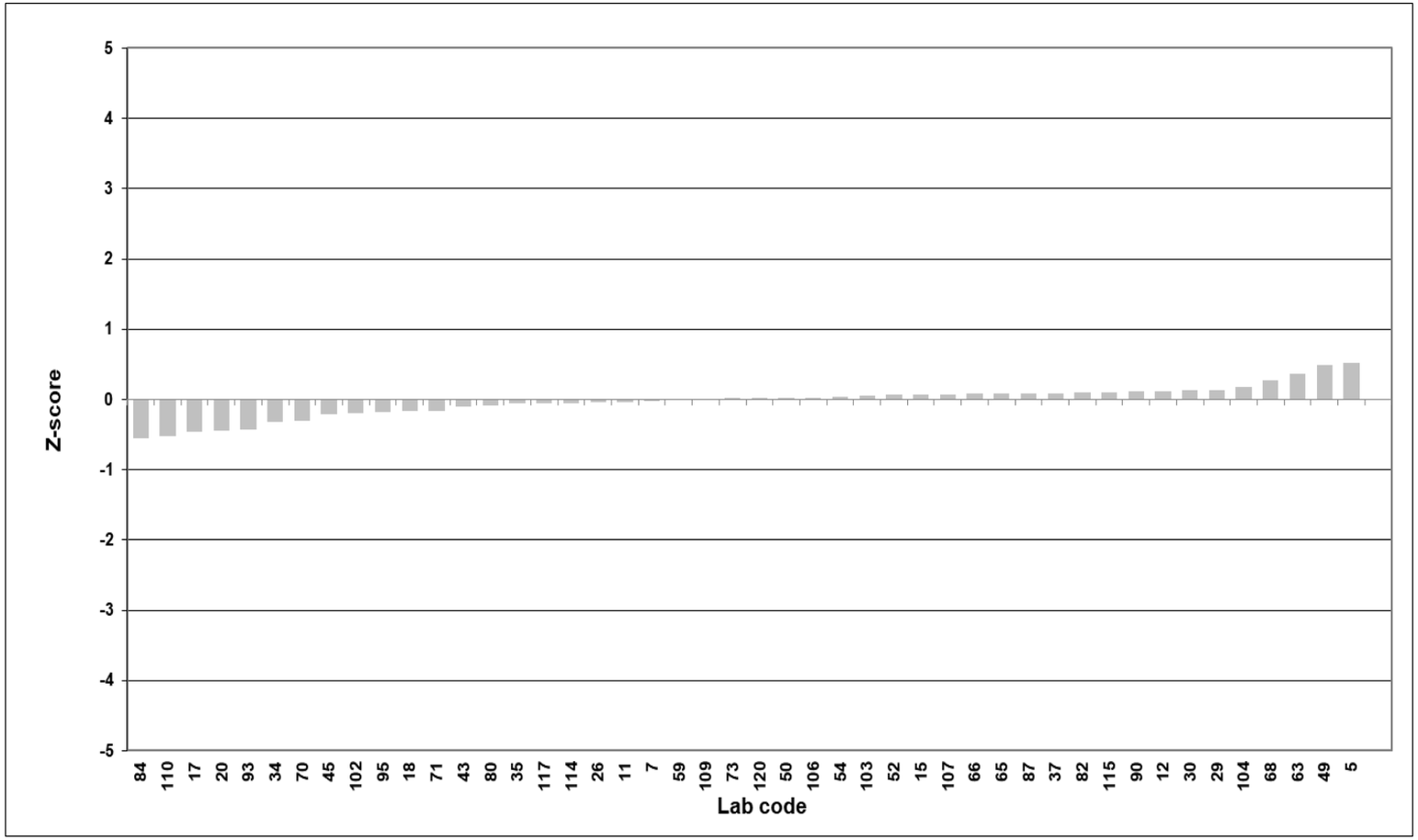
Laboratories' Z-scores: Fish oil, lipid weight (continued)

LAB CODE	Sum TE Total TEQ	Sum TE PCDD/PCDF	Sum TE non-ortho PCB	Sum TE mono-orto PCB	Sum Indicator PCB	Sum PBDE Sum with 209	Sum PBDE Sum without 209
71	0,44	-0,55	1,2	-0,46			
72							
73	-0,17	-1,0	0,40	-0,073	0,013	-0,18	-0,18
74							
75							
76							
77							
78							
79							
80							
81							
82	0,49	0,50	0,53	-0,084	0,51	0,025	-0,14
83							
84	0,053	0,22	-0,054	-0,10	0,17	0,92	0,94
85							
86							
87							
88							
89							
90	-0,10	-0,12	-0,12	0,32		0,33	0,18
91							
92							
93	-1,1		1,6	0,033	0,57	-0,36	-0,36
94	0,026	-0,039	0,037	0,45	1,2		
95	0,061	-0,0086	0,12	-0,053	-0,15		
96							
97	1,1	0,92	1,1	2,3	-5,0		
98							
99							
100							
101							
102	-0,54	0,34	-1,2	-0,29	-0,21	0,29	0,31
103	0,089	0,15	0,056	-0,033	-0,25		
104	-0,32	0,0042	-0,57	-0,015	0,37	0,11	0,052
105							
106	0,24	0,77	-0,17	0,84	0,65	-0,00020	0,017
107	0,15	0,30	0,030	0,41	-0,57		
108							
109	0,55	-0,60	1,4	-0,36			
110							
111	-0,11	-0,023	-0,19	0,072			
112							
113							
114	-0,68	-0,26	-0,98	-0,69	-0,71		
115	-0,16	-0,32	-0,11	0,65	-0,031		
116							
117	1,4	0,27	2,3	-0,26	0,24	0,27	0,11
118							
119							
120	0,39	0,57	0,27	0,22	-0,026	92	92

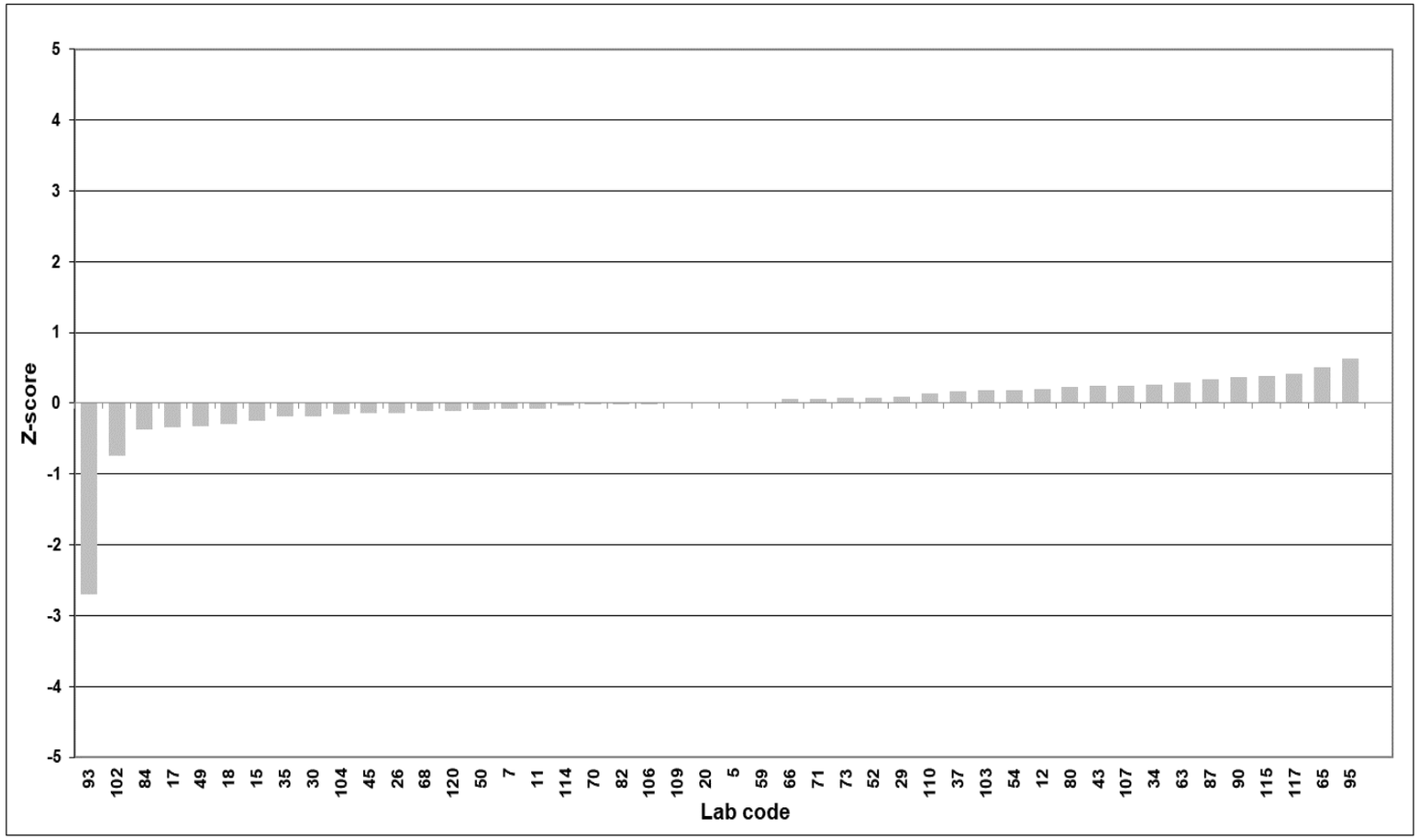
Z-score analyte solution; total TEQ



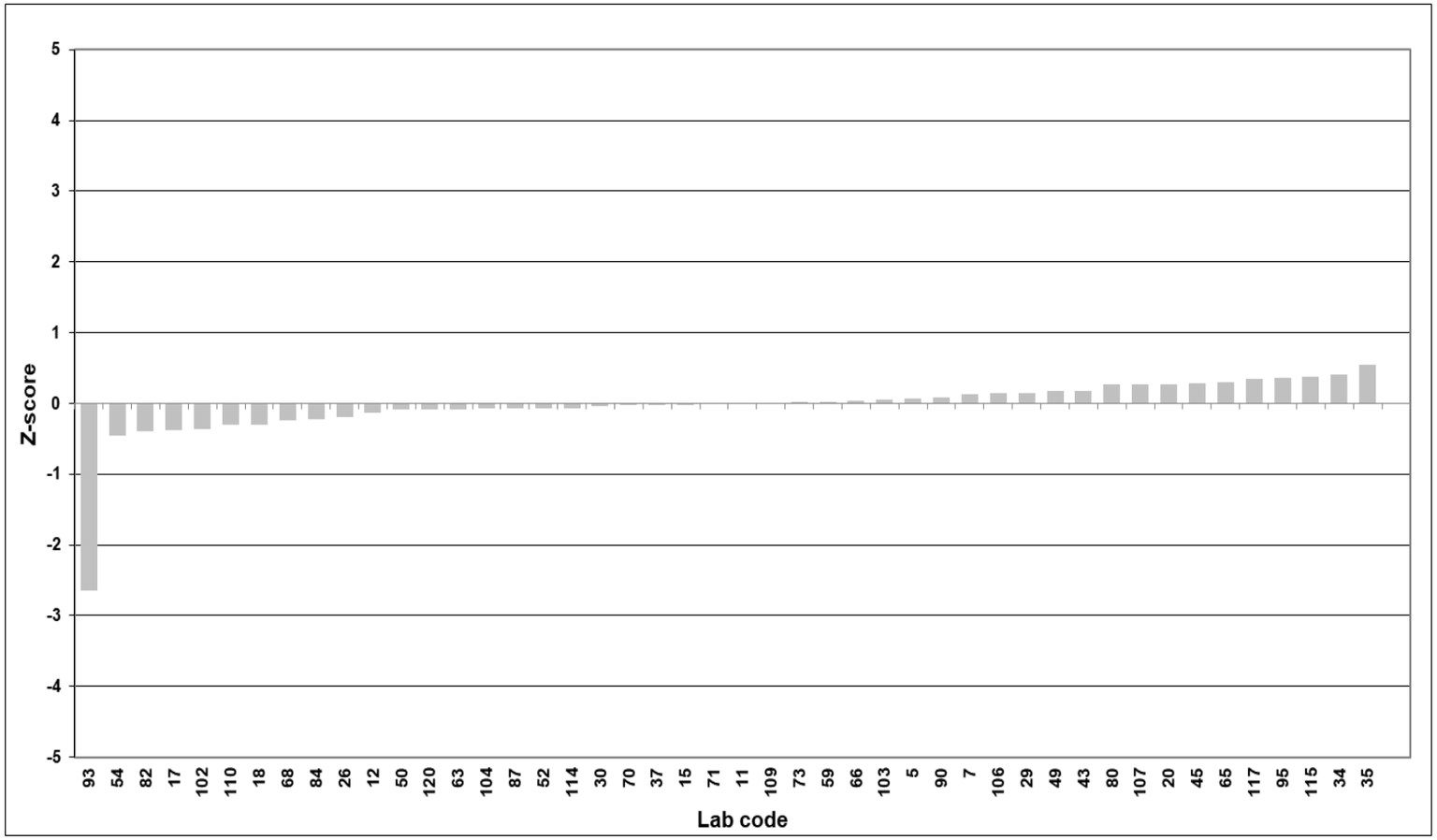
Z-score analyte solution; PCDD/PCDF TEQ



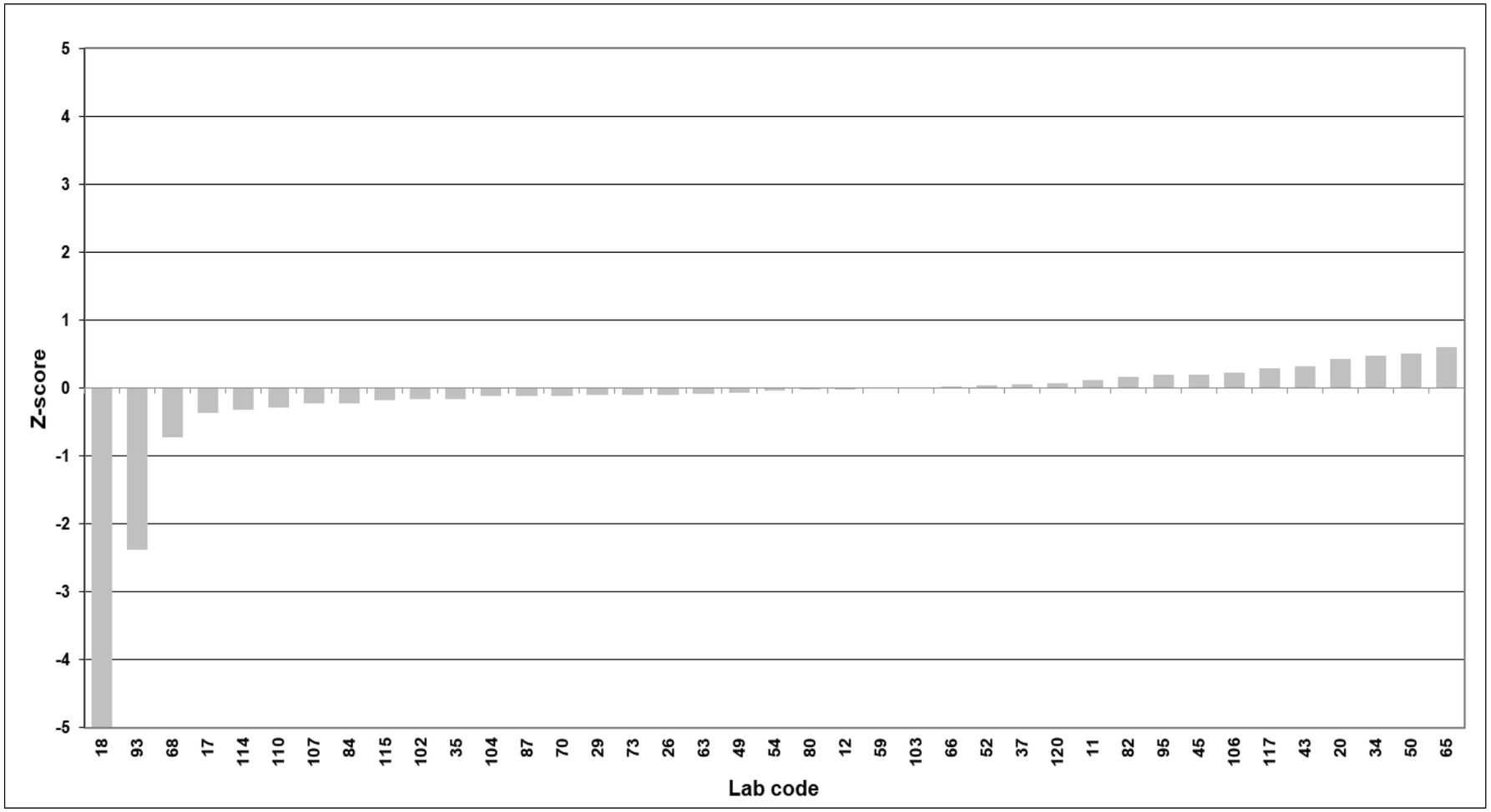
Z-score analyte solution; non-ortho PCB TEQ



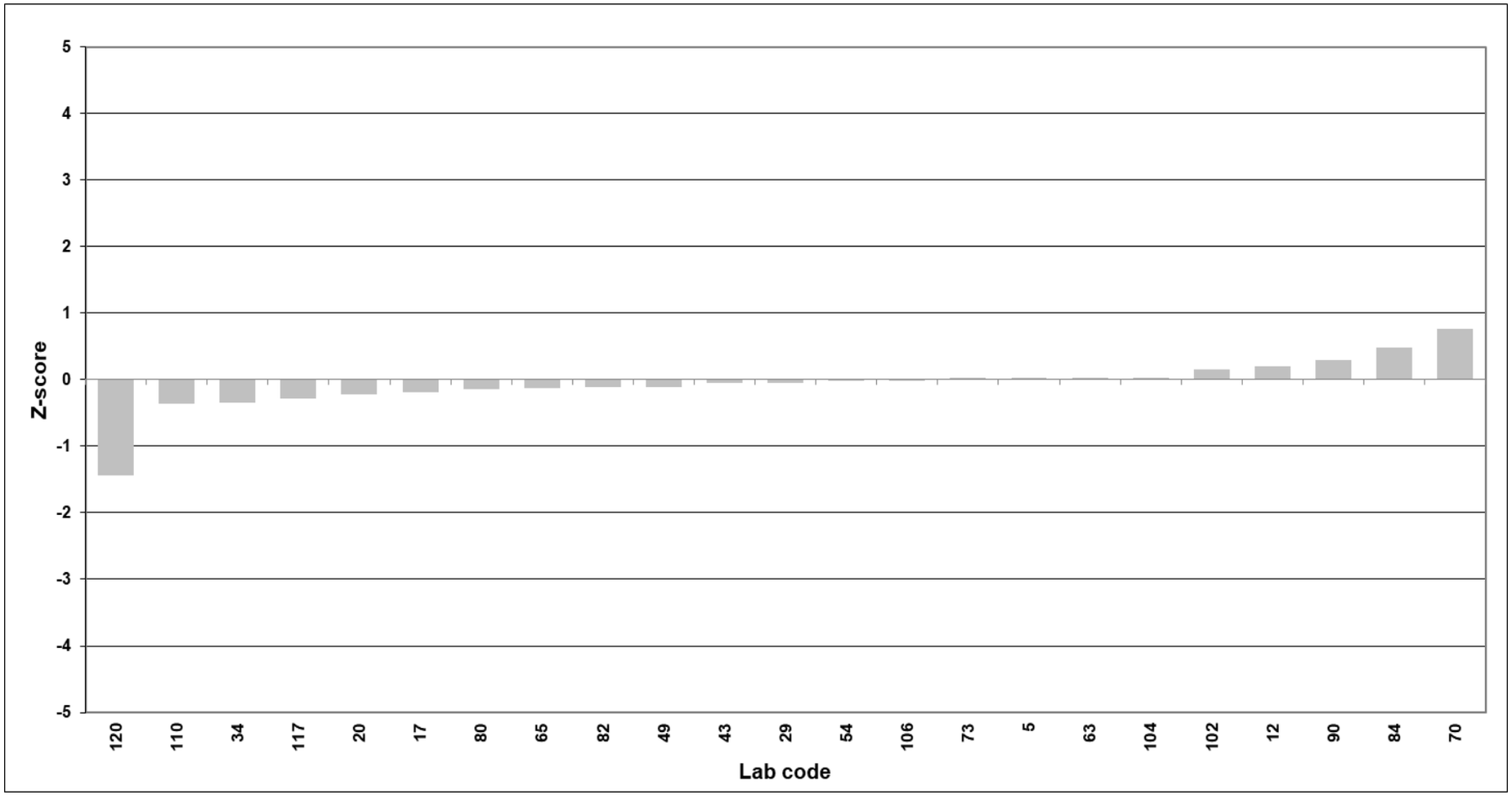
Z-score analyte solution; mono-ortho PCB TEQ



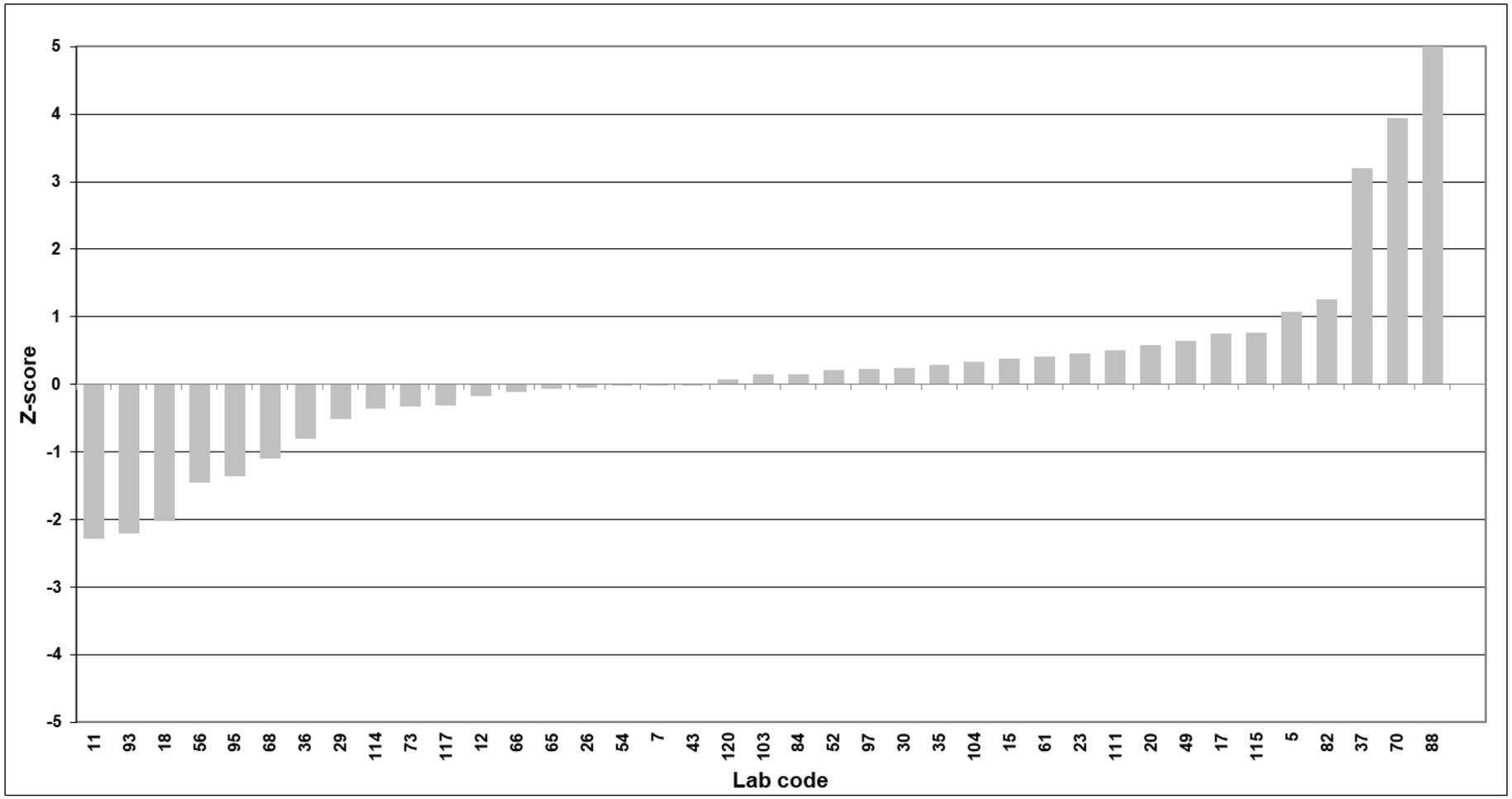
Z-score analyte solution; sum indicator PCB



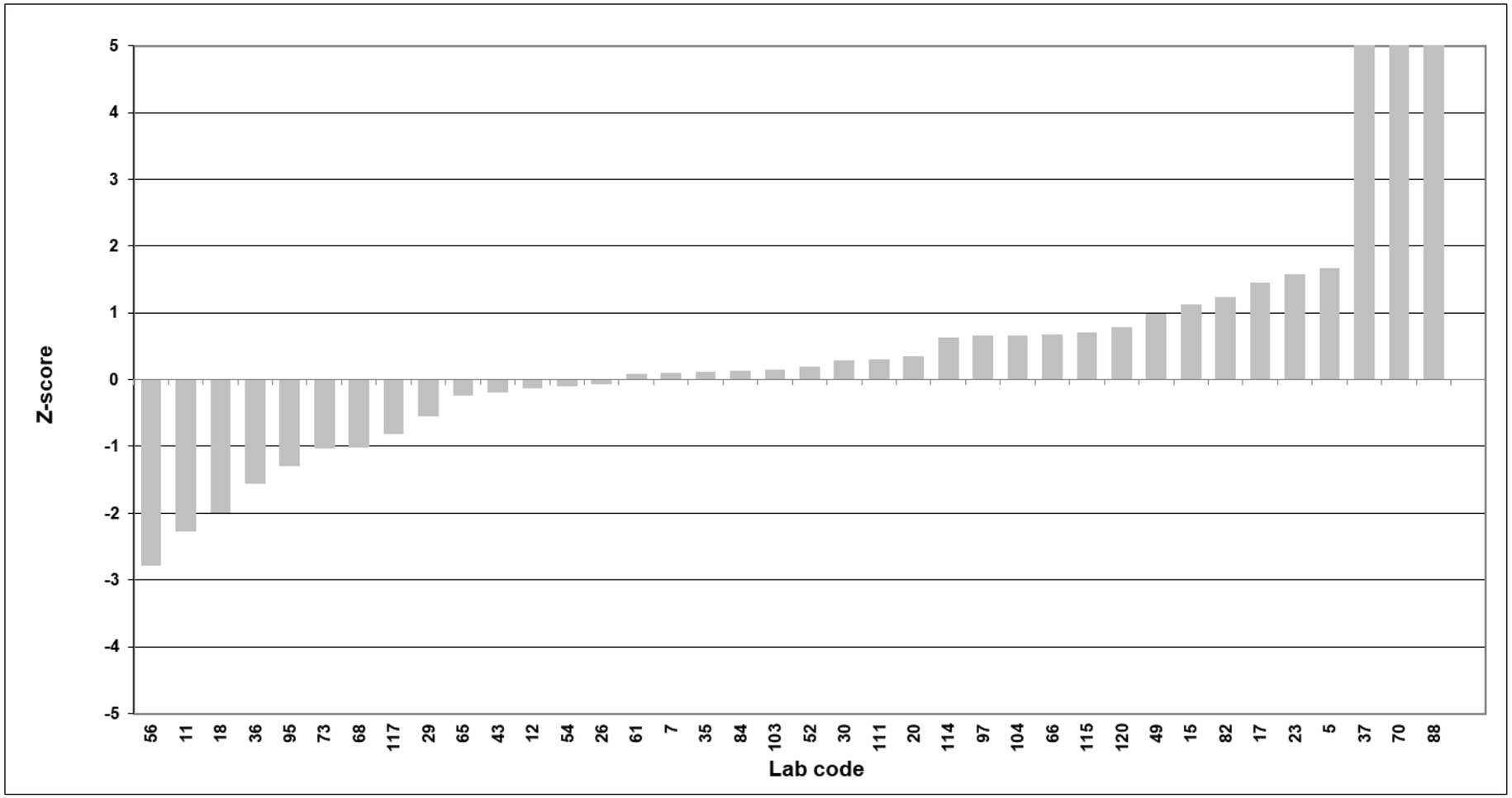
Z-score analyte solution; sum PBDE without PBDE-209



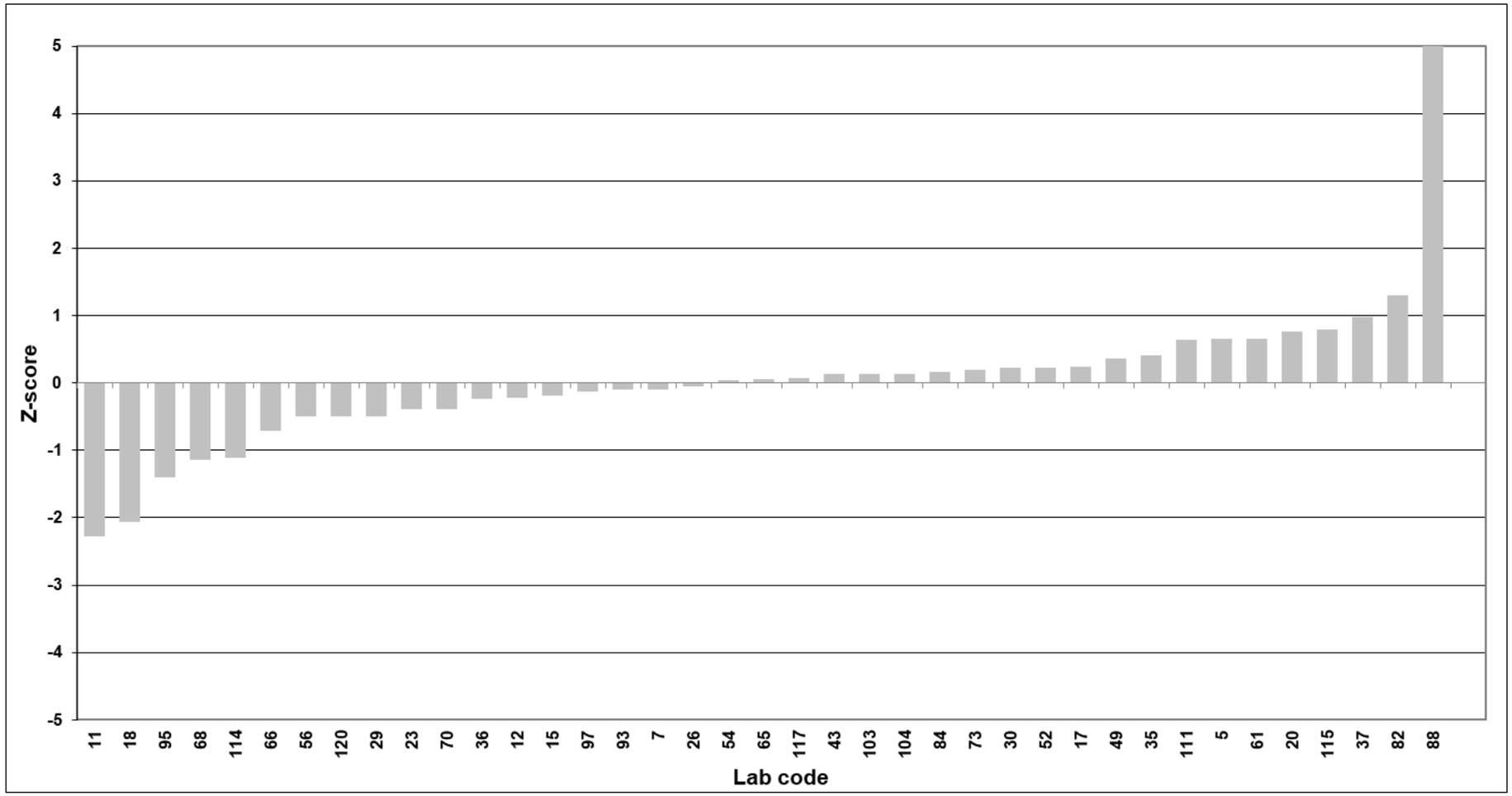
Z-score Reindeer, fresh weight; total TEQ



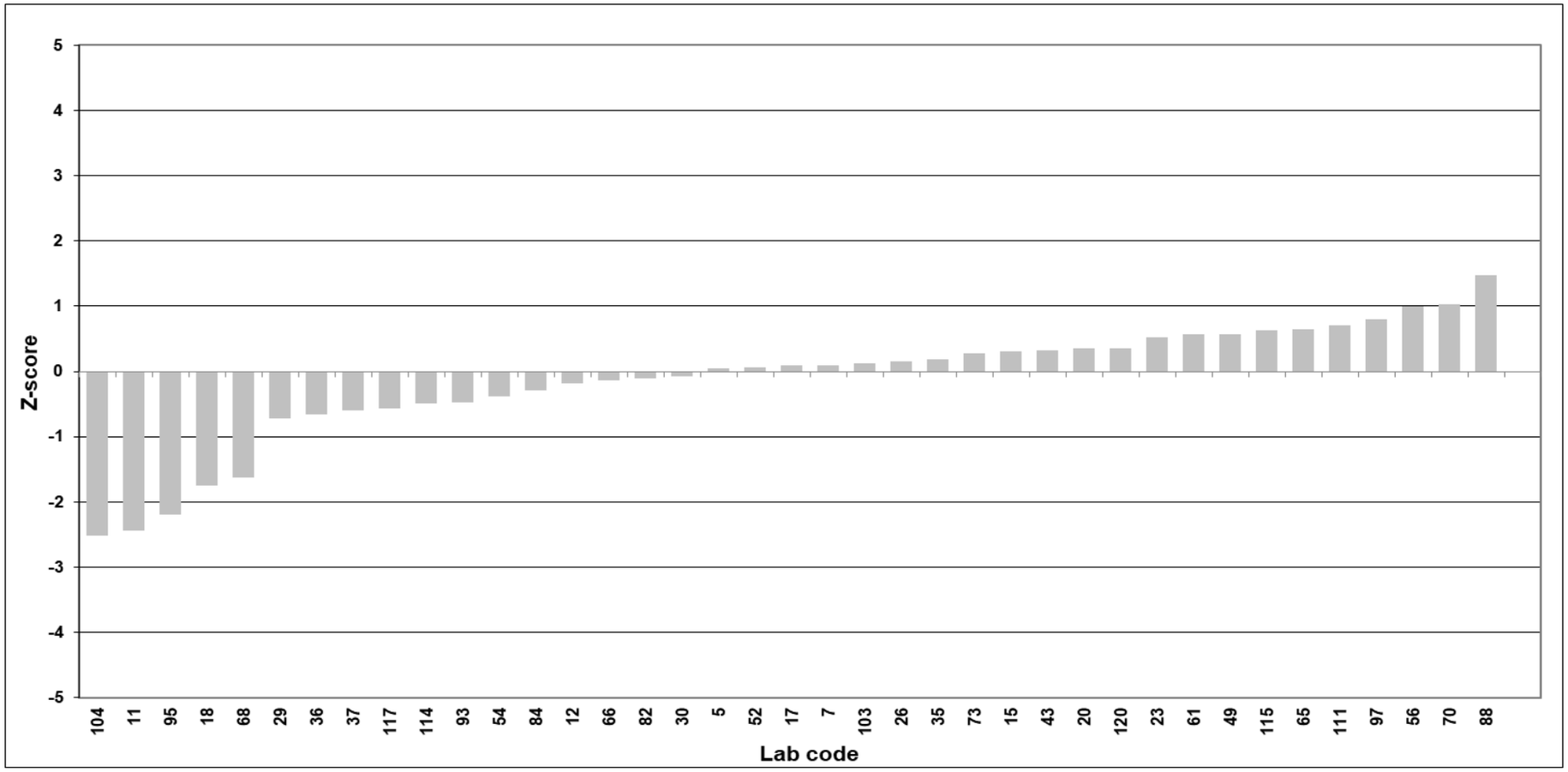
Z-score Reindeer, fresh weight; PCDD/PCDF TEQ



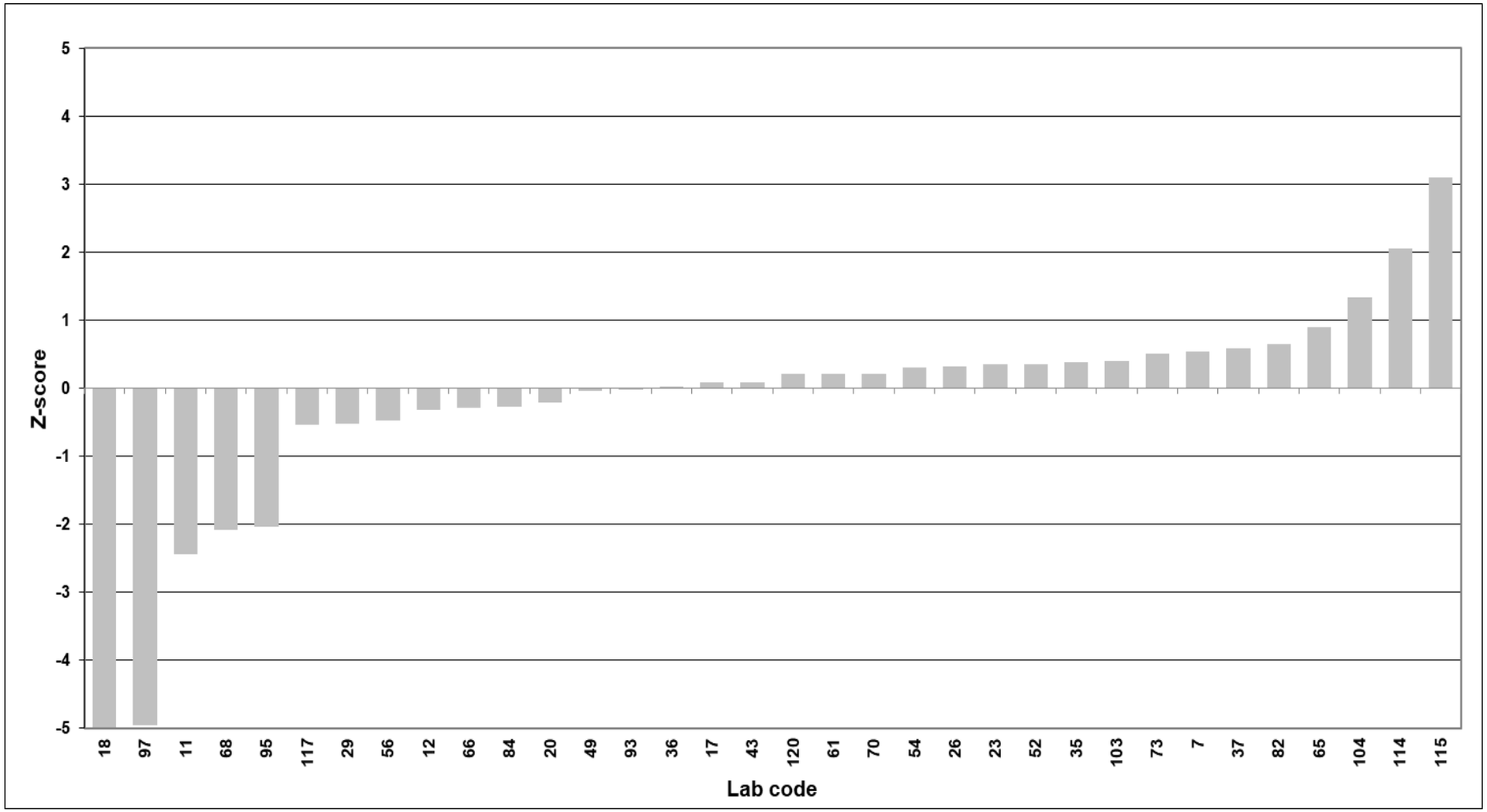
Z-score Reindeer, fresh weight; non-ortho PCB TEQ



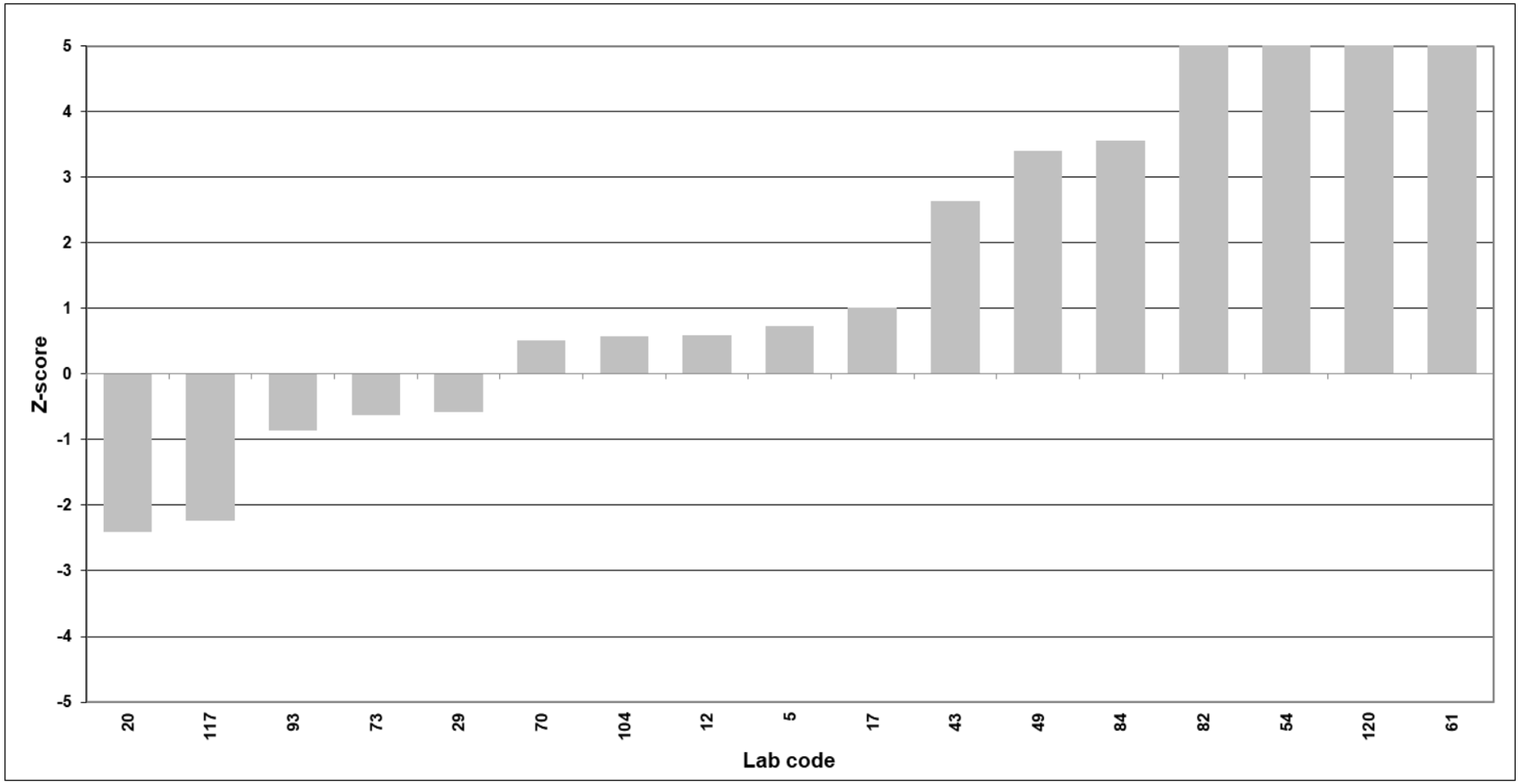
Z-score Reindeer, fresh weight; mono-ortho PCB TEQ



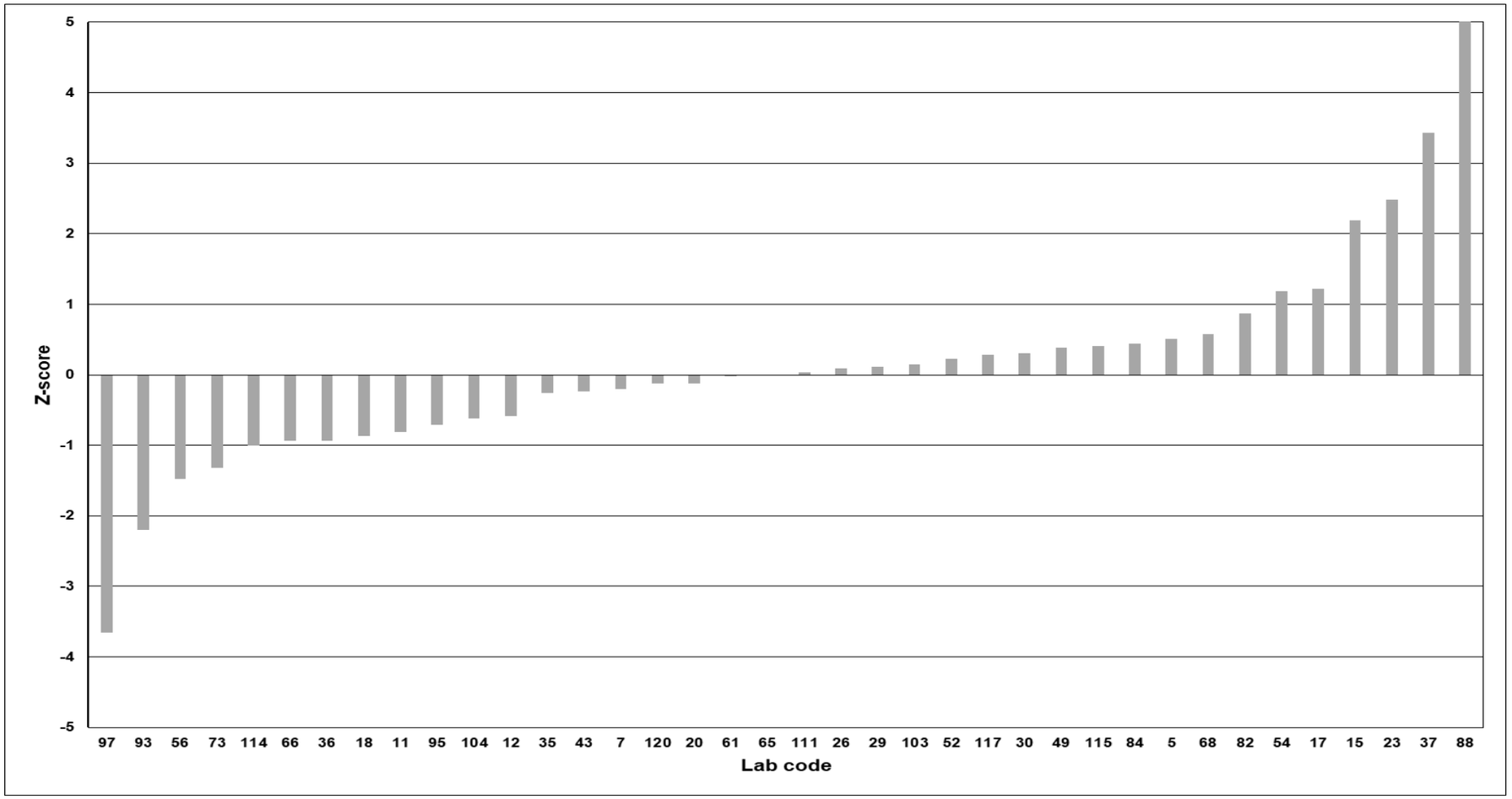
Z-score Reindeer, fresh weight; sum indicator PCB



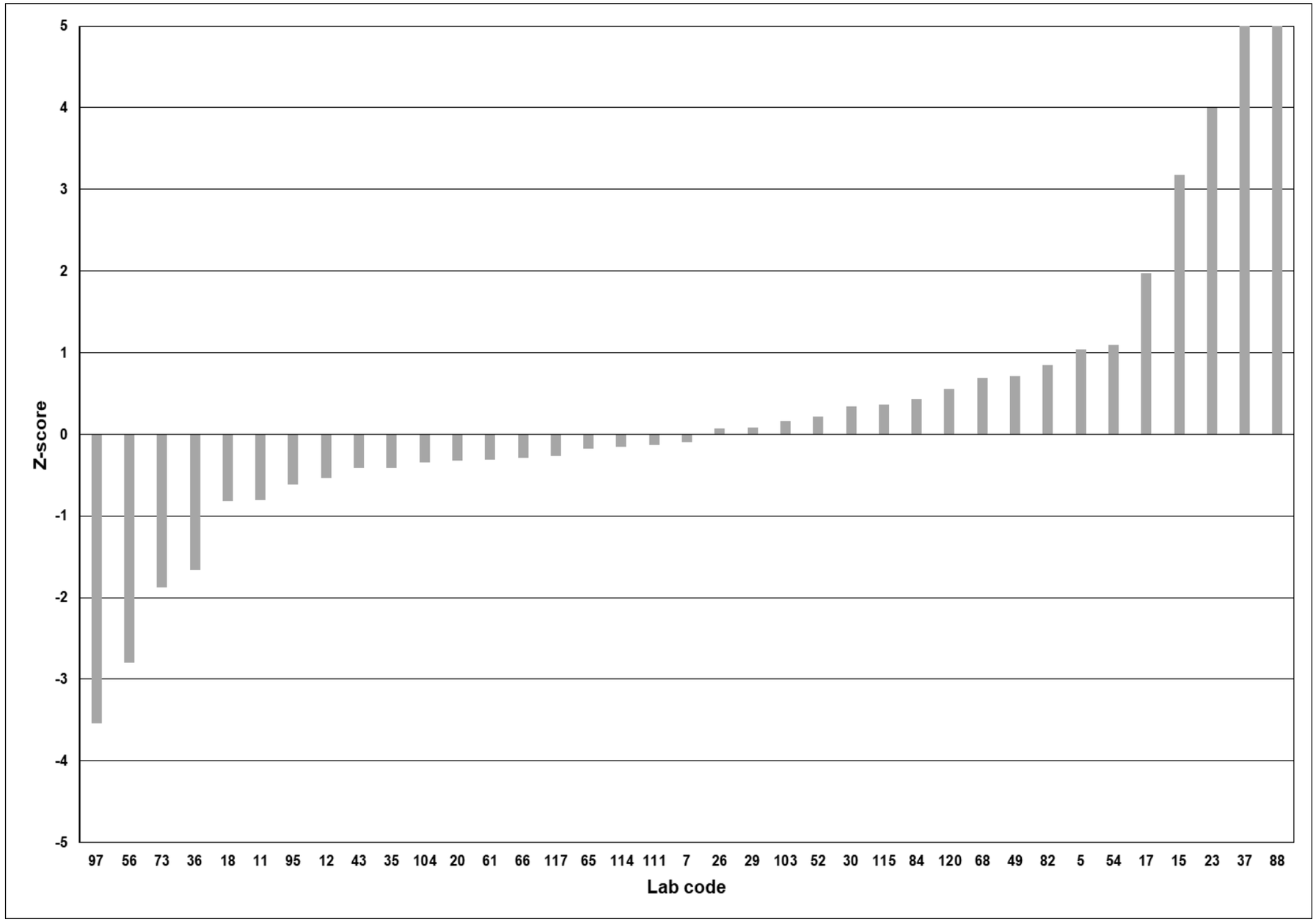
Z-score Reindeer, fresh weight; sum PBDE without PBDE-209



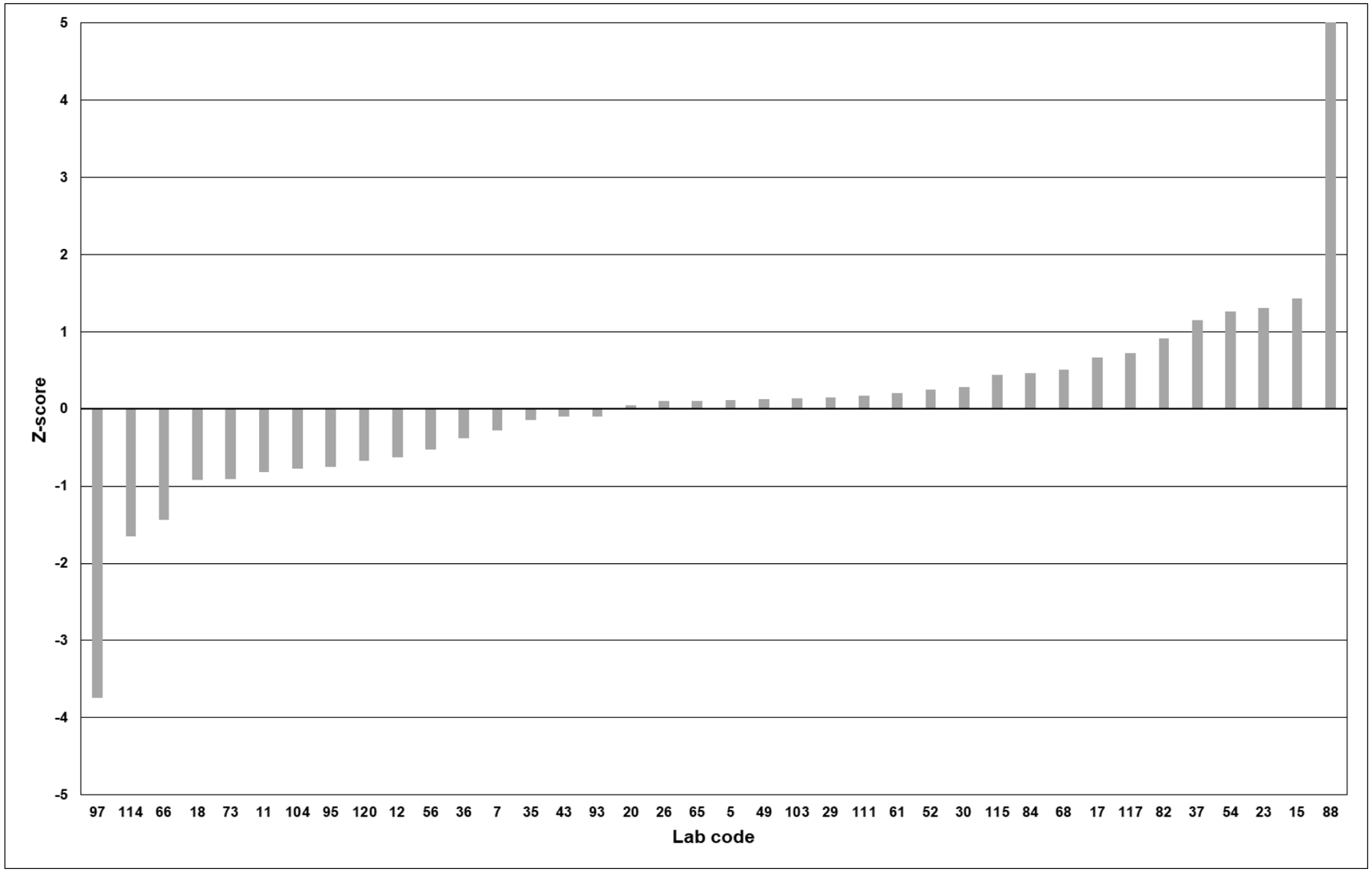
Z-score Reindeer, lipid weight; total TEQ



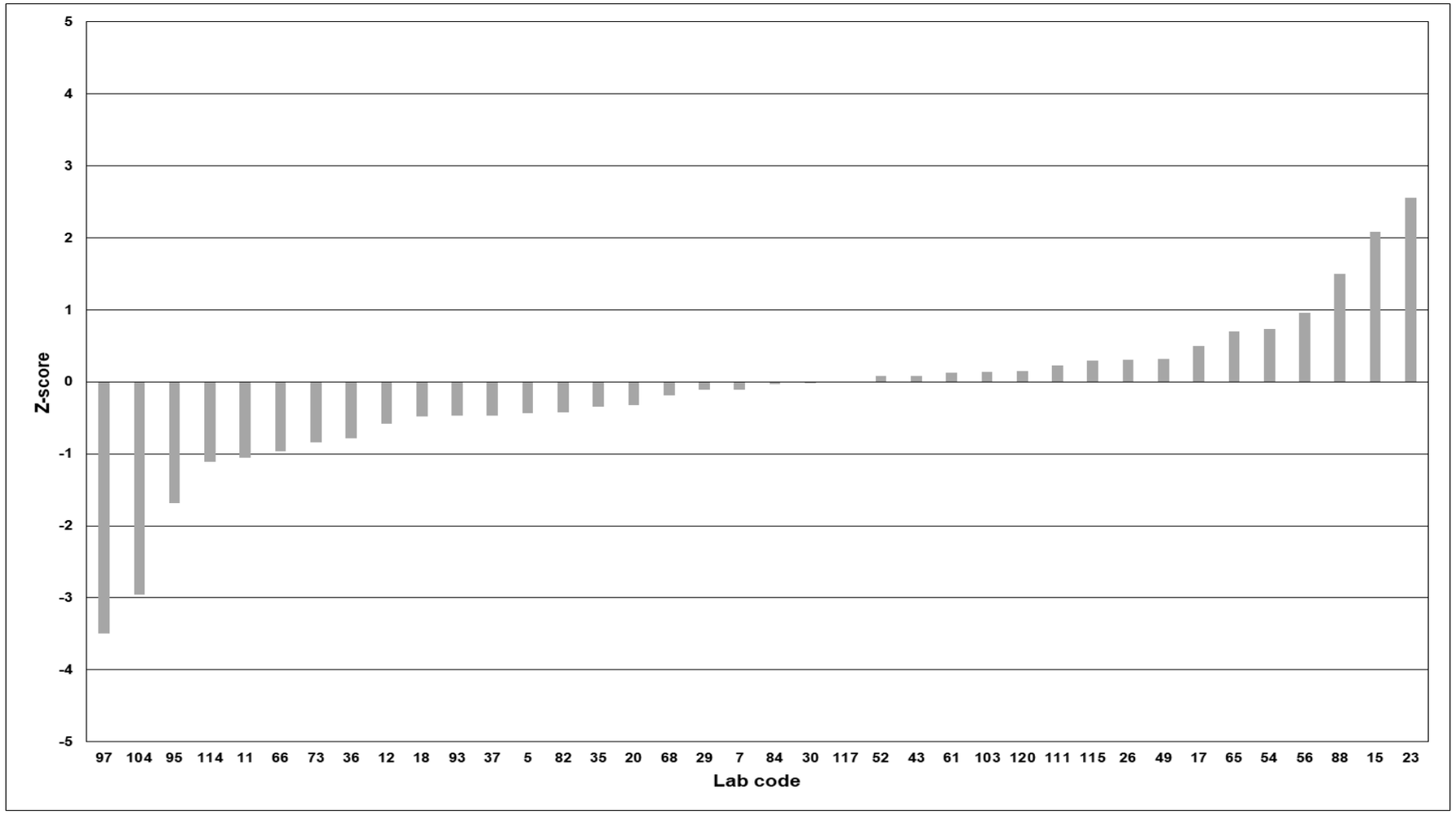
Z-score Reindeer, lipid weight; PCDD/PCDF TEQ



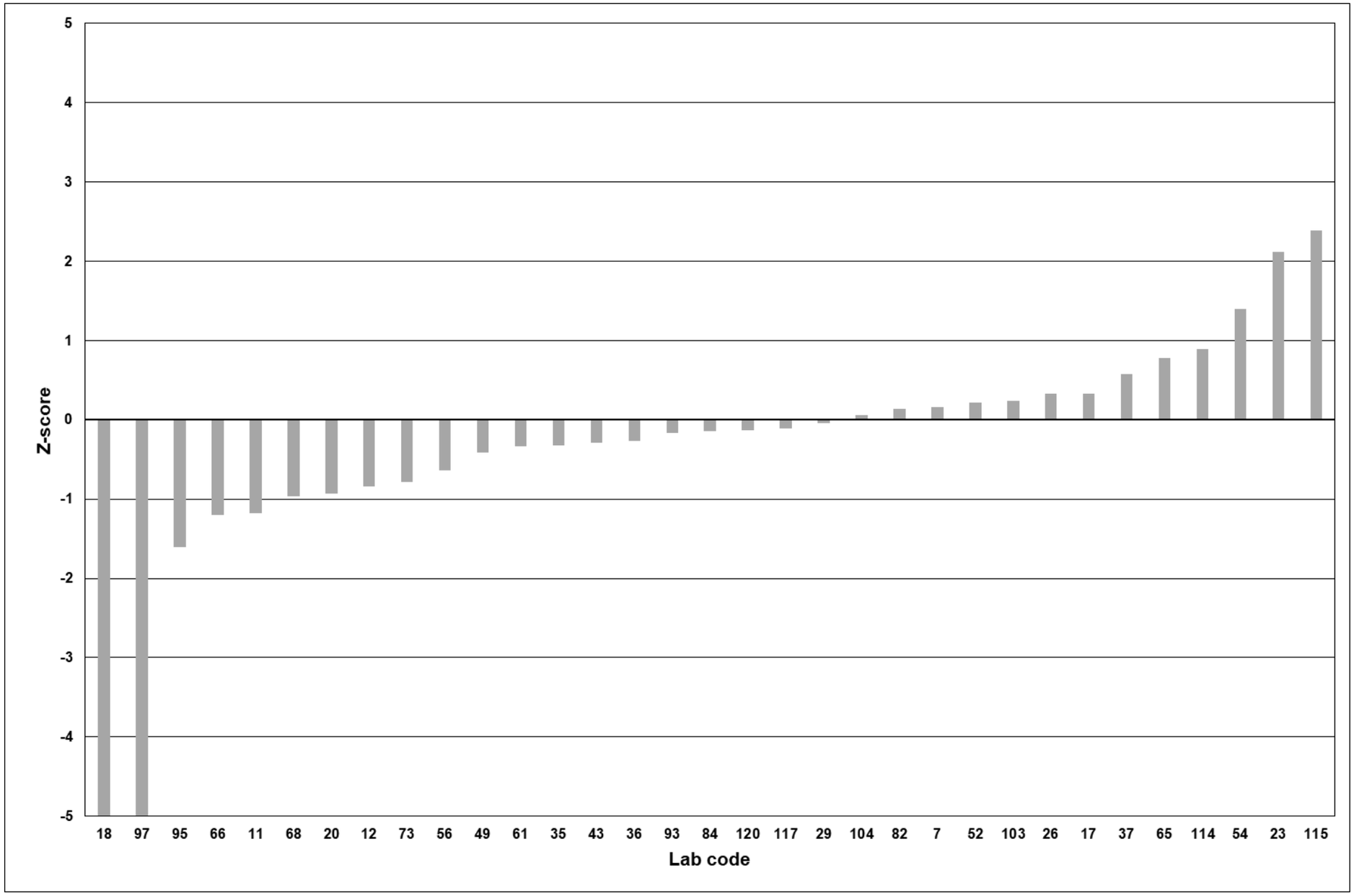
Z-score Reindeer, lipid weight; non-ortho PCB TEQ



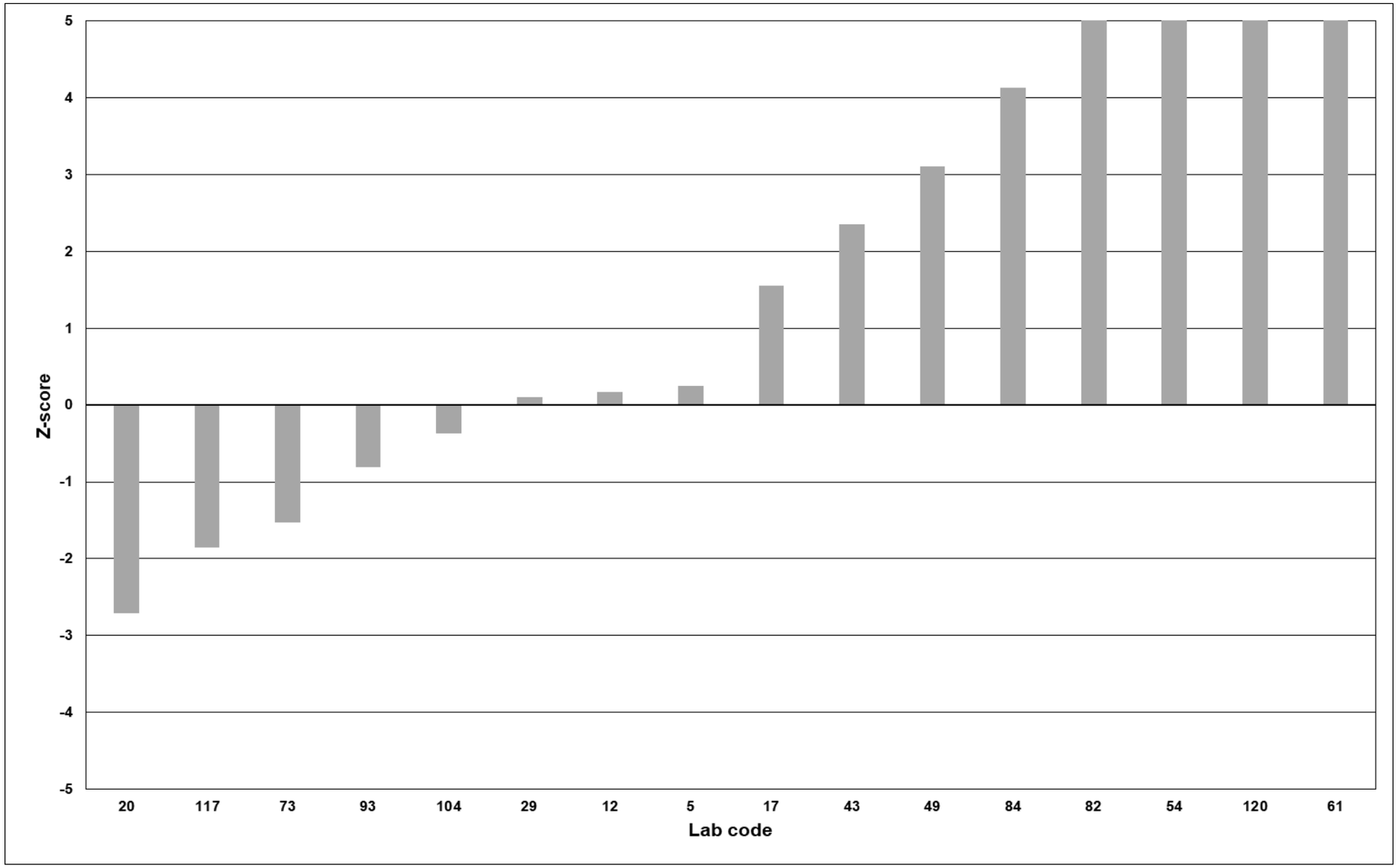
Z-score Reindeer, lipid weight; mono-ortho PCB TEQ



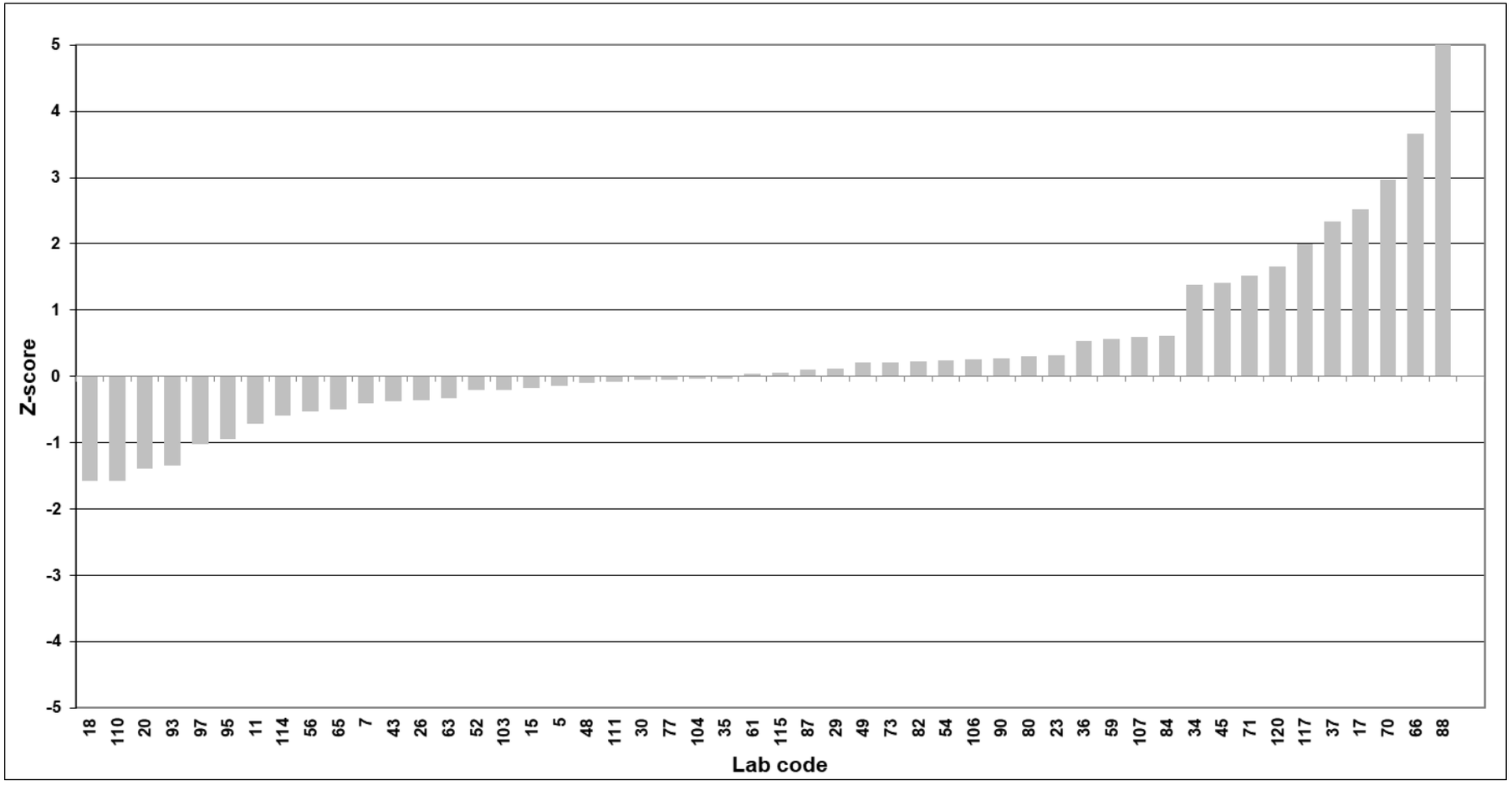
Z-score Reindeer, lipid weight; sum indicator PCB



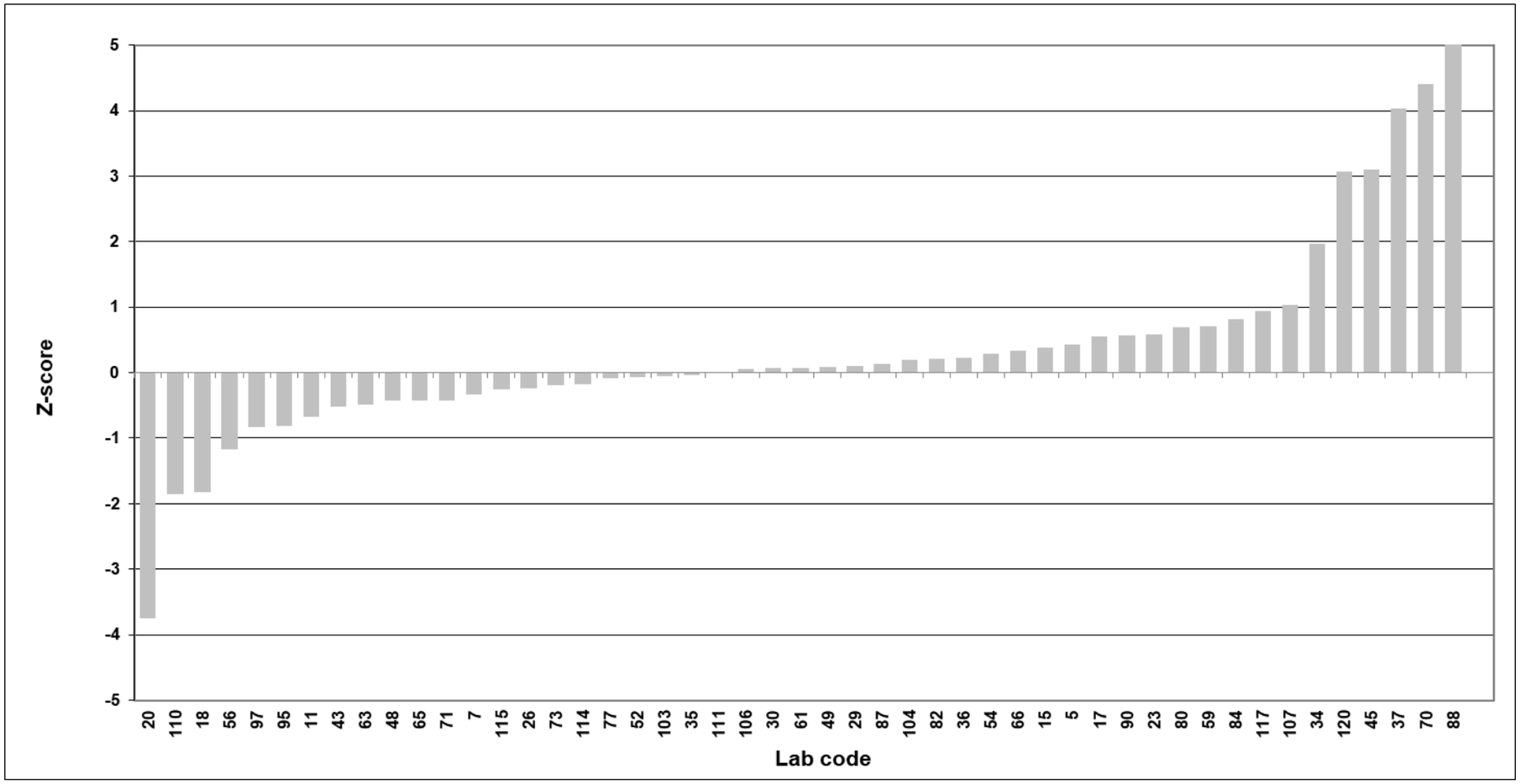
Z-score Reindeer, lipid weight; sum PBDE without PBDE-209



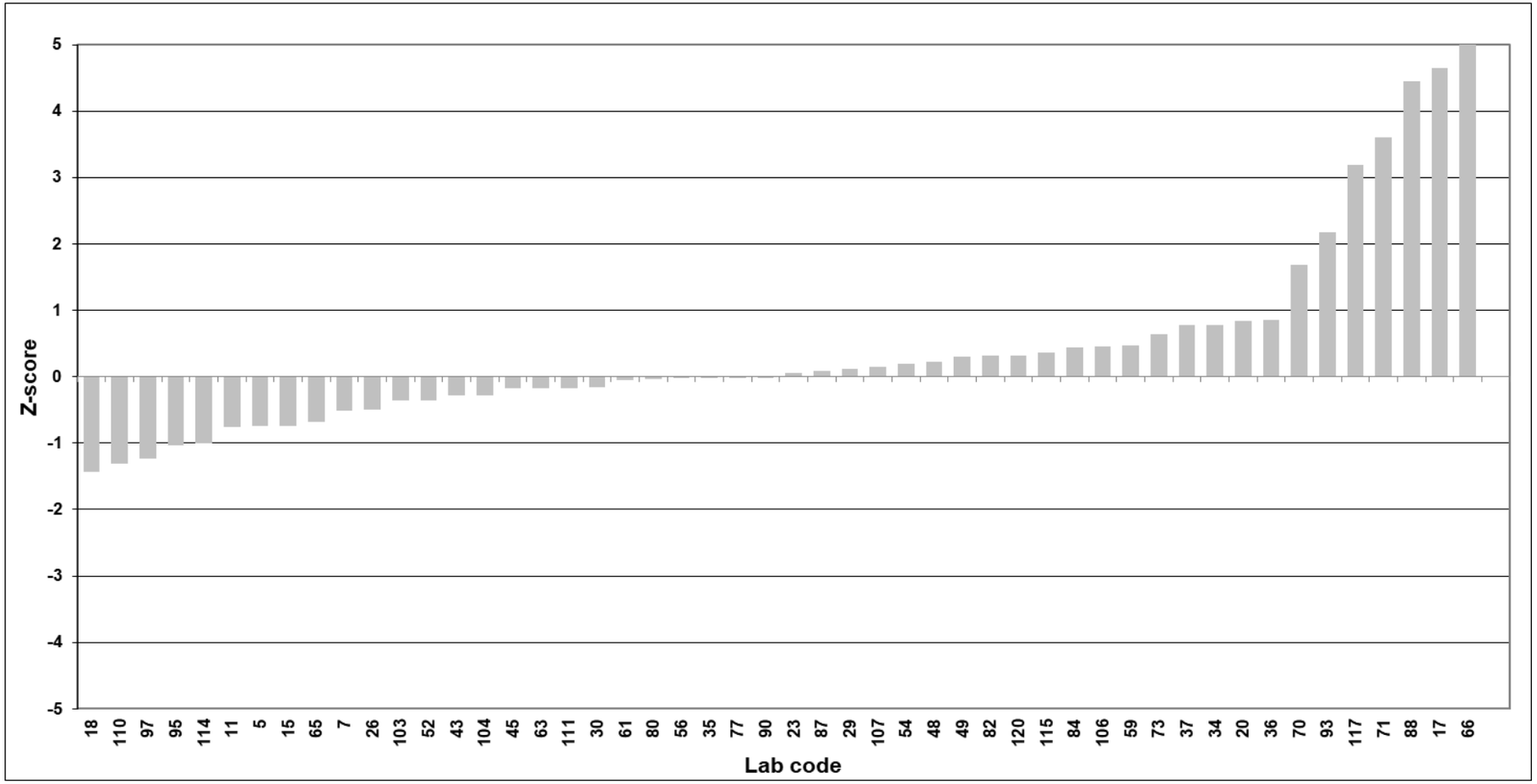
Z-score Herring, fresh weight; total TEQ



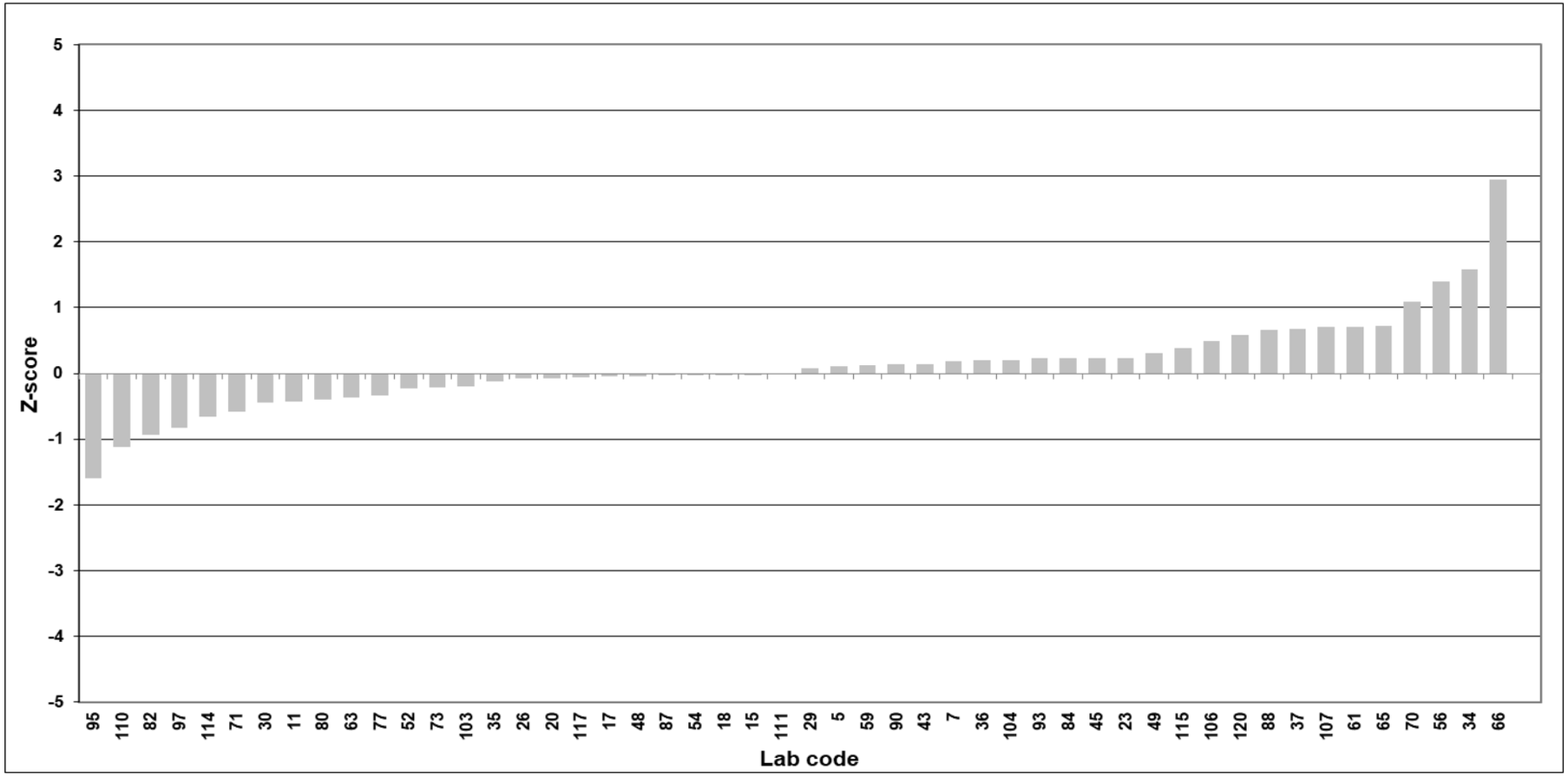
Z-score Herring, fresh weight; PCDD/PCDF TEQ



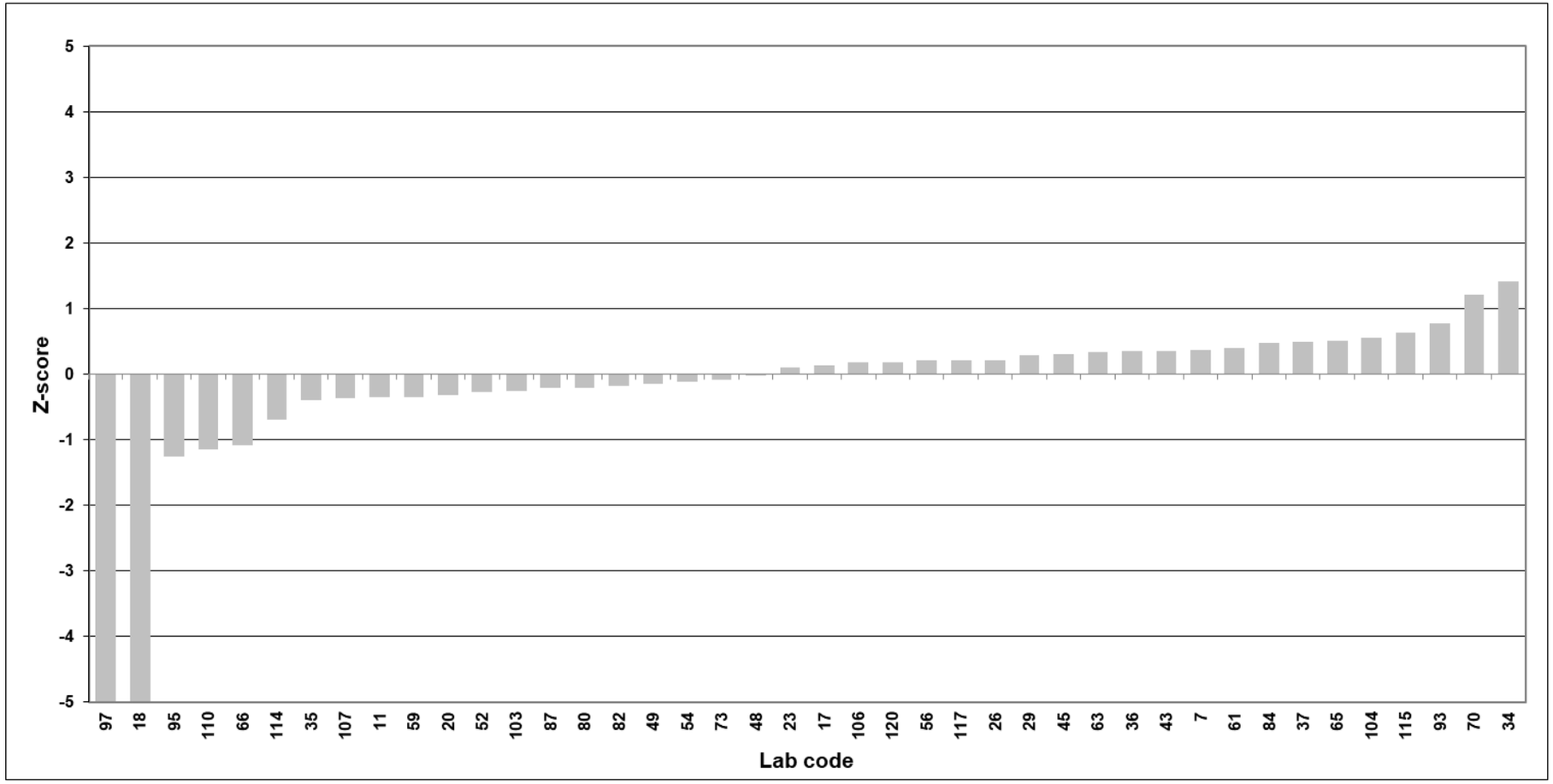
Z-score Herring, fresh weight; non-ortho PCB TEQ



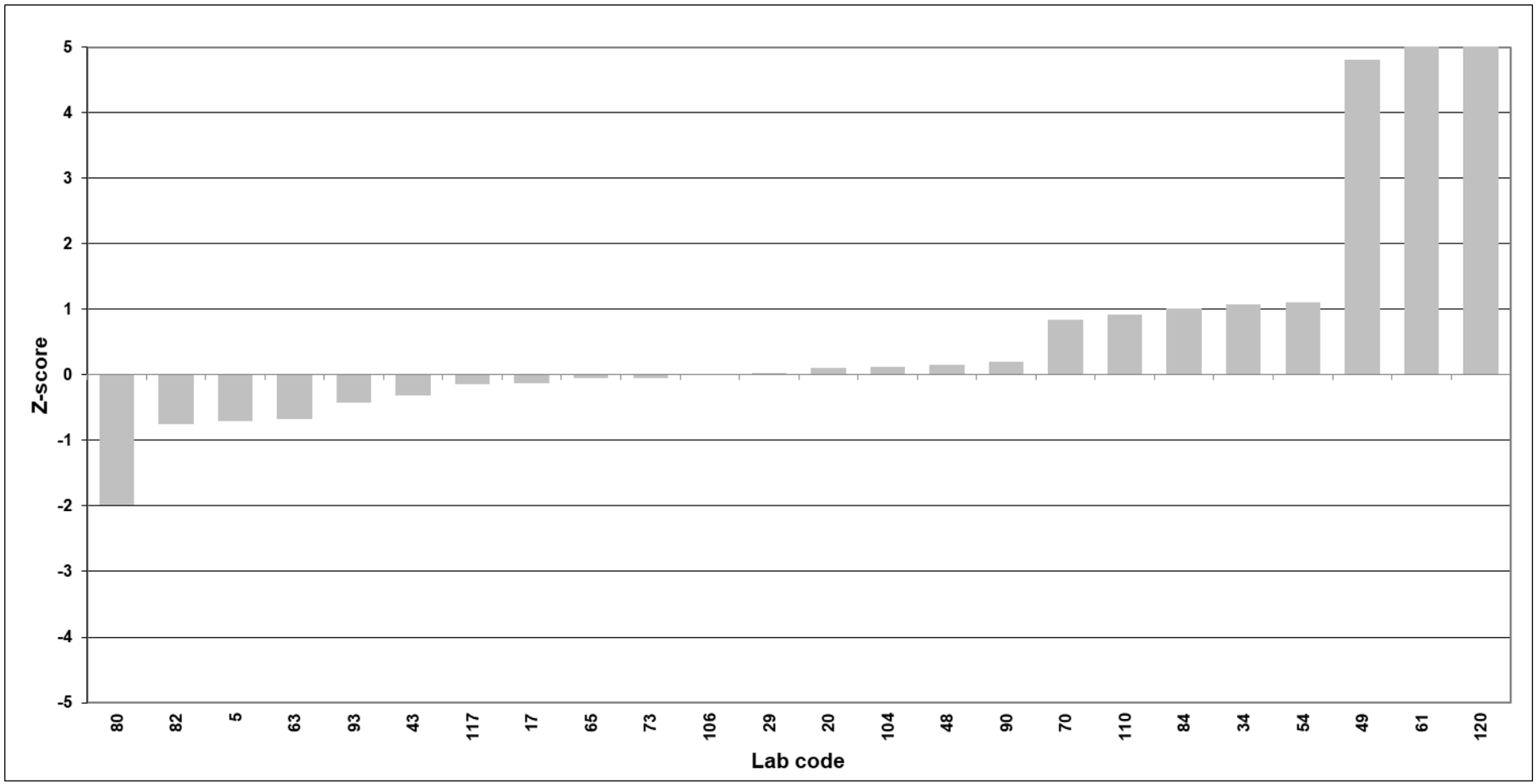
Z-score Herring, fresh weight; mono-ortho PCB TEQ



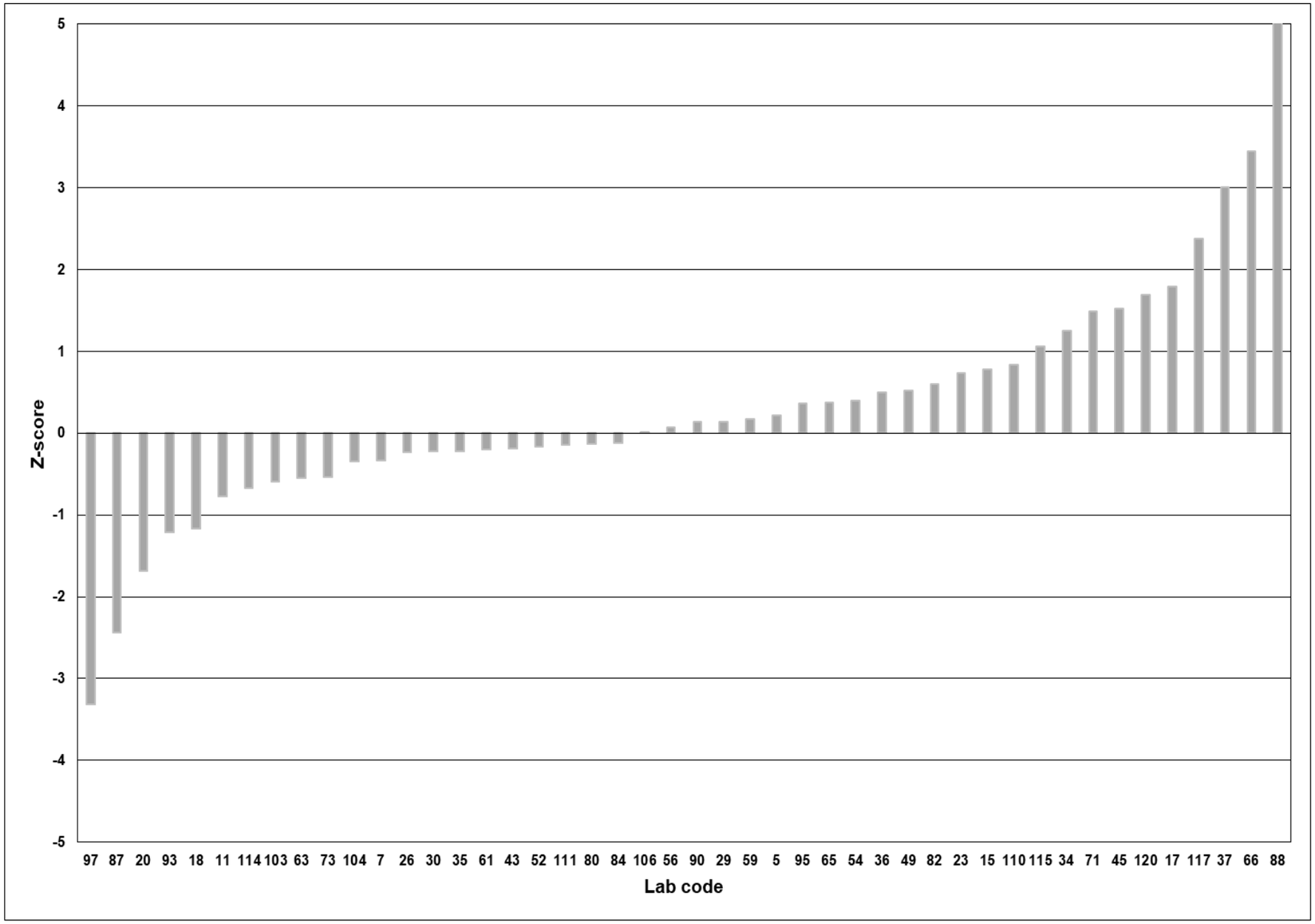
Z-score Herring, fresh weight; sum indicator PCB



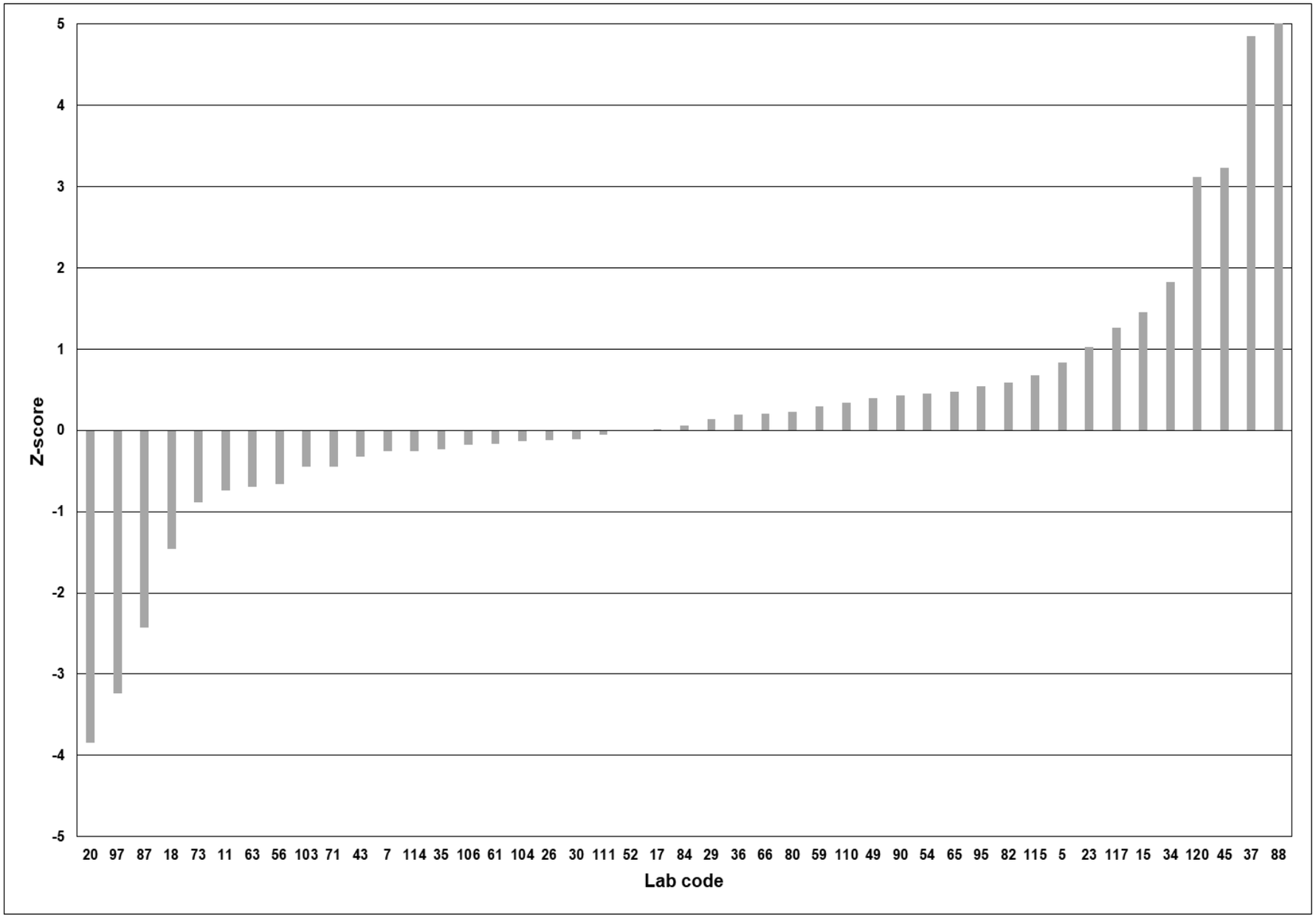
Z-score Herring, fresh weight; sum PBDE without PBDE-209



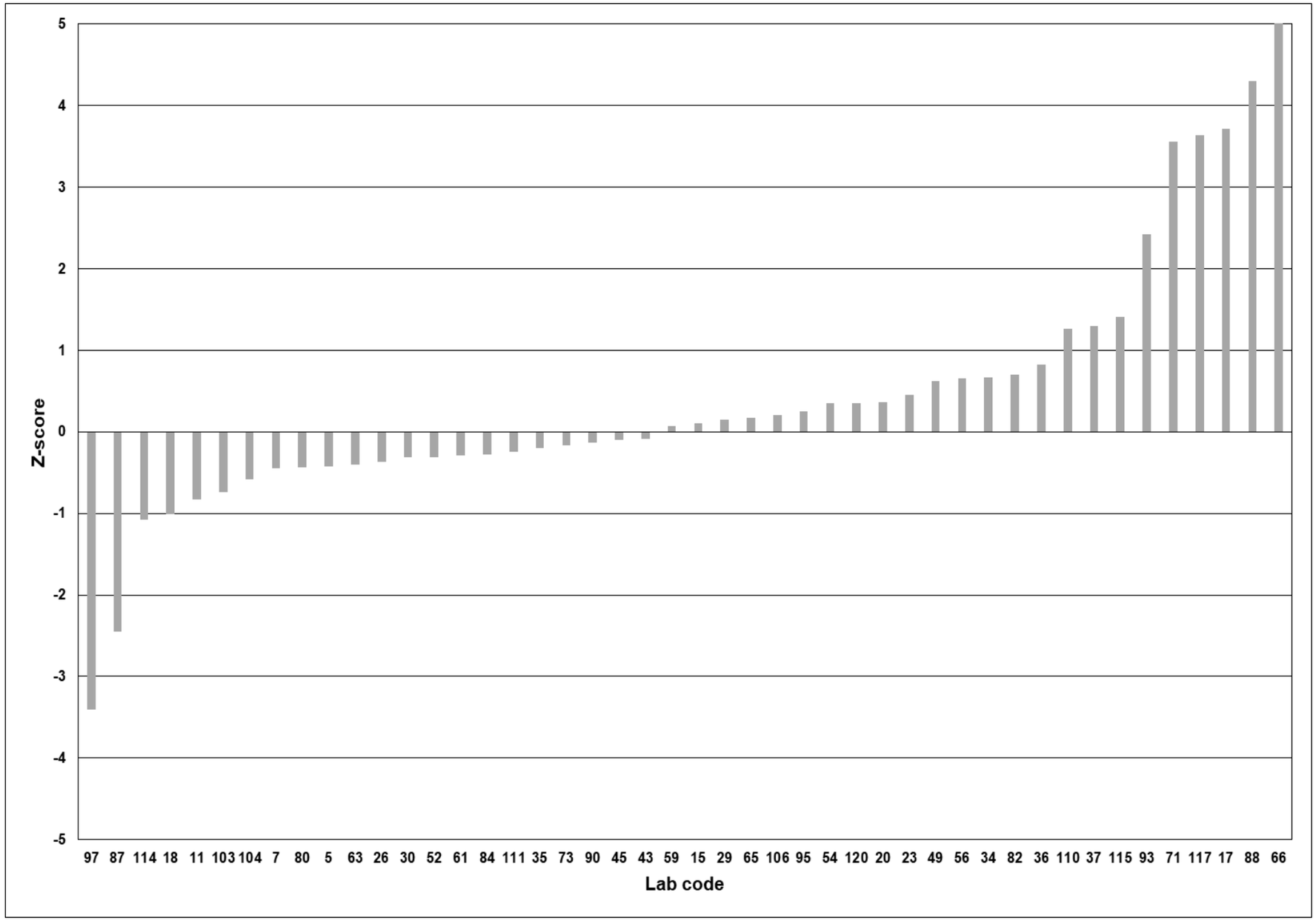
Z-score Herring, lipid weight; total TEQ



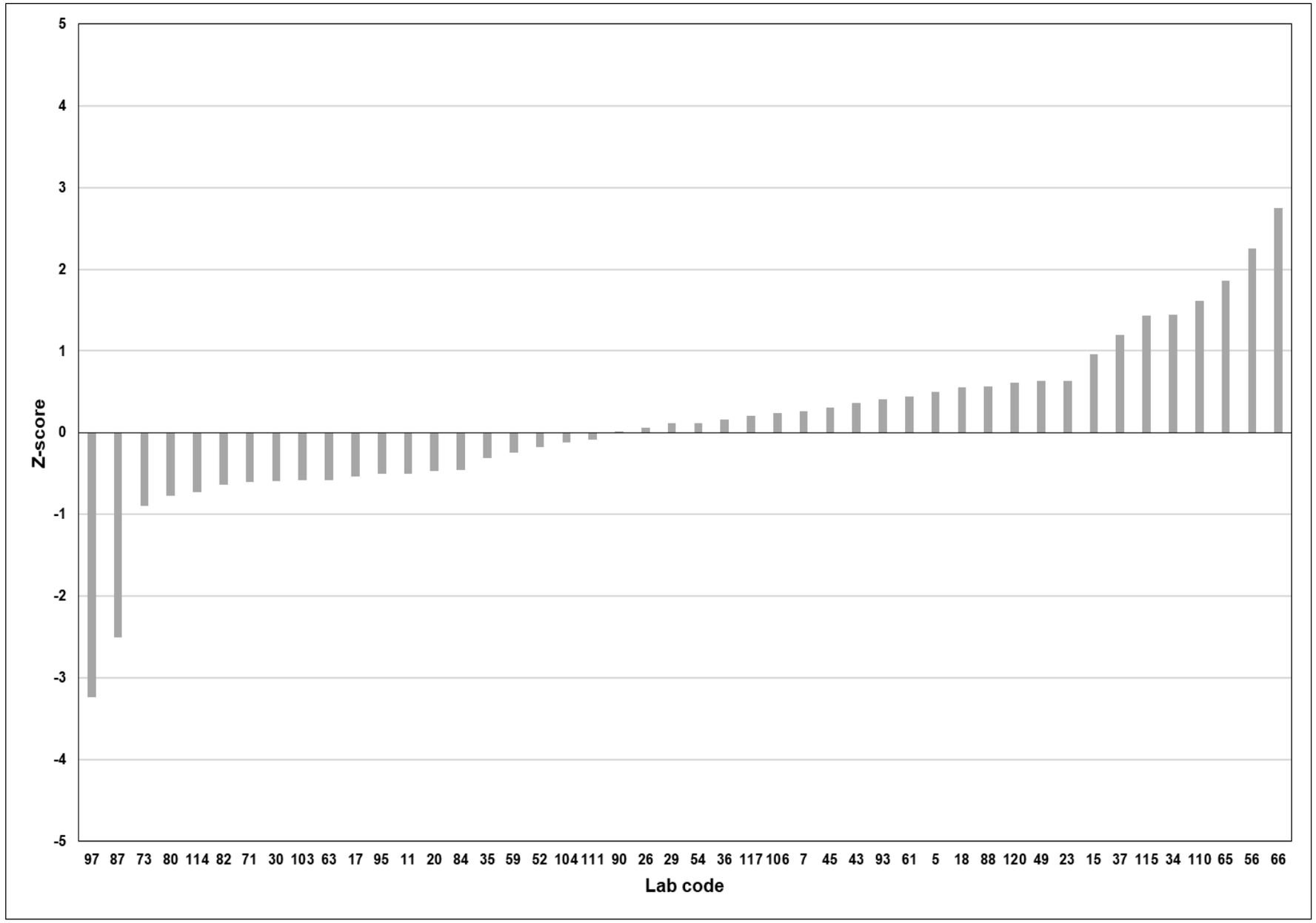
Z-score Herring, lipid weight; PCDD/PCDF TEQ



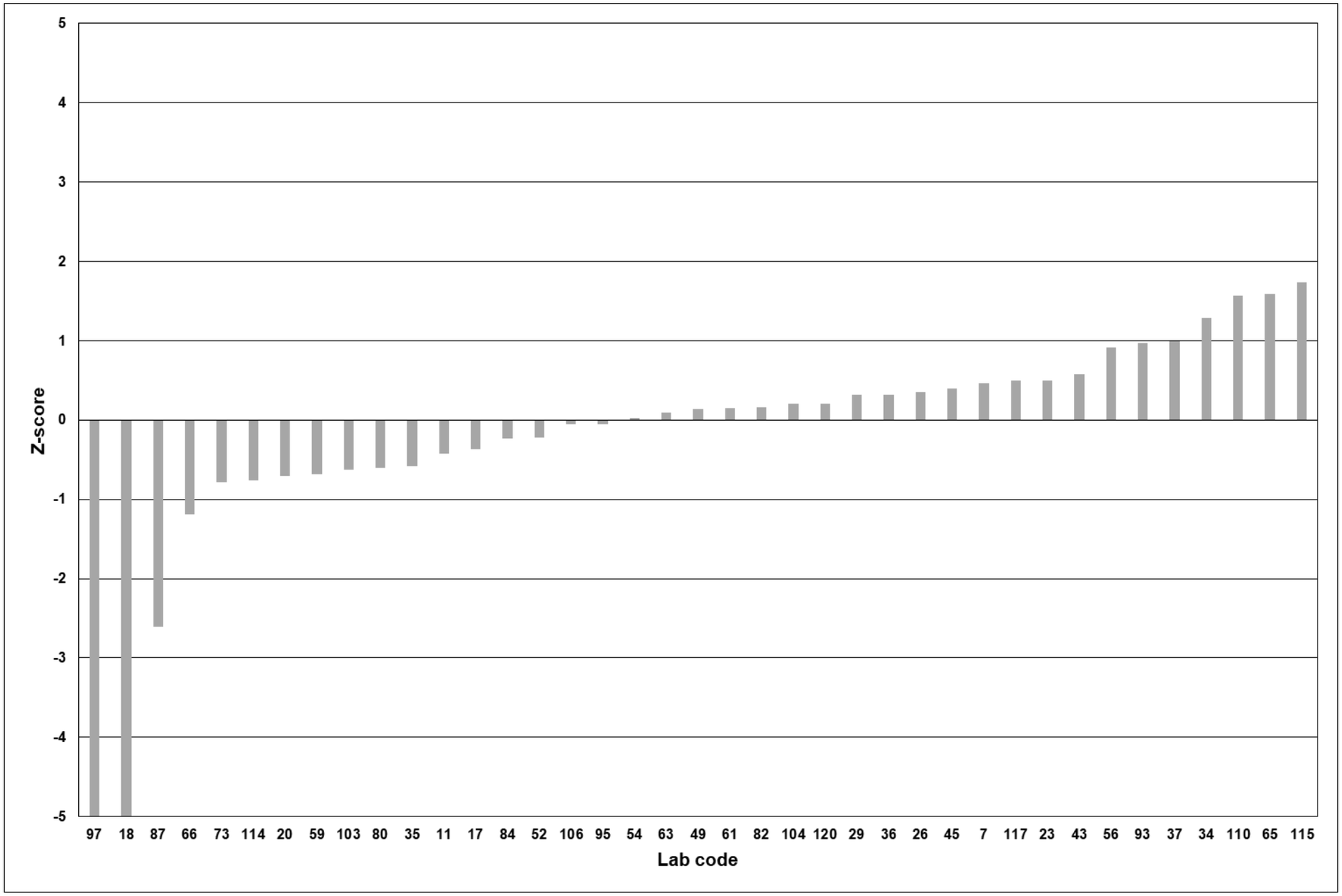
Z-score Herring, lipid weight; non-ortho PCB TEQ



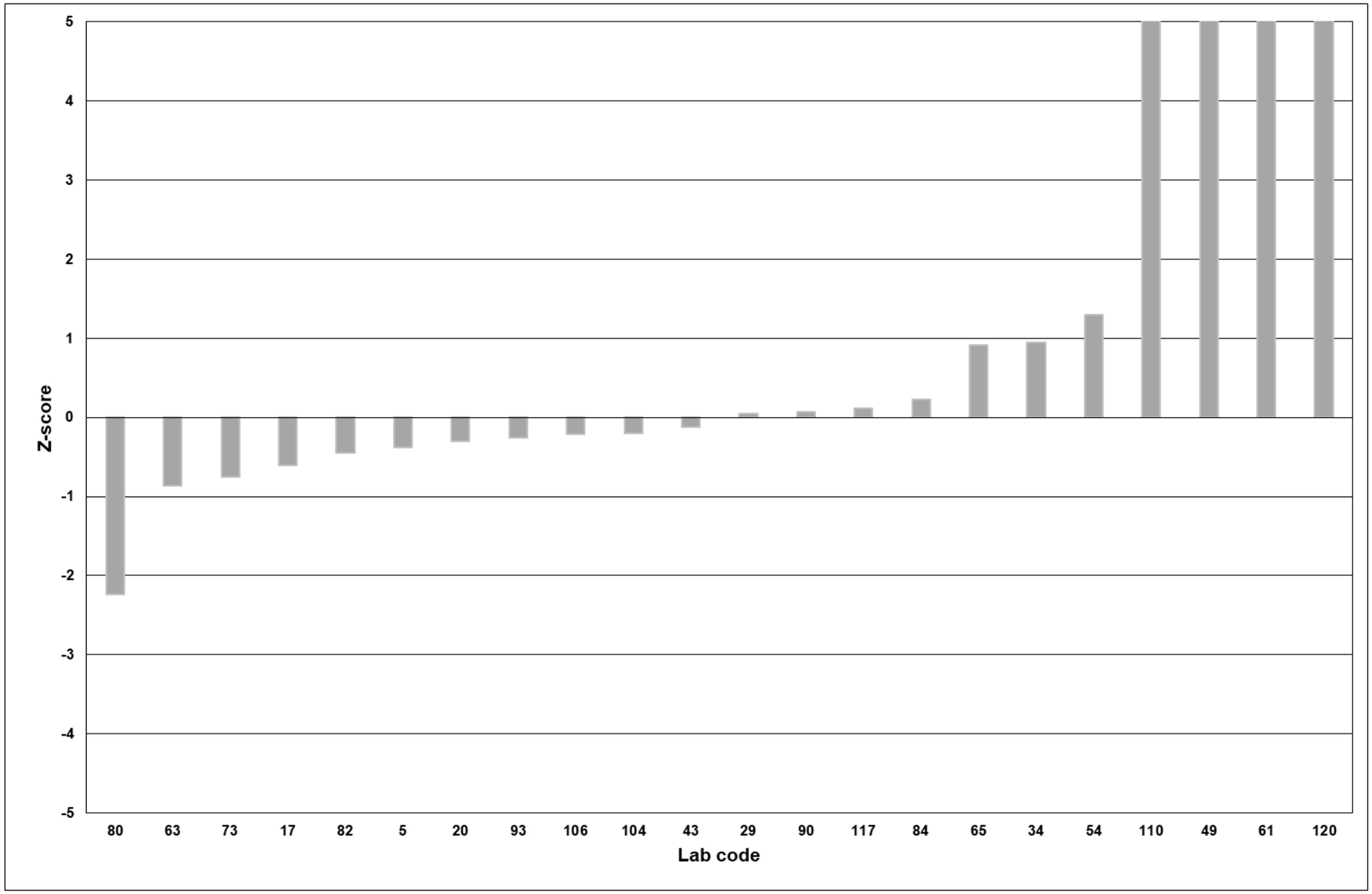
Z-score Herring, lipid weight; mono-ortho PCB TEQ



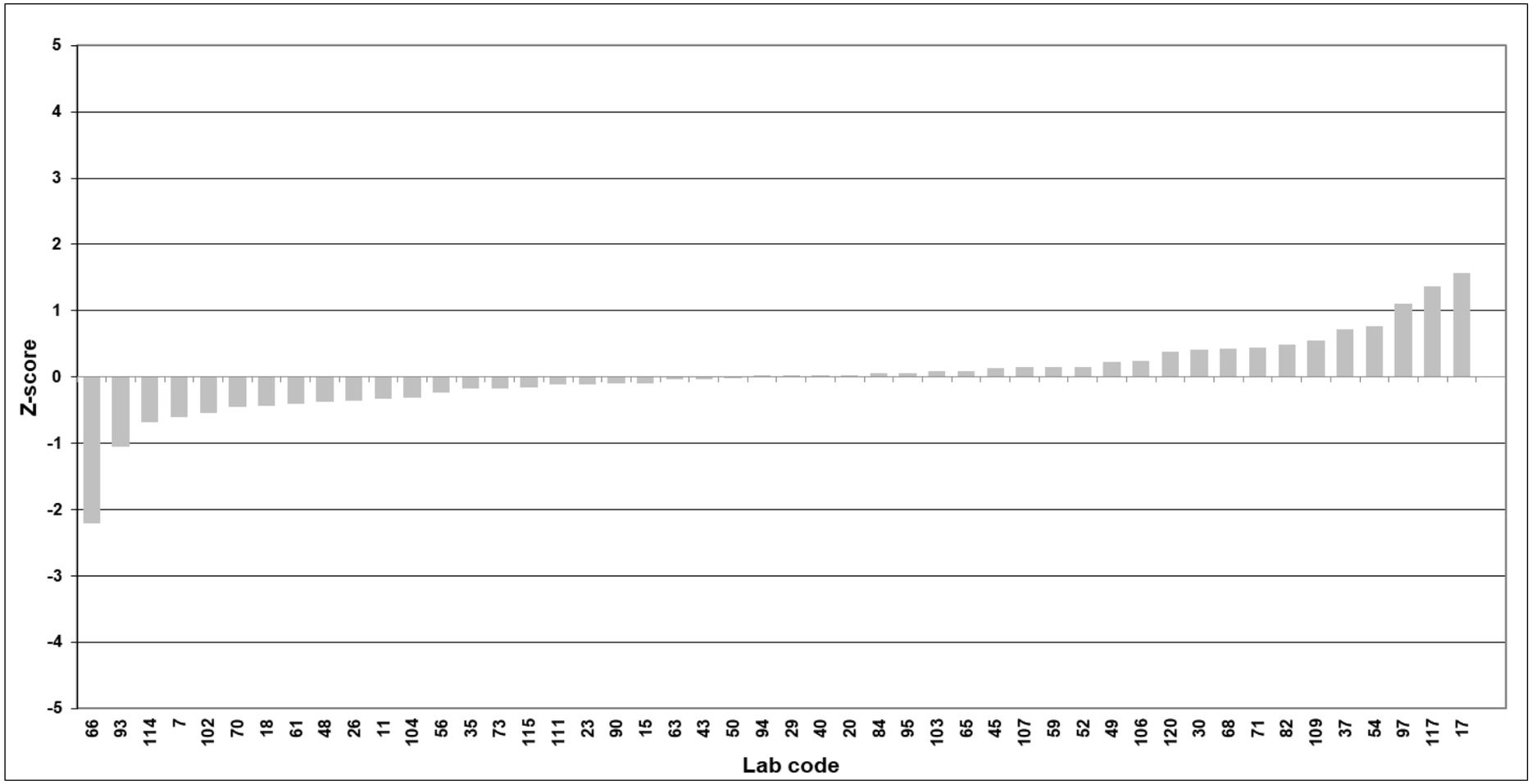
Z-score Herring, lipid weight; sum indicator PCB



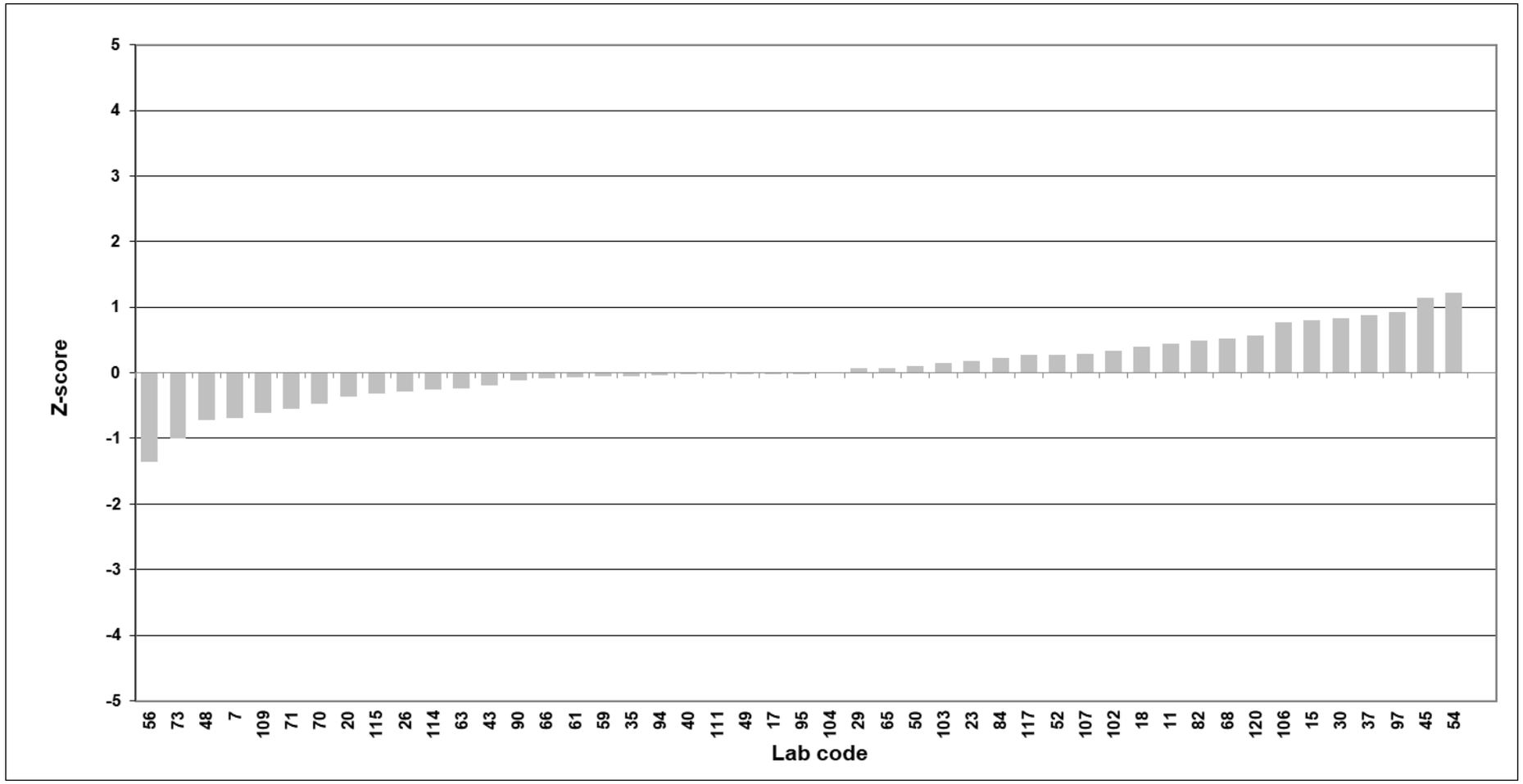
Z-score Herring, lipid weight; sum PBDE without PBDE-209



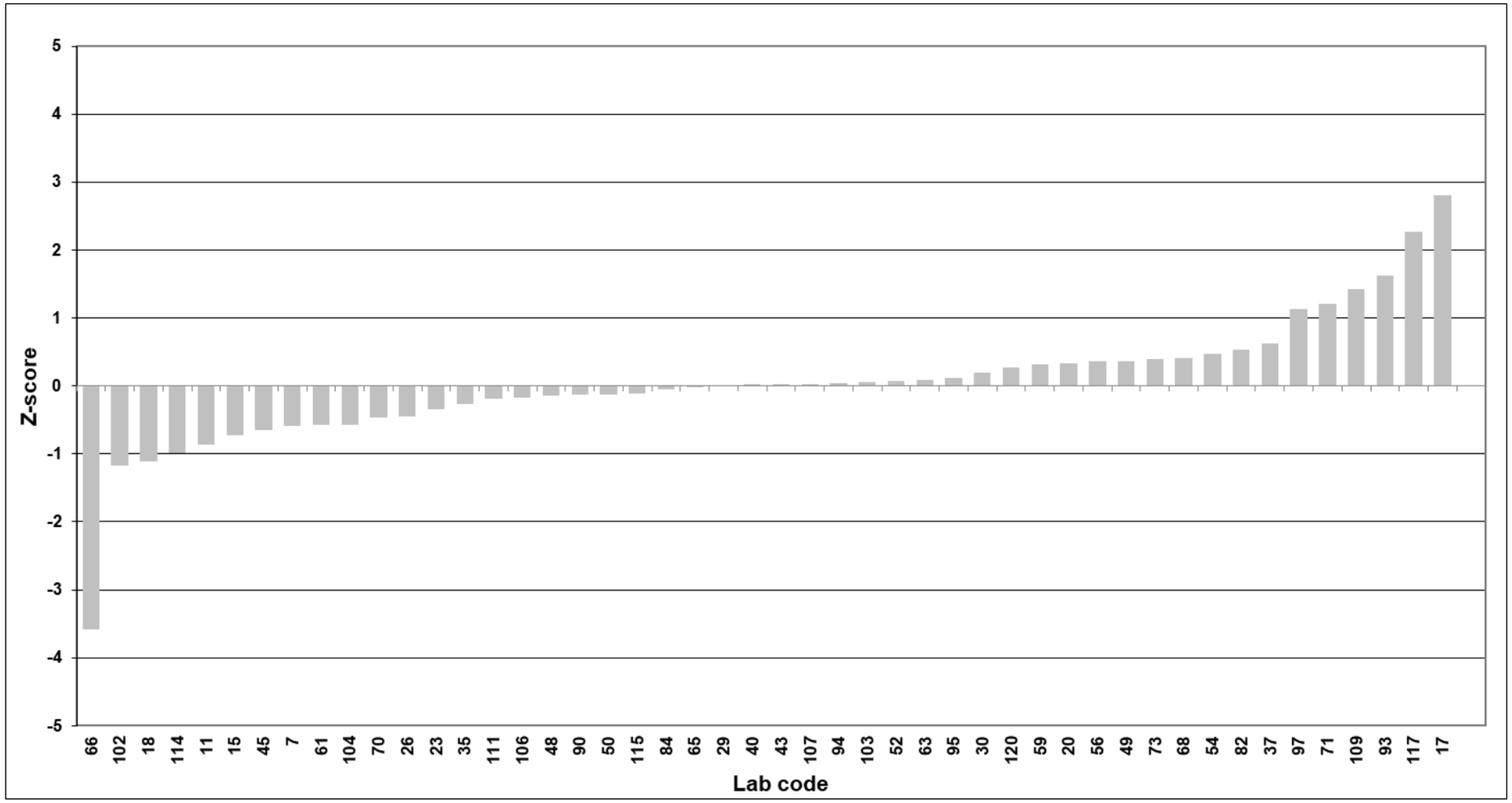
Z-score Fish oil, fresh weight; total TEQ



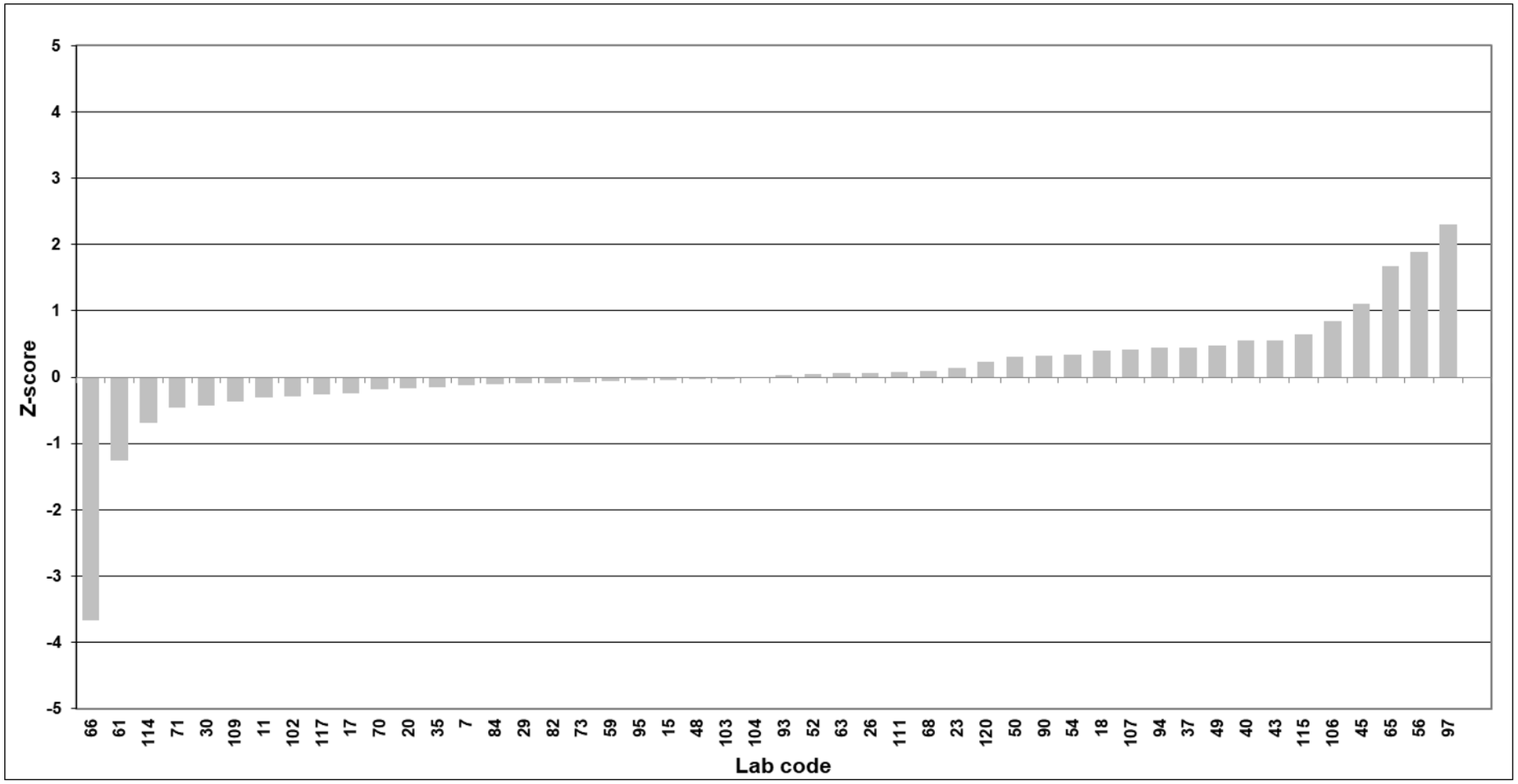
Z-score Fish oil, fresh weight; PCDD/PCDF TEQ



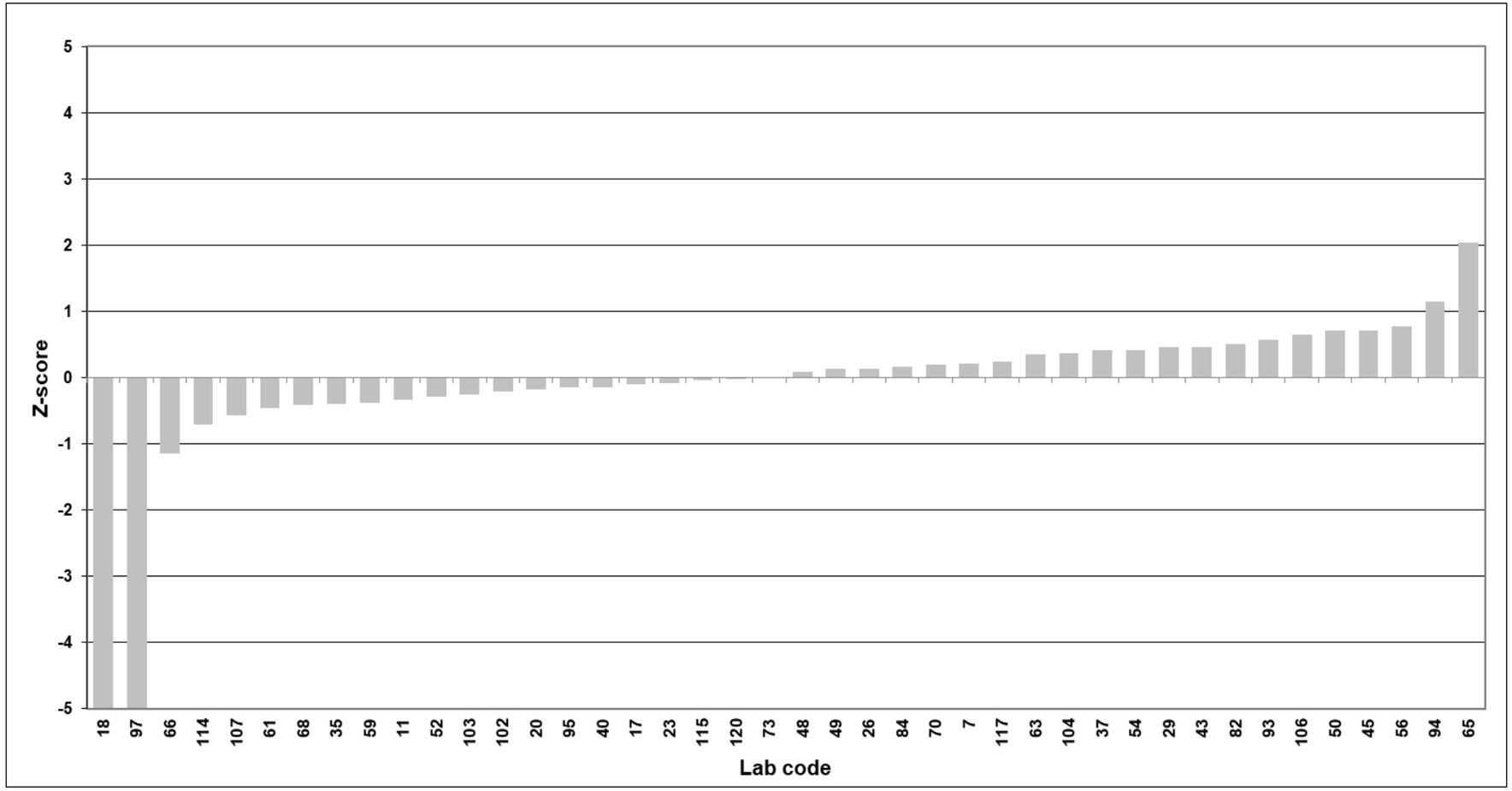
Z-score Fish oil, fresh weight; non-ortho PCB TEQ



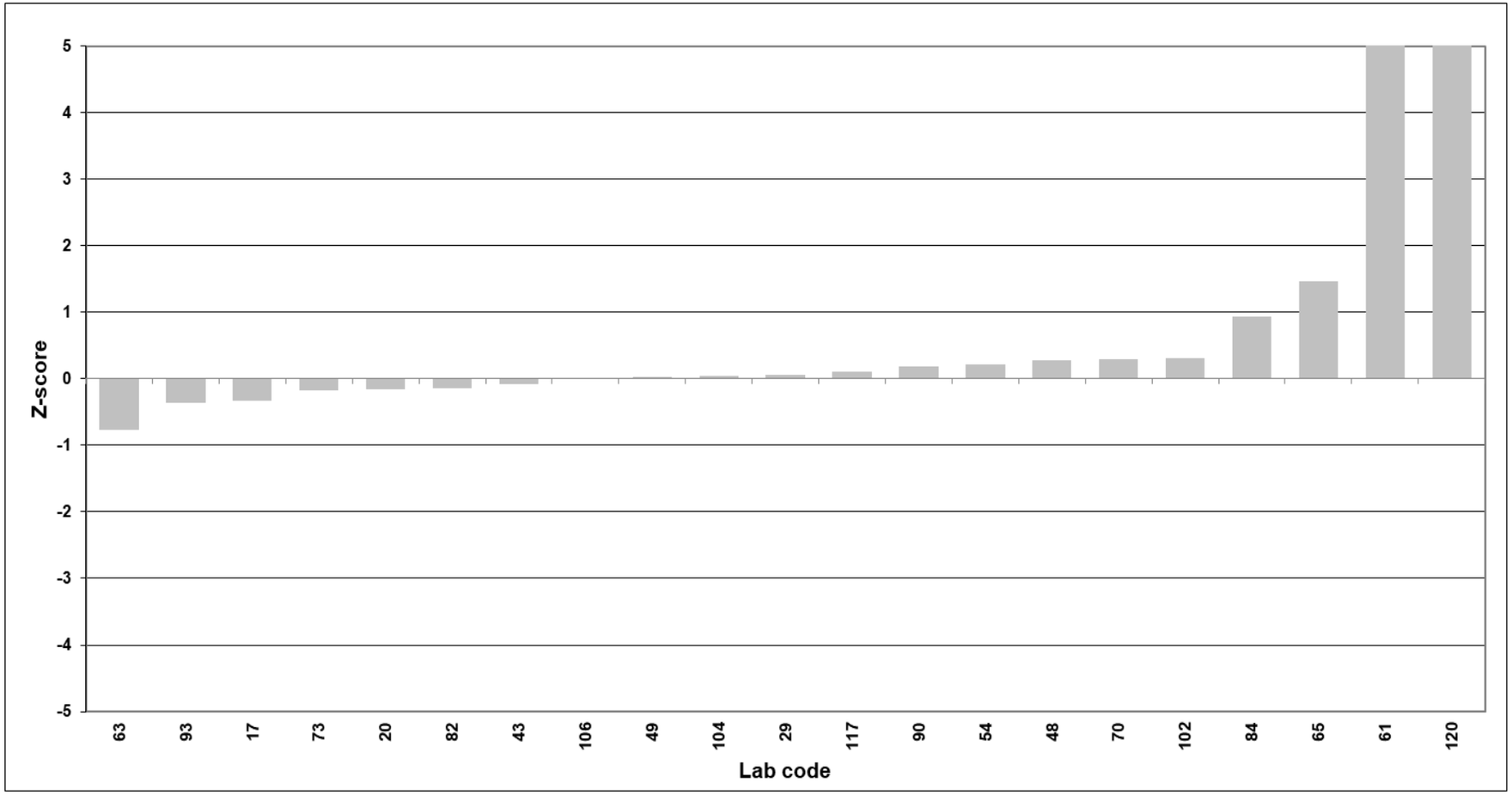
Z-score Fish oil, fresh weight; mono-ortho PCB TEQ



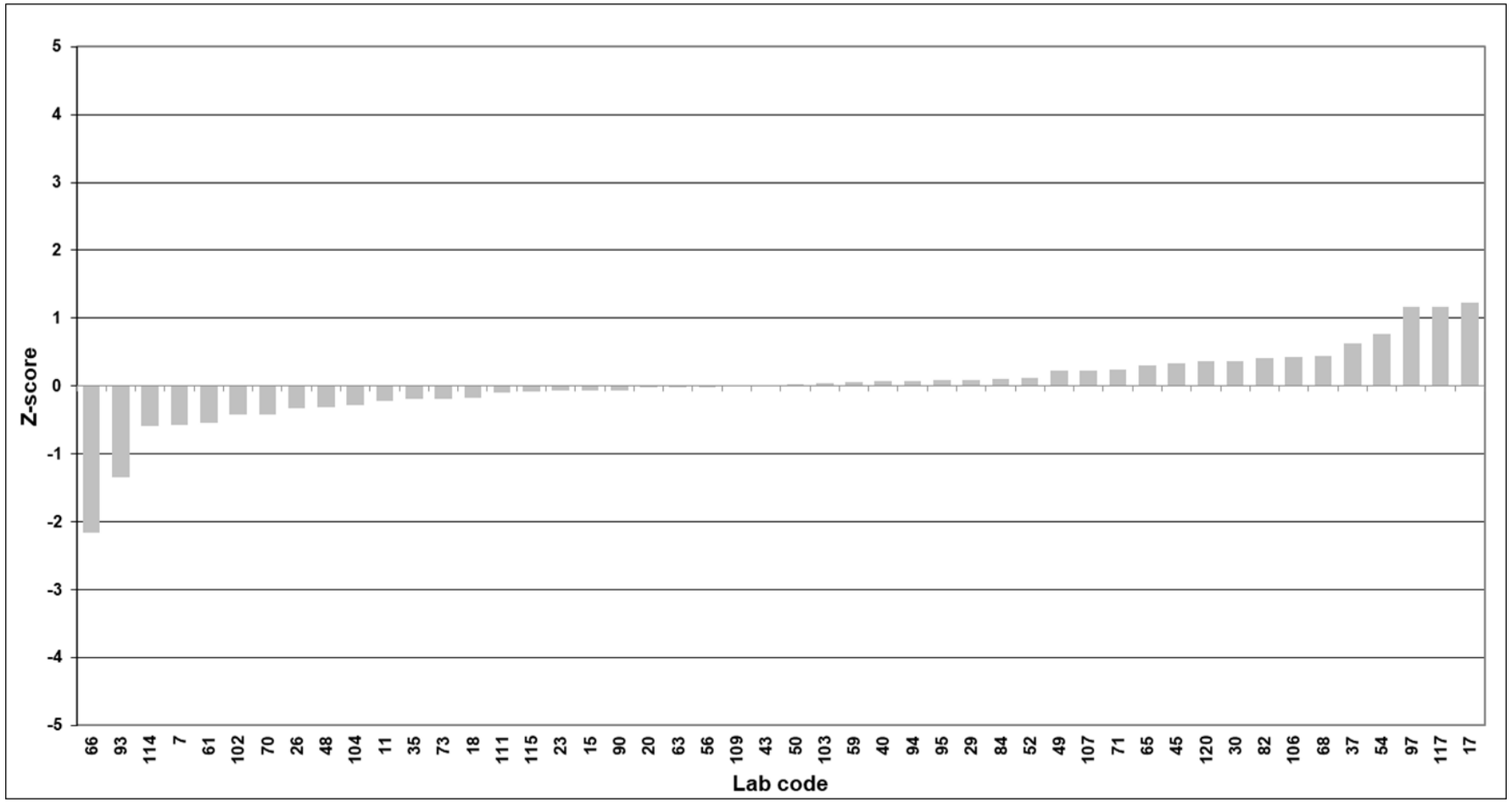
Z-score Fish oil, fresh weight; sum indicator PCB



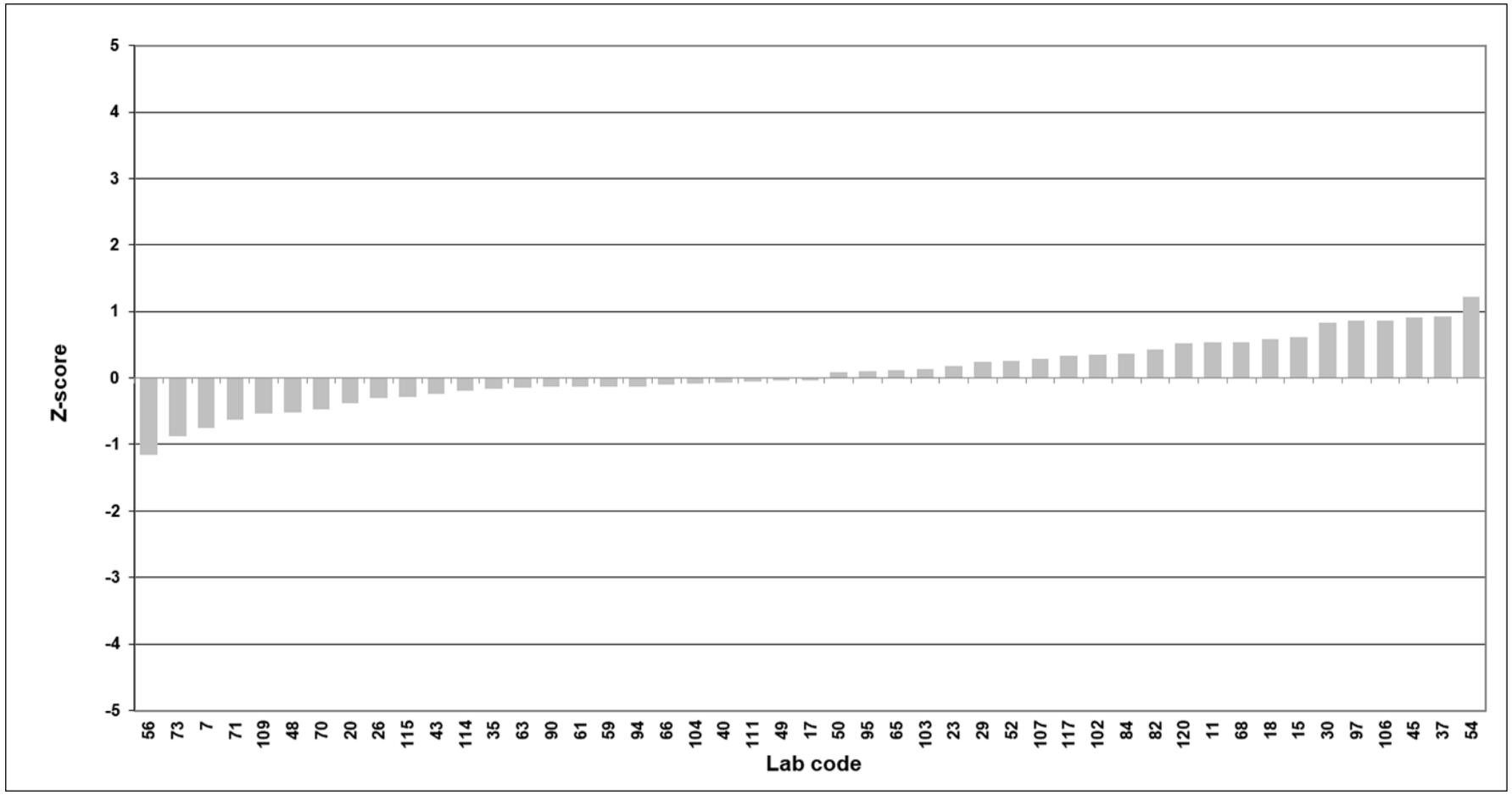
Z-score Fish oil, fresh weight; sum PBDE without PBDE-209



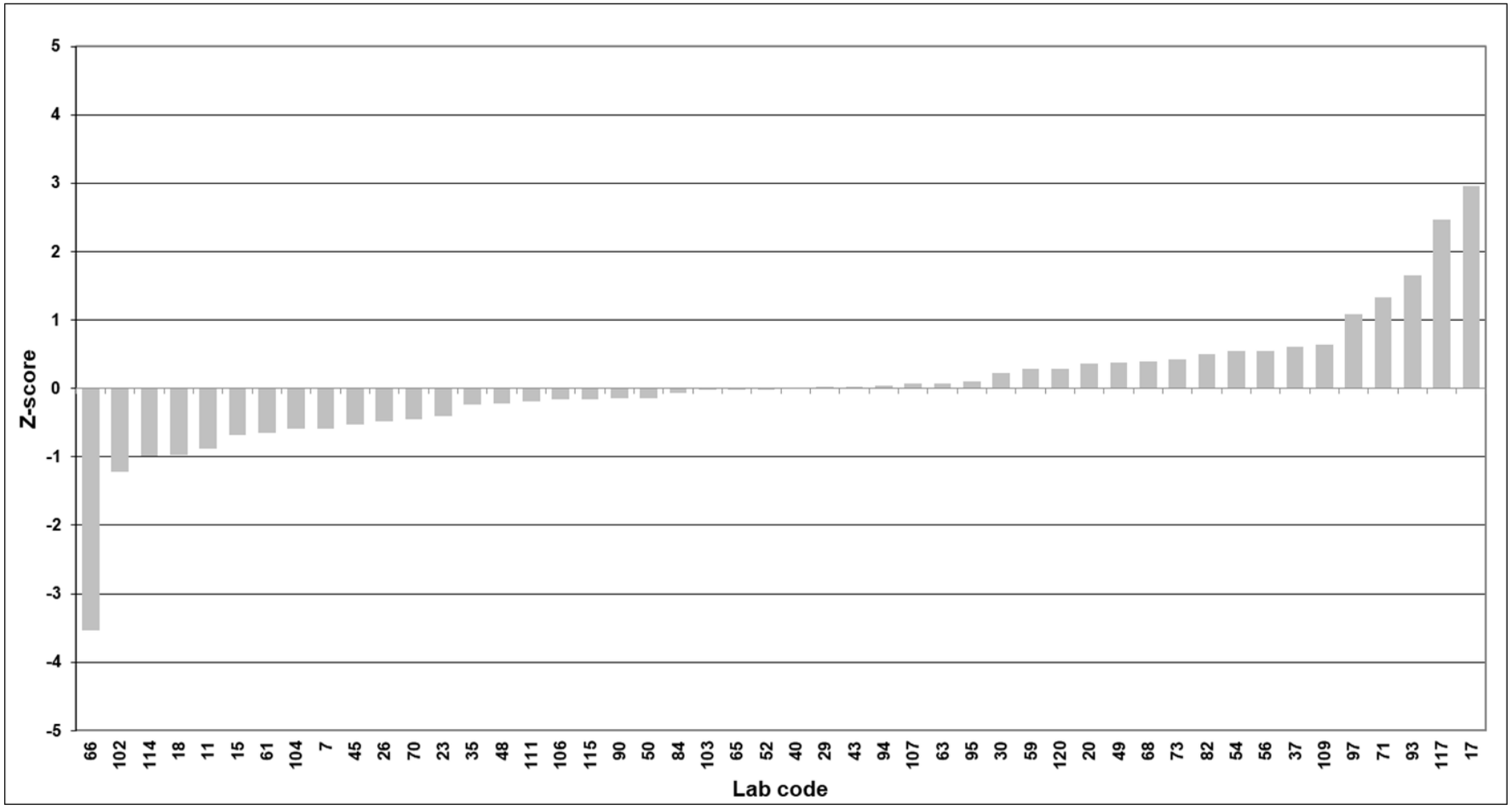
Z-score Fish oil, lipid weight; total TEQ



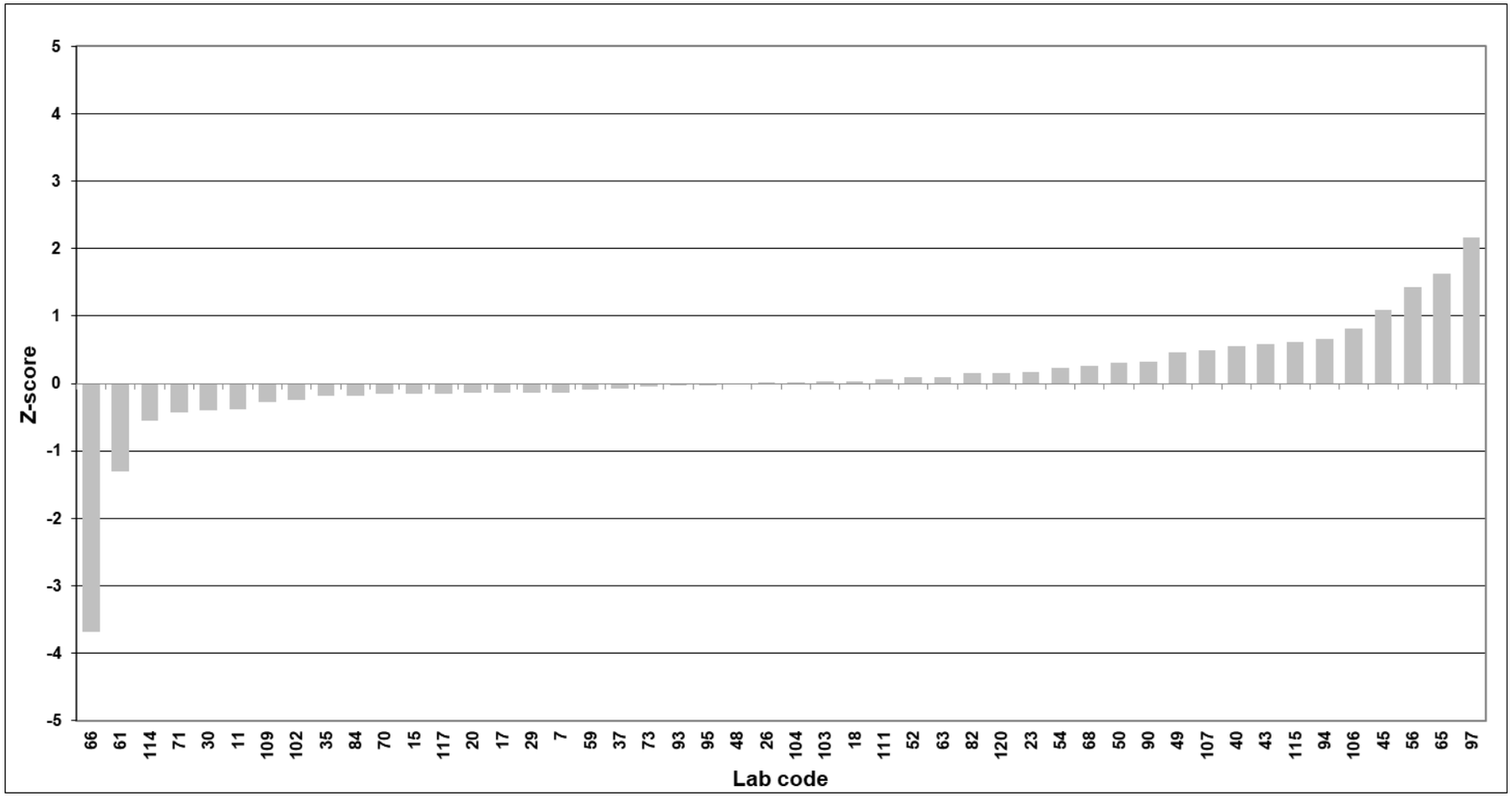
Z-score Fish oil, lipid weight; PCDD/PCDF TEQ



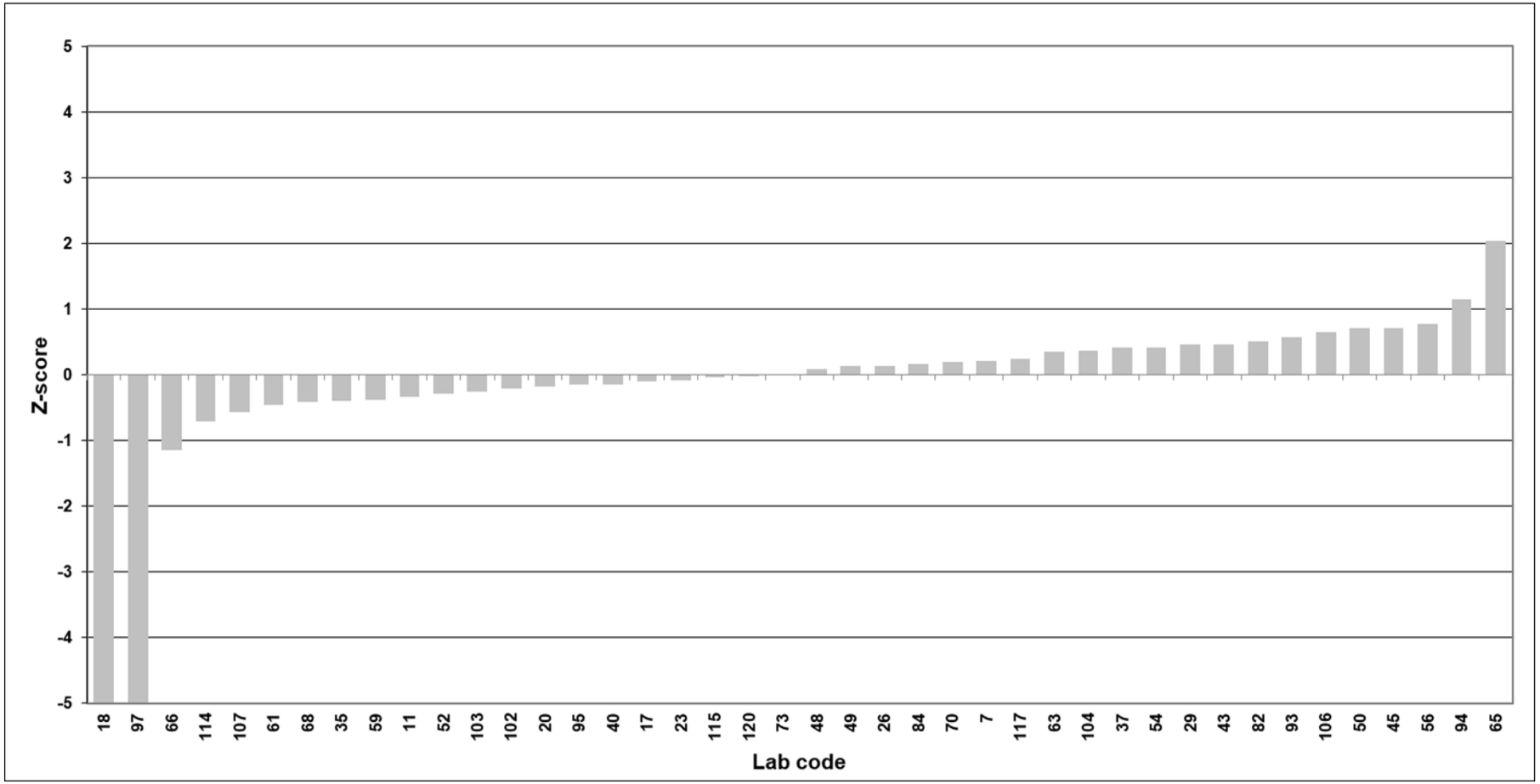
Z-score Fish oil, lipid weight; non-ortho PCB TEQ



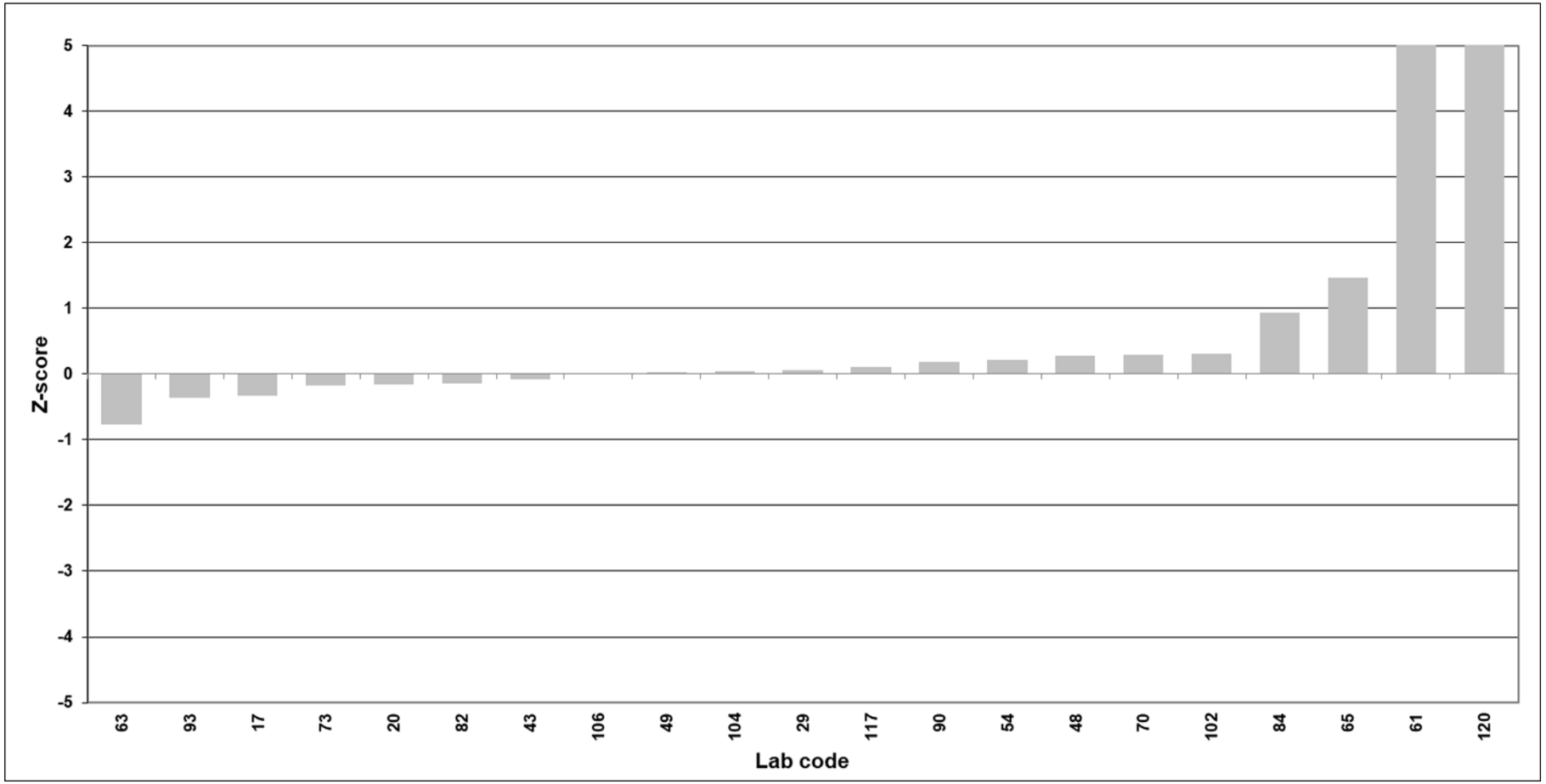
Z-score Fish oil, lipid weight; mono-ortho PCB TEQ



Z-score Fish oil, lipid weight; sum indicator PCB



Z-score Fish oil, lipid weight; sum PBDE without PBDE-209



Appendix 1:

Presentation of results
for analyte solutions

Appendix 1: Presentation of results: Analyte solution

Statistic calculations for PCDDs, PCDFs, dioxin-like PCBs, indicator PCBs, PBDEs and α-HBCD

The analyte solution contained

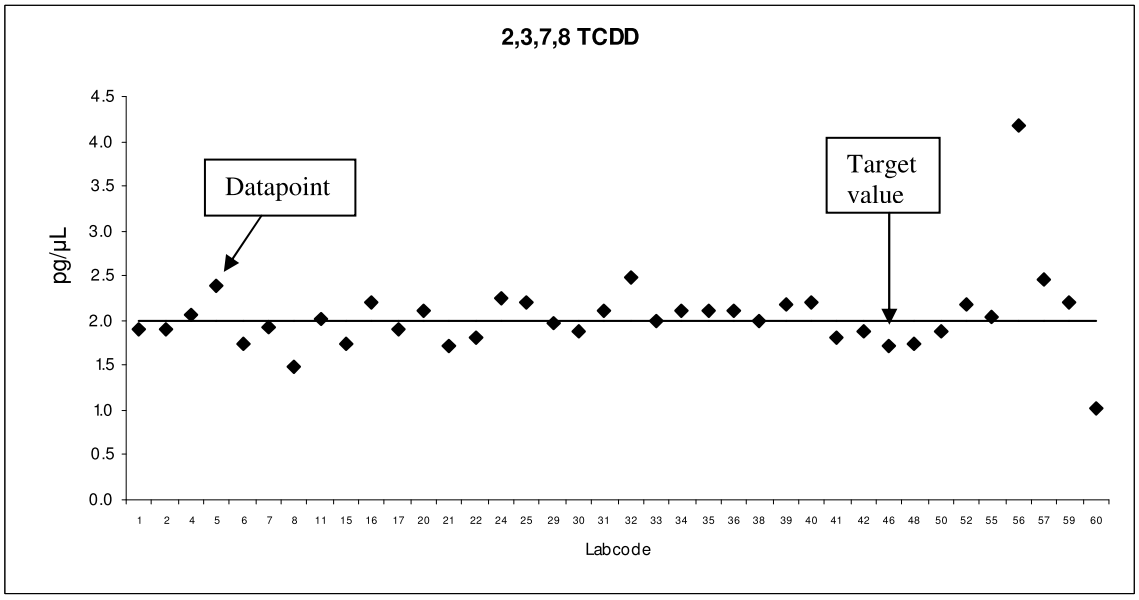
- PCDDs/PCDFs at concentrations of 2:5:10 pg/µl for tetra:penta-hexa-hepta:octa chlorinated dibenzodioxins/furans respectively.
- Non-ortho PCBs at concentration of 10 pg/µl.
- Mono-ortho PCBs and indicator PCBs at concentration of 100 pg/µl.
- PBDE at a concentration of 25 pg/µl, except BDE-209 at 100 pg/µl.
- α-HBCD at a concentration of 500 pg/µl.

These concentrations are called the congeners' target value.

For each congener, the outliers were removed and the consensus calculated according to the following procedure:

1. The median was calculated from all the reported data.
2. Values outside a range of 50 % to 150 % of this median, were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data. This median and mean were called consensus median and mean.

The diagram shows the target value and the reported data. Values outside a range of 50 % to 150 % of "median of all values", were defined as outliers and are not shown in the plot.



Z-Scores of individual congeners

Z-scores of each congener were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

Where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

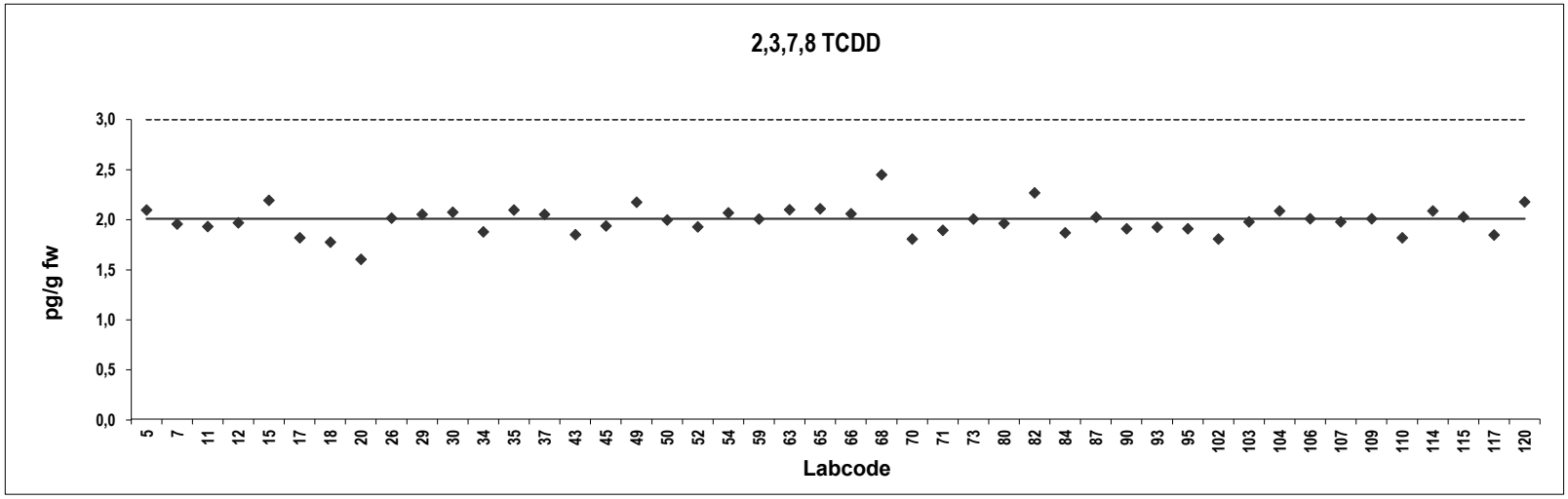
Analyte solution

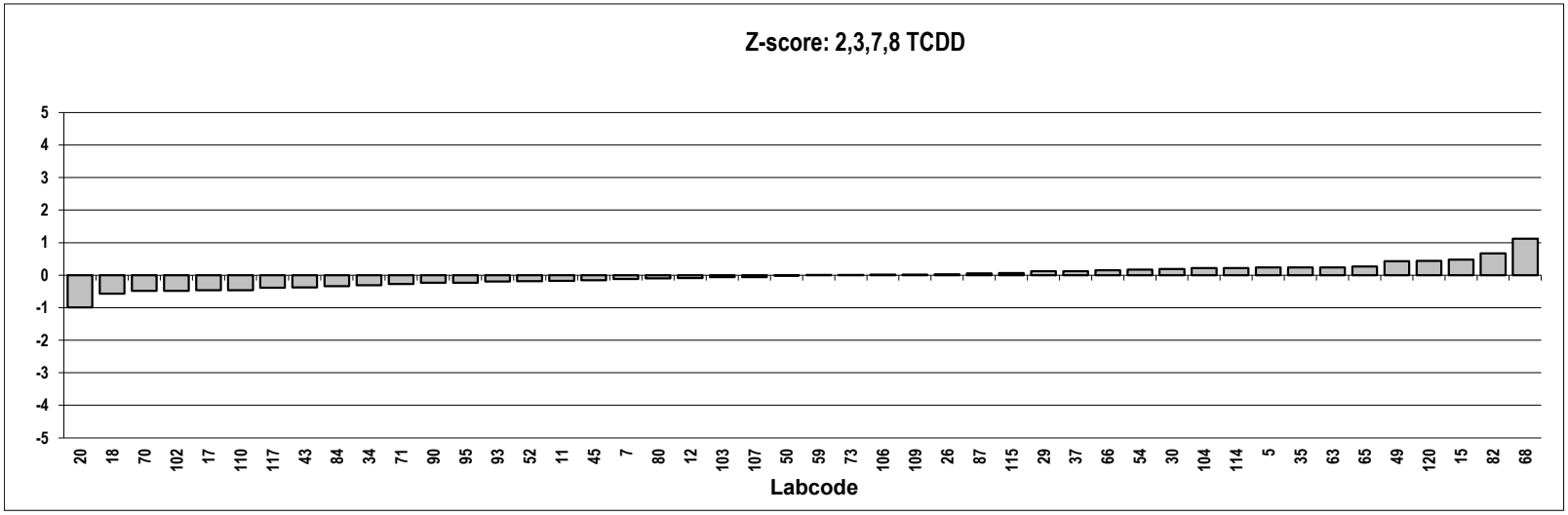
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	2,1	0,24		120	2,2	0,44	
7	1,9	-0,11					
11	1,9	-0,18					
12	2,0	-0,085					
15	2,2	0,48					
17	1,8	-0,46					
18	1,8	-0,57					
20	1,6	-1,0					
26	2,0	0,030					
29	2,0	0,13					
30	2,1	0,19					
34	1,9	-0,31					
35	2,1	0,24					
37	2,0	0,13					
43	1,8	-0,38					
45	1,9	-0,16					
49	2,2	0,43					
50	2,0	-0,010					
52	1,9	-0,19					
54	2,1	0,17					
59	2,0	0,010					
63	2,1	0,24					
65	2,1	0,27					
66	2,1	0,15					
68	2,4	1,12					
70	1,8	-0,49					
71	1,9	-0,27					
73	2,0	0,011					
80	2,0	-0,10					
82	2,3	0,67					
84	1,9	-0,34					
87	2,0	0,055					
90	1,9	-0,24					
93	1,9	-0,19					
95	1,9	-0,24					
102	1,8	-0,49					
103	2,0	-0,060					
104	2,1	0,22					
106	2,0	0,015					
107	2,0	-0,060					
109	2,0	0,015					
110	1,8	-0,46					
114	2,1	0,22					
115	2,0	0,065					
117	1,8	-0,39					

Consenus statistics

Consensus median, pg/g	2,0
Median all values pg/g	2,0
Consensus mean, pg/g	2,0
Standard deviation, pg/g	0,14
Relative standard deviation, %	7,2
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


2,3,7,8 TCDD
pg/g fw
3,0
2,5
2,0
1,5
1,0
0,5
0,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 18 70 102 17 110 117 43 84 34 71 90 95 93 52 11 45 7 80 12 103 107 50 59 73 106 109 26 87 115 29 37 66 54 30 104 114 5 35 63 65 49 120 15 82 68
Labcode

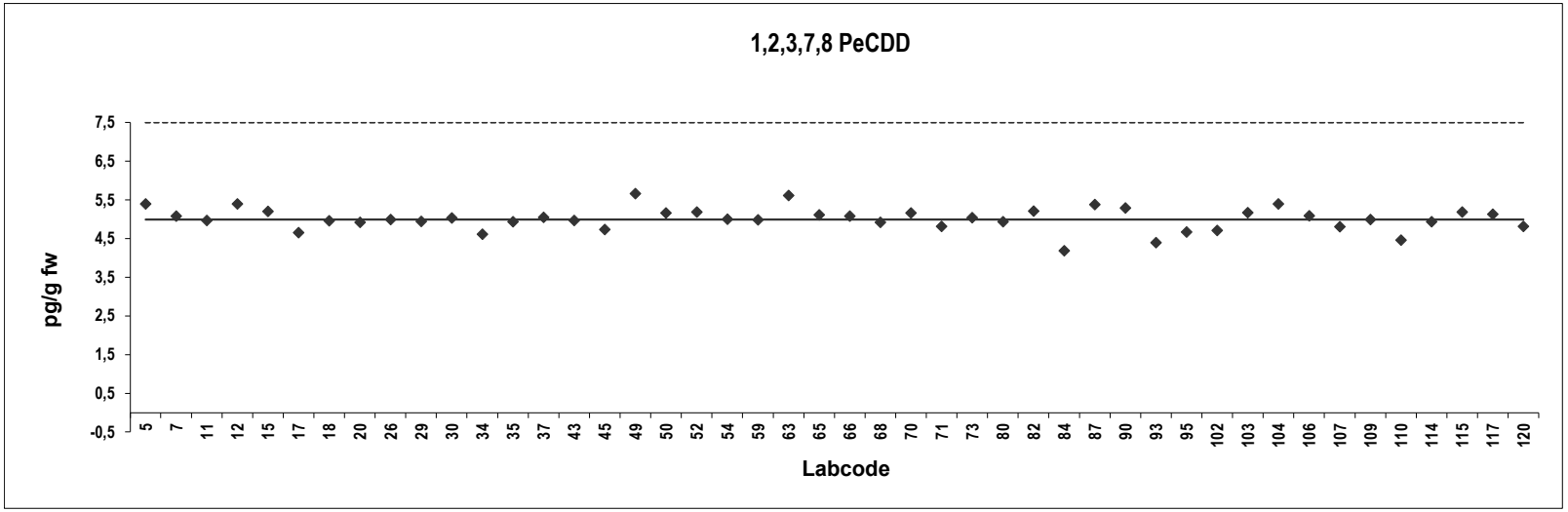
Analyte solution

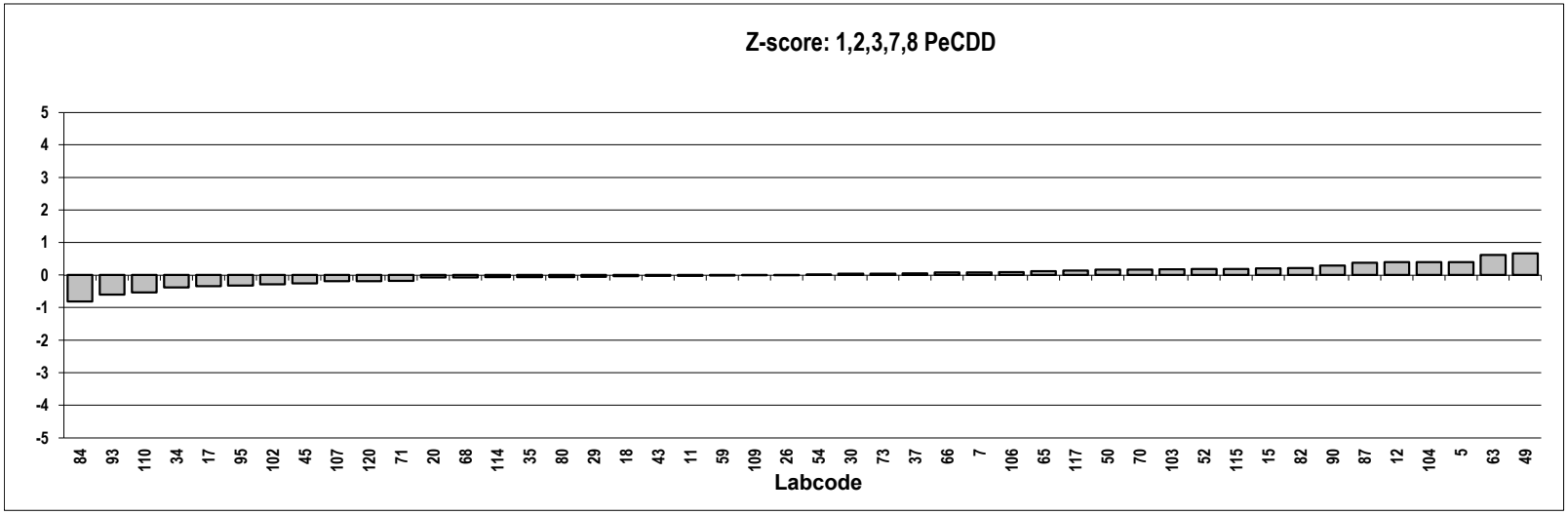
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,4	0,40		120	4,8	-0,19	
7	5,1	0,084					
11	5,0	-0,027					
12	5,4	0,39					
15	5,2	0,20					
17	4,7	-0,35					
18	5,0	-0,037					
20	4,9	-0,079					
26	5,0	-0,0030					
29	4,9	-0,058					
30	5,0	0,037					
34	4,6	-0,39					
35	4,9	-0,061					
37	5,1	0,048					
43	5,0	-0,027					
45	4,7	-0,26					
49	5,7	0,66					
50	5,2	0,16					
52	5,2	0,18					
54	5,0	0,0030					
59	5,0	-0,018					
63	5,6	0,61					
65	5,1	0,11					
66	5,1	0,084					
68	4,9	-0,076					
70	5,2	0,16					
71	4,8	-0,18					
73	5,1	0,045					
80	4,9	-0,061					
82	5,2	0,21					
84	4,2	-0,82					
87	5,4	0,38					
90	5,3	0,29					
93	4,4	-0,61					
95	4,7	-0,33					
102	4,7	-0,29					
103	5,2	0,17					
104	5,4	0,39					
106	5,1	0,094					
107	4,8	-0,19					
109	5,0	-0,0063					
110	4,5	-0,54					
114	4,9	-0,066					
115	5,2	0,18					
117	5,1	0,13					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	5,0
Standard deviation, pg/g	0,29
Relative standard deviation, %	5,8
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,7,8 PeCDD
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
84 93 110 34 17 95 102 45 107 120 71 20 68 114 35 80 29 18 43 11 59 109 26 54 30 73 37 66 7 106 65 117 50 70 103 52 115 15 82 90 87 12 104 5 63 49
Labcode

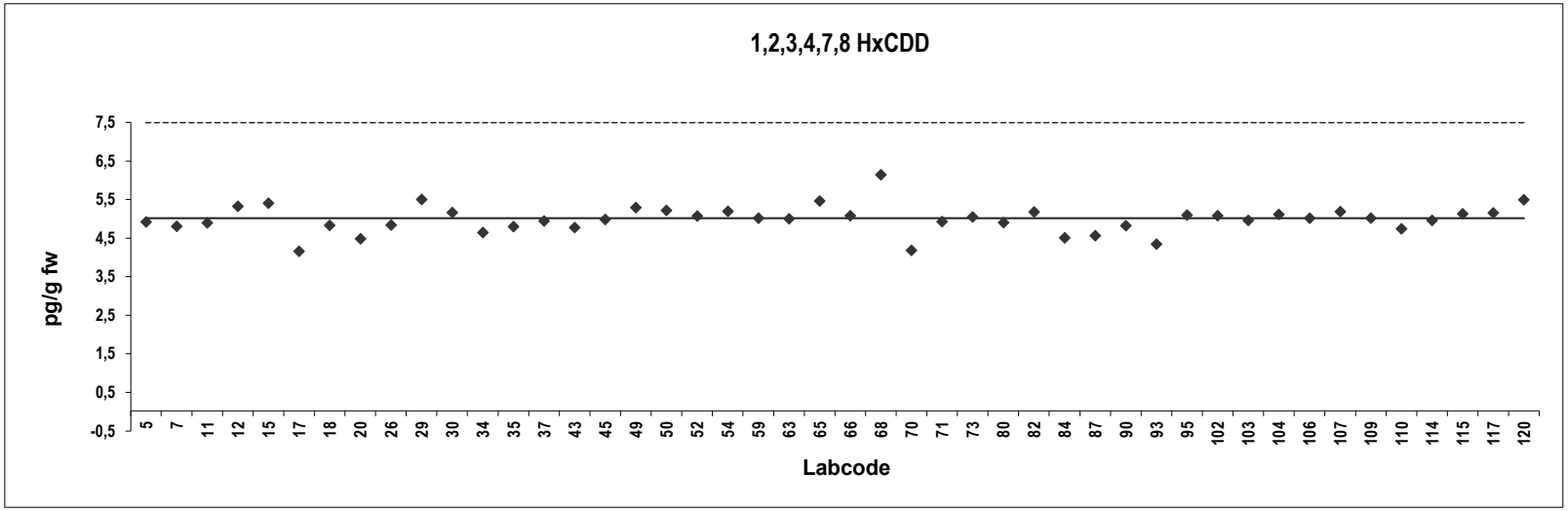
Analyte solution

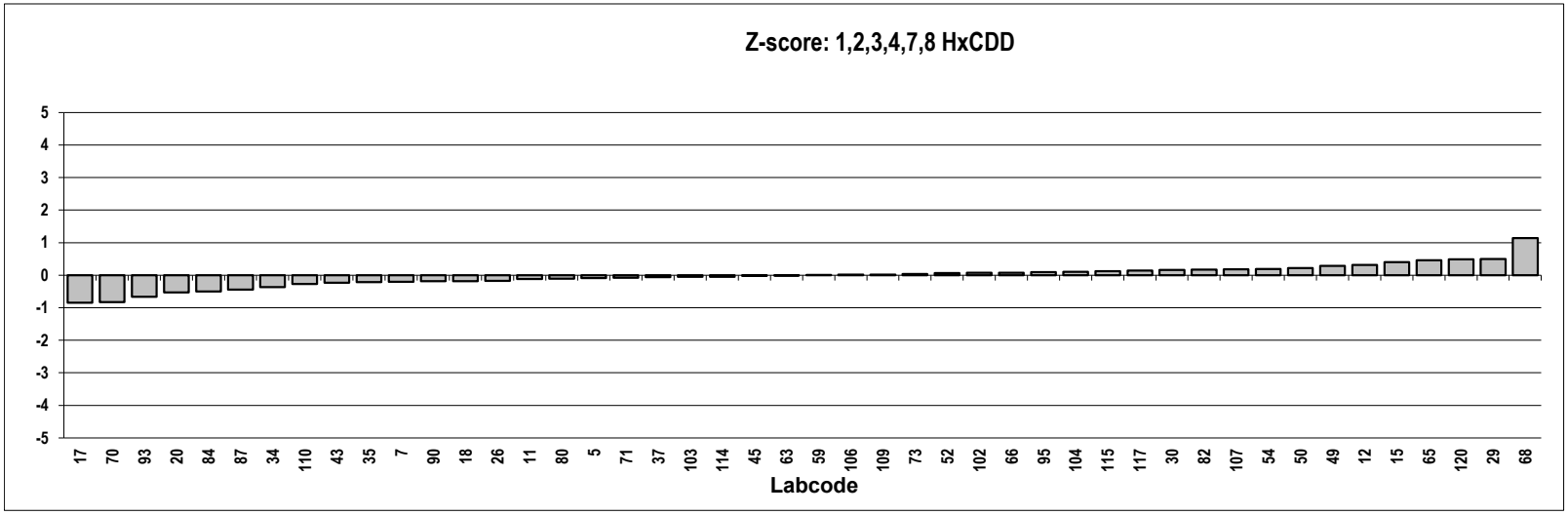
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	4,9	-0,086		120	5,5	0,49	
7	4,8	-0,20					
11	4,9	-0,11					
12	5,3	0,31					
15	5,4	0,40					
17	4,1	-0,85					
18	4,8	-0,18					
20	4,5	-0,53					
26	4,8	-0,17					
29	5,5	0,50					
30	5,1	0,16					
34	4,6	-0,37					
35	4,8	-0,21					
37	4,9	-0,063					
43	4,8	-0,23					
45	5,0	-0,019					
49	5,3	0,28					
50	5,2	0,21					
52	5,1	0,064					
54	5,2	0,19					
59	5,0	0,0061					
63	5,0	-0,0061					
65	5,4	0,46					
66	5,1	0,079					
68	6,1	1,14					
70	4,2	-0,83					
71	4,9	-0,076					
73	5,0	0,040					
80	4,9	-0,10					
82	5,2	0,17					
84	4,5	-0,50					
87	4,5	-0,45					
90	4,8	-0,19					
93	4,3	-0,66					
95	5,1	0,094					
102	5,1	0,074					
103	4,9	-0,046					
104	5,1	0,10					
106	5,0	0,014					
107	5,2	0,18					
109	5,0	0,014					
110	4,7	-0,27					
114	4,9	-0,046					
115	5,1	0,12					
117	5,1	0,14					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	5,0
Standard deviation, pg/g	0,35
Relative standard deviation, %	7,1
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,4,7,8 HxCDD
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
17 70 93 20 84 87 34 110 43 35 7 90 18 26 11 80 5 71 37 103 114 45 63 59 106 109 73 52 102 66 95 104 115 117 30 82 107 54 50 49 12 15 65 120 29 68
Labcode

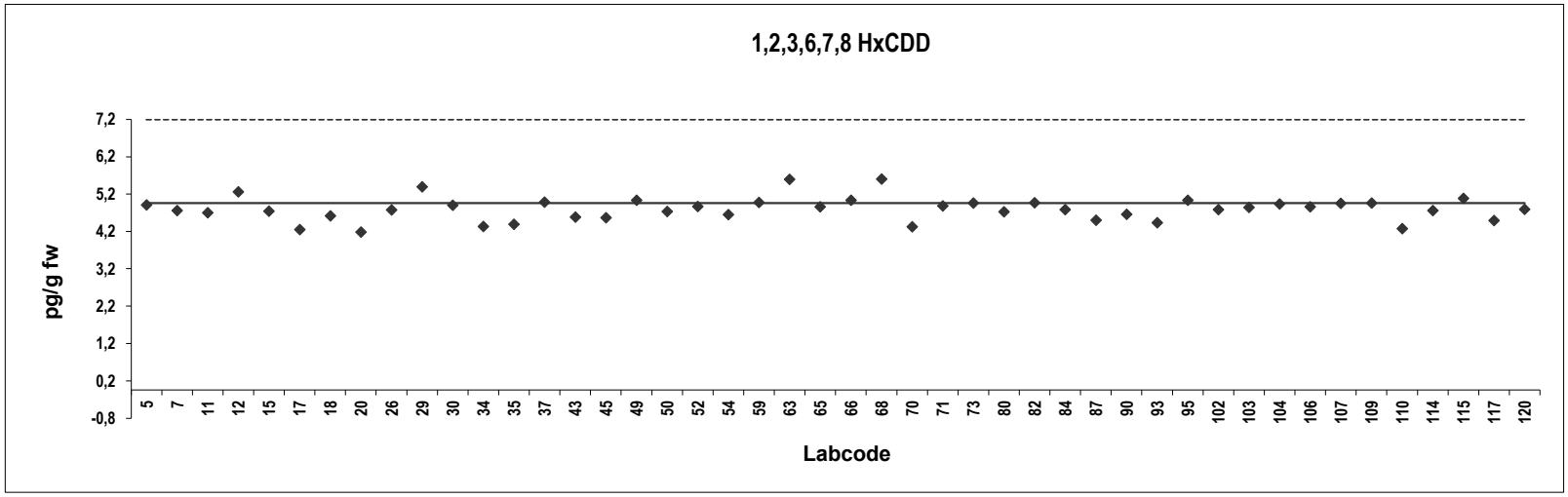
Analyte solution

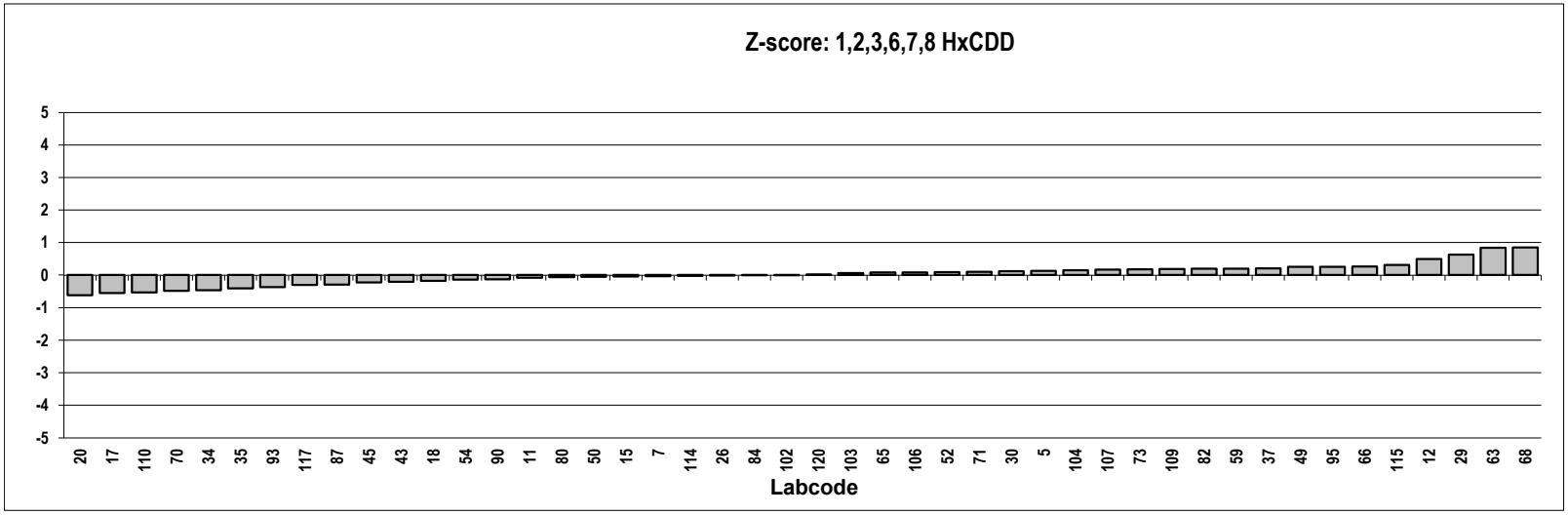
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	4,9	0,13		120	4,8	0,0052	
7	4,8	-0,031					
11	4,7	-0,087					
12	5,3	0,49					
15	4,8	-0,041					
17	4,3	-0,55					
18	4,7	-0,18					
20	4,2	-0,62					
26	4,8	-0,013					
29	5,4	0,62					
30	4,9	0,12					
34	4,4	-0,47					
35	4,4	-0,41					
37	5,0	0,20					
43	4,6	-0,21					
45	4,6	-0,23					
49	5,1	0,25					
50	4,8	-0,057					
52	4,9	0,088					
54	4,7	-0,14					
59	5,0	0,20					
63	5,6	0,83					
65	4,9	0,078					
66	5,1	0,26					
68	5,6	0,84					
70	4,4	-0,48					
71	4,9	0,10					
73	5,0	0,18					
80	4,8	-0,065					
82	5,0	0,19					
84	4,8	-0,0052					
87	4,5	-0,30					
90	4,7	-0,13					
93	4,5	-0,37					
95	5,1	0,25					
102	4,8	-0,0052					
103	4,9	0,057					
104	5,0	0,15					
106	4,9	0,078					
107	5,0	0,17					
109	5,0	0,18					
110	4,3	-0,53					
114	4,8	-0,026					
115	5,1	0,31					
117	4,5	-0,31					

Consenus statistics

Consensus median, pg/g	4,8
Median all values pg/g	4,8
Consensus mean, pg/g	4,8
Standard deviation, pg/g	0,31
Relative standard deviation, %	6,5
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,6,7,8 HxCDD
pg/g fw
7,2
6,2
5,2
4,2
3,2
2,2
1,2
0,2
-0,8
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 17 110 70 34 35 93 117 87 45 43 18 54 90 11 80 50 15 7 114 26 84 102 120 103 65 106 52 71 30 5 104 107 73 109 82 59 37 49 95 66 115 12 29 63 68
Labcode

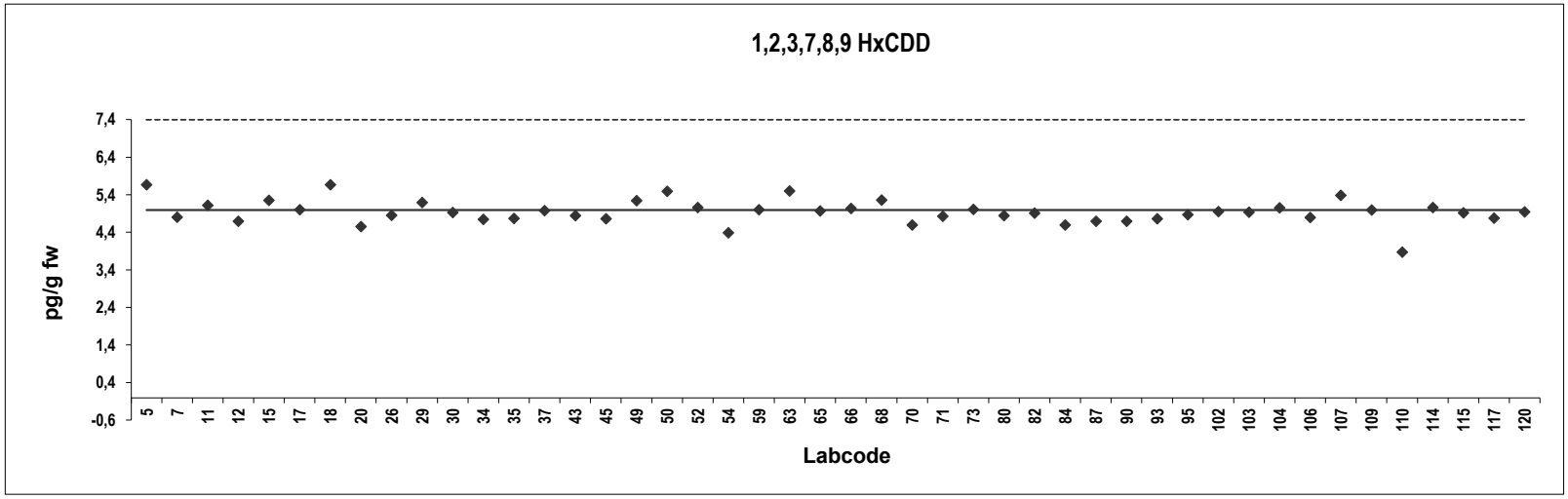
Analyte solution

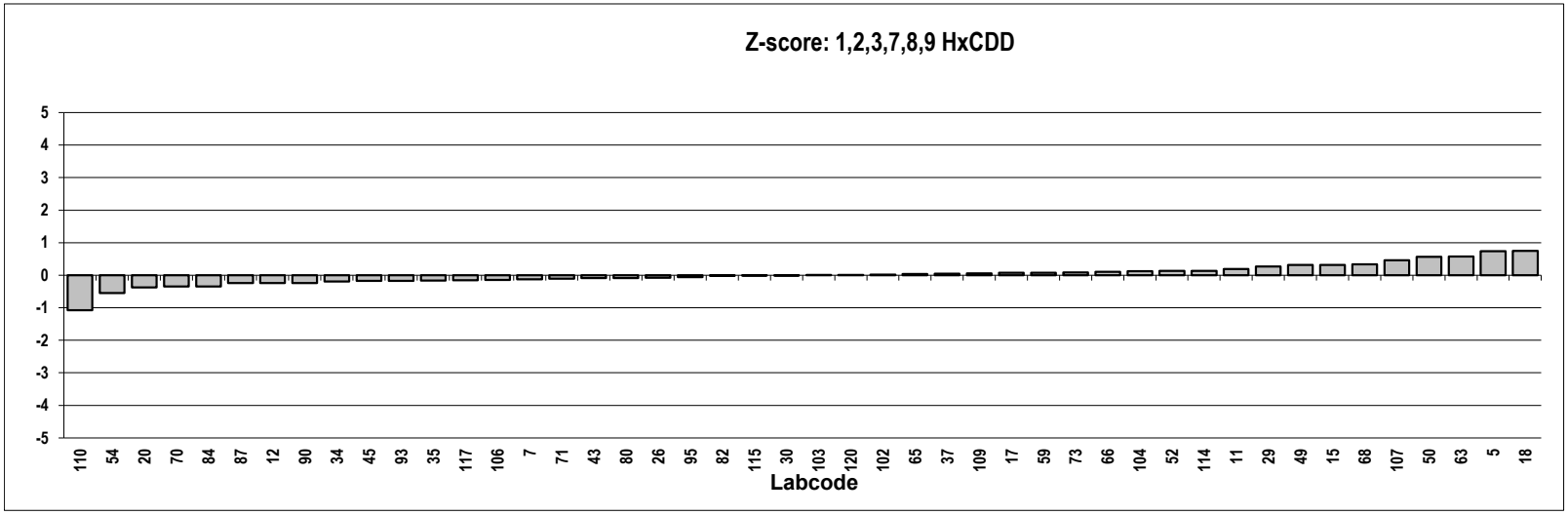
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,7	0,74		120	5,0	0,011	
7	4,8	-0,13					
11	5,1	0,19					
12	4,7	-0,24					
15	5,3	0,32					
17	5,0	0,071					
18	5,7	0,75					
20	4,6	-0,38					
26	4,9	-0,081					
29	5,2	0,27					
30	4,9	-0,00051					
34	4,8	-0,19					
35	4,8	-0,16					
37	5,0	0,050					
43	4,8	-0,091					
45	4,8	-0,18					
49	5,3	0,32					
50	5,5	0,57					
52	5,1	0,13					
54	4,4	-0,55					
59	5,0	0,072					
63	5,5	0,58					
65	5,0	0,041					
66	5,0	0,10					
68	5,3	0,33					
70	4,6	-0,34					
71	4,8	-0,11					
73	5,0	0,082					
80	4,9	-0,088					
82	4,9	-0,020					
84	4,6	-0,34					
87	4,7	-0,24					
90	4,7	-0,24					
93	4,8	-0,17					
95	4,9	-0,060					
102	5,0	0,021					
103	4,9	0,00					
104	5,1	0,12					
106	4,8	-0,14					
107	5,4	0,46					
109	5,0	0,061					
110	3,9	-1,07					
114	5,1	0,13					
115	4,9	-0,010					
117	4,8	-0,15					

Consenus statistics

Consensus median, pg/g	4,9
Median all values pg/g	4,9
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,32
Relative standard deviation, %	6,5
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,7,8,9 HxCDD
pg/g fw
7,4
6,4
5,4
4,4
3,4
2,4
1,4
0,4
-0,6
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
110 54 20 70 84 87 12 90 34 45 93 35 117 106 7 71 43 80 26 95 82 115 30 103 120 102 65 37 109 17 59 73 66 104 52 114 11 29 49 15 68 107 50 63 5 18
Labcode

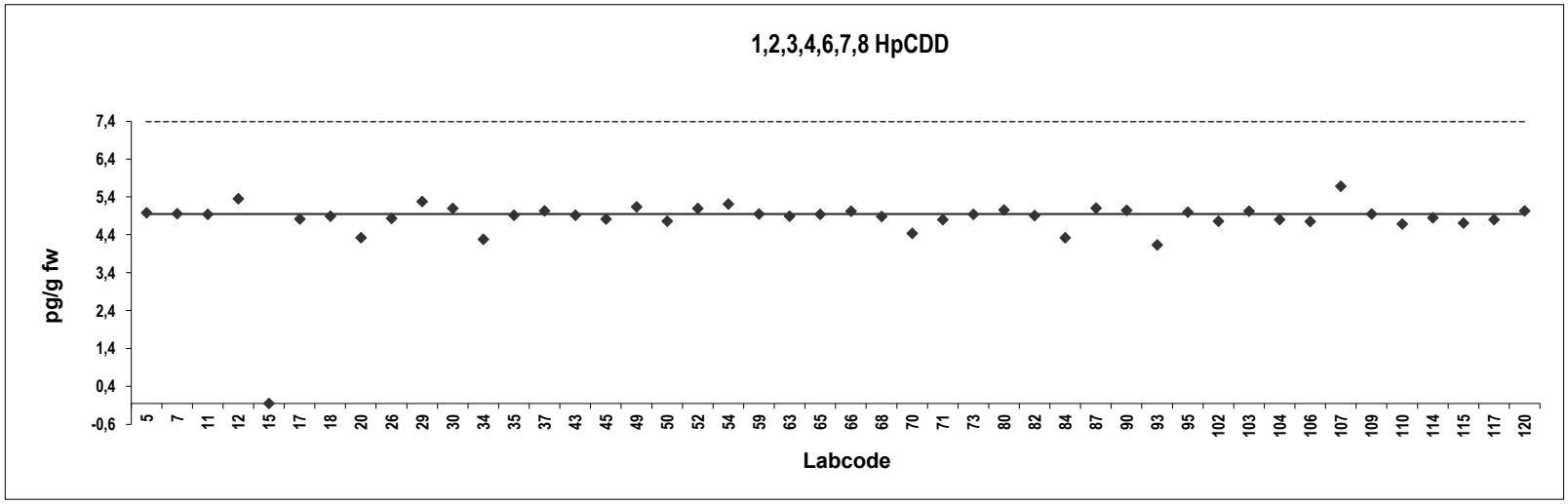
Analyte solution

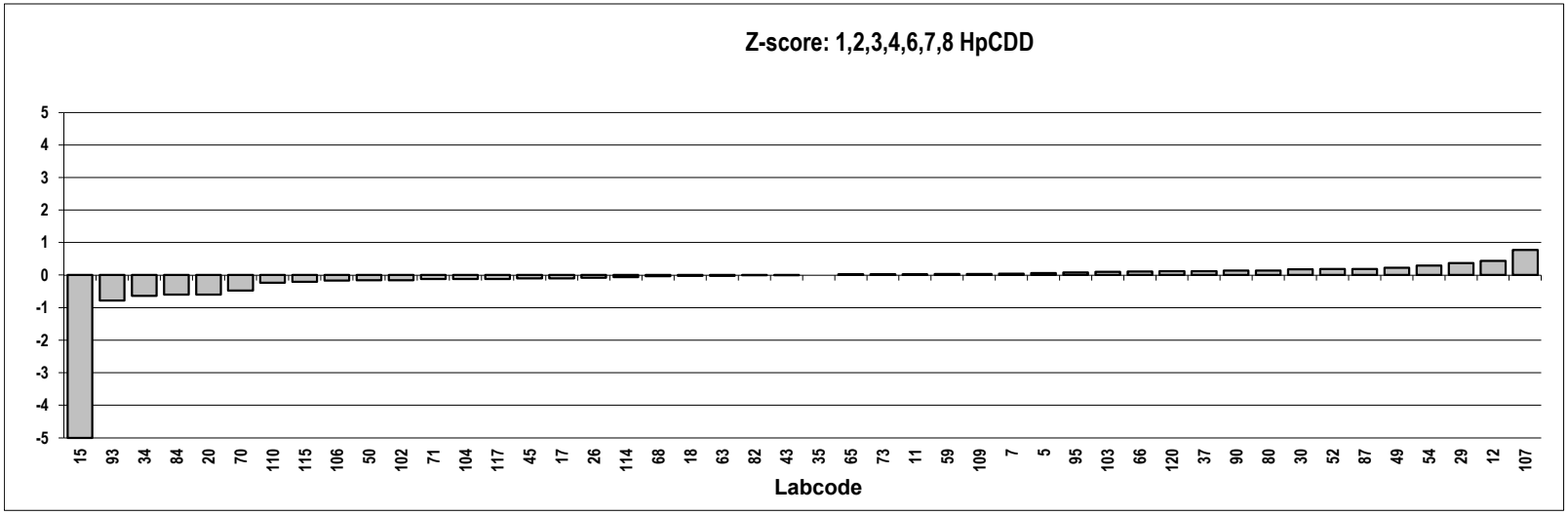
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,0	0,063		120	5,1	0,11	
7	5,0	0,043					
11	5,0	0,025					
12	5,4	0,44					
15	0,0	-5,0	Outlier,ND				
17	4,9	-0,097					
18	4,9	-0,029					
20	4,4	-0,60					
26	4,9	-0,087					
29	5,3	0,37					
30	5,1	0,18					
34	4,3	-0,64					
35	5,0	0,0					
37	5,1	0,12					
43	5,0	-0,0027					
45	4,9	-0,098					
49	5,2	0,22					
50	4,8	-0,16					
52	5,2	0,19					
54	5,3	0,29					
59	5,0	0,030					
63	4,9	-0,026					
65	5,0	0,024					
66	5,1	0,11					
68	4,9	-0,036					
70	4,5	-0,48					
71	4,8	-0,12					
73	5,0	0,025					
80	5,1	0,14					
82	5,0	-0,0060					
84	4,4	-0,60					
87	5,2	0,19					
90	5,1	0,13					
93	4,2	-0,79					
95	5,1	0,085					
102	4,8	-0,16					
103	5,1	0,10					
104	4,9	-0,12					
106	4,8	-0,17					
107	5,7	0,77					
109	5,0	0,034					
110	4,7	-0,24					
114	4,9	-0,066					
115	4,8	-0,21					
117	4,9	-0,12					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,28
Relative standard deviation, %	5,6
No. of values reported	46
No. of values removed	1
No. of reported non-detects	1


1,2,3,4,6,7,8 HpCDD
pg/g fw
7,4
6,4
5,4
4,4
3,4
2,4
1,4
0,4
-0,6
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
15 93 34 84 20 70 110 115 106 50 102 71 104 117 45 17 26 114 68 18 63 82 43 35 65 73 11 59 109 7 5 95 103 66 120 37 90 80 30 52 87 49 54 29 12 107
Labcode

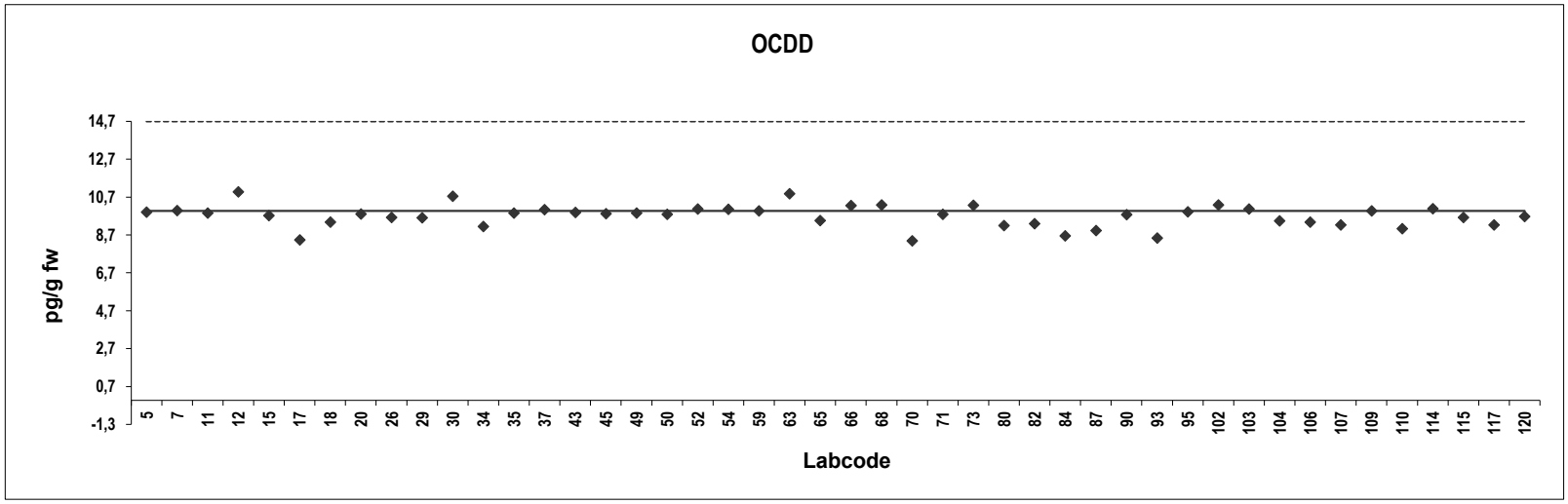
Analyte solution

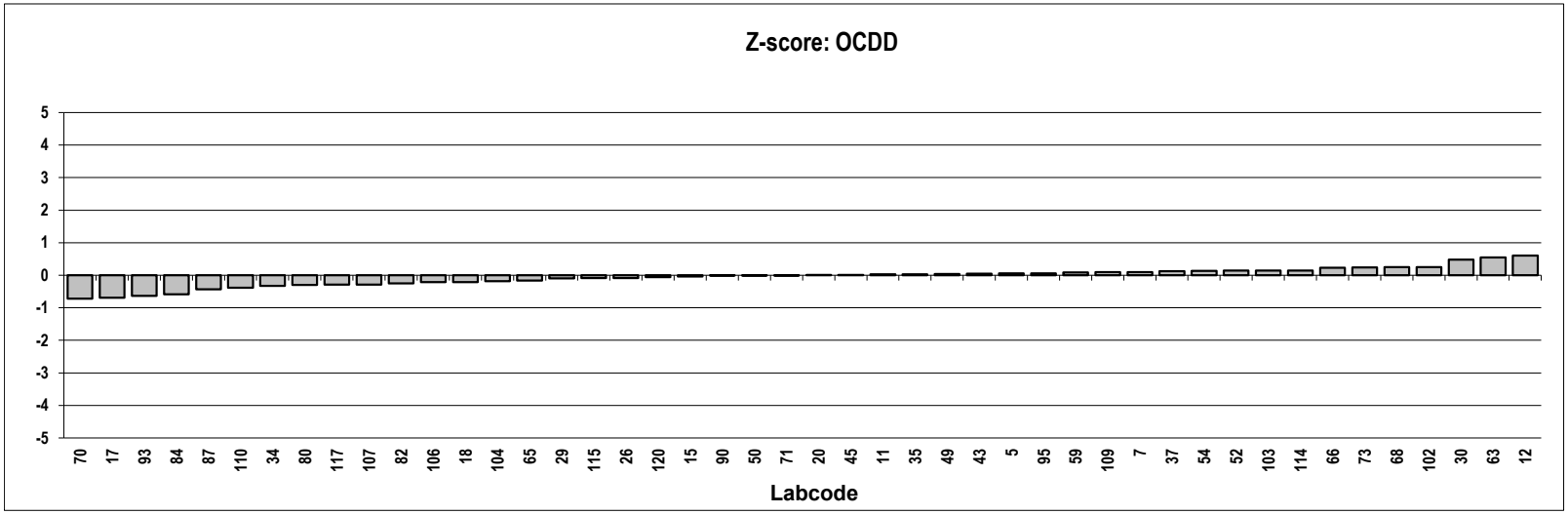
Congener: OCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	9,9	0,059		120	9,7	-0,061	
7	10	0,10					
11	9,9	0,028					
12	11	0,60					
15	9,8	-0,035					
17	8,5	-0,69					
18	9,4	-0,21					
20	9,8	0,0021					
26	9,7	-0,084					
29	9,6	-0,093					
30	11	0,48					
34	9,2	-0,33					
35	9,9	0,033					
37	10	0,12					
43	9,9	0,048					
45	9,8	0,012					
49	9,9	0,034					
50	9,8	-0,0047					
52	10	0,14					
54	10	0,14					
59	10	0,089					
63	11	0,55					
65	9,5	-0,17					
66	10	0,23					
68	10	0,24					
70	8,4	-0,72					
71	9,8	-0,0021					
73	10	0,24					
80	9,2	-0,30					
82	9,3	-0,25					
84	8,7	-0,59					
87	9,0	-0,44					
90	9,8	-0,010					
93	8,6	-0,64					
95	9,9	0,061					
102	10	0,24					
103	10	0,14					
104	9,5	-0,18					
106	9,4	-0,21					
107	9,3	-0,29					
109	10	0,092					
110	9,1	-0,39					
114	10	0,15					
115	9,7	-0,086					
117	9,3	-0,29					

Consenus statistics

Consensus median, pg/g	9,8
Median all values pg/g	9,8
Consensus mean, pg/g	9,7
Standard deviation, pg/g	0,57
Relative standard deviation, %	5,9
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


OCDD
pg/g fw
14,7
12,7
10,7
8,7
6,7
4,7
2,7
0,7
-1,3
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70 17 93 84 87 110 34 80 117 107 82 106 18 104 65 29 115 26 120 15 90 50 71 20 45 11 35 49 43 5 95 59 109 7 37 54 52 103 114 66 73 68 102 30 63 12
Labcode

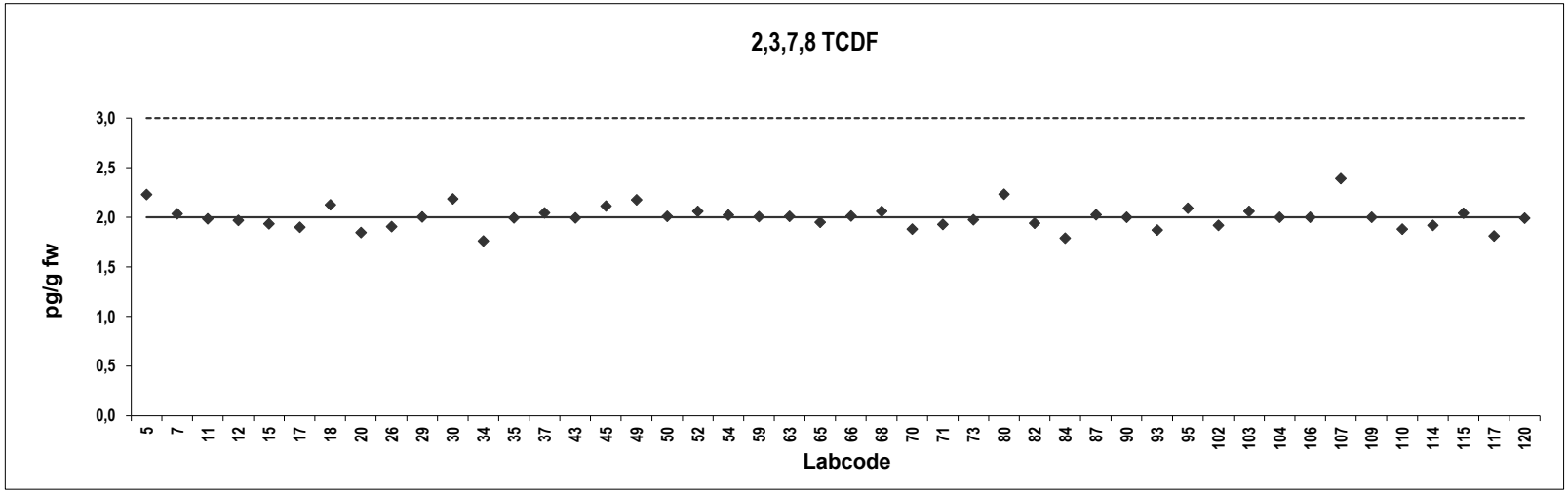
Analyte solution

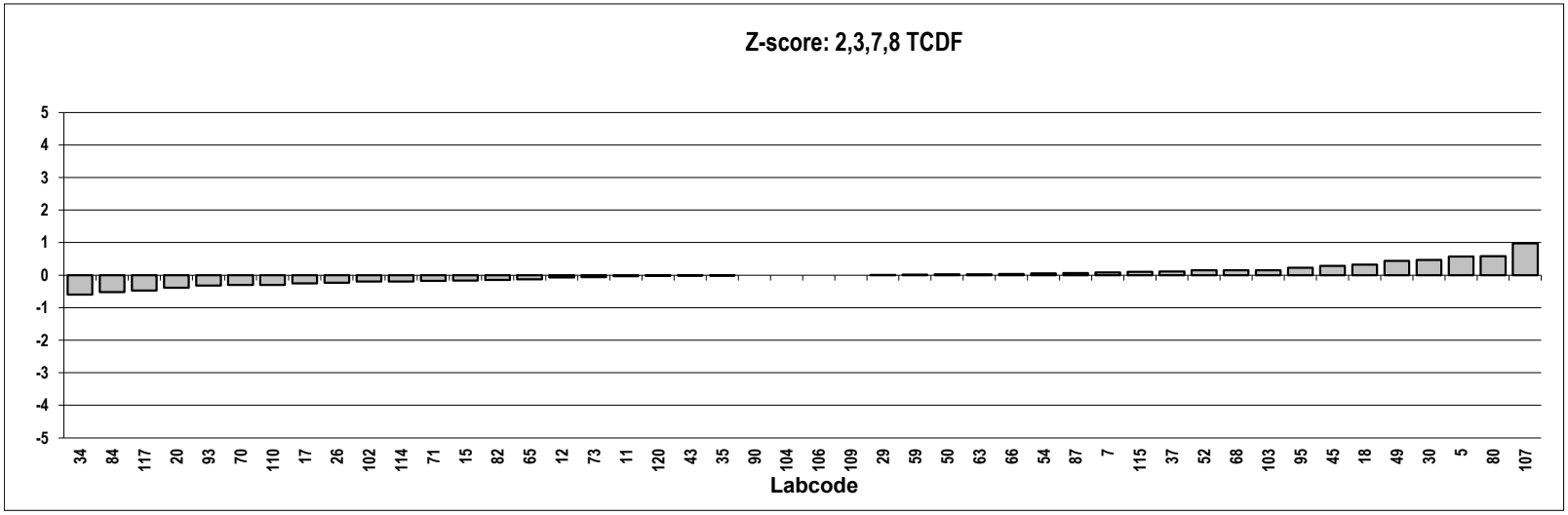
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	2,2	0,57		120	2,0	-0,025	
7	2,0	0,085					
11	2,0	-0,036					
12	2,0	-0,075					
15	1,9	-0,17					
17	1,9	-0,25					
18	2,1	0,32					
20	1,8	-0,39					
26	1,9	-0,23					
29	2,0	0,0075					
30	2,2	0,46					
34	1,8	-0,60					
35	2,0	-0,012					
37	2,0	0,11					
43	2,0	-0,016					
45	2,1	0,29					
49	2,2	0,44					
50	2,0	0,025					
52	2,1	0,15					
54	2,0	0,053					
59	2,0	0,016					
63	2,0	0,025					
65	2,0	-0,13					
66	2,0	0,030					
68	2,1	0,15					
70	1,9	-0,30					
71	1,9	-0,18					
73	2,0	-0,061					
80	2,2	0,58					
82	1,9	-0,15					
84	1,8	-0,53					
87	2,0	0,066					
90	2,0	0,00					
93	1,9	-0,32					
95	2,1	0,23					
102	1,9	-0,20					
103	2,1	0,15					
104	2,0	0,0					
106	2,0	0,0					
107	2,4	0,98					
109	2,0	0,0					
110	1,9	-0,30					
114	1,9	-0,20					
115	2,0	0,10					
117	1,8	-0,48					

Consenus statistics

Consensus median, pg/g	2,0
Median all values pg/g	2,0
Consensus mean, pg/g	2,0
Standard deviation, pg/g	0,12
Relative standard deviation, %	5,9
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


2,3,7,8 TCDF
pg/g fw
3,0
2,5
2,0
1,5
1,0
0,5
0,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
34 84 117 20 93 70 110 17 26 102 114 71 15 82 65 12 73 11 120 43 35 90 104 106 109 29 59 50 63 66 54 87 7 115 37 52 68 103 95 45 18 49 30 5 80 107
Labcode

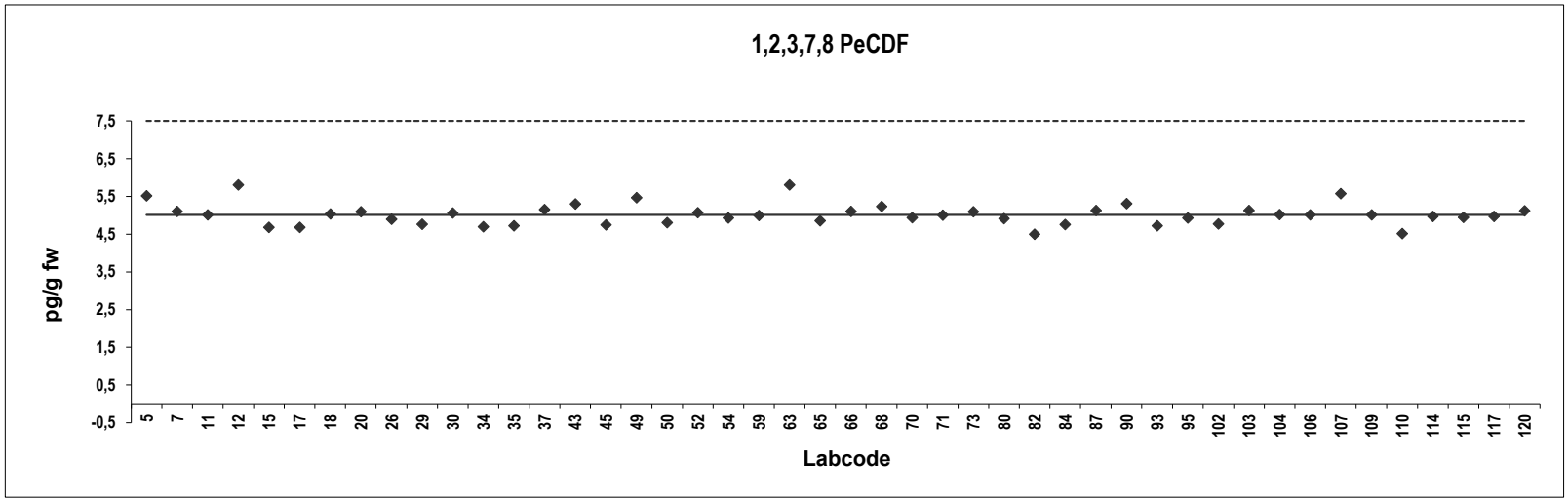
Analyte solution

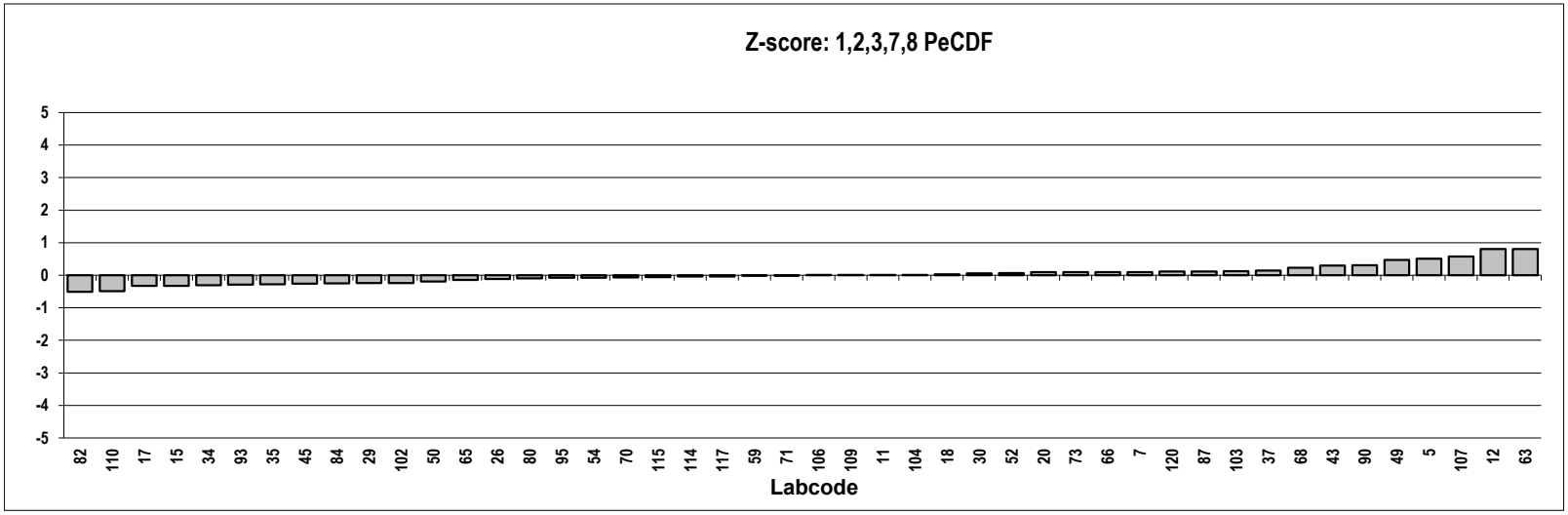
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,5	0,51		120	5,1	0,11	
7	5,1	0,10					
11	5,0	0,0055					
12	5,8	0,80					
15	4,7	-0,32					
17	4,7	-0,33					
18	5,0	0,029					
20	5,1	0,092					
26	4,9	-0,11					
29	4,8	-0,24					
30	5,1	0,054					
34	4,7	-0,31					
35	4,7	-0,28					
37	5,1	0,15					
43	5,3	0,30					
45	4,7	-0,26					
49	5,5	0,47					
50	4,8	-0,20					
52	5,1	0,064					
54	4,9	-0,074					
59	5,0	-0,0080					
63	5,8	0,80					
65	4,9	-0,15					
66	5,1	0,10					
68	5,2	0,23					
70	4,9	-0,066					
71	5,0	-0,0042					
73	5,1	0,094					
80	4,9	-0,091					
82	4,5	-0,51					
84	4,8	-0,25					
87	5,1	0,12					
90	5,3	0,30					
93	4,7	-0,28					
95	4,9	-0,076					
102	4,8	-0,24					
103	5,1	0,12					
104	5,0	0,014					
106	5,0	0,0042					
107	5,6	0,57					
109	5,0	0,0042					
110	4,5	-0,49					
114	5,0	-0,036					
115	4,9	-0,056					
117	5,0	-0,036					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	5,0
Standard deviation, pg/g	0,29
Relative standard deviation, %	5,8
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,7,8 PeCDF
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
82 110 17 15 34 93 35 45 84 29 102 50 65 26 80 95 54 70 115 114 117 59 71 106 109 11 104 18 30 52 20 73 66 7 120 87 103 37 68 43 90 49 5 107 12 63
Labcode

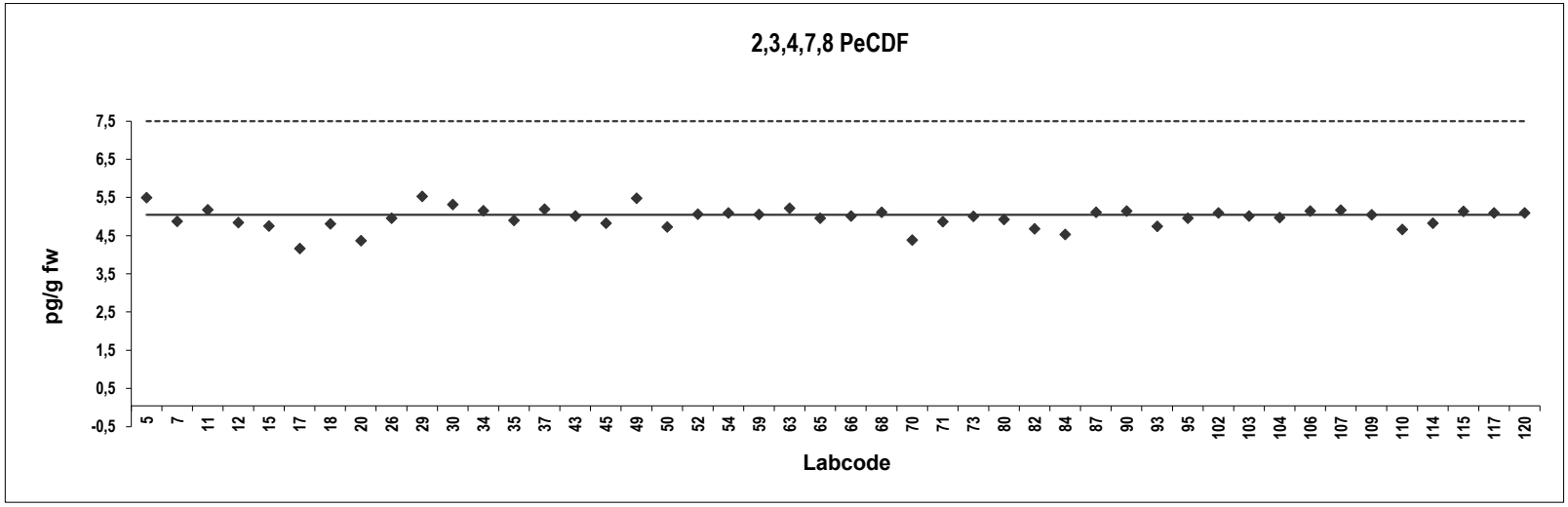
Analyte solution

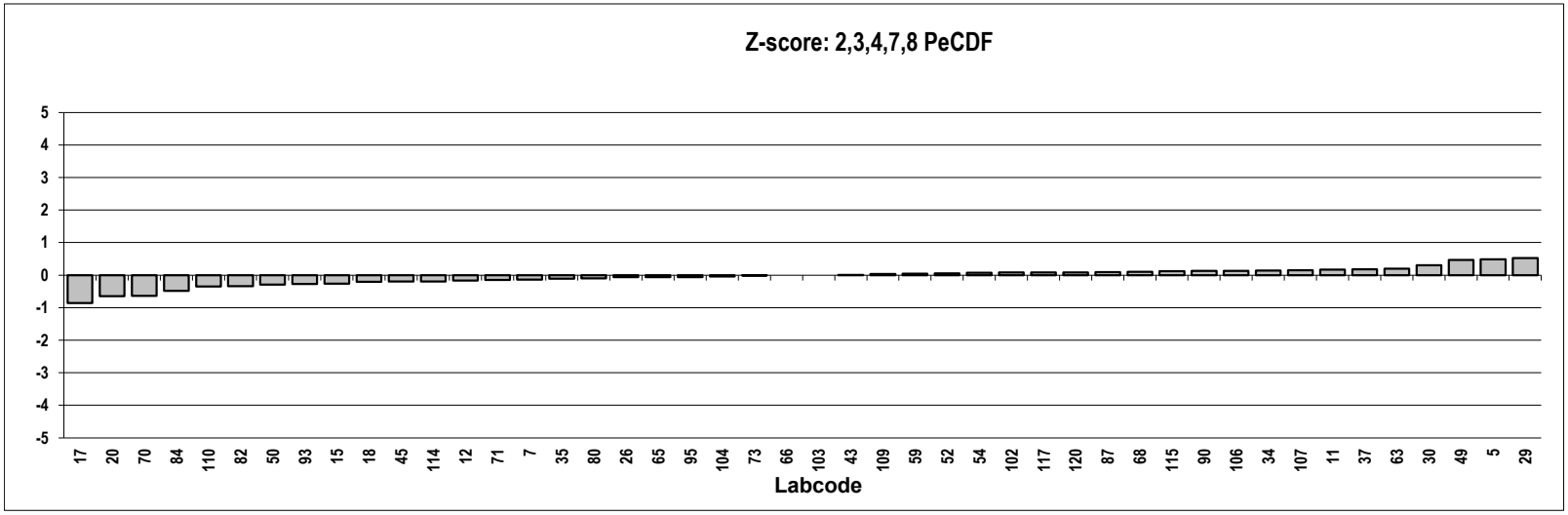
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,5	0,49		120	5,1	0,080	
7	4,8	-0,14					
11	5,1	0,17					
12	4,8	-0,17					
15	4,7	-0,26					
17	4,1	-0,86					
18	4,8	-0,21					
20	4,3	-0,65					
26	4,9	-0,061					
29	5,5	0,52					
30	5,3	0,30					
34	5,1	0,14					
35	4,9	-0,11					
37	5,2	0,18					
43	5,0	0,0017					
45	4,8	-0,19					
49	5,4	0,47					
50	4,7	-0,29					
52	5,0	0,050					
54	5,0	0,078					
59	5,0	0,041					
63	5,2	0,20					
65	4,9	-0,060					
66	5,0	0,0					
68	5,1	0,10					
70	4,3	-0,63					
71	4,8	-0,15					
73	5,0	-0,010					
80	4,9	-0,10					
82	4,6	-0,34					
84	4,5	-0,48					
87	5,1	0,10					
90	5,1	0,13					
93	4,7	-0,27					
95	4,9	-0,060					
102	5,1	0,080					
103	5,0	0,00					
104	4,9	-0,040					
106	5,1	0,13					
107	5,1	0,15					
109	5,0	0,030					
110	4,6	-0,35					
114	4,8	-0,19					
115	5,1	0,12					
117	5,1	0,080					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,28
Relative standard deviation, %	5,6
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


2,3,4,7,8 PeCDF
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
17 20 70 84 110 82 50 93 15 18 45 114 12 71 7 35 80 26 65 95 104 73 66 103 43 109 59 52 54 102 117 120 87 68 115 90 106 34 107 11 37 63 30 49 5 29
Labcode

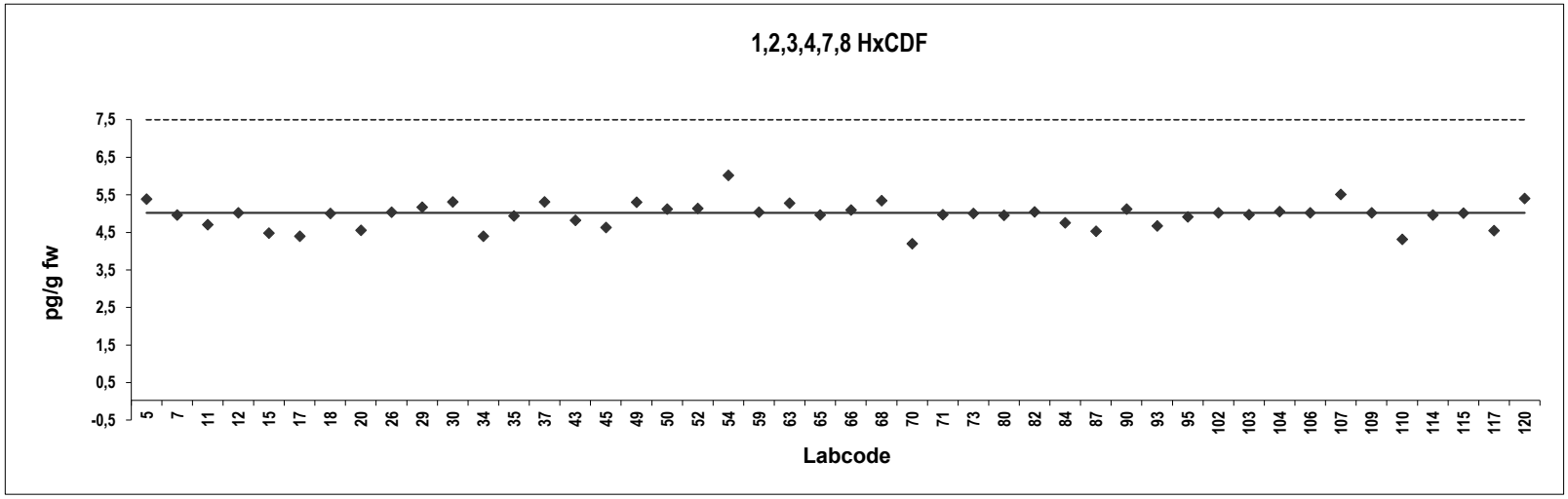
Analyte solution

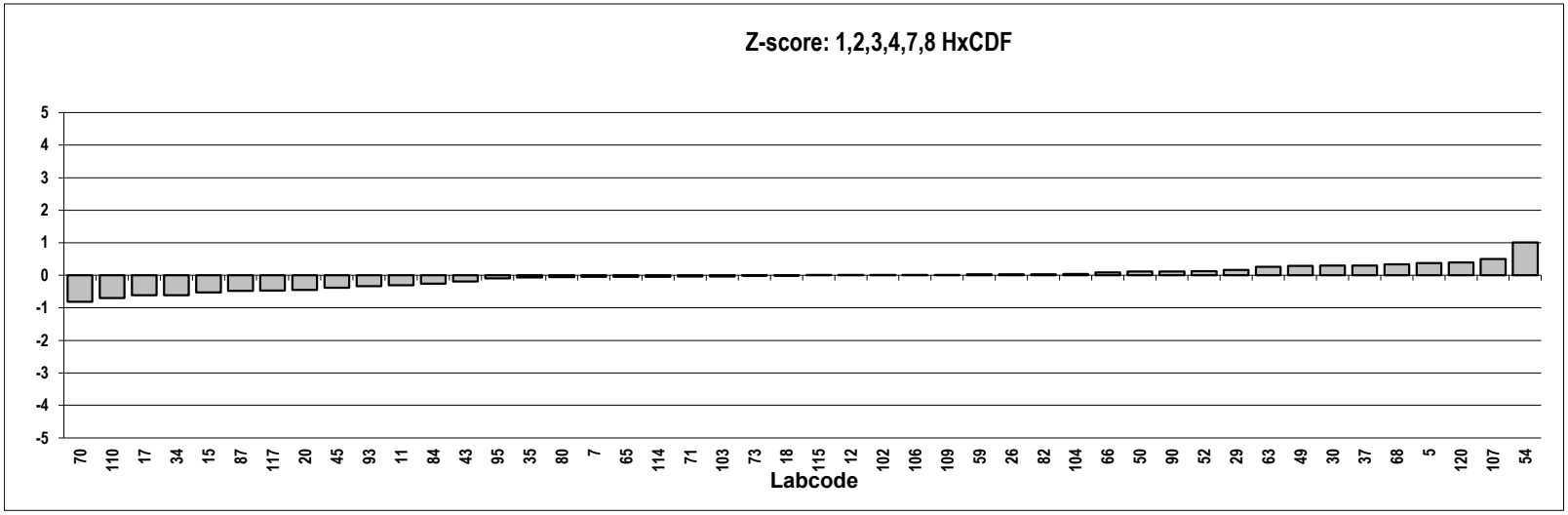
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,4	0,38		120	5,4	0,40	
7	4,9	-0,048					
11	4,7	-0,30					
12	5,0	0,015					
15	4,5	-0,53					
17	4,4	-0,62					
18	5,0	-0,0045					
20	4,5	-0,45					
26	5,0	0,029					
29	5,1	0,16					
30	5,3	0,30					
34	4,4	-0,62					
35	4,9	-0,069					
37	5,3	0,30					
43	4,8	-0,19					
45	4,6	-0,38					
49	5,3	0,29					
50	5,1	0,11					
52	5,1	0,12					
54	6,0	1,0					
59	5,0	0,026					
63	5,3	0,27					
65	4,9	-0,046					
66	5,1	0,088					
68	5,3	0,34					
70	4,2	-0,82					
71	4,9	-0,040					
73	5,0	-0,0092					
80	4,9	-0,059					
82	5,0	0,035					
84	4,7	-0,26					
87	4,5	-0,48					
90	5,1	0,11					
93	4,7	-0,34					
95	4,9	-0,10					
102	5,0	0,015					
103	5,0	-0,036					
104	5,0	0,045					
106	5,0	0,015					
107	5,5	0,50					
109	5,0	0,015					
110	4,3	-0,70					
114	4,9	-0,046					
115	5,0	0,0045					
117	4,5	-0,47					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,34
Relative standard deviation, %	7,0
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,4,7,8 HxCDF
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
70 110 17 34 15 87 117 20 45 93 11 84 43 95 35 80 7 65 114 71 103 73 18 115 12 102 106 109 59 26 82 104 66 50 90 52 29 63 49 30 37 68 5 120 107 54
Labcode

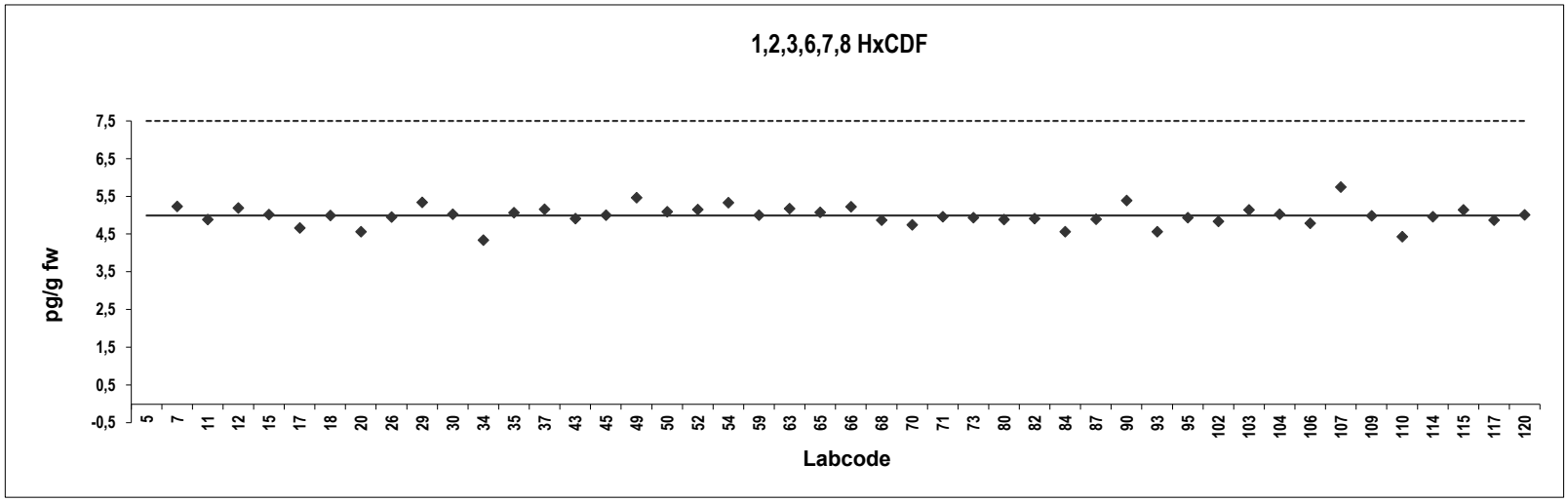
Analyte solution

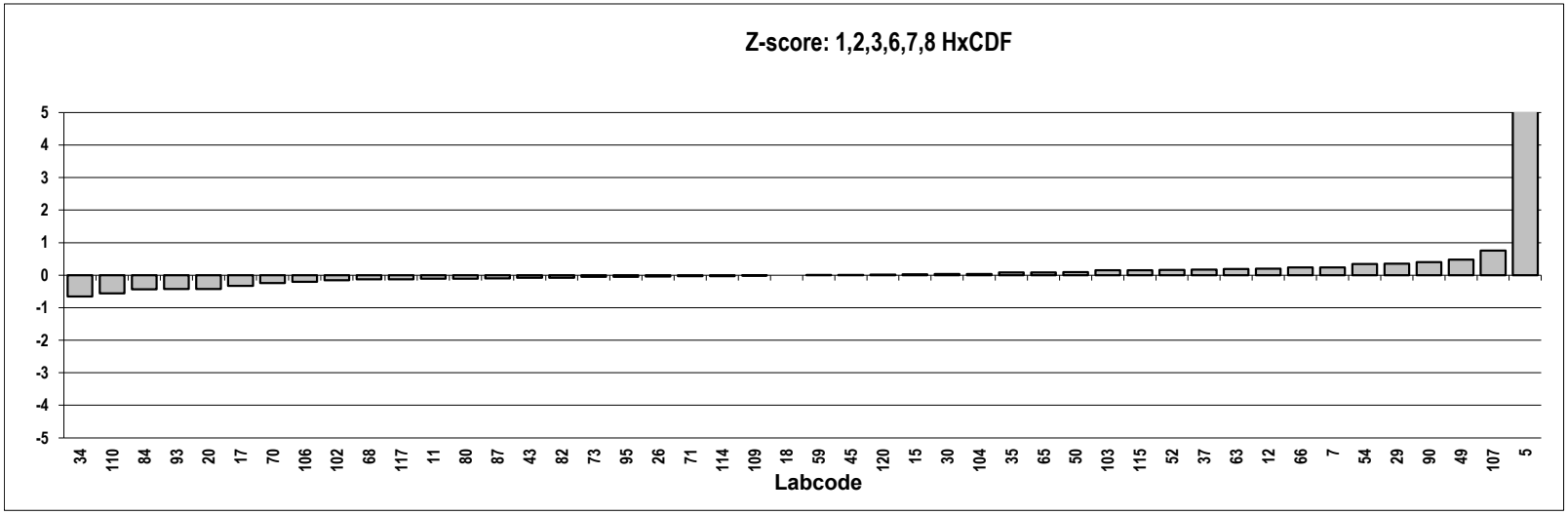
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	5,4	Outlier	120	5,0	0,017	
7	5,2	0,24					
11	4,9	-0,11					
12	5,2	0,20					
15	5,0	0,028					
17	4,7	-0,33					
18	5,0	0,0					
20	4,6	-0,43					
26	5,0	-0,038					
29	5,4	0,35					
30	5,0	0,032					
34	4,4	-0,65					
35	5,1	0,079					
37	5,2	0,17					
43	4,9	-0,084					
45	5,0	0,011					
49	5,5	0,47					
50	5,1	0,10					
52	5,2	0,16					
54	5,3	0,34					
59	5,0	0,0089					
63	5,2	0,19					
65	5,1	0,087					
66	5,2	0,23					
68	4,9	-0,12					
70	4,8	-0,24					
71	5,0	-0,035					
73	4,9	-0,055					
80	4,9	-0,11					
82	4,9	-0,083					
84	4,6	-0,43					
87	4,9	-0,10					
90	5,4	0,40					
93	4,6	-0,43					
95	5,0	-0,053					
102	4,9	-0,15					
103	5,2	0,15					
104	5,0	0,037					
106	4,8	-0,20					
107	5,8	0,75					
109	5,0	0,00					
110	4,4	-0,56					
114	5,0	-0,033					
115	5,2	0,15					
117	4,9	-0,12					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	5,0
Standard deviation, pg/g	0,27
Relative standard deviation, %	5,3
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


1,2,3,6,7,8 HxCDF
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
34 110 84 93 20 17 70 106 102 68 117 11 80 87 43 82 73 95 26 71 114 109 18 59 45 120 15 30 104 35 65 50 103 115 52 37 63 12 66 7 54 29 90 49 107 5
Labcode

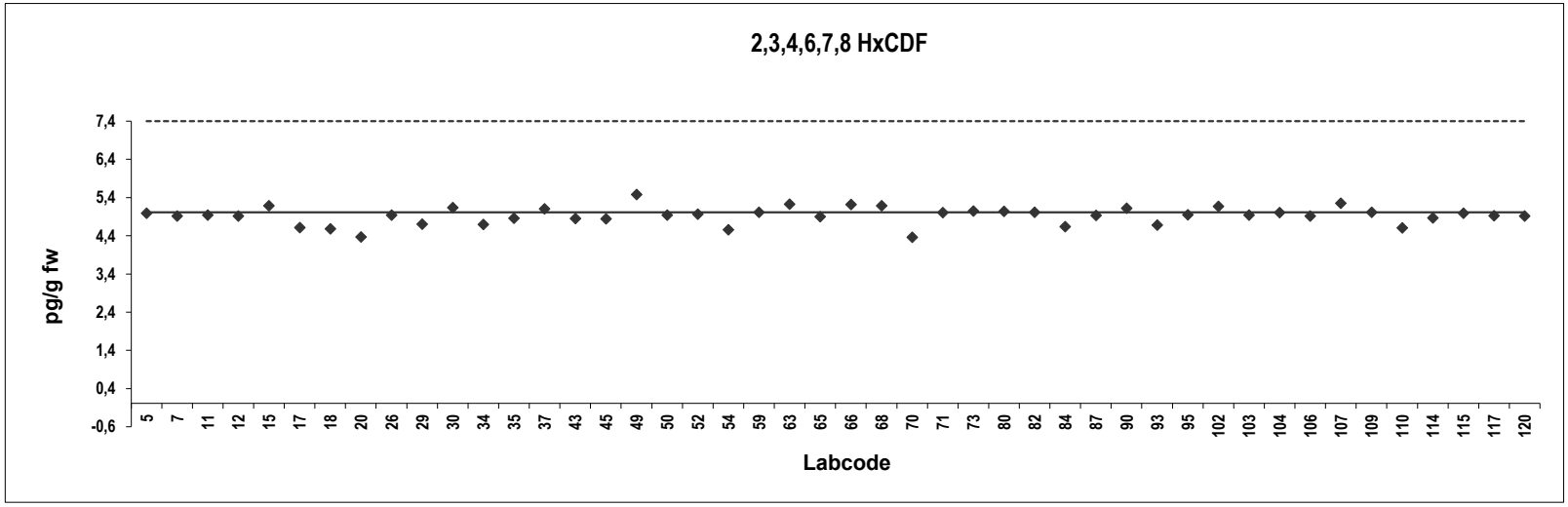
Analyte solution

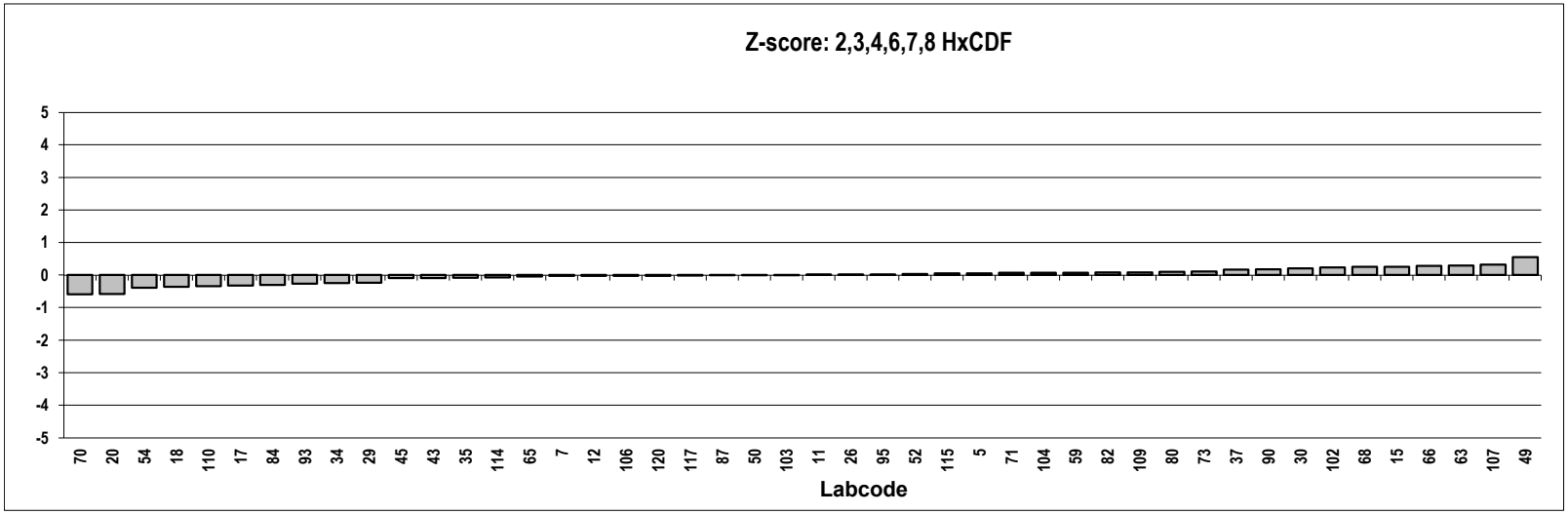
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,0	0,052		120	4,9	-0,024	
7	4,9	-0,024					
11	4,9	0,0035					
12	4,9	-0,024					
15	5,2	0,25					
17	4,6	-0,33					
18	4,6	-0,36					
20	4,4	-0,58					
26	4,9	0,0040					
29	4,7	-0,24					
30	5,1	0,20					
34	4,7	-0,25					
35	4,8	-0,083					
37	5,1	0,17					
43	4,8	-0,090					
45	4,8	-0,10					
49	5,5	0,55					
50	4,9	-0,0035					
52	5,0	0,027					
54	4,5	-0,39					
59	5,0	0,072					
63	5,2	0,29					
65	4,9	-0,044					
66	5,2	0,28					
68	5,2	0,25					
70	4,3	-0,59					
71	5,0	0,066					
73	5,0	0,11					
80	5,0	0,10					
82	5,0	0,078					
84	4,6	-0,31					
87	4,9	-0,0067					
90	5,1	0,18					
93	4,7	-0,26					
95	4,9	0,0067					
102	5,2	0,23					
103	4,9	-0,0035					
104	5,0	0,068					
106	4,9	-0,024					
107	5,2	0,32					
109	5,0	0,078					
110	4,6	-0,34					
114	4,9	-0,075					
115	5,0	0,047					
117	4,9	-0,014					

Consenus statistics

Consensus median, pg/g	4,9
Median all values pg/g	4,9
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,23
Relative standard deviation, %	4,6
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


2,3,4,6,7,8 HxCDF
pg/g fw
7,4
6,4
5,4
4,4
3,4
2,4
1,4
0,4
-0,6
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
70 20 54 18 110 17 84 93 34 29 45 43 35 114 65 7 12 106 120 117 87 50 103 11 26 95 52 115 5 71 104 59 82 109 80 73 37 90 30 102 68 15 66 63 107 49
Labcode

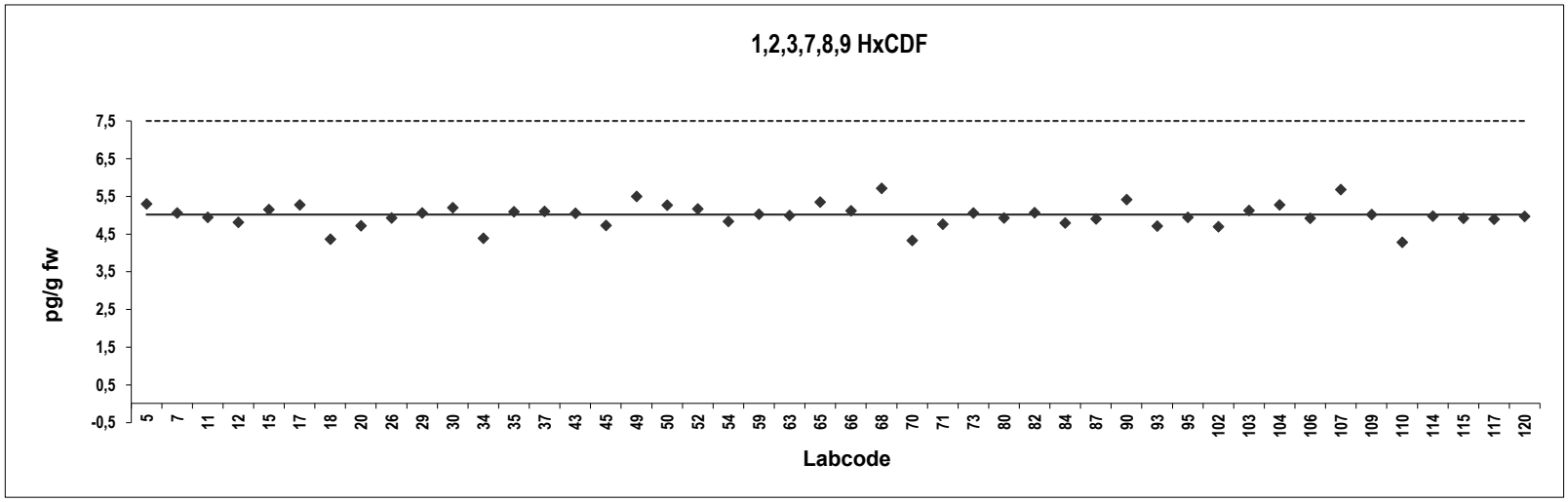
Analyte solution

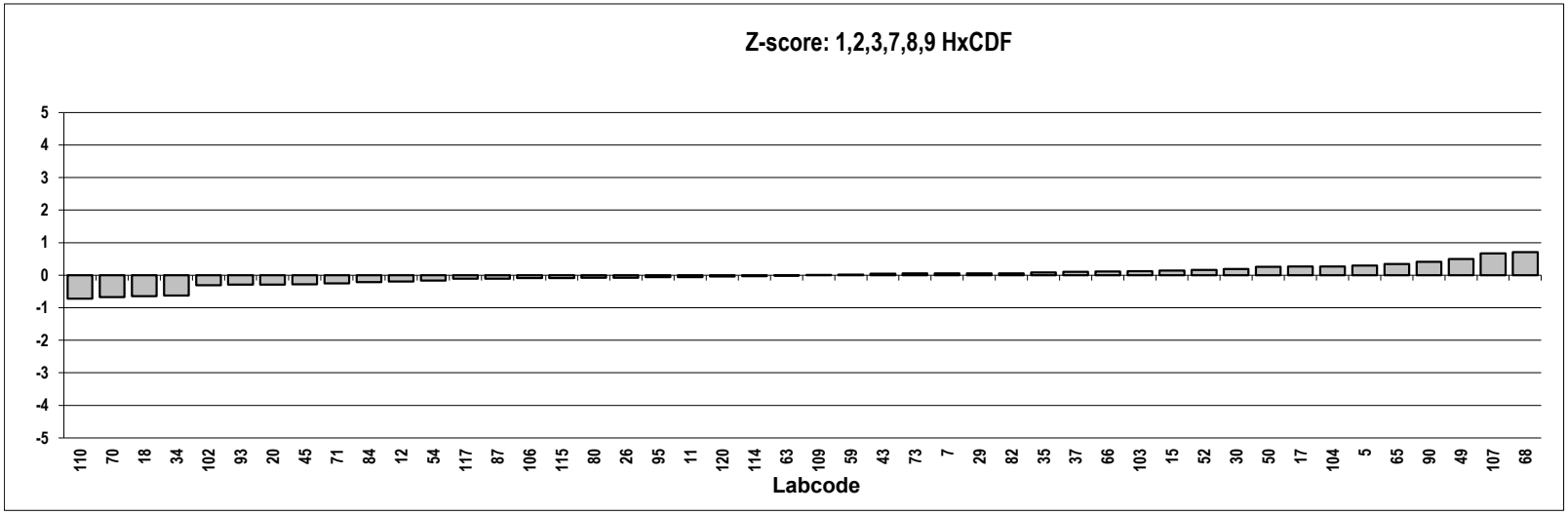
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,3	0,29		120	5,0	-0,040	
7	5,0	0,052					
11	4,9	-0,059					
12	4,8	-0,19					
15	5,1	0,15					
17	5,3	0,27					
18	4,3	-0,65					
20	4,7	-0,29					
26	4,9	-0,075					
29	5,0	0,057					
30	5,2	0,19					
34	4,4	-0,62					
35	5,1	0,088					
37	5,1	0,10					
43	5,0	0,050					
45	4,7	-0,28					
49	5,5	0,49					
50	5,3	0,26					
52	5,2	0,16					
54	4,8	-0,17					
59	5,0	0,018					
63	5,0	-0,010					
65	5,3	0,34					
66	5,1	0,11					
68	5,7	0,71					
70	4,3	-0,67					
71	4,7	-0,25					
73	5,0	0,051					
80	4,9	-0,076					
82	5,1	0,060					
84	4,8	-0,21					
87	4,9	-0,11					
90	5,4	0,41					
93	4,7	-0,29					
95	4,9	-0,060					
102	4,7	-0,31					
103	5,1	0,12					
104	5,3	0,27					
106	4,9	-0,090					
107	5,7	0,67					
109	5,0	0,010					
110	4,3	-0,72					
114	5,0	-0,030					
115	4,9	-0,090					
117	4,9	-0,11					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	5,0
Standard deviation, pg/g	0,31
Relative standard deviation, %	6,2
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,7,8,9 HxCDF
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
110 70 18 34 102 93 20 45 71 84 12 54 117 87 106 115 80 26 95 11 120 114 63 109 59 43 73 7 29 82 35 37 66 103 15 52 30 50 17 104 5 65 90 49 107 68
Labcode

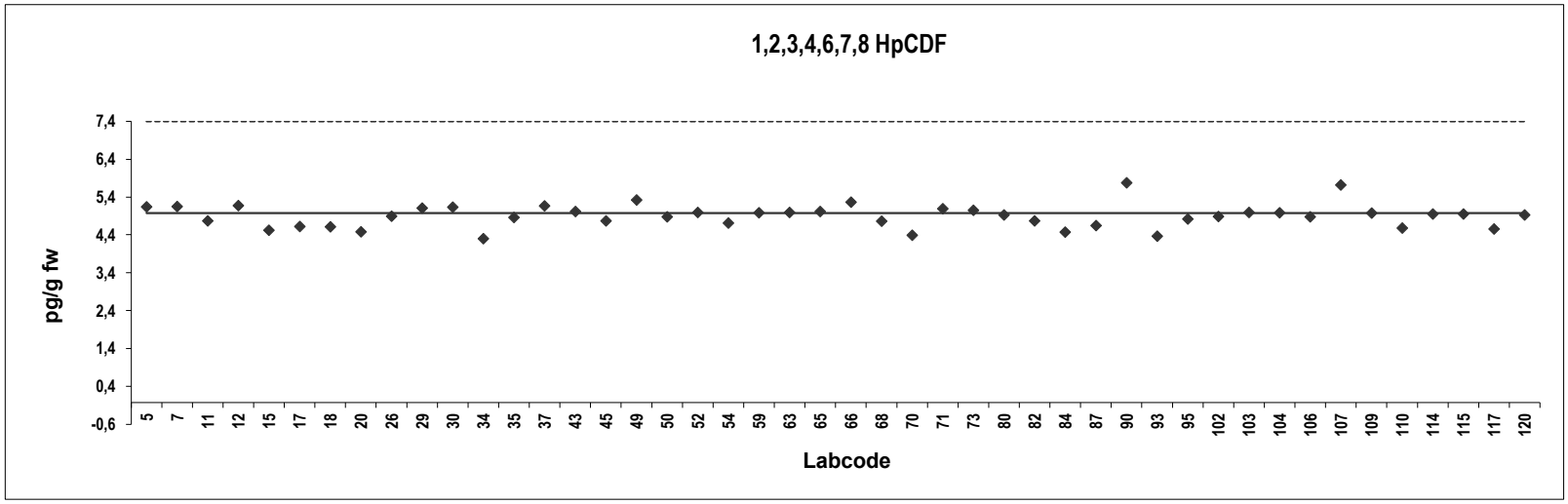
Analyte solution

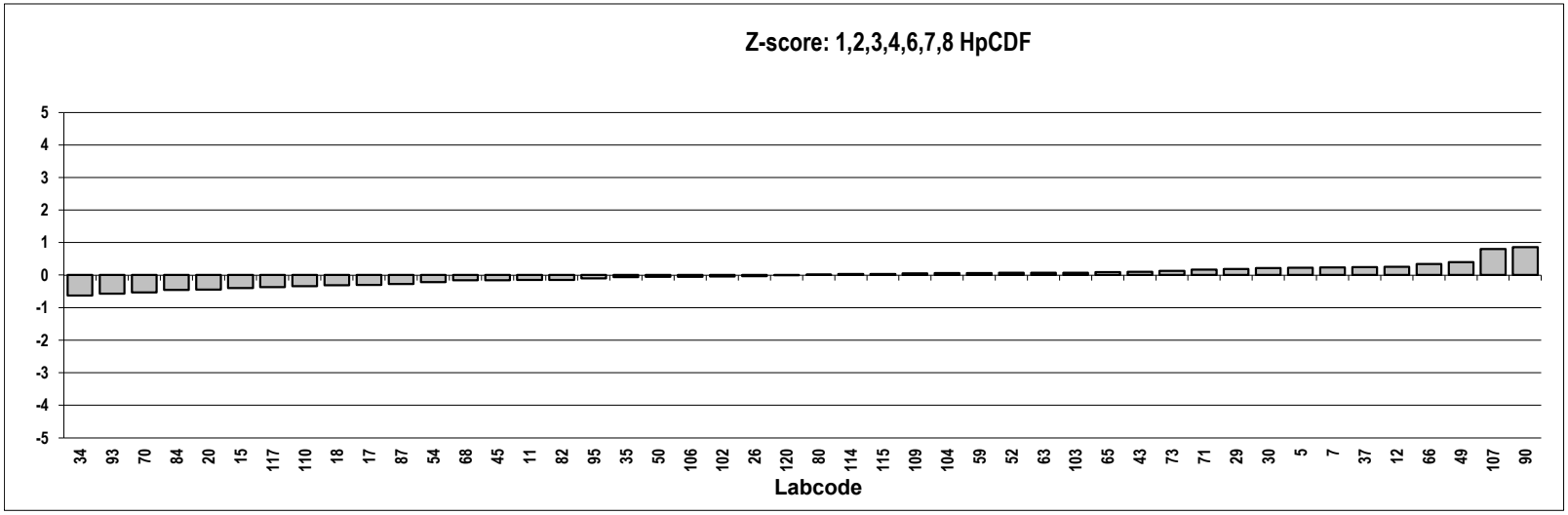
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,2	0,22		120	5,0	-0,0015	
7	5,2	0,23					
11	4,8	-0,15					
12	5,2	0,25					
15	4,6	-0,40					
17	4,7	-0,30					
18	4,6	-0,31					
20	4,5	-0,45					
26	4,9	-0,032					
29	5,1	0,19					
30	5,2	0,21					
34	4,3	-0,63					
35	4,9	-0,068					
37	5,2	0,25					
43	5,0	0,10					
45	4,8	-0,16					
49	5,3	0,40					
50	4,9	-0,052					
52	5,0	0,069					
54	4,7	-0,22					
59	5,0	0,061					
63	5,0	0,069					
65	5,0	0,089					
66	5,3	0,34					
68	4,8	-0,16					
70	4,4	-0,54					
71	5,1	0,17					
73	5,1	0,12					
80	5,0	0,0015					
82	4,8	-0,15					
84	4,5	-0,46					
87	4,7	-0,28					
90	5,8	0,86					
93	4,4	-0,57					
95	4,9	-0,10					
102	4,9	-0,042					
103	5,0	0,069					
104	5,0	0,059					
106	4,9	-0,052					
107	5,7	0,80					
109	5,0	0,049					
110	4,6	-0,34					
114	5,0	0,029					
115	5,0	0,029					
117	4,6	-0,38					

Consenus statistics

Consensus median, pg/g	5,0
Median all values pg/g	5,0
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,31
Relative standard deviation, %	6,2
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,4,6,7,8 HpCDF
pg/g fw
7,4
6,4
5,4
4,4
3,4
2,4
1,4
0,4
-0,6
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
34 93 70 84 20 15 117 110 18 17 87 54 68 45 11 82 95 35 50 106 102 26 120 80 114 115 109 104 59 52 63 103 65 43 73 71 29 30 5 7 37 12 66 49 107 90
Labcode

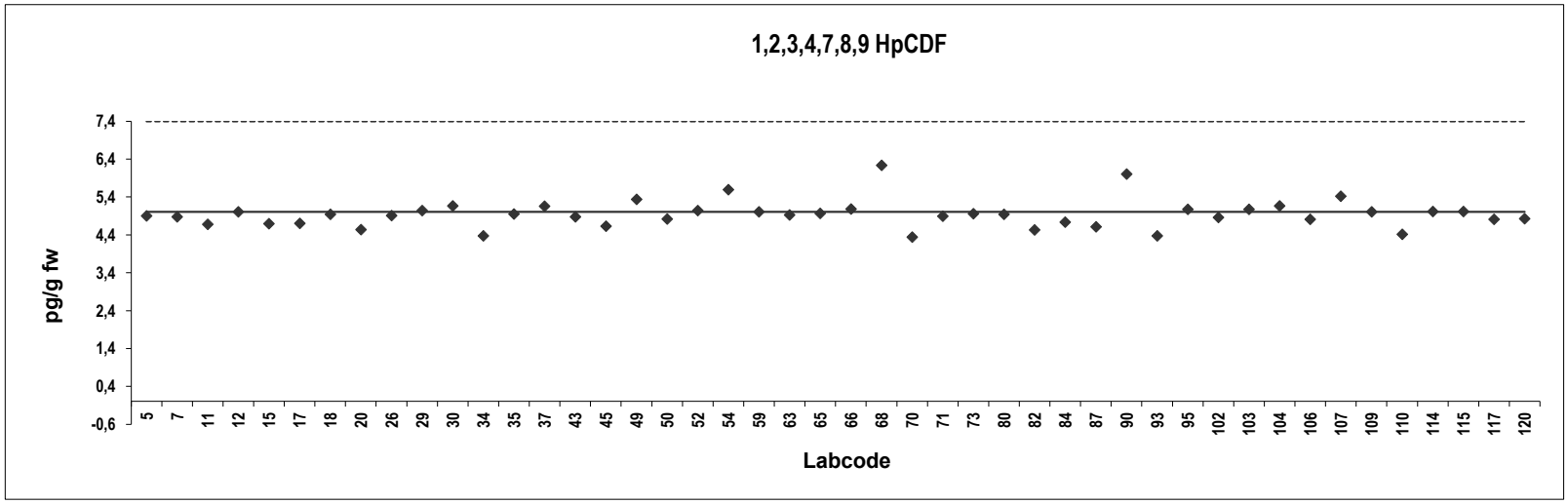
Analyte solution

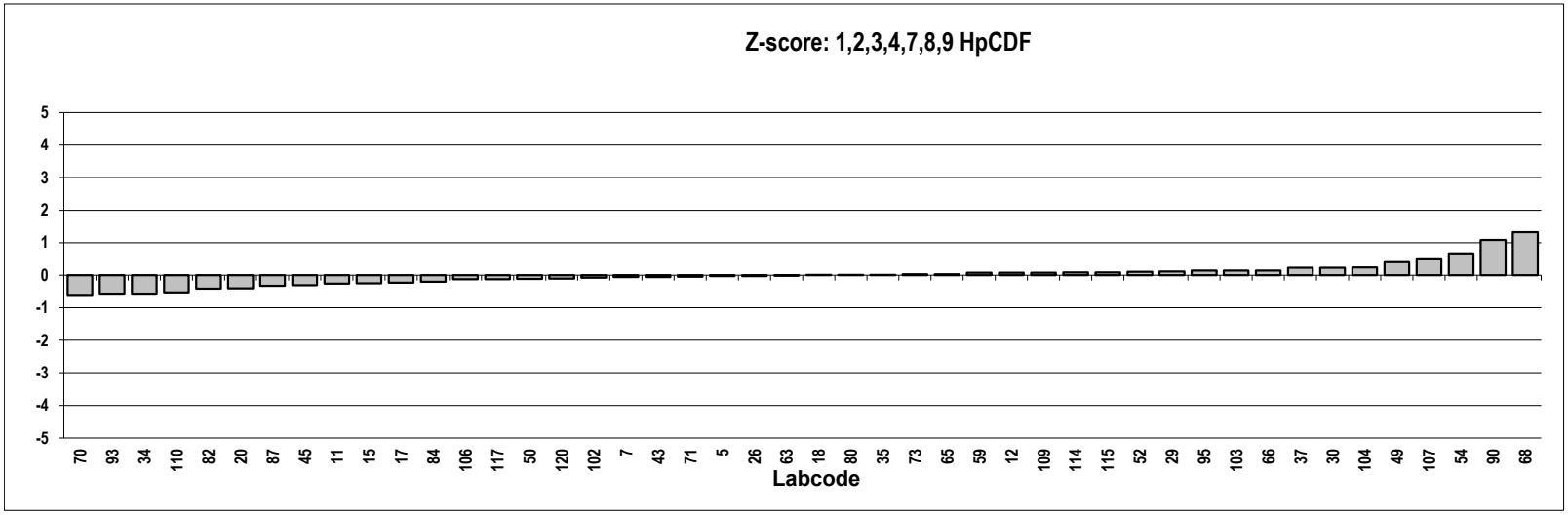
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	4,9	-0,032		120	4,8	-0,11	
7	4,9	-0,062					
11	4,7	-0,26					
12	5,0	0,073					
15	4,7	-0,25					
17	4,7	-0,23					
18	4,9	0,0086					
20	4,5	-0,40					
26	4,9	-0,030					
29	5,0	0,11					
30	5,2	0,23					
34	4,4	-0,57					
35	4,9	0,012					
37	5,2	0,23					
43	4,9	-0,057					
45	4,6	-0,31					
49	5,3	0,40					
50	4,8	-0,12					
52	5,0	0,10					
54	5,6	0,67					
59	5,0	0,07					
63	4,9	-0,0086					
65	5,0	0,032					
66	5,1	0,15					
68	6,2	1,3					
70	4,3	-0,61					
71	4,9	-0,047					
73	5,0	0,024					
80	4,9	0,0086					
82	4,5	-0,41					
84	4,7	-0,20					
87	4,6	-0,33					
90	6,0	1,1					
93	4,4	-0,57					
95	5,1	0,14					
102	4,9	-0,080					
103	5,1	0,14					
104	5,2	0,23					
106	4,8	-0,13					
107	5,4	0,49					
109	5,0	0,073					
110	4,4	-0,53					
114	5,0	0,083					
115	5,0	0,083					
117	4,8	-0,13					

Consenus statistics

Consensus median, pg/g	4,9
Median all values pg/g	4,9
Consensus mean, pg/g	4,9
Standard deviation, pg/g	0,37
Relative standard deviation, %	7,4
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


1,2,3,4,7,8,9 HpCDF
pg/g fw
7,4
6,4
5,4
4,4
3,4
2,4
1,4
0,4
-0,6
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
70 93 34 110 82 20 87 45 11 15 17 84 106 117 50 120 102 7 43 71 5 26 63 18 80 35 73 65 59 12 109 114 115 52 29 95 103 66 37 30 104 49 107 54 90 68
Labcode

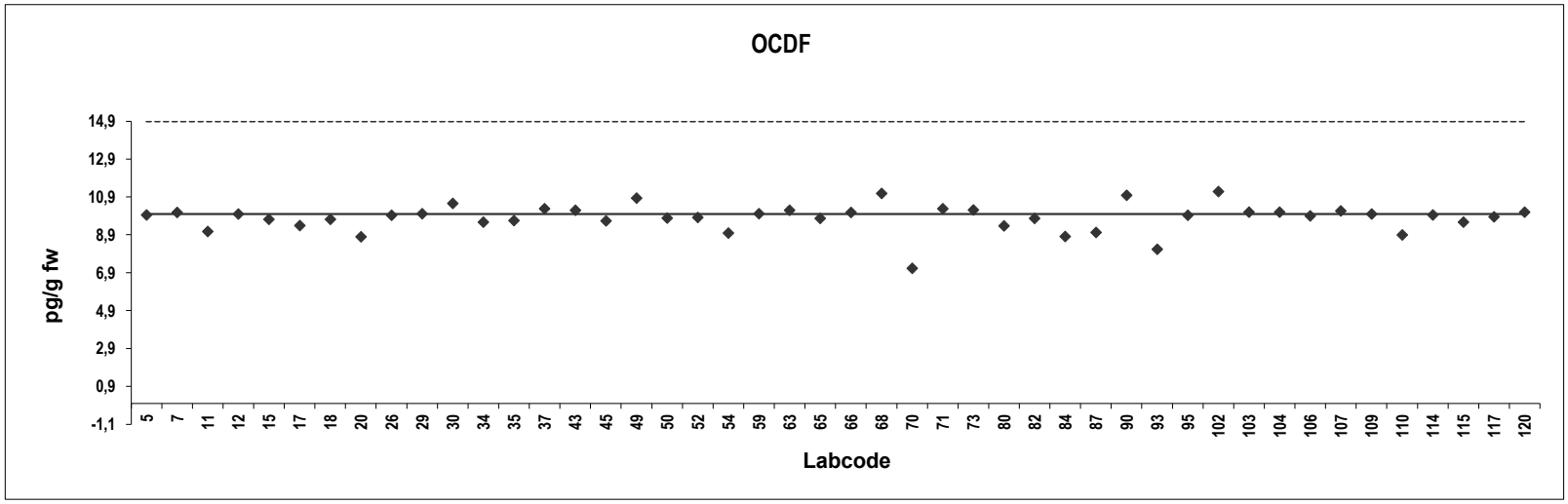
Analyte solution

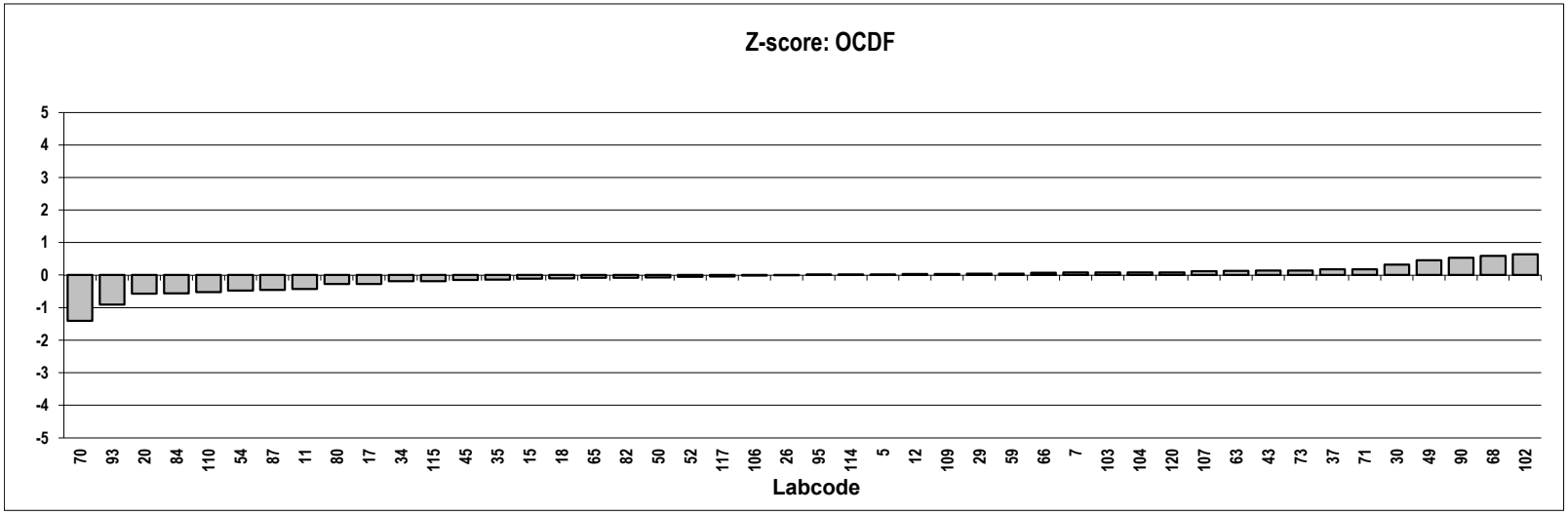
Congener: OCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	0,011		120	10	0,082	
7	10	0,080					
11	9,1	-0,43					
12	10	0,032					
15	9,7	-0,11					
17	9,4	-0,27					
18	9,7	-0,11					
20	8,8	-0,57					
26	9,9	0,00					
29	10	0,039					
30	11	0,32					
34	9,6	-0,18					
35	9,7	-0,14					
37	10	0,17					
43	10	0,14					
45	9,6	-0,15					
49	11	0,46					
50	9,8	-0,074					
52	9,8	-0,053					
54	9,0	-0,47					
59	10	0,042					
63	10	0,13					
65	9,8	-0,084					
66	10	0,072					
68	11	0,59					
70	7,1	-1,4					
71	10	0,18					
73	10	0,14					
80	9,4	-0,28					
82	9,8	-0,084					
84	8,8	-0,56					
87	9,0	-0,45					
90	11	0,54					
93	8,1	-0,91					
95	9,9	0,00					
102	11	0,64					
103	10	0,082					
104	10	0,082					
106	9,9	-0,018					
107	10	0,12					
109	10	0,032					
110	8,9	-0,52					
114	10,0	0,0069					
115	9,6	-0,18					
117	9,9	-0,043					

Consenus statistics

Consensus median, pg/g	9,9
Median all values pg/g	9,9
Consensus mean, pg/g	9,8
Standard deviation, pg/g	0,72
Relative standard deviation, %	7,4
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


OCDF
pg/g fw
14,9
12,9
10,9
8,9
6,9
4,9
2,9
0,9
-1,1
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
70 93 20 84 110 54 87 11 80 17 34 115 45 35 15 18 65 82 50 52 117 106 26 95 114 5 12 109 29 59 66 7 103 104 120 107 63 43 73 37 71 30 49 90 68 102
Labcode

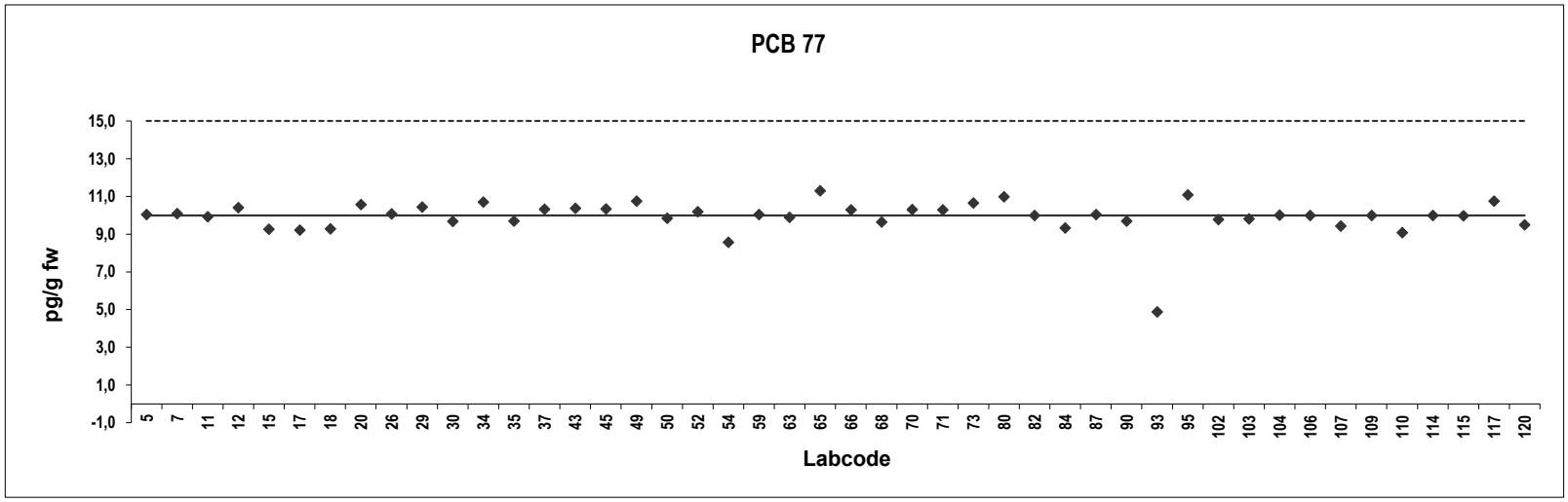
Analyte solution

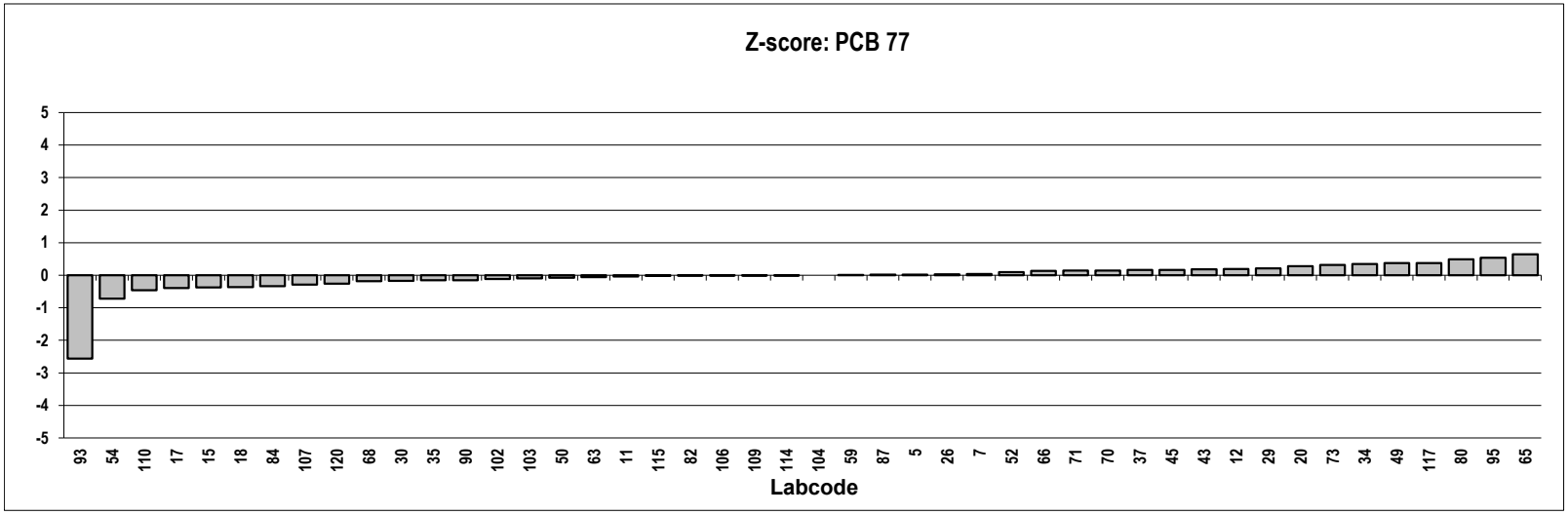
Congener: PCB 77

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	0,015		120	9,5	-0,25	
7	10	0,043					
11	9,9	-0,042					
12	10	0,19					
15	9,3	-0,37					
17	9,2	-0,39					
18	9,3	-0,37					
20	11	0,28					
26	10	0,030					
29	10	0,21					
30	9,7	-0,17					
34	11	0,34					
35	9,7	-0,15					
37	10	0,16					
43	10	0,18					
45	10	0,16					
49	11	0,37					
50	9,9	-0,080					
52	10	0,095					
54	8,6	-0,72					
59	10	0,014					
63	9,9	-0,055					
65	11	0,64					
66	10	0,14					
68	9,7	-0,18					
70	10	0,14					
71	10	0,14					
73	11	0,32					
80	11	0,49					
82	10	-0,0050					
84	9,3	-0,34					
87	10	0,014					
90	9,7	-0,15					
93	4,9	-2,6	Outlier				
95	11	0,54					
102	9,8	-0,11					
103	9,8	-0,10					
104	10	0,0					
106	10	-0,0050					
107	9,4	-0,29					
109	10	-0,0050					
110	9,1	-0,46					
114	10	-0,0050					
115	10,0	-0,015					
117	11	0,37					

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	10
Consensus mean, pg/g	10
Standard deviation, pg/g	0,55
Relative standard deviation, %	5,5
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 77
pg/g fw
15,0
13,0
11,0
9,0
7,0
5,0
3,0
1,0
-1,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 54 110 17 15 18 84 107 120 68 30 35 90 102 103 50 63 11 115 82 106 109 114 104 59 87 5 26 7 52 66 71 70 37 45 43 12 29 20 73 34 49 117 80 95 65
Labcode

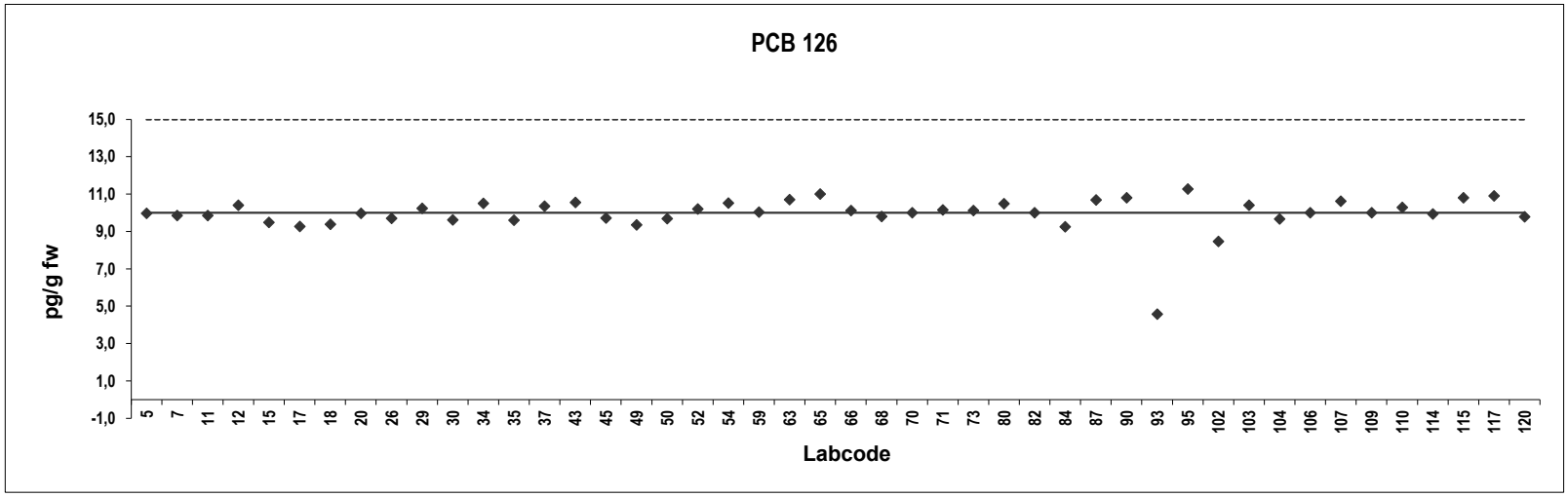
Analyte solution

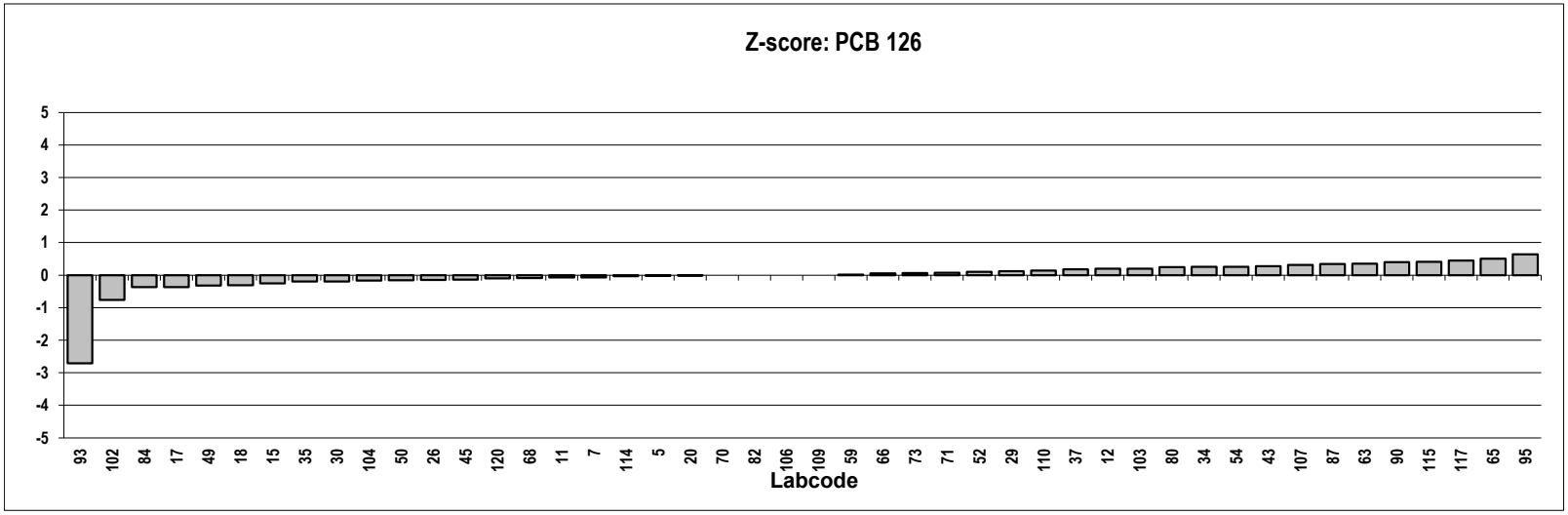
Congener: PCB 126

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	-0,019		120	9,8	-0,11	
7	9,9	-0,074					
11	9,9	-0,075					
12	10	0,20					
15	9,5	-0,26					
17	9,3	-0,37					
18	9,4	-0,31					
20	10	-0,011					
26	9,7	-0,15					
29	10	0,12					
30	9,6	-0,19					
34	11	0,25					
35	9,6	-0,20					
37	10	0,18					
43	11	0,27					
45	9,7	-0,14					
49	9,4	-0,32					
50	9,7	-0,16					
52	10	0,10					
54	11	0,26					
59	10	0,018					
63	11	0,35					
65	11	0,50					
66	10	0,056					
68	9,8	-0,095					
70	10	0,0					
71	10	0,074					
73	10	0,064					
80	10	0,24					
82	10	0,0					
84	9,3	-0,37					
87	11	0,34					
90	11	0,40					
93	4,6	-2,71	Outlier				
95	11	0,64					
102	8,5	-0,77					
103	10	0,20					
104	9,7	-0,17					
106	10	0,0					
107	11	0,31					
109	10	0,0					
110	10	0,14					
114	9,9	-0,030					
115	11	0,41					
117	11	0,45					

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	10
Consensus mean, pg/g	10
Standard deviation, pg/g	0,54
Relative standard deviation, %	5,4
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 126
pg/g fw
15,0
13,0
11,0
9,0
7,0
5,0
3,0
1,0
-1,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 102 84 17 49 18 15 35 30 104 50 26 45 120 68 11 7 114 5 20 70 82 106 109 59 66 73 71 52 29 110 37 12 103 80 34 54 43 107 87 63 90 115 117 65 95
Labcode

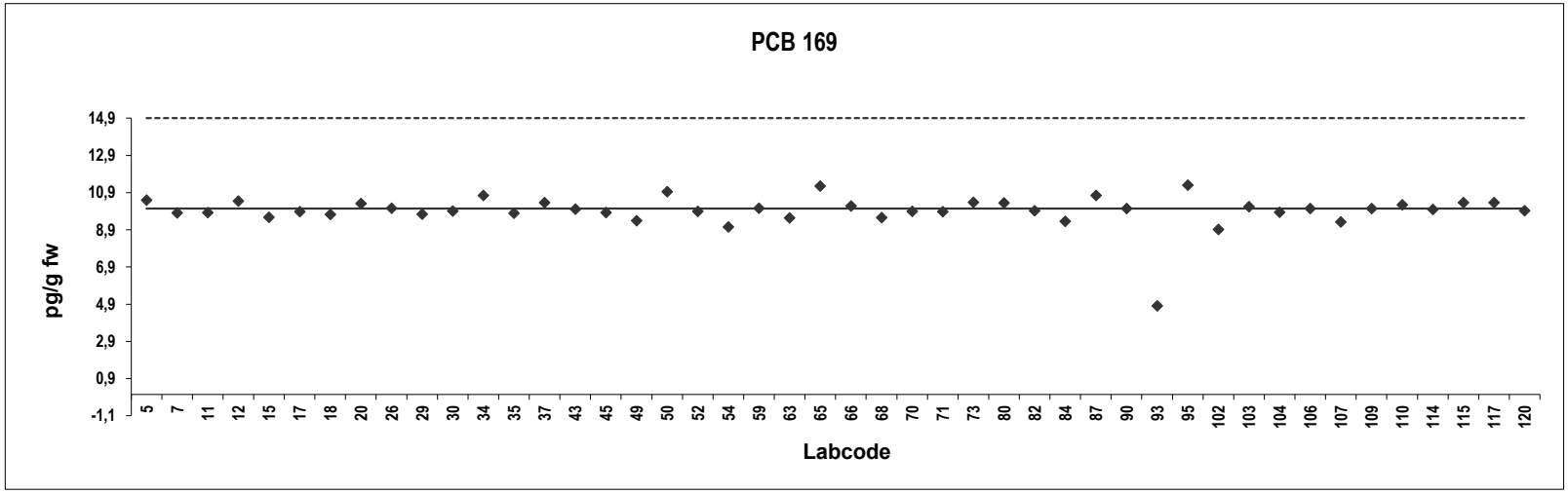
Analyte solution

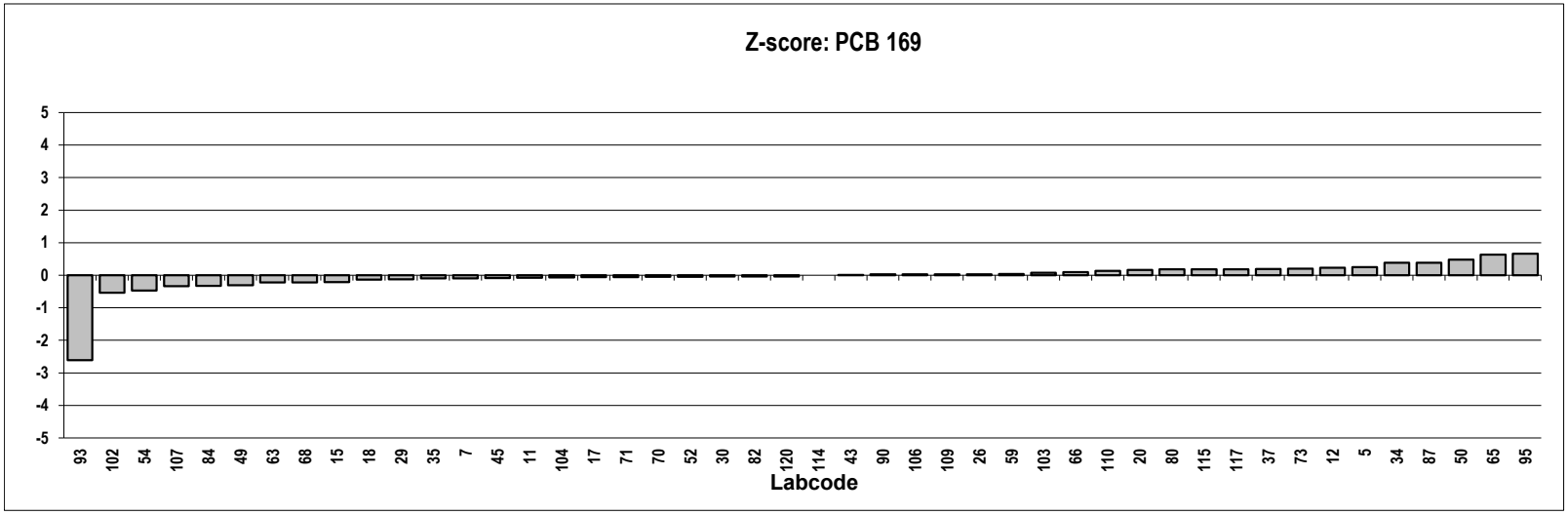
Congener: PCB 169

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	0,25		120	9,9	-0,035	
7	9,8	-0,094					
11	9,8	-0,078					
12	10	0,23					
15	9,5	-0,21					
17	9,8	-0,060					
18	9,7	-0,13					
20	10	0,16					
26	10	0,033					
29	9,7	-0,12					
30	9,9	-0,036					
34	11	0,38					
35	9,8	-0,10					
37	10	0,19					
43	10	0,012					
45	9,8	-0,083					
49	9,3	-0,30					
50	11	0,48					
52	9,9	-0,045					
54	9,0	-0,47					
59	10	0,039					
63	9,5	-0,22					
65	11	0,63					
66	10	0,10					
68	9,5	-0,22					
70	9,8	-0,050					
71	9,8	-0,060					
73	10	0,20					
80	10	0,18					
82	9,9	-0,035					
84	9,3	-0,32					
87	11	0,39					
90	10	0,030					
93	4,8	-2,61	Outlier				
95	11	0,66					
102	8,9	-0,54					
103	10	0,080					
104	9,8	-0,070					
106	10	0,030					
107	9,3	-0,33					
109	10	0,030					
110	10	0,13					
114	9,9	0,0					
115	10	0,19					
117	10	0,19					

Consenus statistics

Consensus median, pg/g	9,9
Median all values pg/g	9,9
Consensus mean, pg/g	10
Standard deviation, pg/g	0,50
Relative standard deviation, %	5,0
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 169
pg/g fw
14,9
12,9
10,9
8,9
6,9
4,9
2,9
0,9
-1,1
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 102 54 107 84 49 63 68 15 18 29 35 7 45 11 104 17 71 70 52 30 82 120 114 43 90 106 109 26 59 103 66 110 20 80 115 117 37 73 12 5 34 87 50 65 95
Labcode

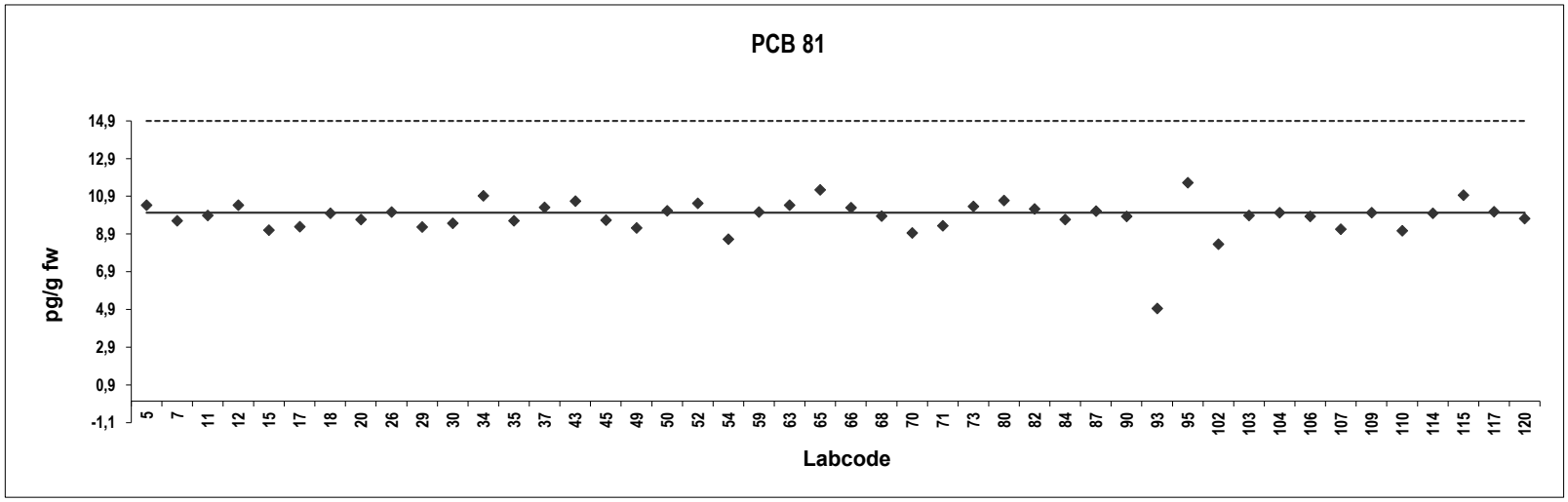
Analyte solution

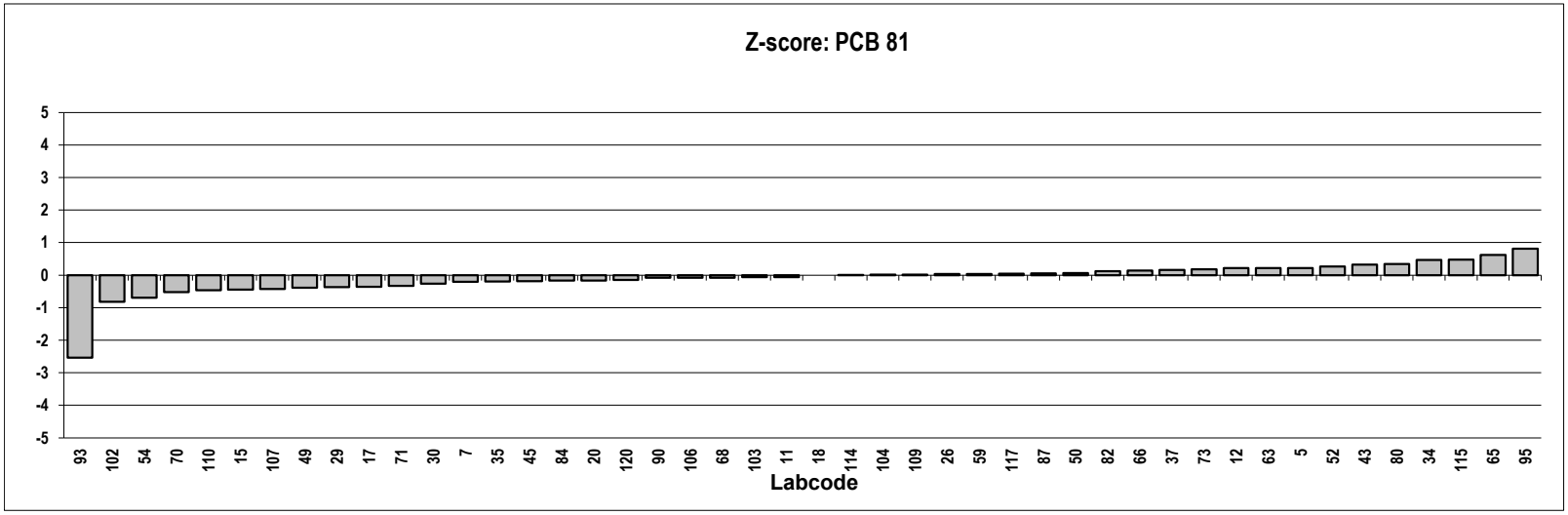
Congener: PCB 81

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	10	0,22		120	9,7	-0,14	
7	9,6	-0,20					
11	9,9	-0,058					
12	10	0,22					
15	9,1	-0,45					
17	9,3	-0,36					
18	10	0,0					
20	9,6	-0,16					
26	10	0,033					
29	9,2	-0,37					
30	9,4	-0,26					
34	11	0,47					
35	9,6	-0,20					
37	10	0,16					
43	11	0,32					
45	9,6	-0,18					
49	9,2	-0,39					
50	10	0,066					
52	11	0,27					
54	8,6	-0,69					
59	10	0,037					
63	10	0,22					
65	11	0,62					
66	10	0,14					
68	9,8	-0,079					
70	8,9	-0,52					
71	9,3	-0,33					
73	10	0,18					
80	11	0,34					
82	10	0,12					
84	9,6	-0,17					
87	10	0,054					
90	9,8	-0,084					
93	4,9	-2,53	Outlier				
95	12	0,82					
102	8,3	-0,82					
103	9,9	-0,059					
104	10	0,016					
106	9,8	-0,084					
107	9,1	-0,43					
109	10	0,016					
110	9,0	-0,47					
114	10,0	0,0010					
115	11	0,48					
117	10	0,041					

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	9,9
Consensus mean, pg/g	9,9
Standard deviation, pg/g	0,66
Relative standard deviation, %	6,7
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 81
pg/g fw
14,9
12,9
10,9
8,9
6,9
4,9
2,9
0,9
-1,1
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 102 54 70 110 15 107 49 29 17 71 30 7 35 45 84 20 120 90 106 68 103 11 18 114 104 109 26 59 117 87 50 82 66 37 73 12 63 5 52 43 80 34 115 65 95
Labcode

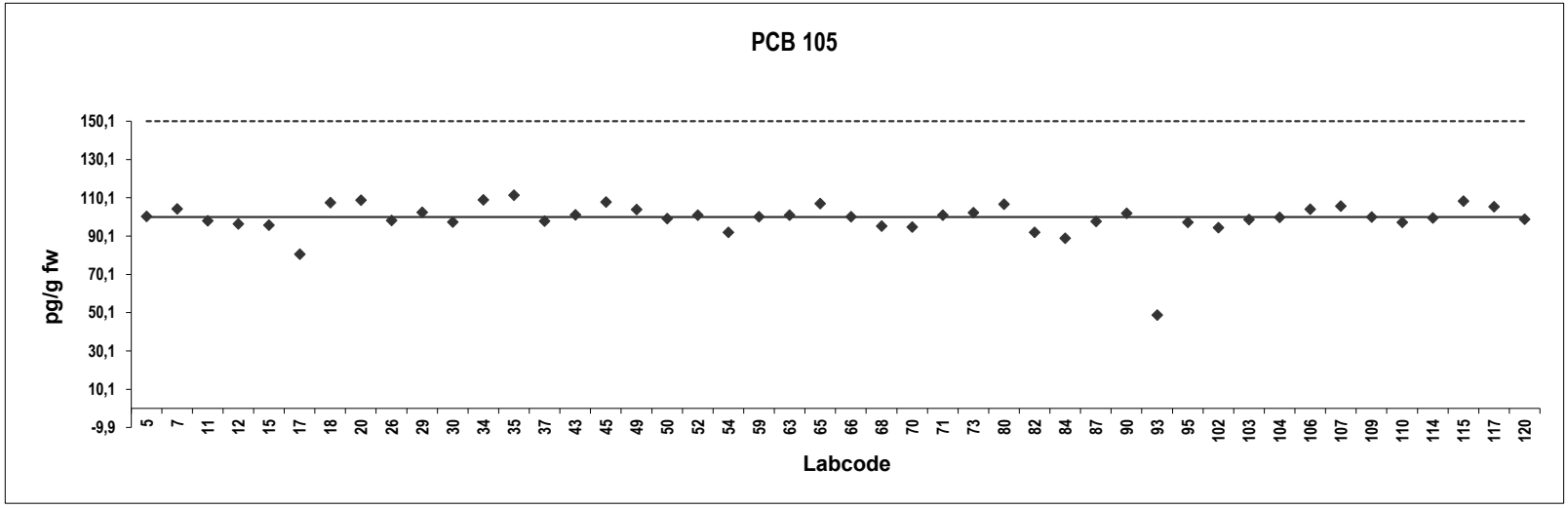
Analyte solution

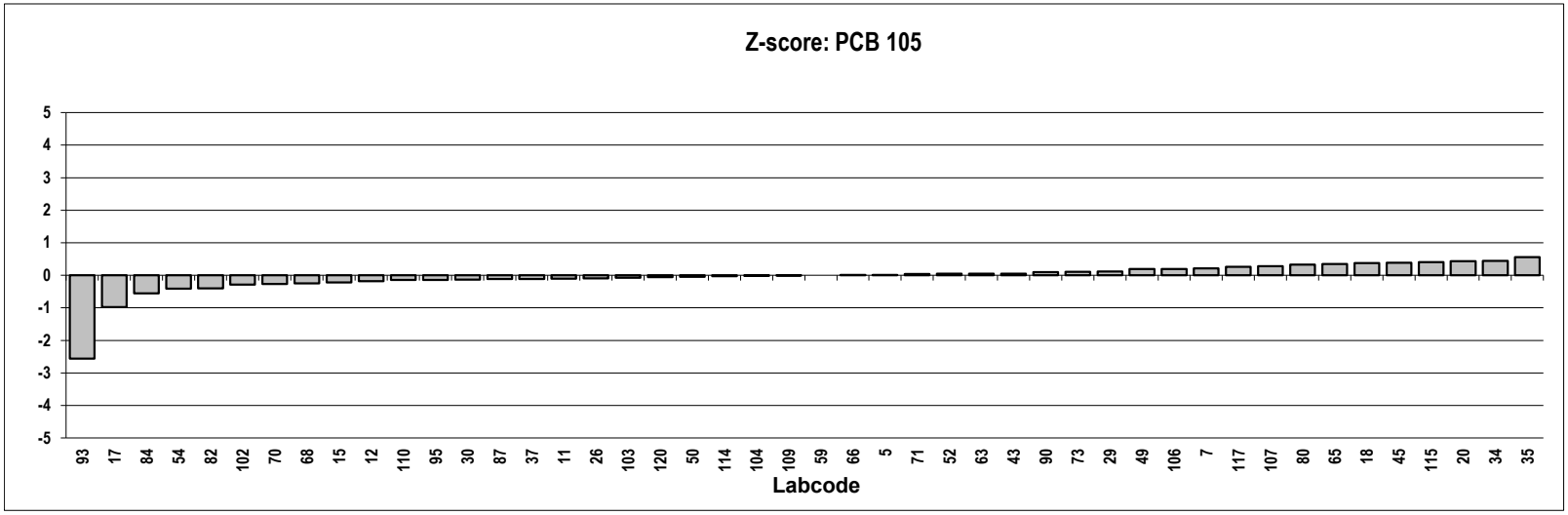
Congener: PCB 105

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	100	0,014		120	99	-0,059	
7	104	0,21					
11	98	-0,10					
12	96	-0,18					
15	96	-0,22					
17	81	-0,98					
18	108	0,37					
20	109	0,44					
26	98	-0,093					
29	102	0,11					
30	97	-0,14					
34	109	0,44					
35	111	0,56					
37	98	-0,11					
43	101	0,049					
45	108	0,38					
49	104	0,19					
50	99	-0,045					
52	101	0,045					
54	92	-0,41					
59	100	0,0					
63	101	0,045					
65	107	0,34					
66	100	0,0					
68	95	-0,24					
70	95	-0,26					
71	101	0,039					
73	102	0,11					
80	107	0,33					
82	92	-0,40					
84	89	-0,56					
87	98	-0,12					
90	102	0,095					
93	49	-2,6	Outlier				
95	97	-0,14					
102	94	-0,28					
103	99	-0,075					
104	100	-0,015					
106	104	0,19					
107	106	0,28					
109	100	-0,0049					
110	97	-0,15					
114	100	-0,030					
115	108	0,41					
117	105	0,26					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	100
Standard deviation, pg/g	5,8
Relative standard deviation, %	5,8
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 105
150,1
130,1
110,1
90,1
70,1
50,1
30,1
10,1
-9,9
pg/g fw
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 17 84 54 82 102 70 68 15 12 110 95 30 87 37 11 26 103 120 50 114 104 109 59 66 5 71 52 63 43 90 73 29 49 106 7 117 107 80 65 18 45 115 20 34 35
Labcode

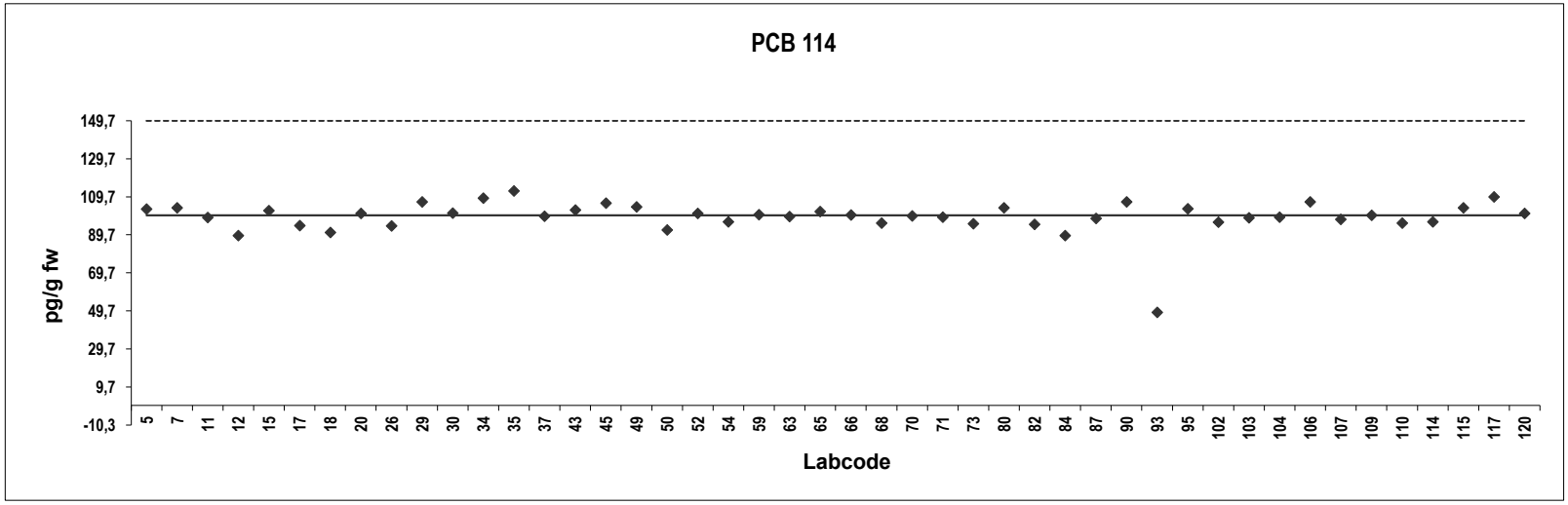
Analyte solution

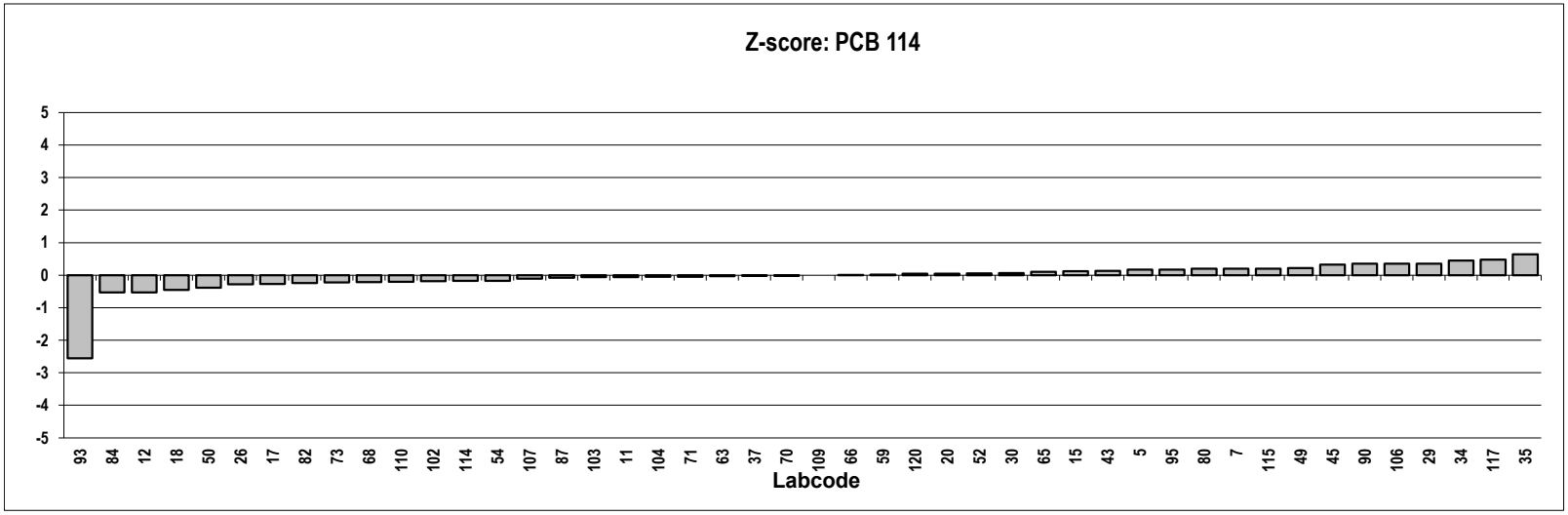
Congener: PCB 114

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	103	0,17		120	101	0,045	
7	104	0,20					
11	99	-0,061					
12	89	-0,53					
15	102	0,12					
17	95	-0,27					
18	91	-0,46					
20	101	0,046					
26	94	-0,28					
29	107	0,35					
30	101	0,060					
34	109	0,45					
35	113	0,64					
37	100	-0,024					
43	103	0,14					
45	106	0,32					
49	104	0,22					
50	92	-0,39					
52	101	0,050					
54	97	-0,17					
59	100	0,013					
63	99	-0,030					
65	102	0,10					
66	100	0,0089					
68	96	-0,21					
70	100	-0,020					
71	99	-0,048					
73	96	-0,22					
80	104	0,20					
82	95	-0,24					
84	89	-0,54					
87	98	-0,083					
90	107	0,35					
93	49	-2,55	Outlier				
95	103	0,17					
102	96	-0,19					
103	99	-0,065					
104	99	-0,049					
106	107	0,35					
107	98	-0,11					
109	100	0,0					
110	96	-0,20					
114	97	-0,17					
115	104	0,20					
117	110	0,48					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	100
Standard deviation, pg/g	5,2
Relative standard deviation, %	5,2
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 114
149,7
129,7
109,7
89,7
69,7
49,7
29,7
9,7
-10,3
pg/g fw
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 84 12 18 50 26 17 82 73 68 110 102 114 54 107 87 103 11 104 71 63 37 70 109 66 59 120 20 52 30 65 15 43 5 95 80 7 115 49 45 90 106 29 34 117 35
Labcode

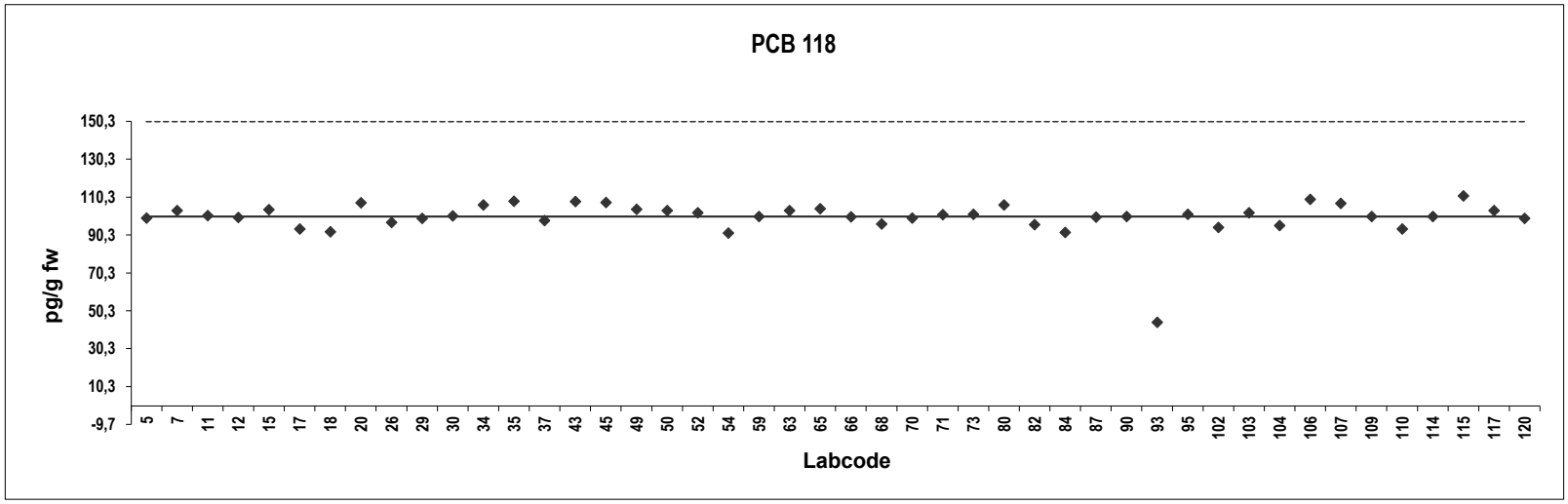
Analyte solution

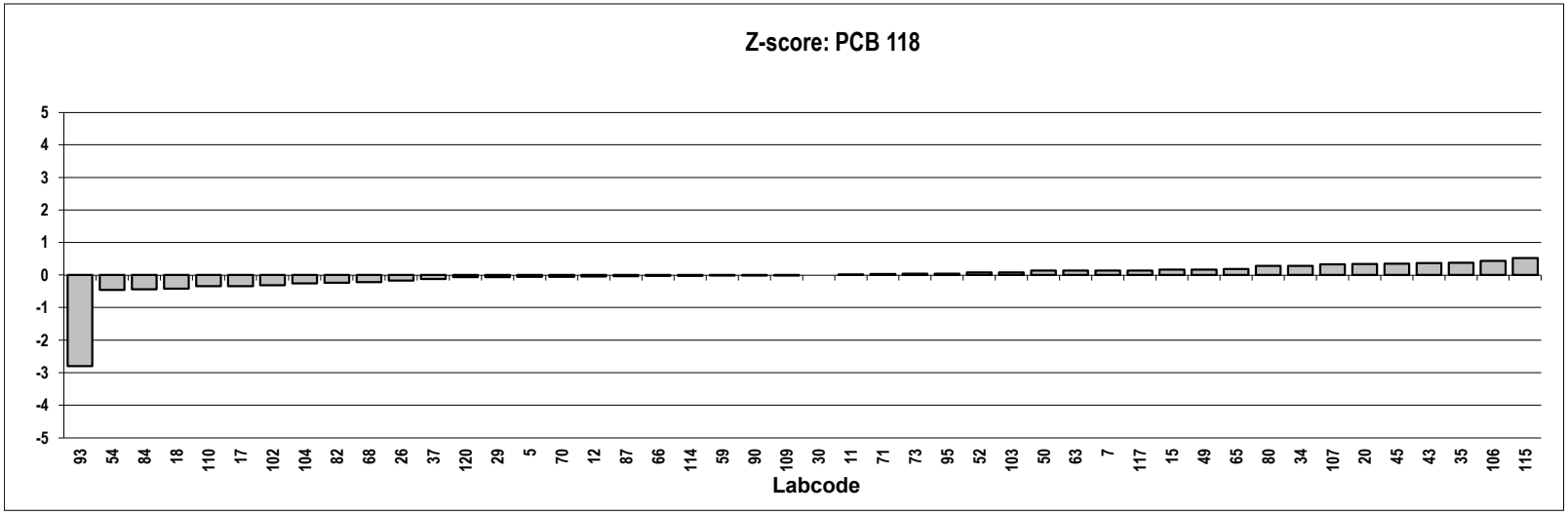
Congener: PCB 118

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	99	-0,058		120	99	-0,069	
7	103	0,13					
11	100	0,0057					
12	99	-0,043					
15	104	0,16					
17	93	-0,35					
18	92	-0,42					
20	107	0,34					
26	97	-0,17					
29	99	-0,066					
30	100	0,0					
34	106	0,28					
35	108	0,38					
37	98	-0,13					
43	108	0,37					
45	107	0,35					
49	104	0,17					
50	103	0,13					
52	102	0,083					
54	91	-0,46					
59	100	-0,020					
63	103	0,13					
65	104	0,18					
66	100	-0,024					
68	96	-0,22					
70	99	-0,057					
71	101	0,030					
73	101	0,037					
80	106	0,28					
82	96	-0,24					
84	92	-0,44					
87	100	-0,033					
90	100	-0,017					
93	44	-2,8	Outlier				
95	101	0,040					
102	94	-0,31					
103	102	0,083					
104	95	-0,26					
106	109	0,43					
107	107	0,33					
109	100	-0,017					
110	93	-0,35					
114	100	-0,022					
115	111	0,52					
117	103	0,14					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	101
Standard deviation, pg/g	4,8
Relative standard deviation, %	4,8
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 118
150,3
130,3
110,3
90,3
70,3
50,3
30,3
10,3
-9,7
pg/g fw
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 54 84 18 110 17 102 104 82 68 26 37 120 29 5 70 12 87 66 114 59 90 109 30 11 71 73 95 52 103 50 63 7 117 15 49 65 80 34 107 20 45 43 35 106 115
Labcode

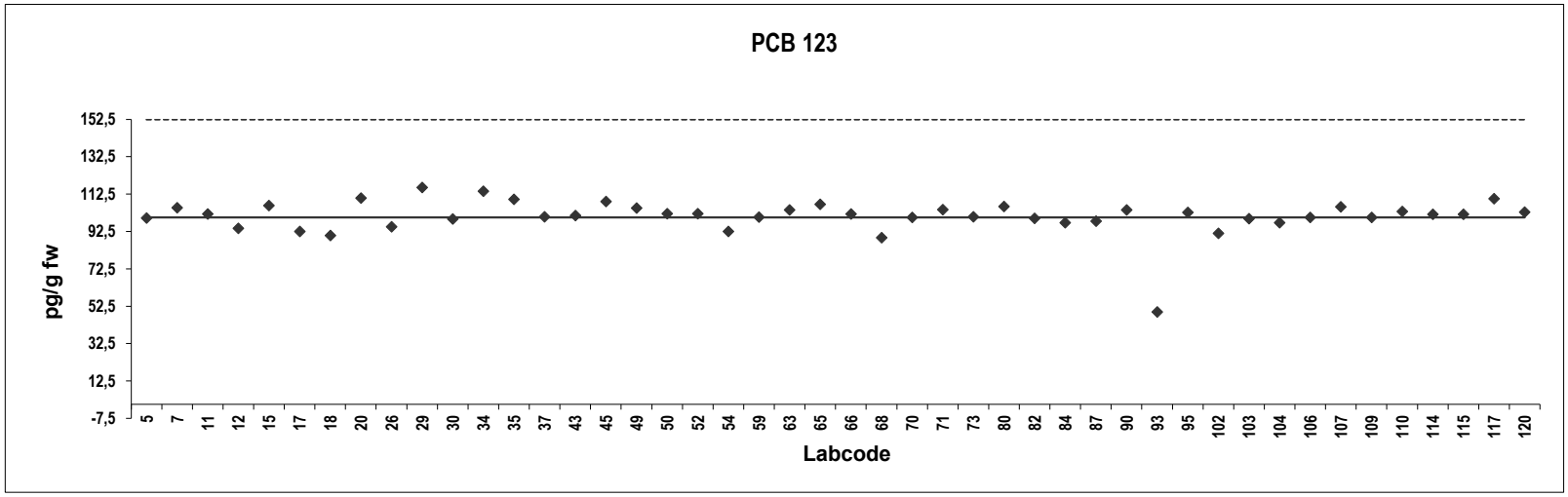
Analyte solution

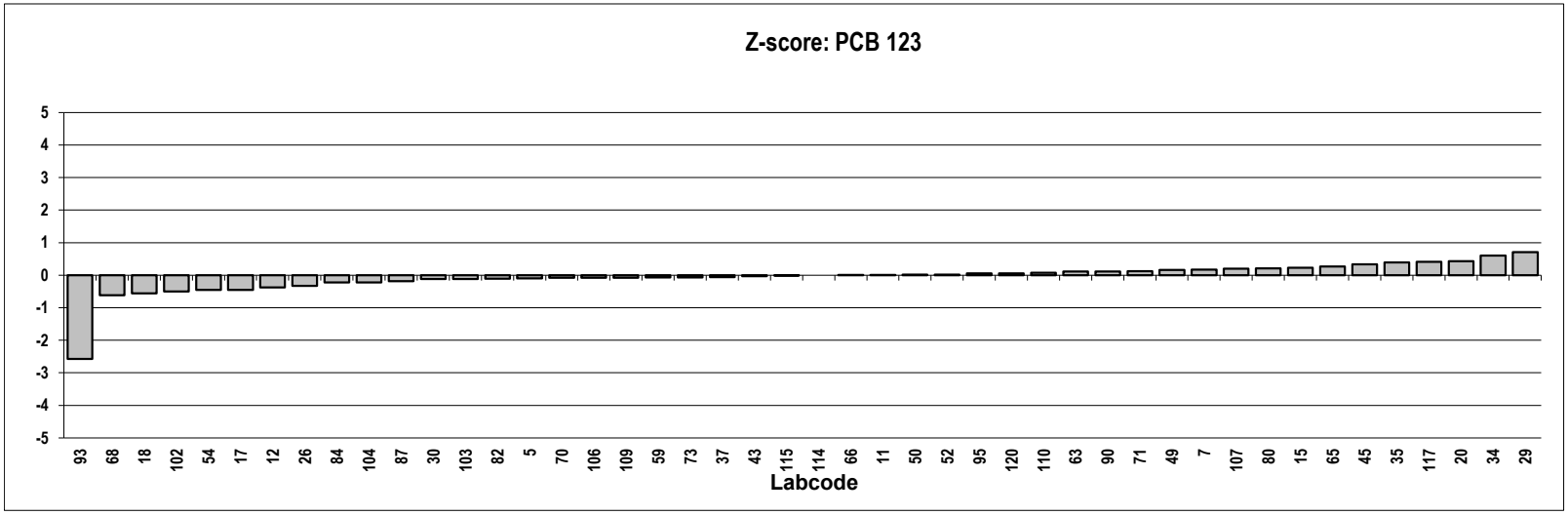
Congener: PCB 123

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	100	-0,098		120	103	0,056	
7	105	0,17					
11	102	0,011					
12	94	-0,37					
15	106	0,23					
17	92	-0,46					
18	90	-0,56					
20	110	0,43					
26	95	-0,33					
29	116	0,71					
30	99	-0,12					
34	114	0,61					
35	110	0,39					
37	100	-0,063					
43	101	-0,034					
45	108	0,34					
49	105	0,16					
50	102	0,017					
52	102	0,017					
54	92	-0,46					
59	100	-0,073					
63	104	0,12					
65	107	0,26					
66	102	0,0076					
68	89	-0,62					
70	100	-0,082					
71	104	0,12					
73	100	-0,069					
80	106	0,21					
82	99	-0,11					
84	97	-0,22					
87	98	-0,18					
90	104	0,12					
93	49	-2,6	Outlier				
95	103	0,052					
102	92	-0,50					
103	99	-0,12					
104	97	-0,22					
106	100	-0,08					
107	106	0,20					
109	100	-0,082					
110	103	0,072					
114	102	0,00					
115	102	-0,0025					
117	110	0,41					

Consenus statistics

Consensus median, pg/g	102
Median all values pg/g	102
Consensus mean, pg/g	102
Standard deviation, pg/g	5,8
Relative standard deviation, %	5,7
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 123
pg/g fw
152,5
132,5
112,5
92,5
72,5
52,5
32,5
12,5
-7,5
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 68 18 102 54 17 12 26 84 104 87 30 103 82 5 70 106 109 59 73 37 43 115 114 66 11 50 52 95 120 110 63 90 71 49 7 107 80 15 65 45 35 117 20 34 29
Labcode

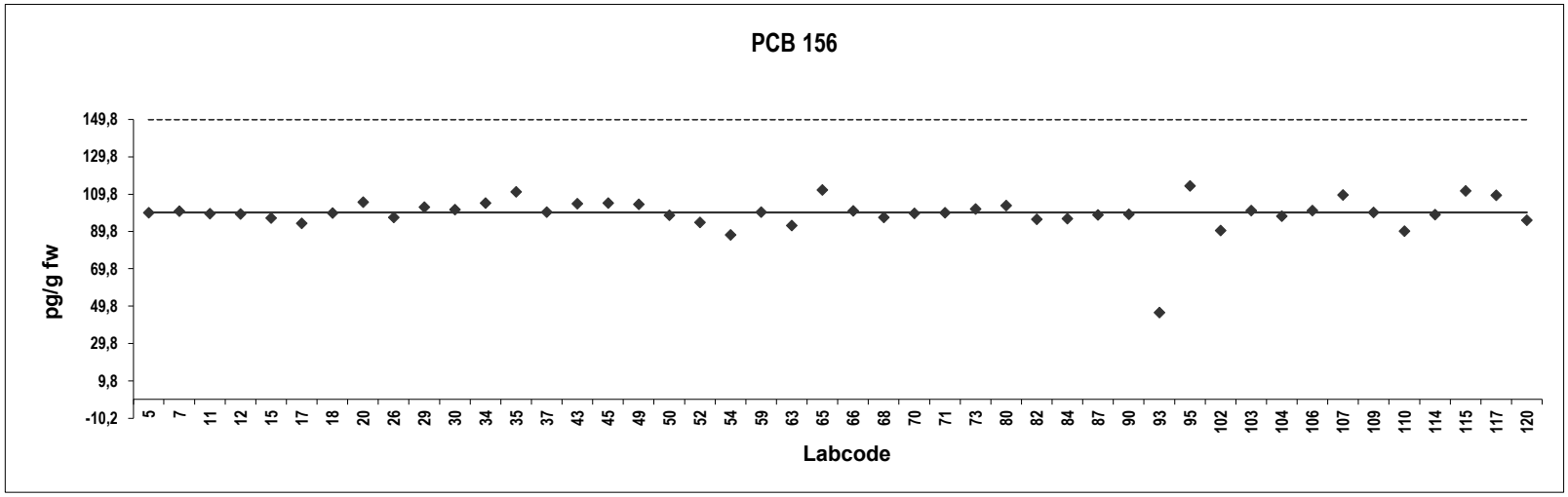
Analyte solution

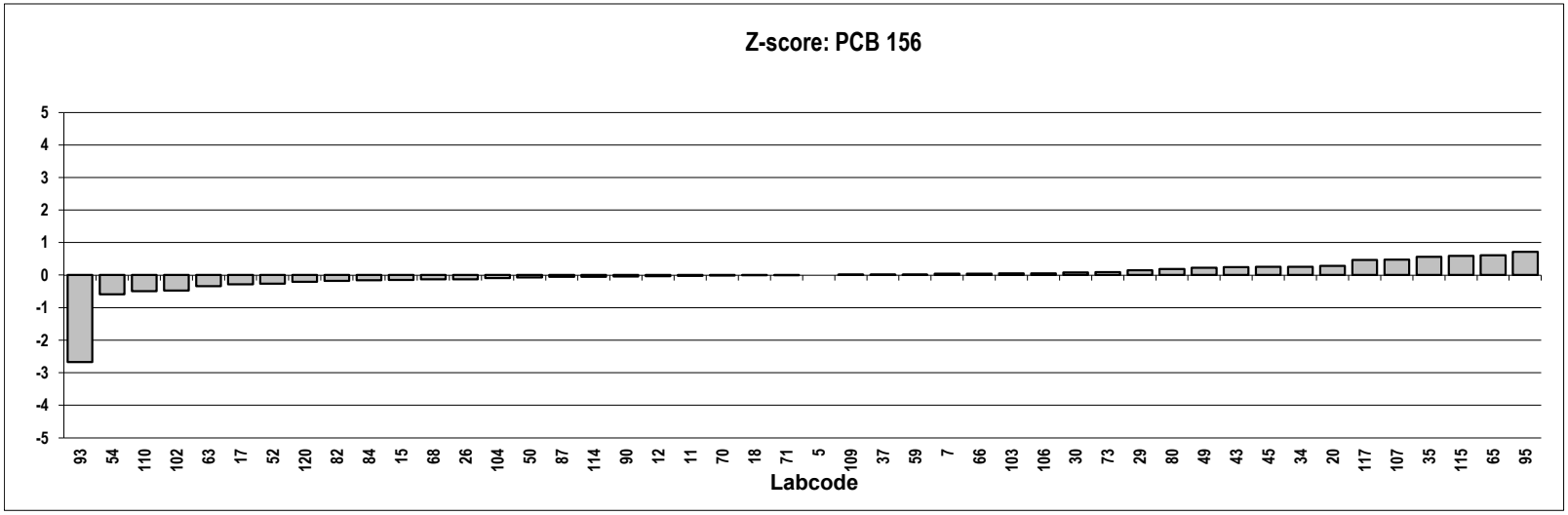
Congener: PCB 156

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	100	0,0		120	96	-0,20	
7	101	0,040					
11	99	-0,028					
12	99	-0,032					
15	97	-0,15					
17	94	-0,29					
18	100	-0,010					
20	106	0,28					
26	97	-0,13					
29	103	0,15					
30	101	0,078					
34	105	0,25					
35	111	0,56					
37	100	0,011					
43	105	0,24					
45	105	0,25					
49	104	0,23					
50	99	-0,071					
52	95	-0,26					
54	88	-0,59					
59	100	0,013					
63	93	-0,35					
65	112	0,60					
66	101	0,045					
68	97	-0,13					
70	100	-0,016					
71	100	-0,0034					
73	102	0,094					
80	104	0,19					
82	96	-0,18					
84	97	-0,16					
87	99	-0,058					
90	99	-0,046					
93	46	-2,7	Outlier				
95	114	0,71					
102	90	-0,48					
103	101	0,054					
104	98	-0,10					
106	101	0,054					
107	109	0,47					
109	100	0,0040					
110	90	-0,49					
114	99	-0,051					
115	112	0,59					
117	109	0,46					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	101
Standard deviation, pg/g	5,7
Relative standard deviation, %	5,7
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 156
149,8
129,8
109,8
89,8
69,8
49,8
29,8
9,8
-10,2
pg/g fw
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 54 110 102 63 17 52 120 82 84 15 68 26 104 50 87 114 90 12 11 70 18 71 5 109 37 59 7 66 103 106 30 73 29 80 49 43 45 34 20 117 107 35 115 65 95
Labcode

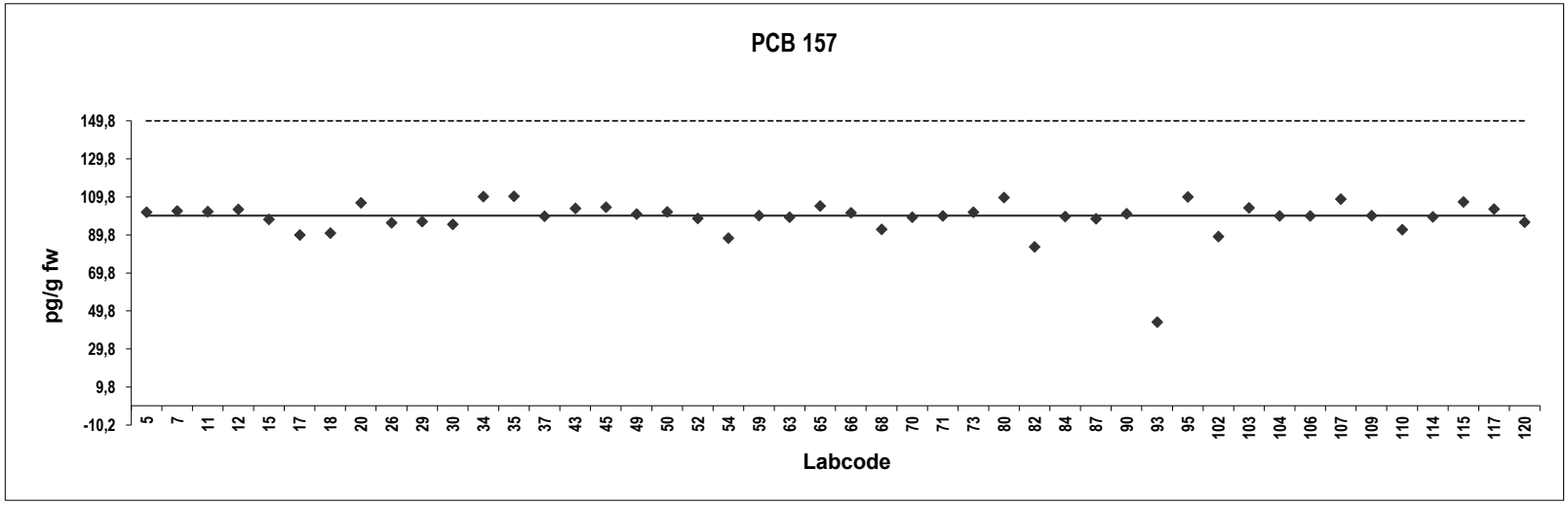
Analyte solution

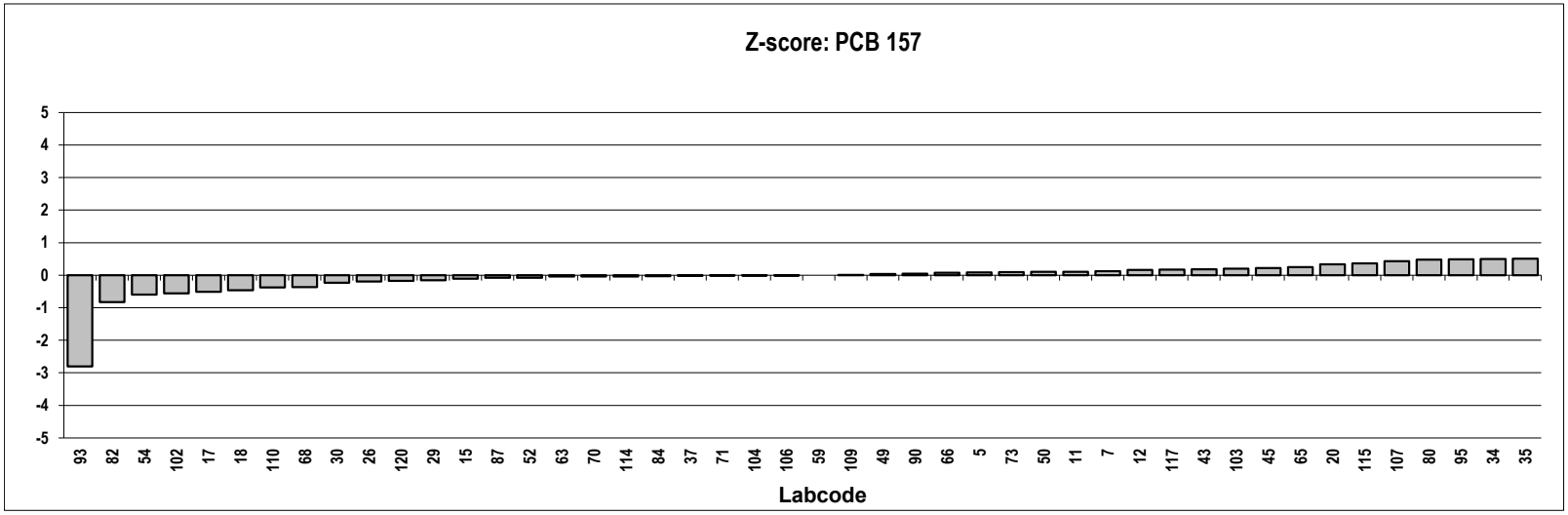
Congener: PCB 157

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	102	0,088		120	97	-0,17	
7	102	0,12					
11	102	0,11					
12	103	0,17					
15	98	-0,10					
17	90	-0,51					
18	91	-0,46					
20	107	0,33					
26	96	-0,19					
29	97	-0,15					
30	95	-0,23					
34	110	0,50					
35	110	0,51					
37	100	-0,019					
43	104	0,18					
45	104	0,22					
49	101	0,040					
50	102	0,10					
52	98	-0,079					
54	88	-0,60					
59	100	0,0					
63	99	-0,044					
65	105	0,25					
66	101	0,074					
68	93	-0,36					
70	99	-0,039					
71	100	-0,012					
73	102	0,091					
80	110	0,48					
82	84	-0,82					
84	99	-0,029					
87	98	-0,081					
90	101	0,051					
93	44	-2,8	Outlier				
95	110	0,49					
102	89	-0,55					
103	104	0,20					
104	100	-0,0089					
106	100	-0,0089					
107	109	0,43					
109	100	0,0011					
110	93	-0,37					
114	99	-0,037					
115	107	0,36					
117	103	0,17					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	100
Standard deviation, pg/g	6,0
Relative standard deviation, %	6,0
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 157
149,8
129,8
109,8
89,8
69,8
49,8
29,8
9,8
-10,2
pg/g fw
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 82 54 102 17 18 110 68 30 26 120 29 15 87 52 63 70 114 84 37 71 104 106 59 109 49 90 66 5 73 50 11 7 12 117 43 103 45 65 20 115 107 80 95 34 35
Labcode

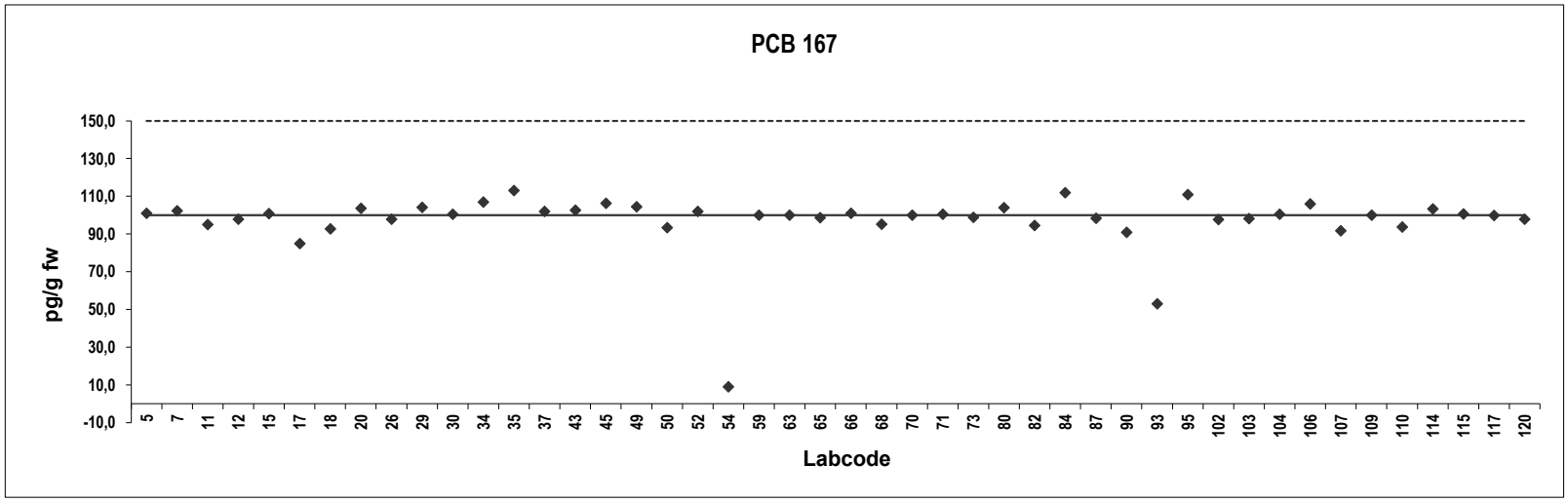
Analyte solution

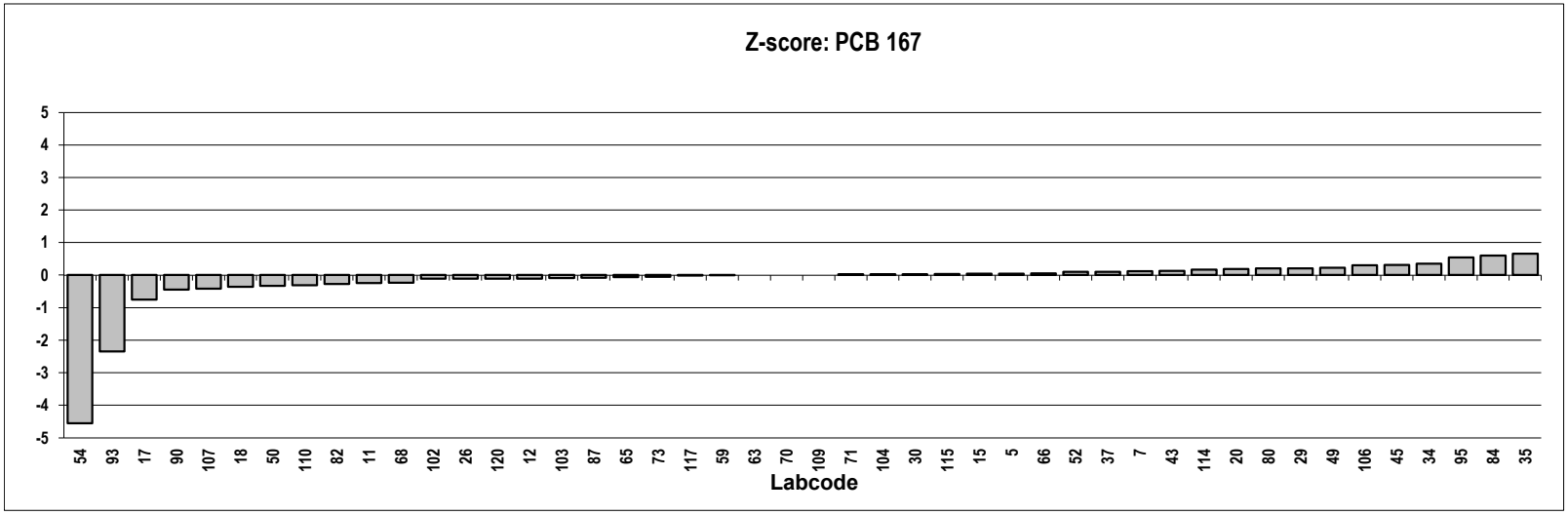
Congener: PCB 167

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	101	0,047		120	98	-0,11	
7	102	0,12					
11	95	-0,24					
12	98	-0,11					
15	101	0,043					
17	85	-0,76					
18	93	-0,36					
20	104	0,19					
26	98	-0,11					
29	104	0,21					
30	101	0,026					
34	107	0,35					
35	113	0,66					
37	102	0,10					
43	103	0,13					
45	106	0,32					
49	105	0,23					
50	93	-0,33					
52	102	0,10					
54	9,0	-4,5	Outlier				
59	100	-0,00057					
63	100	0,0					
65	99	-0,065					
66	101	0,053					
68	95	-0,24					
70	100	0,0					
71	100	0,024					
73	99	-0,055					
80	104	0,20					
82	95	-0,27					
84	112	0,60					
87	98	-0,079					
90	91	-0,45					
93	53	-2,4					
95	111	0,54					
102	98	-0,12					
103	98	-0,090					
104	101	0,025					
106	106	0,30					
107	92	-0,41					
109	100	0,0					
110	94	-0,31					
114	103	0,17					
115	101	0,037					
117	100	-0,010					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	99
Standard deviation, pg/g	8,9
Relative standard deviation, %	8,9
No. of values reported	46
No. of values removed	1
No. of reported non-detects	0


PCB 167
pg/g fw
150,0
130,0
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
54 93 17 90 107 18 50 110 82 11 68 102 26 120 12 103 87 65 73 117 59 63 70 109 71 104 30 115 15 5 66 52 37 7 43 114 20 80 29 49 106 45 34 95 84 35
Labcode

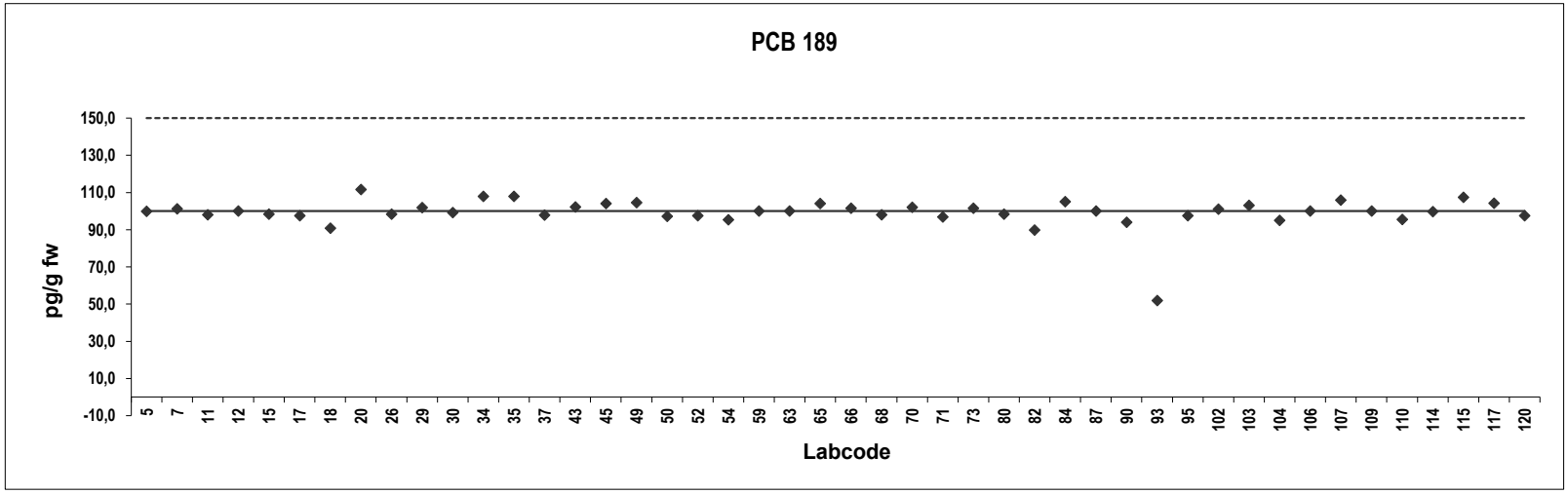
Analyte solution

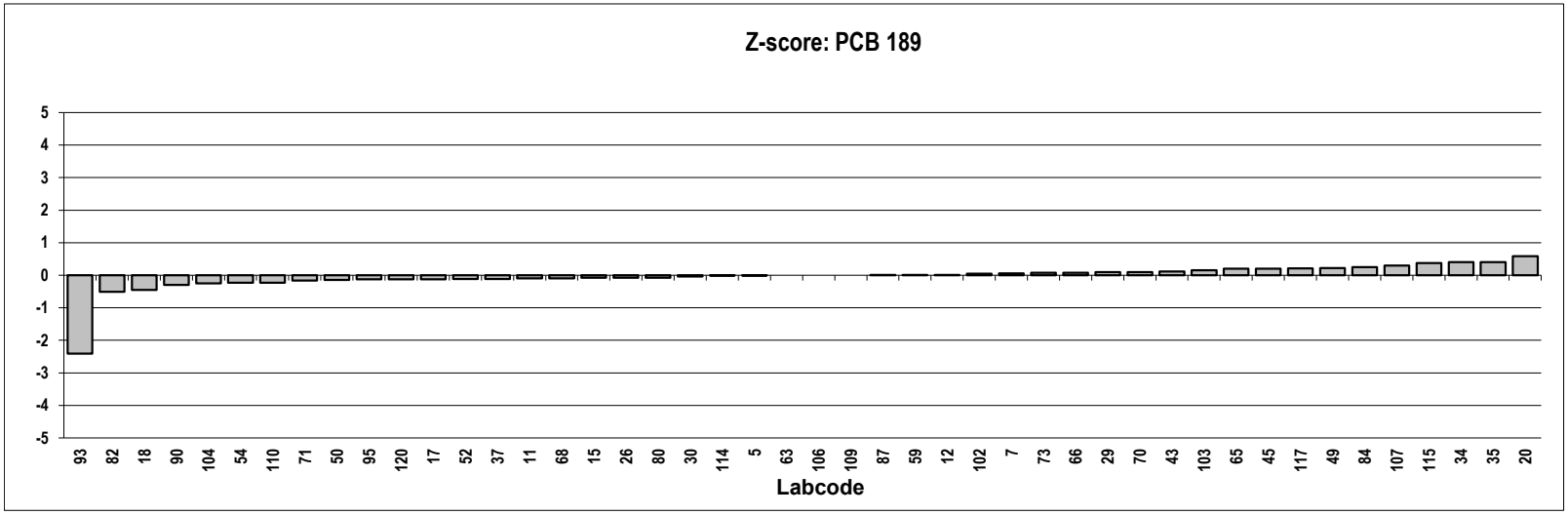
Congener: PCB 189

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	100	-0,0068		120	97	-0,13	
7	101	0,057					
11	98	-0,10					
12	100	0,0050					
15	98	-0,081					
17	98	-0,13					
18	91	-0,46					
20	112	0,58					
26	98	-0,081					
29	102	0,094					
30	99	-0,039					
34	108	0,40					
35	108	0,40					
37	98	-0,11					
43	102	0,11					
45	104	0,20					
49	105	0,23					
50	97	-0,15					
52	98	-0,12					
54	95	-0,23					
59	100	0,0040					
63	100	0,0					
65	104	0,20					
66	102	0,079					
68	98	-0,10					
70	102	0,10					
71	97	-0,16					
73	101	0,073					
80	98	-0,079					
82	90	-0,51					
84	105	0,25					
87	100	0,0025					
90	94	-0,30					
93	52	-2,4					
95	97	-0,13					
102	101	0,050					
103	103	0,15					
104	95	-0,25					
106	100	0,0					
107	106	0,30					
109	100	0,0					
110	95	-0,23					
114	100	-0,012					
115	107	0,37					
117	104	0,21					

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	99
Standard deviation, pg/g	8,3
Relative standard deviation, %	8,4
No. of values reported	46
No. of values removed	0
No. of reported non-detects	0


PCB 189
pg/g fw
150,0
130,0
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
5 7 11 12 15 17 18 20 26 29 30 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 71 73 80 82 84 87 90 93 95 102 103 104 106 107 109 110 114 115 117 120
Labcode


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
93 82 18 90 104 54 110 71 50 95 120 17 52 37 11 68 15 26 80 30 114 5 63 106 109 87 59 12 102 7 73 66 29 70 43 103 65 45 117 49 84 107 115 34 35 20
Labcode

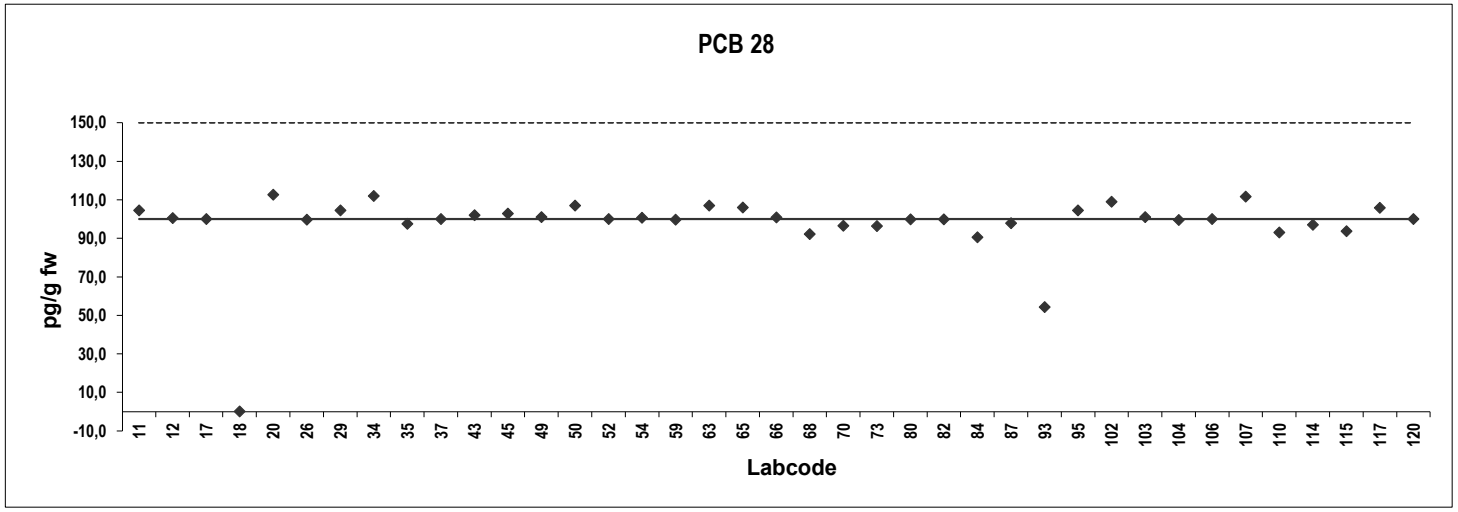
Analyte solution

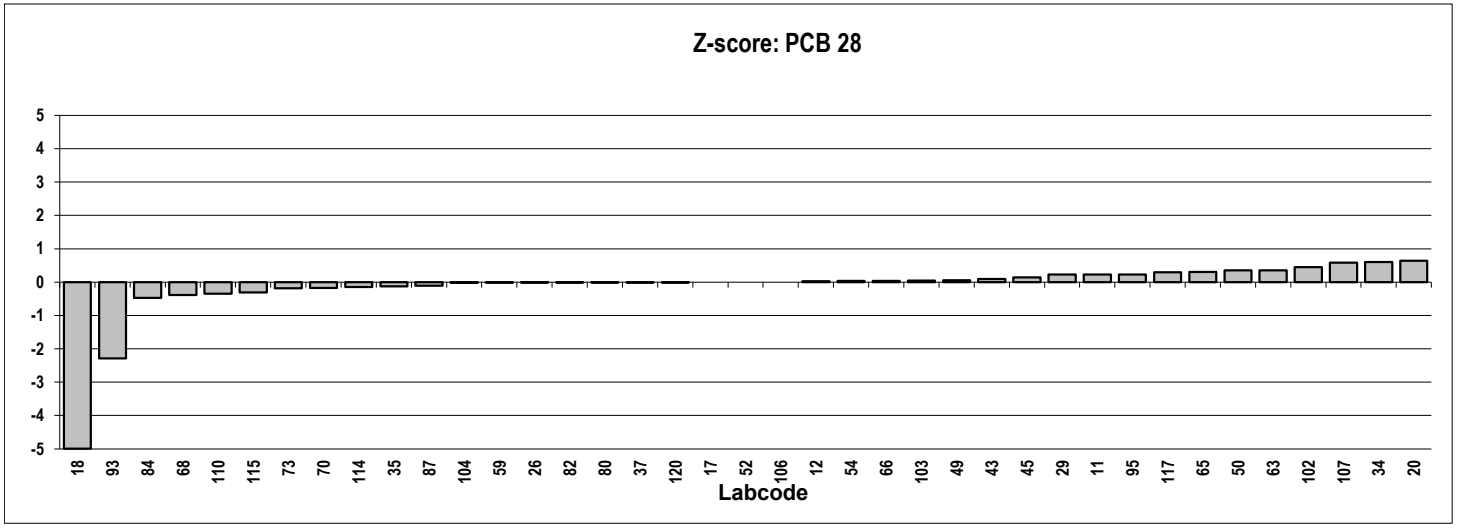
Congener: PCB 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	104	0,22				
12	101	0,029				
17	100	0,0				
18	0,093	-5,0	Outlier			
20	113	0,64				
26	100	-0,014				
29	104	0,22				
34	112	0,60				
35	97	-0,13				
37	100	-0,0026				
43	102	0,10				
45	103	0,14				
49	101	0,055				
50	107	0,35				
52	100	0,0				
54	101	0,034				
59	100	-0,016				
63	107	0,35				
65	106	0,30				
66	101	0,040				
68	92	-0,39				
70	97	-0,18				
73	96	-0,19				
80	100	-0,0038				
82	100	-0,010				
84	91	-0,47				
87	98	-0,11				
93	54	-2,3				
95	105	0,23				
102	109	0,45				
103	101	0,050				
104	100	-0,020				
106	100	0,0				
107	112	0,58				
110	93	-0,35				
114	97	-0,14				
115	94	-0,31				
117	106	0,29				
120	100	-0,00050				

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	100
Standard deviation, pg/g	9,2
Relative standard deviation, %	9,2
No. of values reported	39
No. of values removed	1
No. of reported non-detects	0


PCB 28
pg/g fw
150,0
130,0
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 84 68 110 115 73 70 114 35 87 104 59 26 82 80 37 120 17 52 106 12 54 66 103 49 43 45 29 11 95 117 65 50 63 102 107 34 20
Labcode

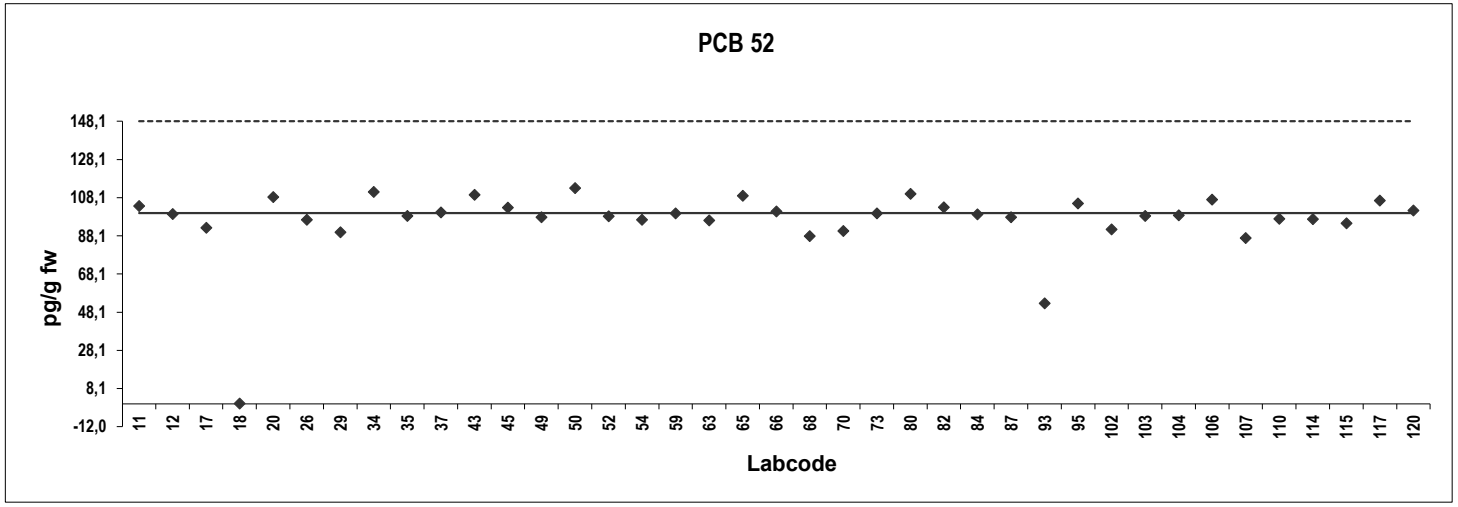
Analyte solution

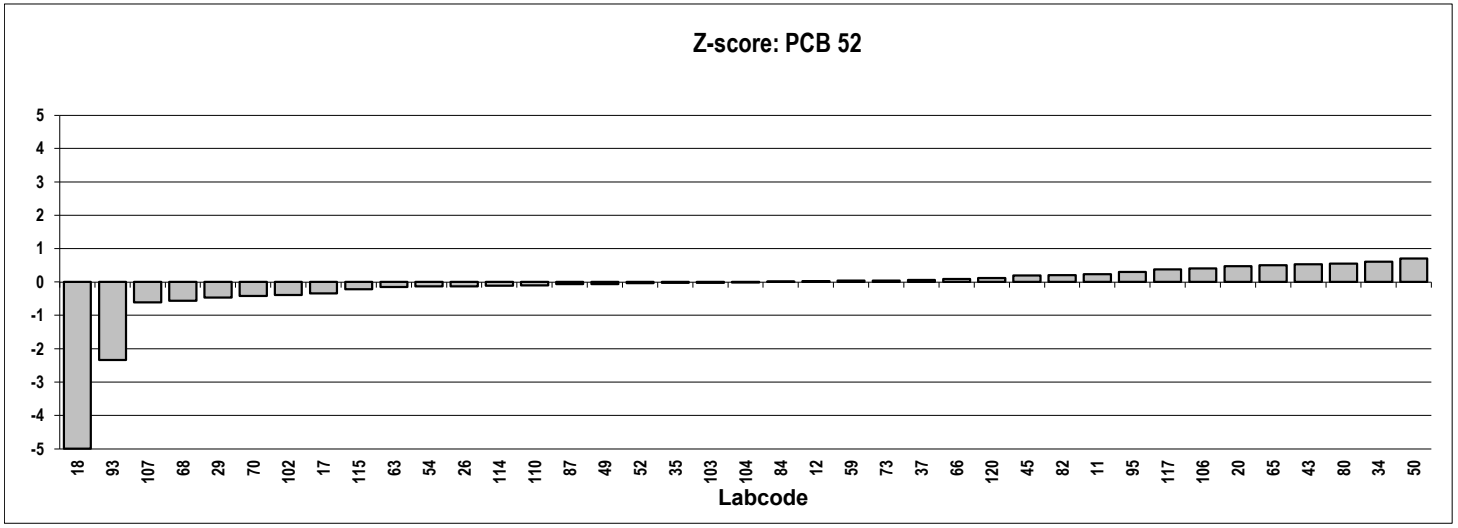
Congener: PCB 52

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	104	0,23				
12	99	0,023				
17	92	-0,34				
18	0,092	-5,0	Outlier			
20	108	0,47				
26	96	-0,13				
29	90	-0,46				
34	111	0,61				
35	98	-0,031				
37	100	0,064				
43	109	0,53				
45	103	0,19				
49	98	-0,061				
50	113	0,71				
52	98	-0,040				
54	96	-0,13				
59	100	0,040				
63	96	-0,15				
65	109	0,51				
66	101	0,093				
68	88	-0,57				
70	91	-0,42				
73	100	0,043				
80	110	0,55				
82	103	0,20				
84	99	0,015				
87	98	-0,061				
93	53	-2,3				
95	105	0,30				
102	91	-0,39				
103	98	-0,030				
104	99	-0,015				
106	107	0,40				
107	87	-0,61				
110	97	-0,11				
114	97	-0,11				
115	95	-0,22				
117	106	0,38				
120	101	0,12				

Consenus statistics

Consensus median, pg/g	99
Median all values pg/g	99
Consensus mean, pg/g	99
Standard deviation, pg/g	10
Relative standard deviation, %	10
No. of values reported	39
No. of values removed	1
No. of reported non-detects	0


PCB 52
148,1
128,1
108,1
88,1
68,1
48,1
28,1
8,1
-12,0
pg/g fw
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 107 68 29 70 102 17 115 63 54 26 114 110 87 49 52 35 103 104 84 12 59 73 37 66 120 45 82 11 95 117 106 20 65 43 80 34 50
Labcode

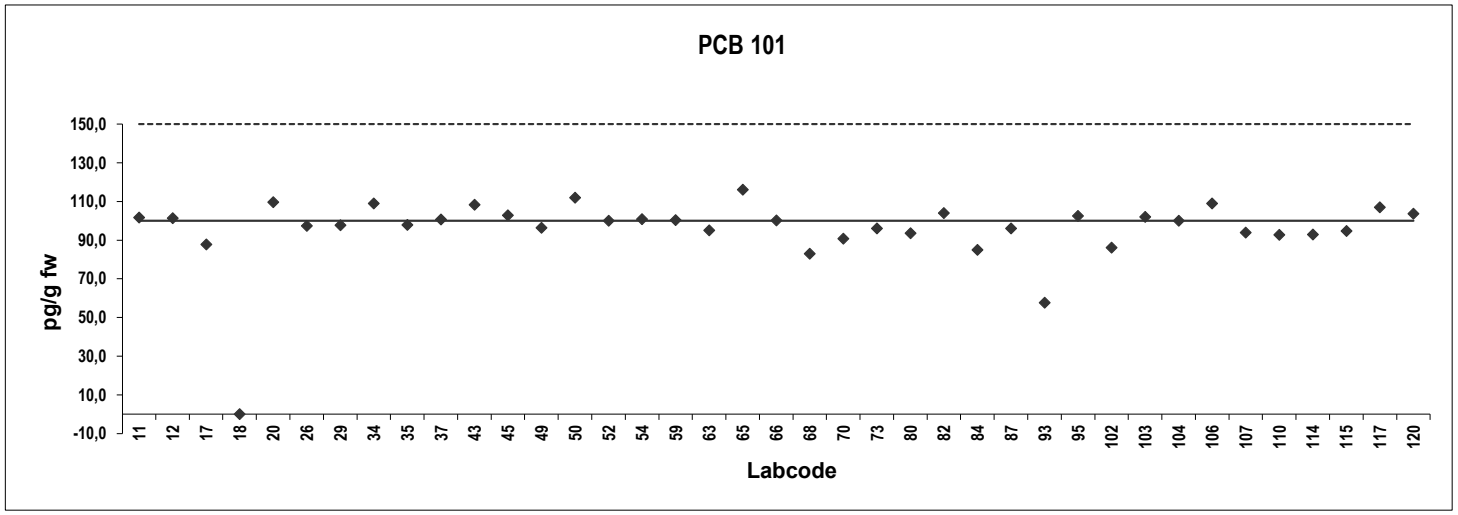
Analyte solution

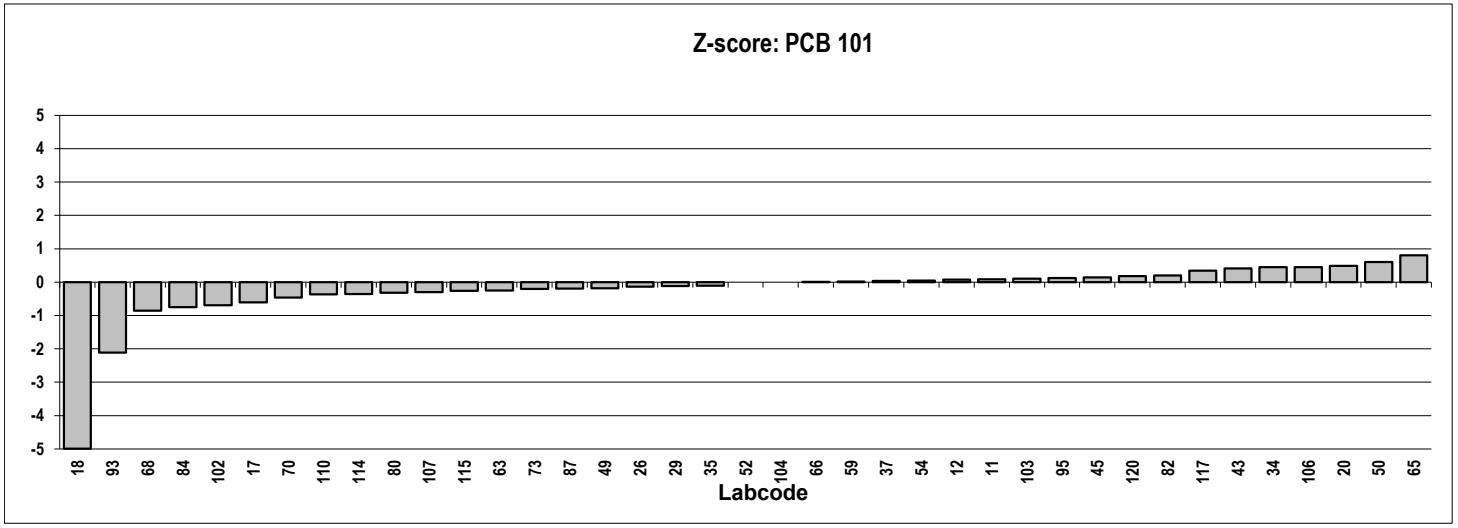
Congener: PCB 101

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	102	0,087				
12	101	0,071				
17	88	-0,61				
18	0,097	-5,0	Outlier			
20	110	0,48				
26	97	-0,13				
29	98	-0,11				
34	109	0,45				
35	98	-0,11				
37	101	0,036				
43	108	0,41				
45	103	0,14				
49	96	-0,18				
50	112	0,60				
52	100	0,0				
54	101	0,041				
59	100	0,019				
63	95	-0,25				
65	116	0,80				
66	100	0,0084				
68	83	-0,86				
70	91	-0,47				
73	96	-0,20				
80	94	-0,32				
82	104	0,20				
84	85	-0,75				
87	96	-0,20				
93	58	-2,1				
95	102	0,12				
102	86	-0,69				
103	102	0,10				
104	100	0,0				
106	109	0,45				
107	94	-0,30				
110	93	-0,36				
114	93	-0,36				
115	95	-0,26				
117	107	0,35				
120	104	0,18				

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	98
Standard deviation, pg/g	10
Relative standard deviation, %	10
No. of values reported	39
No. of values removed	1
No. of reported non-detects	0


PCB 101
pg/g fw
150,0
130,0
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 68 84 102 17 70 110 114 80 107 115 63 73 87 49 26 29 35 52 104 66 59 37 54 12 11 103 95 45 120 82 117 43 34 106 20 50 65
Labcode

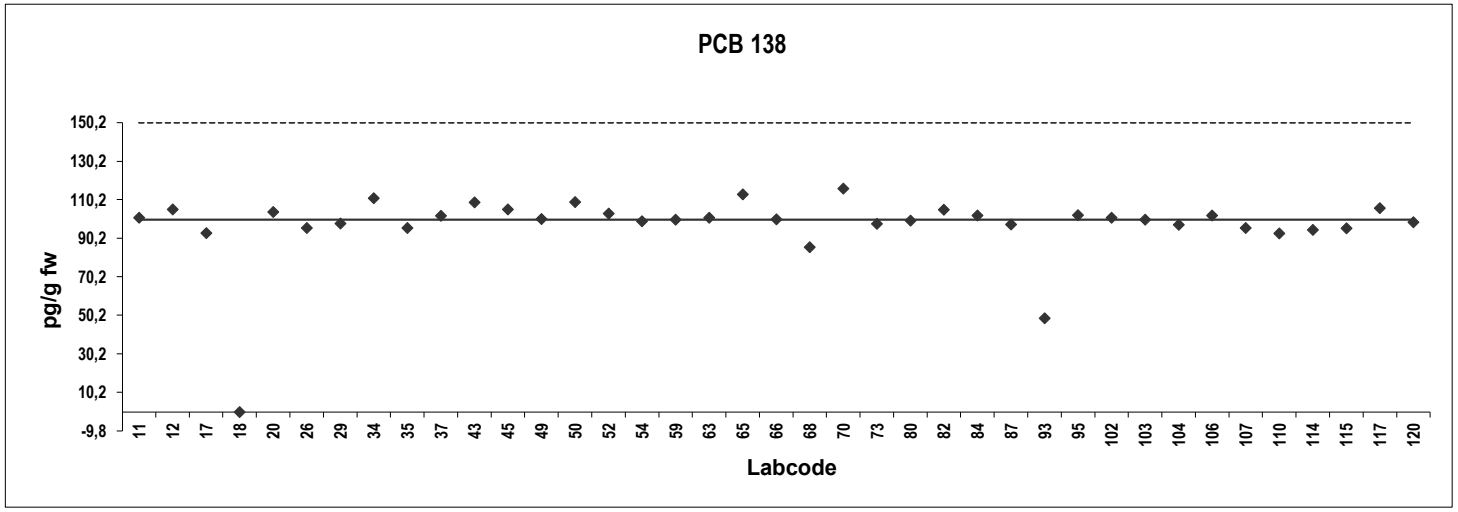
Analyte solution

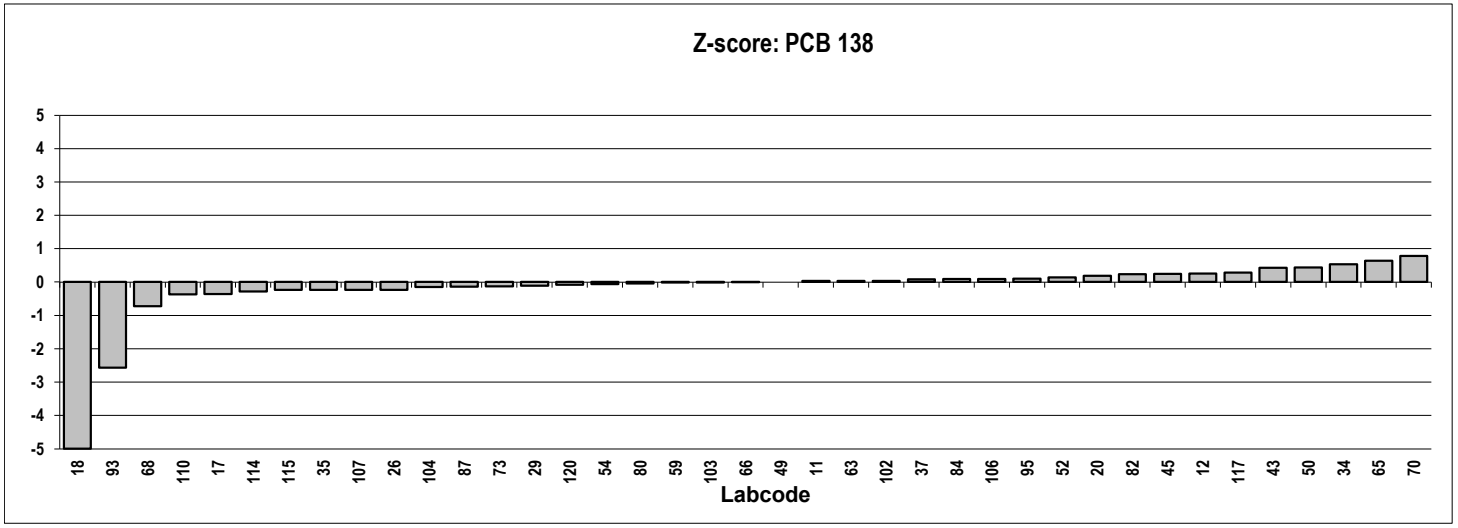
Congener: PCB 138

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	101	0,033				
12	105	0,25				
17	93	-0,36				
18	0,093	-5,0	Outlier			
20	104	0,18				
26	96	-0,23				
29	98	-0,11				
34	111	0,53				
35	96	-0,24				
37	102	0,084				
43	109	0,43				
45	105	0,25				
49	100	0,0				
50	109	0,43				
52	103	0,14				
54	99	-0,060				
59	100	-0,015				
63	101	0,036				
65	113	0,63				
66	100	-0,0066				
68	86	-0,73				
70	116	0,78				
73	98	-0,13				
80	99	-0,041				
82	105	0,24				
84	102	0,086				
87	97	-0,14				
93	49	-2,6	Outlier			
95	102	0,10				
102	101	0,036				
103	100	-0,014				
104	97	-0,15				
106	102	0,086				
107	96	-0,23				
110	93	-0,37				
114	95	-0,28				
115	95	-0,24				
117	106	0,28				
120	99	-0,083				

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	101
Standard deviation, pg/g	6,0
Relative standard deviation, %	5,9
No. of values reported	39
No. of values removed	2
No. of reported non-detects	0


PCB 138
pg/g fw
150,2
130,2
110,2
90,2
70,2
50,2
30,2
10,2
-9,8
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 68 110 17 114 115 35 107 26 104 87 73 29 120 54 80 59 103 66 49 11 63 102 37 84 106 95 52 20 82 45 12 117 43 50 34 65 70
Labcode

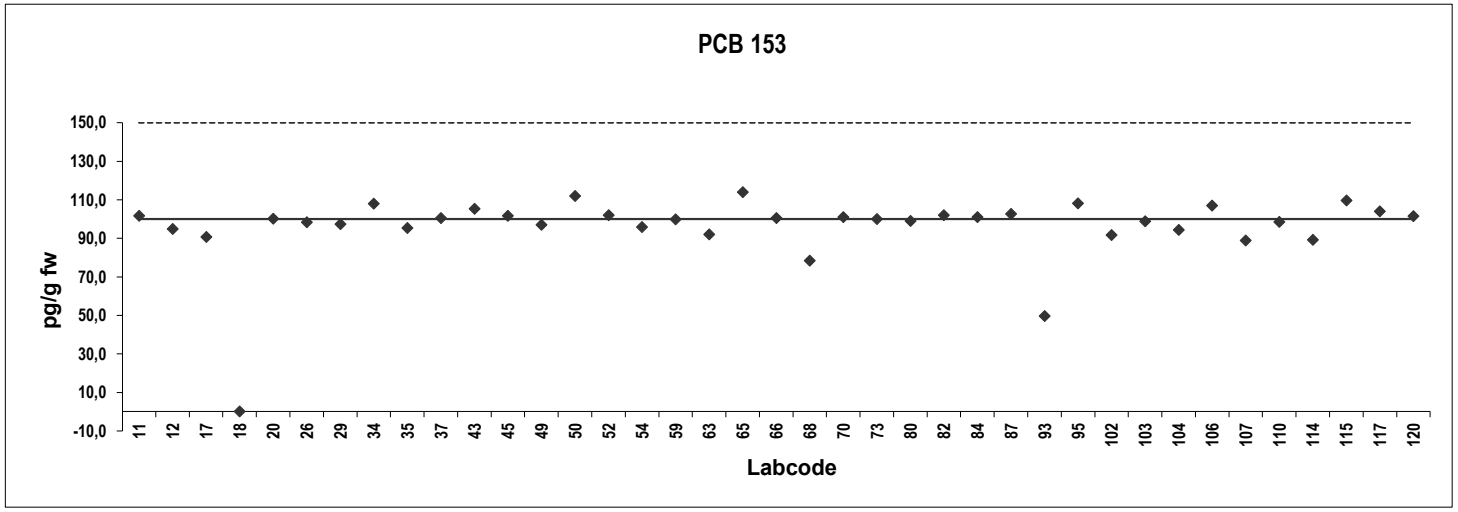
Analyte solution

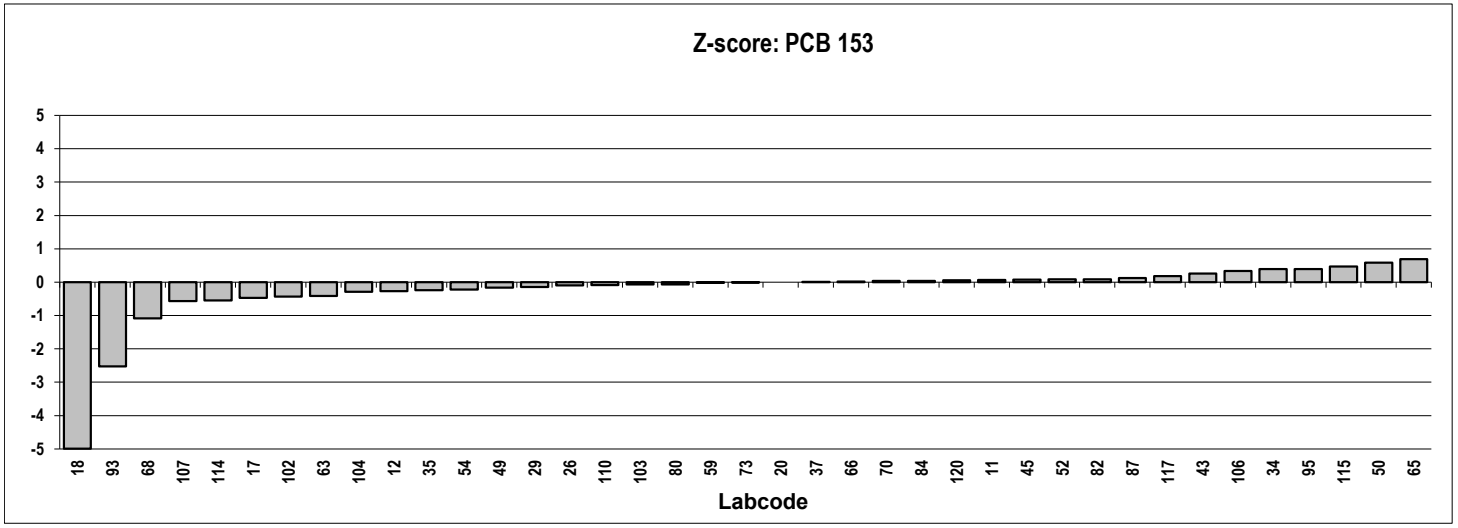
Congener: PCB 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	102	0,070				
12	95	-0,27				
17	91	-0,48				
18	0,089	-5,0	Outlier			
20	100	0,0				
26	98	-0,10				
29	97	-0,14				
34	108	0,39				
35	95	-0,24				
37	100	0,0095				
43	105	0,26				
45	102	0,074				
49	97	-0,16				
50	112	0,59				
52	102	0,088				
54	96	-0,22				
59	100	-0,017				
63	92	-0,41				
65	114	0,69				
66	101	0,015				
68	78	-1,1				
70	101	0,038				
73	100	-0,013				
80	99	-0,065				
82	102	0,088				
84	101	0,038				
87	103	0,12				
93	50	-2,5	Outlier			
95	108	0,39				
102	92	-0,43				
103	99	-0,066				
104	94	-0,29				
106	107	0,34				
107	89	-0,57				
110	98	-0,091				
114	89	-0,55				
115	110	0,47				
117	104	0,19				
120	101	0,058				

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	100
Standard deviation, pg/g	6,9
Relative standard deviation, %	7,0
No. of values reported	39
No. of values removed	2
No. of reported non-detects	0


PCB 153
pg/g fw
150,0
130,0
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 68 107 114 17 102 63 104 12 35 54 49 29 26 110 103 80 59 73 20 37 66 70 84 120 11 45 52 82 87 117 43 106 34 95 115 50 65
Labcode

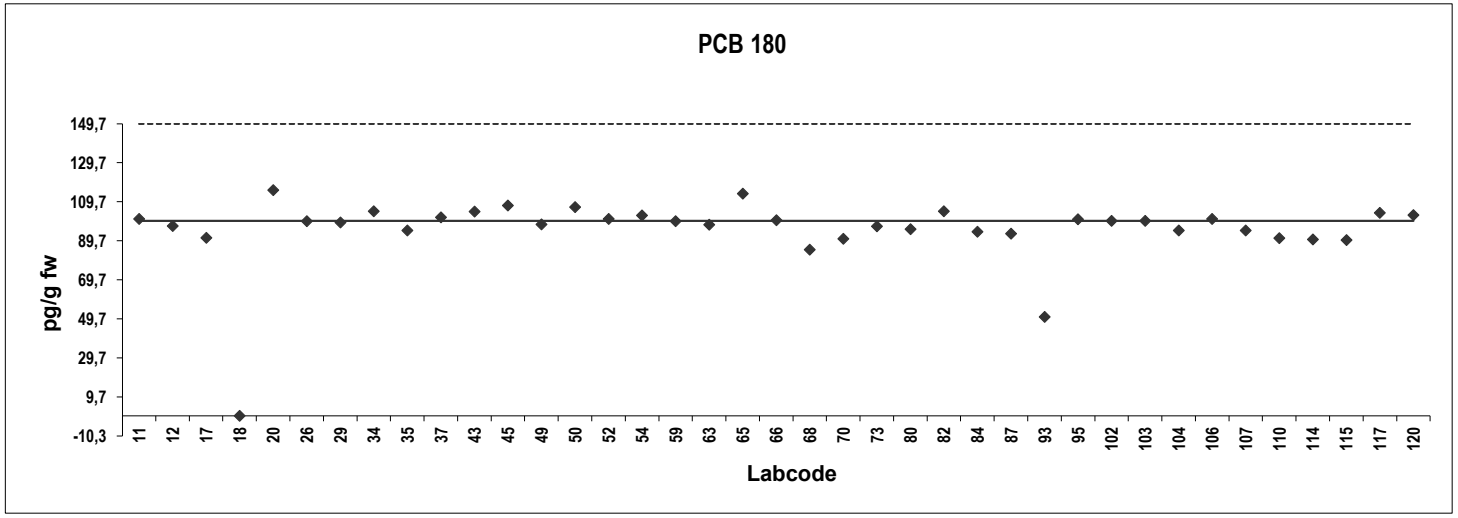
Analyte solution

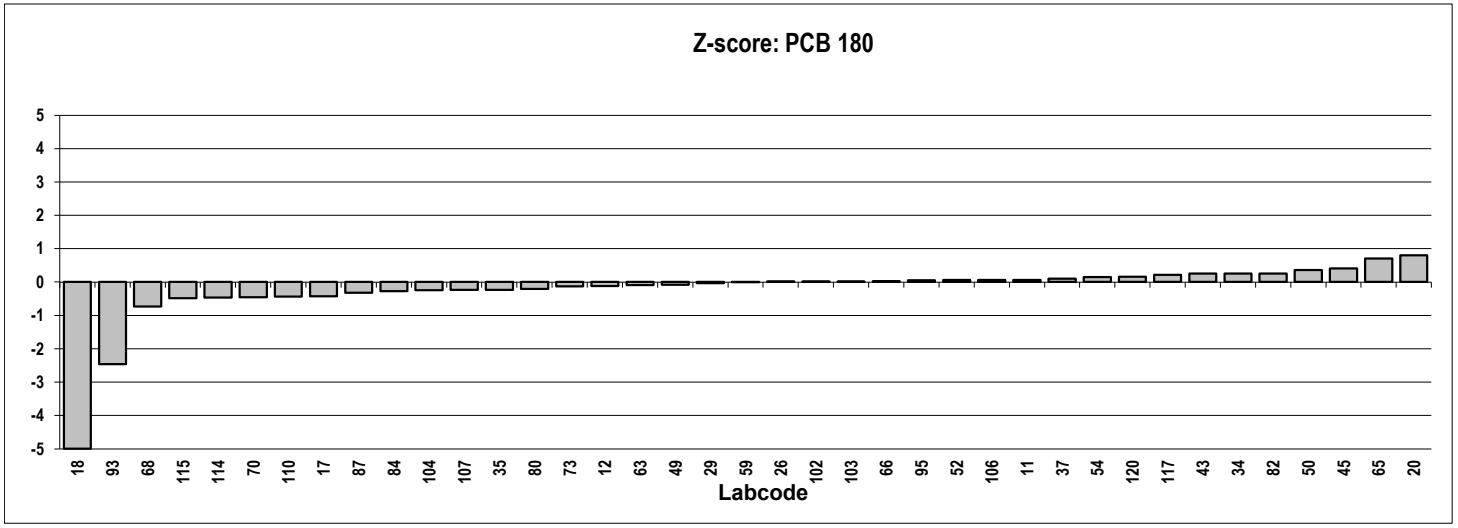
Congener: PCB 180

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
11	101	0,060				
12	97	-0,12				
17	91	-0,43				
18	0,090	-5,0	Outlier			
20	116	0,80				
26	100	0,0014				
29	99	-0,037				
34	105	0,26				
35	95	-0,24				
37	102	0,10				
43	105	0,25				
45	108	0,41				
49	98	-0,082				
50	107	0,36				
52	101	0,058				
54	103	0,15				
59	100	-0,0014				
63	98	-0,092				
65	114	0,71				
66	100	0,026				
68	85	-0,73				
70	91	-0,45				
73	97	-0,13				
80	96	-0,20				
82	105	0,26				
84	94	-0,27				
87	93	-0,32				
93	51	-2,5				
95	101	0,048				
102	100	0,0081				
103	100	0,0081				
104	95	-0,24				
106	101	0,058				
107	95	-0,24				
110	91	-0,44				
114	90	-0,47				
115	90	-0,48				
117	104	0,21				
120	103	0,16				

Consenus statistics

Consensus median, pg/g	100
Median all values pg/g	100
Consensus mean, pg/g	98
Standard deviation, pg/g	10
Relative standard deviation, %	10
No. of values reported	39
No. of values removed	1
No. of reported non-detects	0


PCB 180
149,7
129,7
109,7
89,7
69,7
49,7
29,7
9,7
-10,3
pg/g fw
11 12 17 18 20 26 29 34 35 37 43 45 49 50 52 54 59 63 65 66 68 70 73 80 82 84 87 93 95 102 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 93 68 115 114 70 110 17 87 84 104 107 35 80 73 12 63 49 29 59 26 102 103 66 95 52 106 11 37 54 120 117 43 34 82 50 45 65 20
Labcode

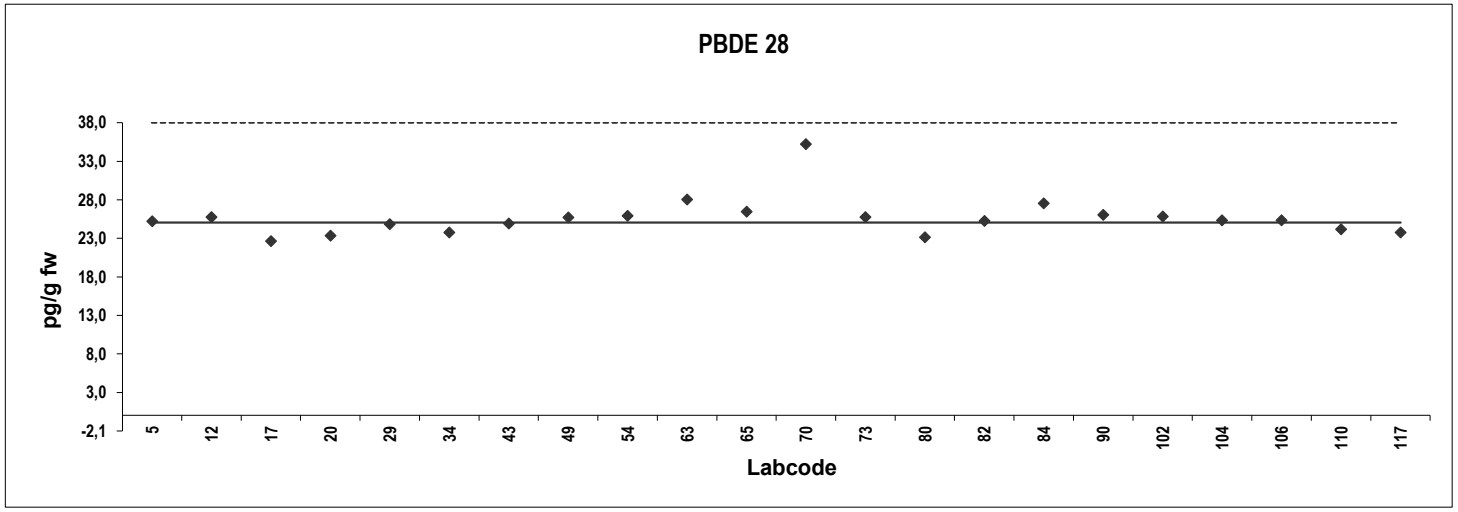
Analyte solution

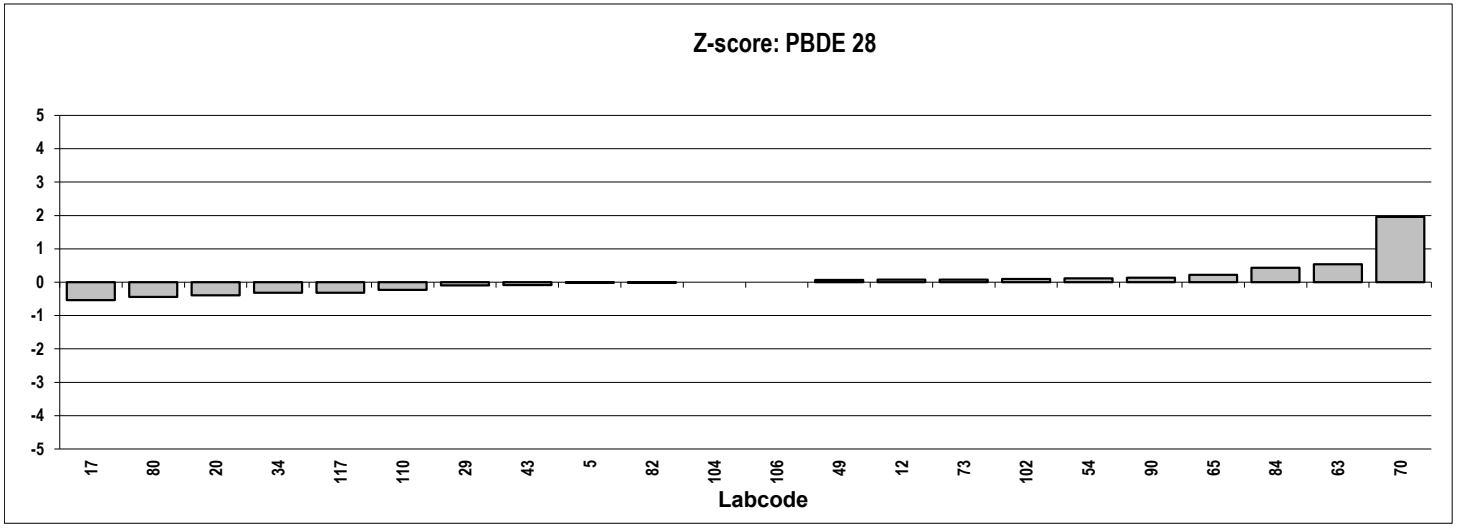
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	25	-0,023				
12	26	0,079				
17	23	-0,53				
20	23	-0,39				
29	25	-0,10				
34	24	-0,32				
43	25	-0,086				
49	26	0,070				
54	26	0,11				
63	28	0,53				
65	26	0,22				
70	35	2,0				
73	26	0,081				
80	23	-0,44				
82	25	-0,020				
84	28	0,43				
90	26	0,14				
102	26	0,10				
104	25	0,0				
106	25	0,0				
110	24	-0,23				
117	24	-0,32				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	26
Standard deviation, pg/g	2,5
Relative standard deviation, %	10
No. of values reported	22
No. of values removed	0
No. of reported non-detects	0


PBDE 28
pg/g fw
38,0
33,0
28,0
23,0
18,0
13,0
8,0
3,0
-2,1
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
Labcode


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
17
80
20
34
117
110
29
43
5
82
104
106
49
12
73
102
54
90
65
84
63
70
Labcode

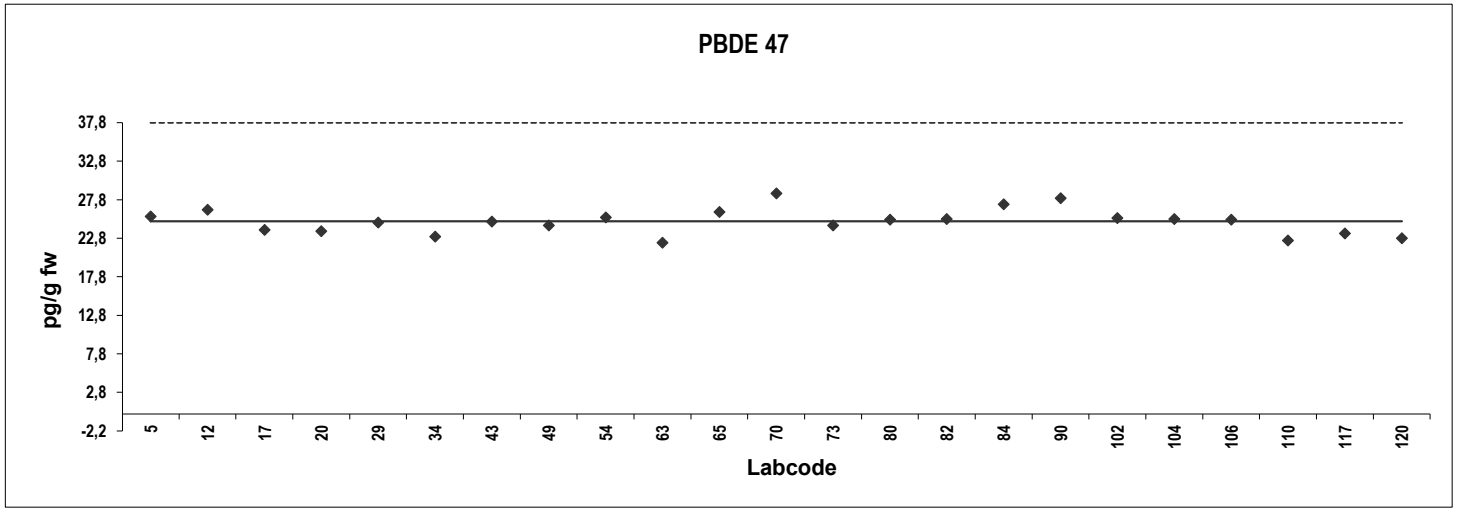
Analyte solution

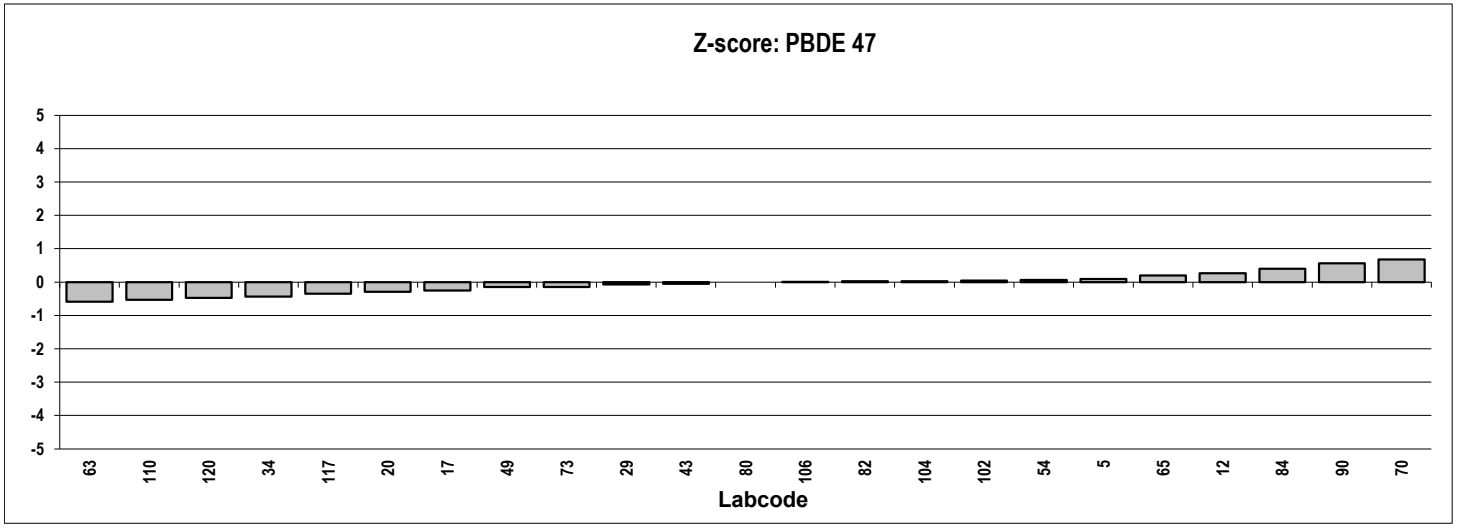
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	26	0,089				
12	27	0,26				
17	24	-0,26				
20	24	-0,29				
29	25	-0,068				
34	23	-0,43				
43	25	-0,049				
49	24	-0,15				
54	26	0,063				
63	22	-0,59				
65	26	0,20				
70	29	0,68				
73	24	-0,15				
80	25	0,0				
82	25	0,022				
84	27	0,40				
90	28	0,56				
102	25	0,041				
104	25	0,022				
106	25	0,0018				
110	22	-0,54				
117	23	-0,35				
120	23	-0,47				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	25
Standard deviation, pg/g	1,7
Relative standard deviation, %	6,6
No. of values reported	23
No. of values removed	0
No. of reported non-detects	0


PBDE 47
pg/g fw
37,8
32,8
27,8
22,8
17,8
12,8
7,8
2,8
-2,2
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
120
Labcode


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
63
110
120
34
117
20
17
49
73
29
43
80
106
82
104
102
54
5
65
12
84
90
70
Labcode

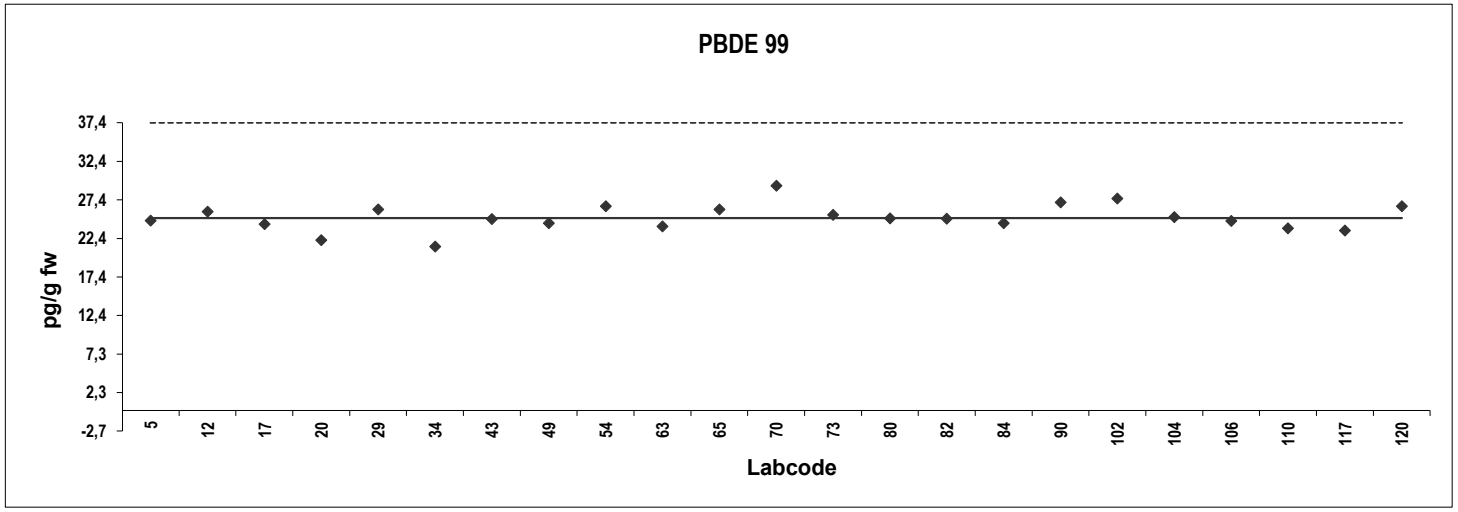
Analyte solution

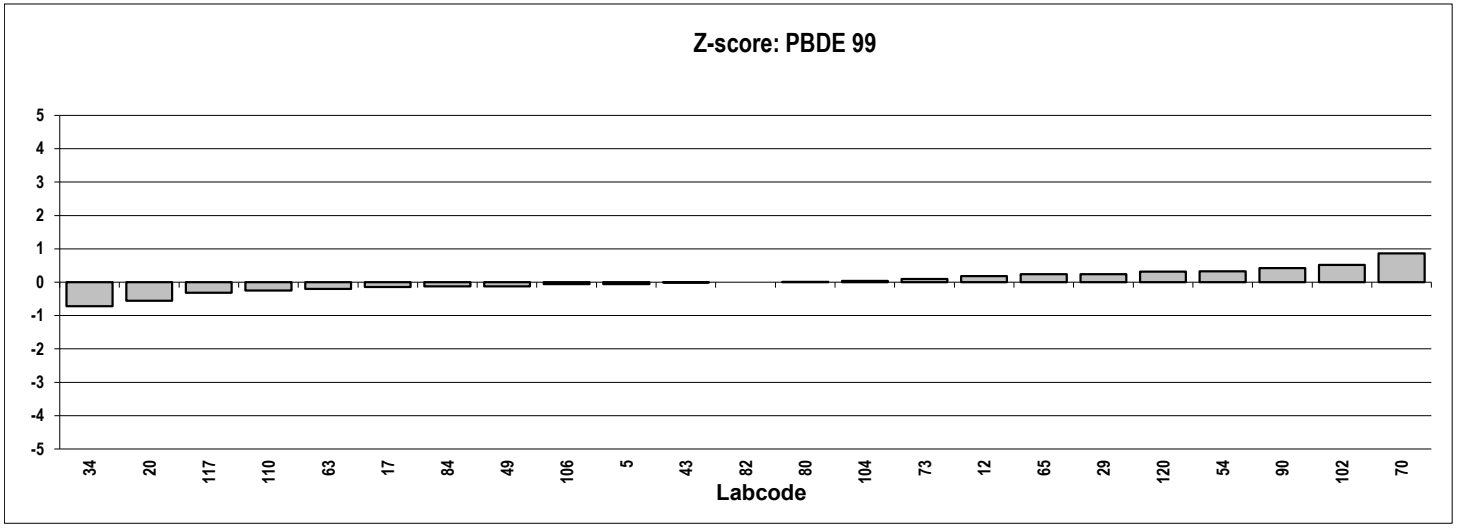
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	25	-0,054				
12	26	0,18				
17	24	-0,14				
20	22	-0,56				
29	26	0,24				
34	21	-0,72				
43	25	-0,012				
49	24	-0,12				
54	27	0,32				
63	24	-0,20				
65	26	0,24				
70	29	0,86				
73	25	0,10				
80	25	0,012				
82	25	0,0				
84	24	-0,12				
90	27	0,42				
102	28	0,52				
104	25	0,040				
106	25	-0,060				
110	24	-0,25				
117	23	-0,31				
120	27	0,32				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	25
Standard deviation, pg/g	1,7
Relative standard deviation, %	6,9
No. of values reported	23
No. of values removed	0
No. of reported non-detects	0


PBDE 99
pg/g fw
37,4
32,4
27,4
22,4
17,4
12,4
7,3
2,3
-2,7
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
120
Labcode


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
34
20
117
110
63
17
84
49
106
5
43
82
80
104
73
12
65
29
120
54
90
102
70
Labcode

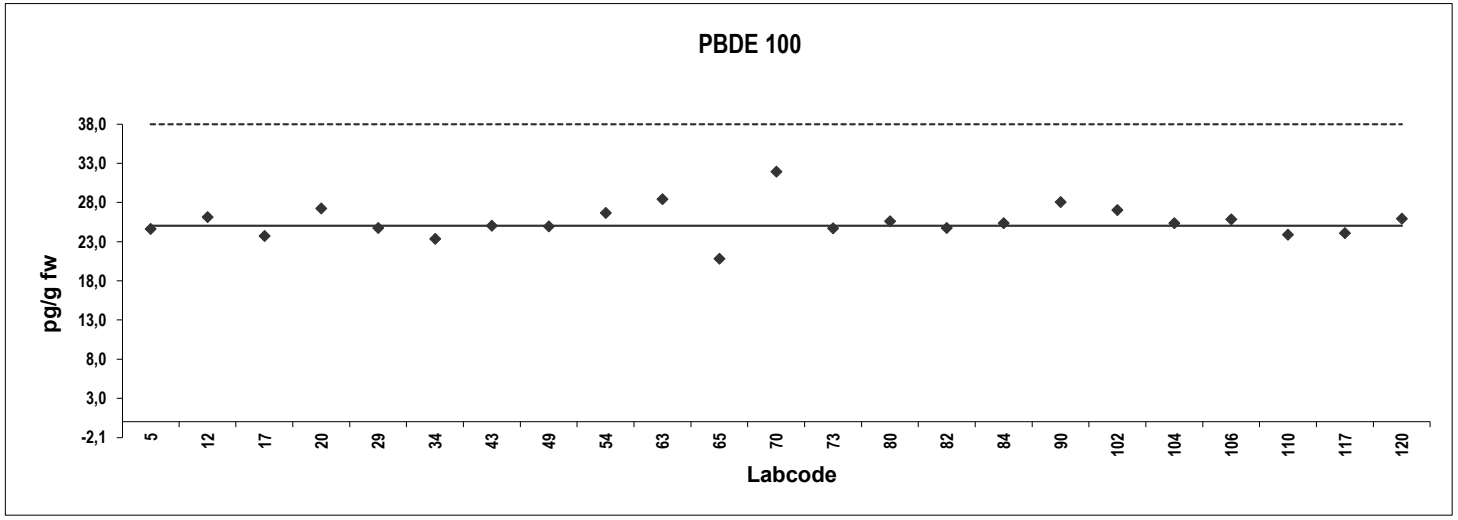
Analyte solution

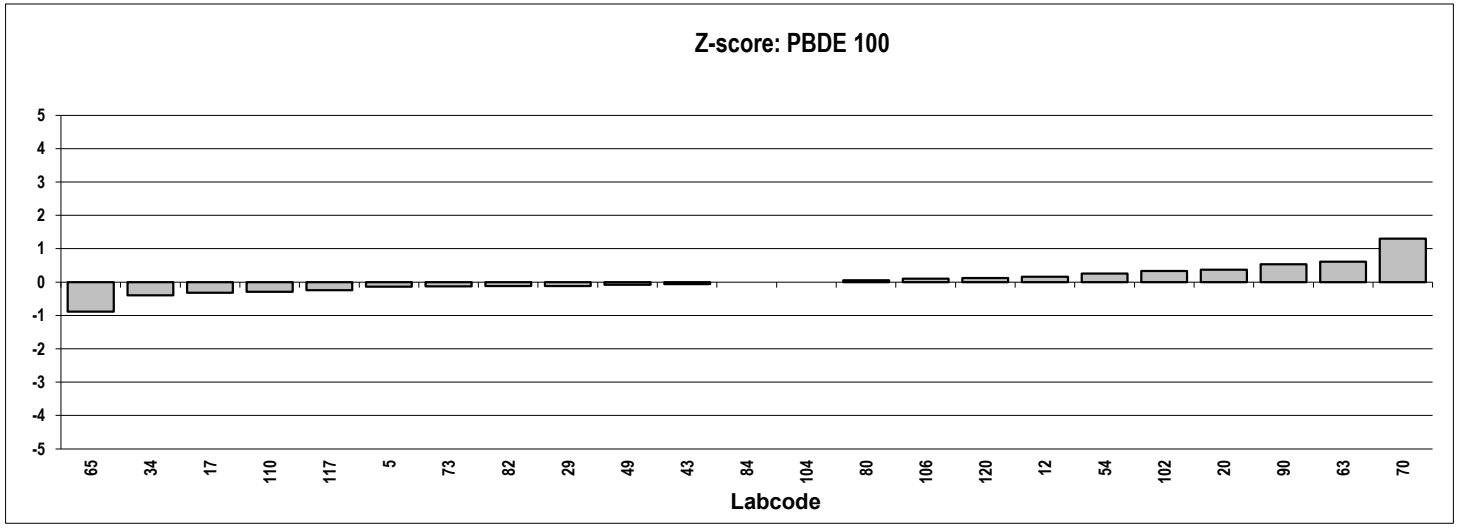
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	25	-0,14				
12	26	0,16				
17	24	-0,32				
20	27	0,37				
29	25	-0,12				
34	23	-0,40				
43	25	-0,058				
49	25	-0,081				
54	27	0,26				
63	28	0,61				
65	21	-0,89				
70	32	1,3				
73	25	-0,13				
80	26	0,051				
82	25	-0,12				
84	25	0,0				
90	28	0,53				
102	27	0,34				
104	25	0,0				
106	26	0,10				
110	24	-0,29				
117	24	-0,25				
120	26	0,12				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	26
Standard deviation, pg/g	2,1
Relative standard deviation, %	8,4
No. of values reported	23
No. of values removed	0
No. of reported non-detects	0


PBDE 100
pg/g fw
38,0
33,0
28,0
23,0
18,0
13,0
8,0
3,0
-2,1
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
120
Labcode


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
65
34
17
110
117
5
73
82
29
49
43
84
104
80
106
120
12
54
102
20
90
63
70
Labcode

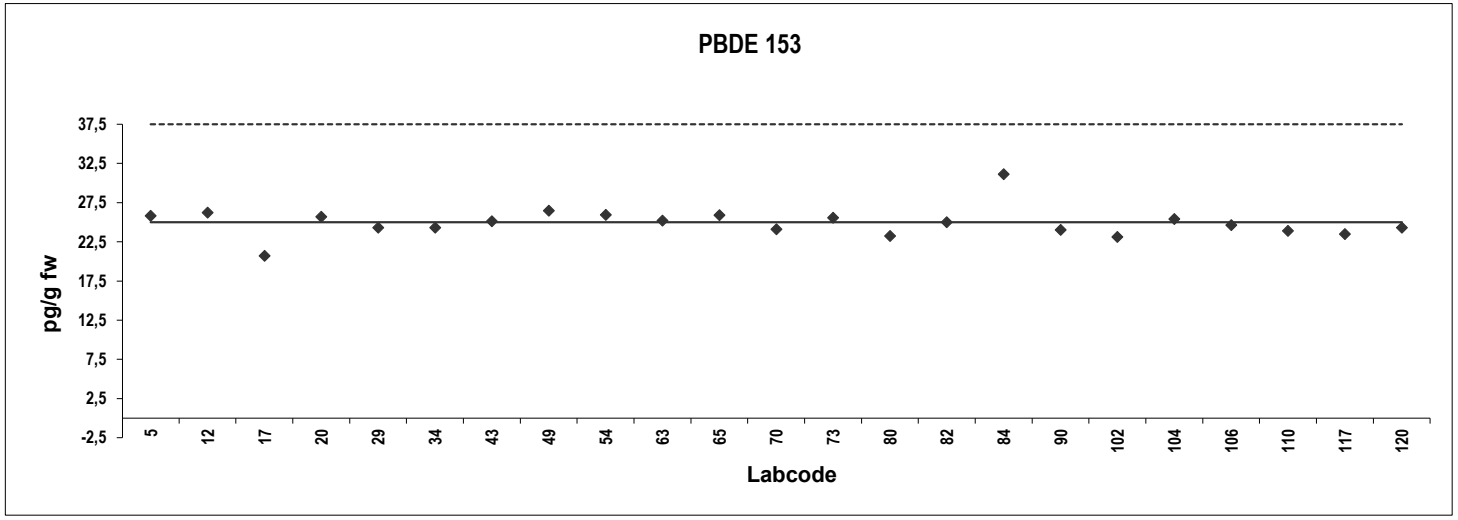
Analyte solution

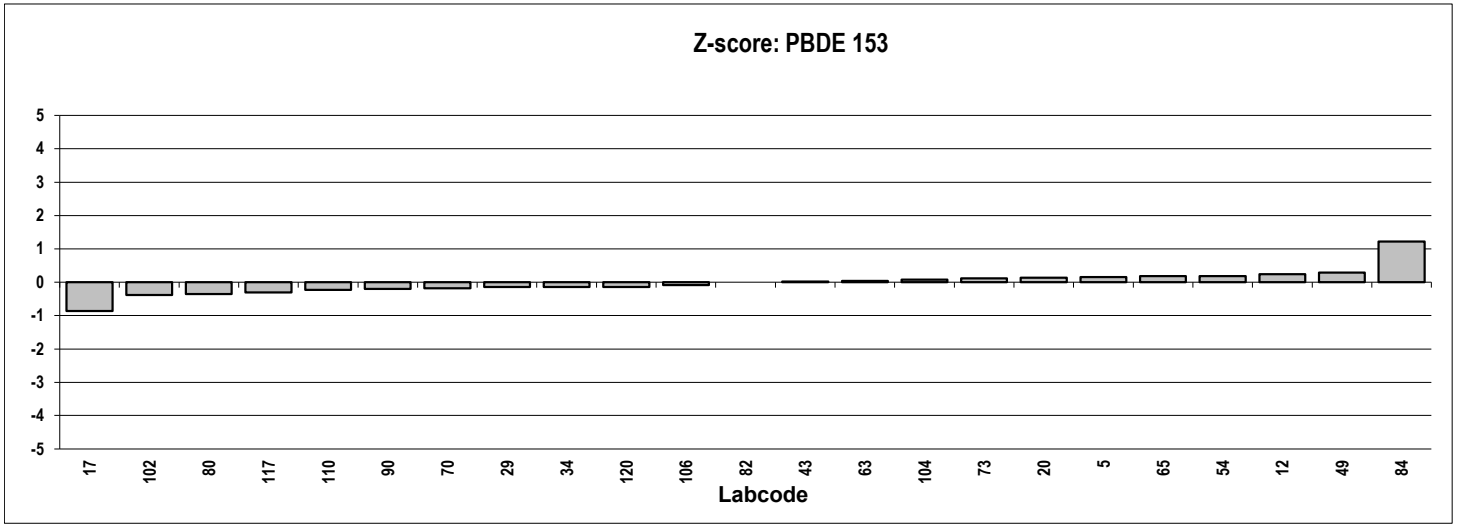
Congener: PBDE 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	26	0,16				
12	26	0,24				
17	21	-0,86				
20	26	0,13				
29	24	-0,14				
34	24	-0,14				
43	25	0,021				
49	26	0,29				
54	26	0,18				
63	25	0,040				
65	26	0,18				
70	24	-0,18				
73	26	0,12				
80	23	-0,35				
82	25	0,0				
84	31	1,2				
90	24	-0,20				
102	23	-0,38				
104	25	0,080				
106	25	-0,080				
110	24	-0,22				
117	23	-0,31				
120	24	-0,14				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	25
Standard deviation, pg/g	1,9
Relative standard deviation, %	7,5
No. of values reported	23
No. of values removed	0
No. of reported non-detects	0


PBDE 153
pg/g fw
37,5
32,5
27,5
22,5
17,5
12,5
7,5
2,5
-2,5
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
120
Labcode


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
17
102
80
117
110
90
70
29
34
120
106
82
43
63
104
73
20
5
65
54
12
49
84
Labcode

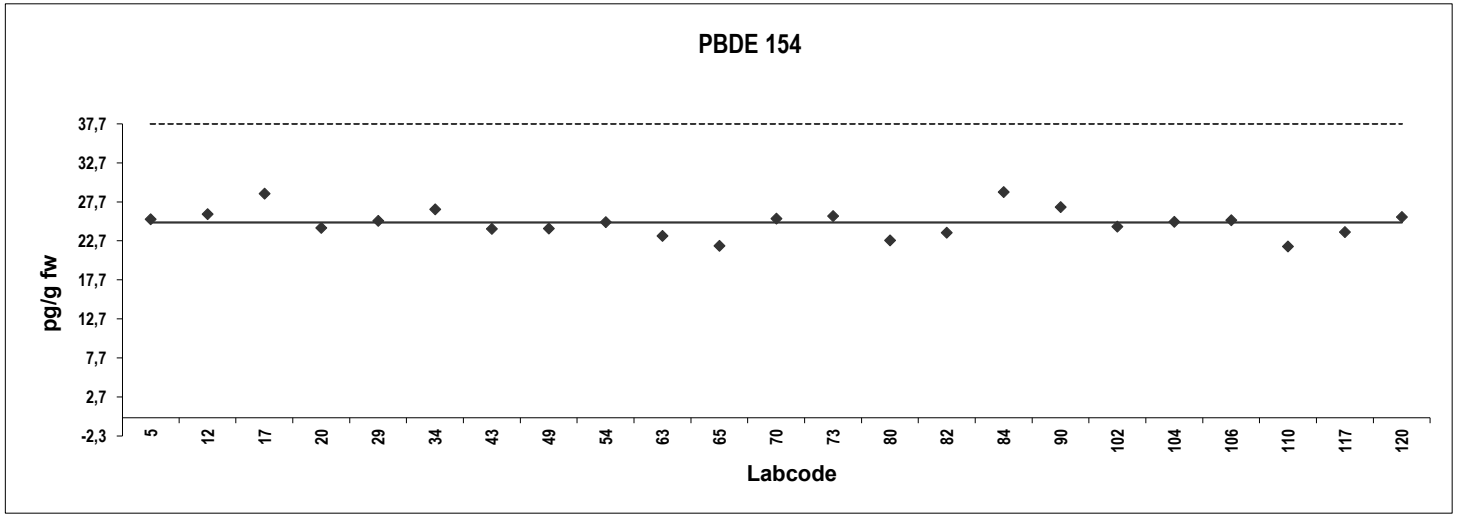
Analyte solution

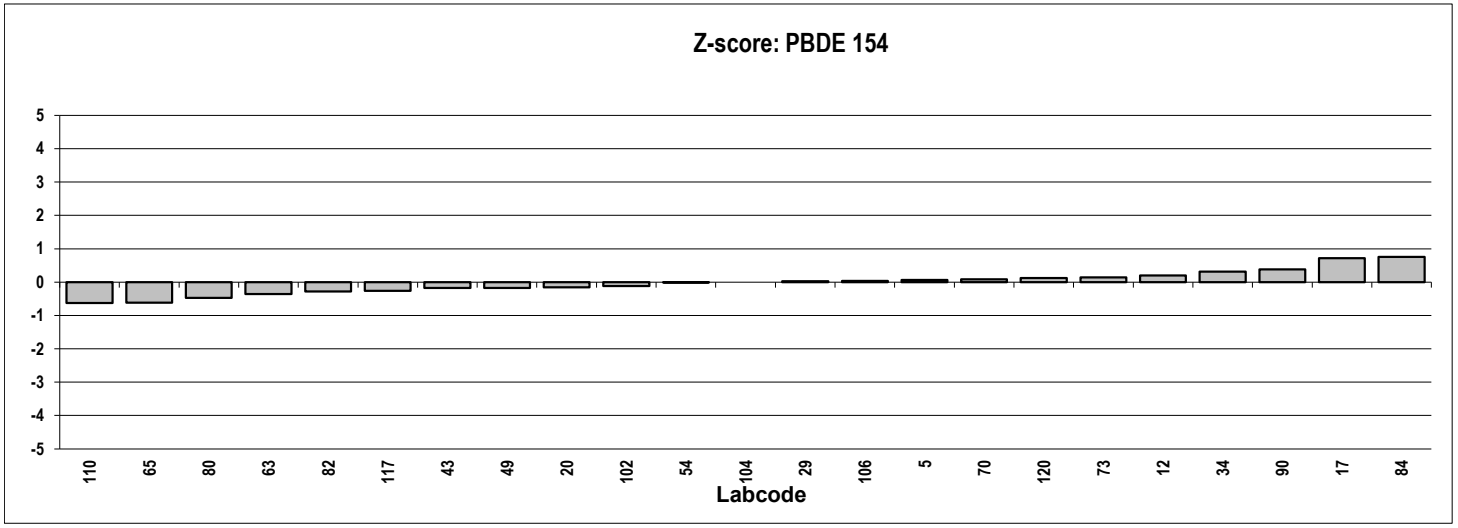
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	25	0,068				
12	26	0,20				
17	29	0,72				
20	24	-0,16				
29	25	0,022				
34	27	0,32				
43	24	-0,18				
49	24	-0,17				
54	25	-0,0073				
63	23	-0,36				
65	22	-0,62				
70	26	0,080				
73	26	0,14				
80	23	-0,47				
82	24	-0,28				
84	29	0,76				
90	27	0,38				
102	25	-0,12				
104	25	0,0				
106	25	0,040				
110	22	-0,63				
117	24	-0,26				
120	26	0,12				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	25
Standard deviation, pg/g	1,8
Relative standard deviation, %	7,1
No. of values reported	23
No. of values removed	0
No. of reported non-detects	0


PBDE 154
37,7
32,7
27,7
22,7
17,7
12,7
7,7
2,7
-2,3
pg/g fw
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
120
Labcode


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
110
65
80
63
82
117
43
49
20
102
54
104
29
106
5
70
120
73
12
34
90
17
84
Labcode

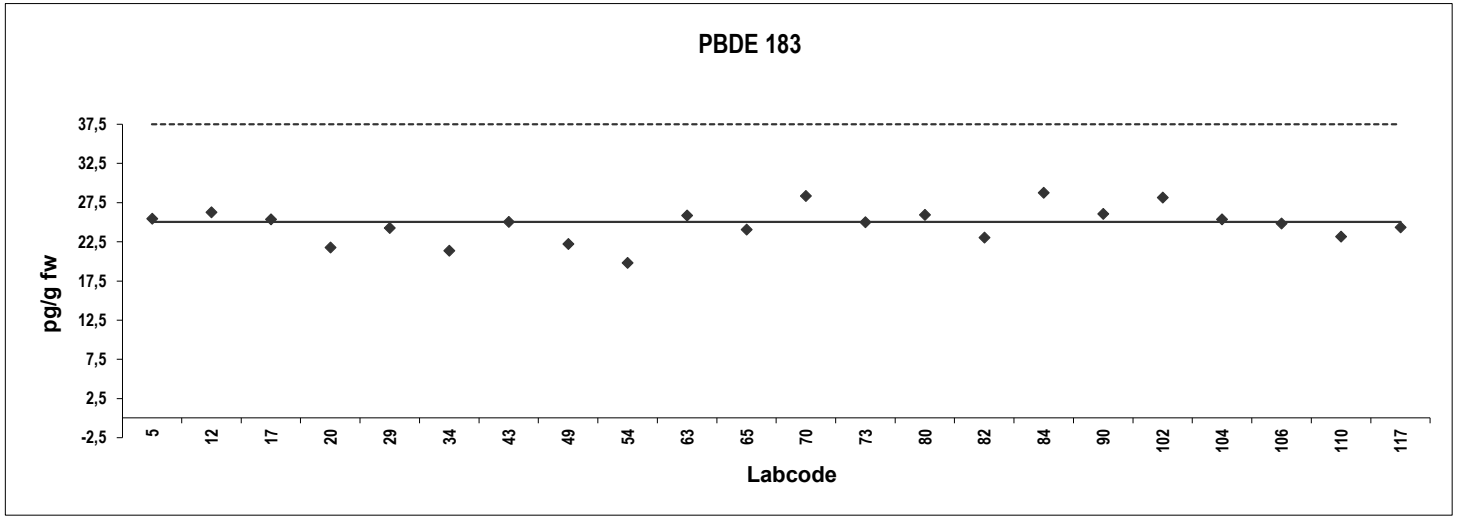
Analyte solution

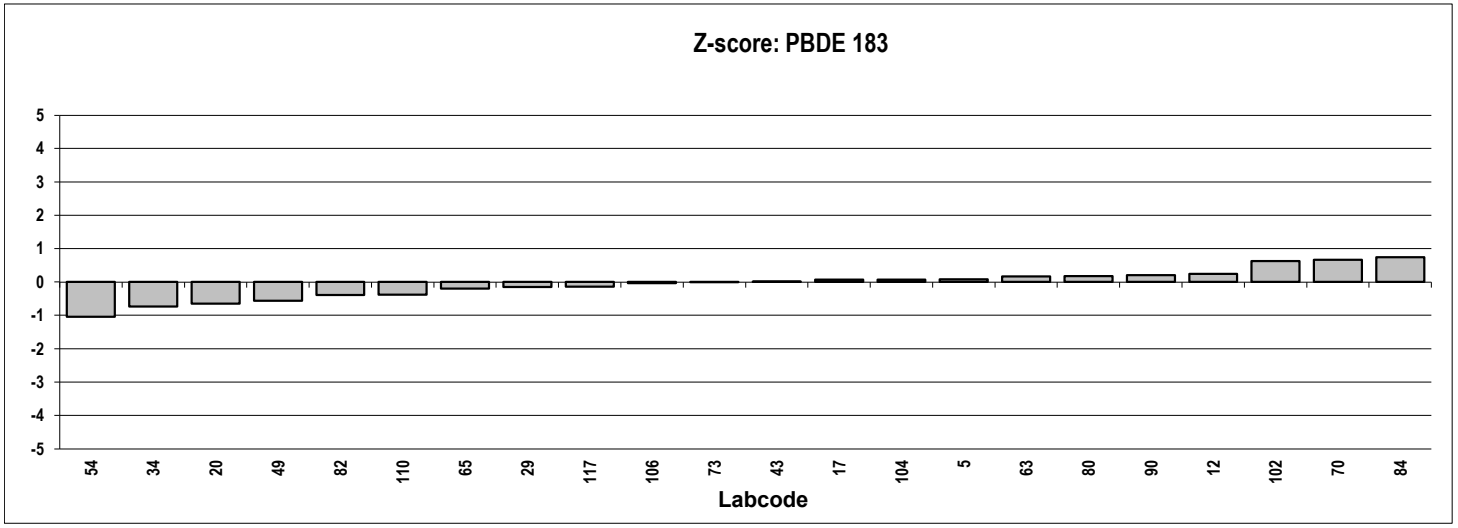
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	25	0,082				
12	26	0,25				
17	25	0,065				
20	22	-0,65				
29	24	-0,15				
34	21	-0,74				
43	25	0,0027				
49	22	-0,56				
54	20	-1,0				
63	26	0,17				
65	24	-0,19				
70	28	0,67				
73	25	-0,0027				
80	26	0,18				
82	23	-0,40				
84	29	0,75				
90	26	0,21				
102	28	0,63				
104	25	0,065				
106	25	-0,035				
110	23	-0,38				
117	24	-0,14				

Consenus statistics

Consensus median, pg/g	25
Median all values pg/g	25
Consensus mean, pg/g	25
Standard deviation, pg/g	2,3
Relative standard deviation, %	9,1
No. of values reported	22
No. of values removed	0
No. of reported non-detects	0


PBDE 183
pg/g fw
37,5
32,5
27,5
22,5
17,5
12,5
7,5
2,5
-2,5
5
12
17
20
29
34
43
49
54
63
65
70
73
80
82
84
90
102
104
106
110
117
Labcode


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
54
34
20
49
82
110
65
29
117
106
73
43
17
104
5
63
80
90
12
102
70
84
Labcode

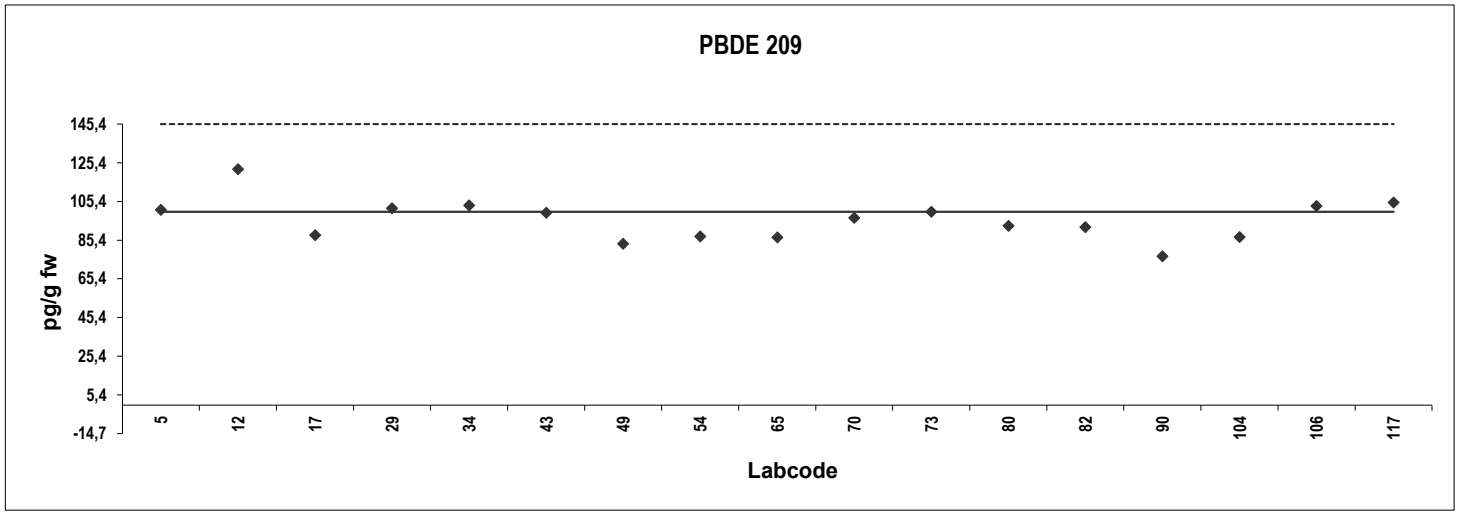
Analyte solution

Congener: PBDE 209

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	101	0,21				
12	122	1,3				
17	88	-0,46				
29	102	0,25				
34	103	0,33				
43	99	0,13				
49	84	-0,69				
54	87	-0,50				
65	87	-0,52				
70	97	0,0				
73	100	0,16				
80	93	-0,21				
82	92	-0,25				
90	77	-1,0				
104	87	-0,51				
106	103	0,31				
117	105	0,40				

Consenus statistics

Consensus median, pg/g	97
Median all values pg/g	97
Consensus mean, pg/g	96
Standard deviation, pg/g	11
Relative standard deviation, %	11
No. of values reported	17
No. of values removed	0
No. of reported non-detects	0


PBDE 209
145,4
125,4
105,4
85,4
65,4
45,4
25,4
5,4
-14,7
pg/g fw
5
12
17
29
34
43
49
54
65
70
73
80
82
90
104
106
117
Labcode


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
90
49
65
104
54
17
82
80
70
43
73
5
29
106
34
117
12
Labcode

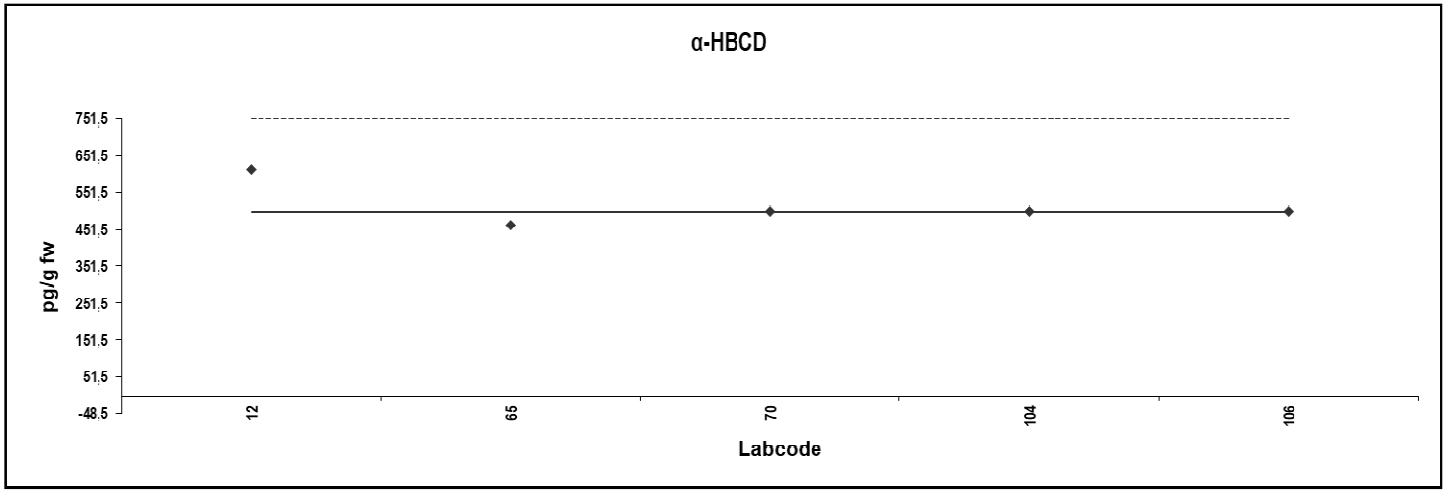
Analyte solution

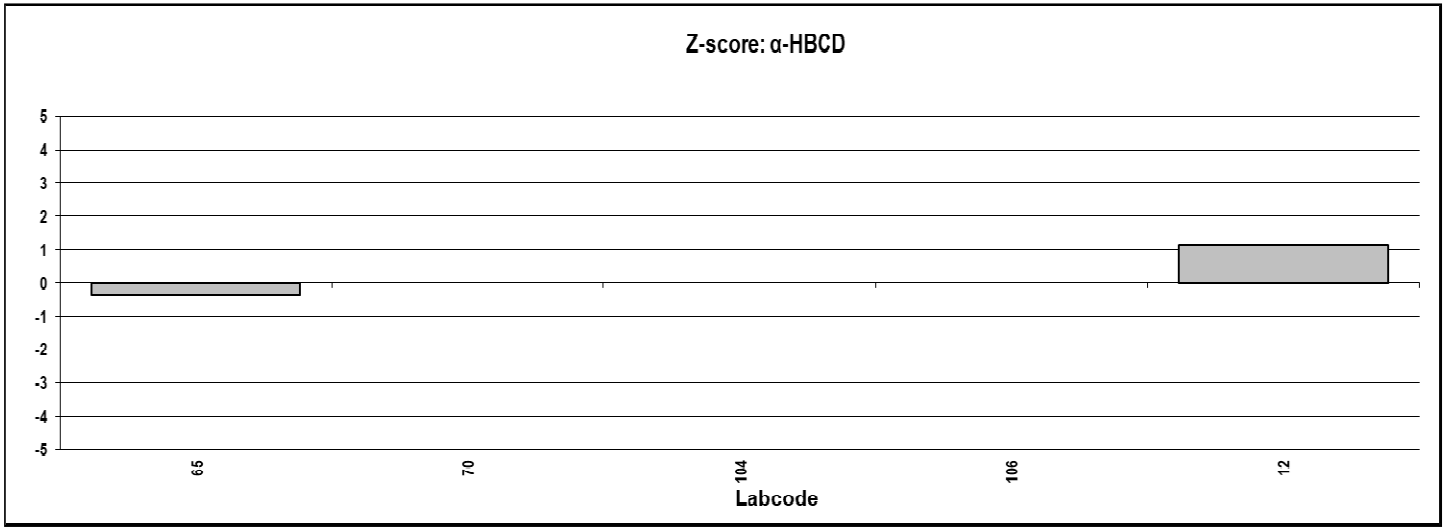
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
12	615	1,1				
65	464	-0,37				
70	501	0,0				
104	501	0,0				
106	501	0,0				

Consenus statistics

Consensus median, pg/g	501
Median all values pg/g	501
Consensus mean, pg/g	516
Standard deviation, pg/g	57
Relative standard deviation, %	11
No. of values reported	5
No. of values removed	0
No. of reported non-detects	0


α-HBCD
751,5
651,5
551,5
451,5
351,5
251,5
151,5
51,5
-48,5
pg/g fw
12
65
70
104
106
Labcode


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
65
70
104
106
12
Labcode

Appendix 2:

Presentation of results for
Reindeer 2023

Appendix 2: Presentation of results: Reindeer 2023

Statistic calculations for PCDDs, PCDFs and dioxin-like PCBs

For each congener, the outliers were removed, and the consensus calculated according to the following procedure:

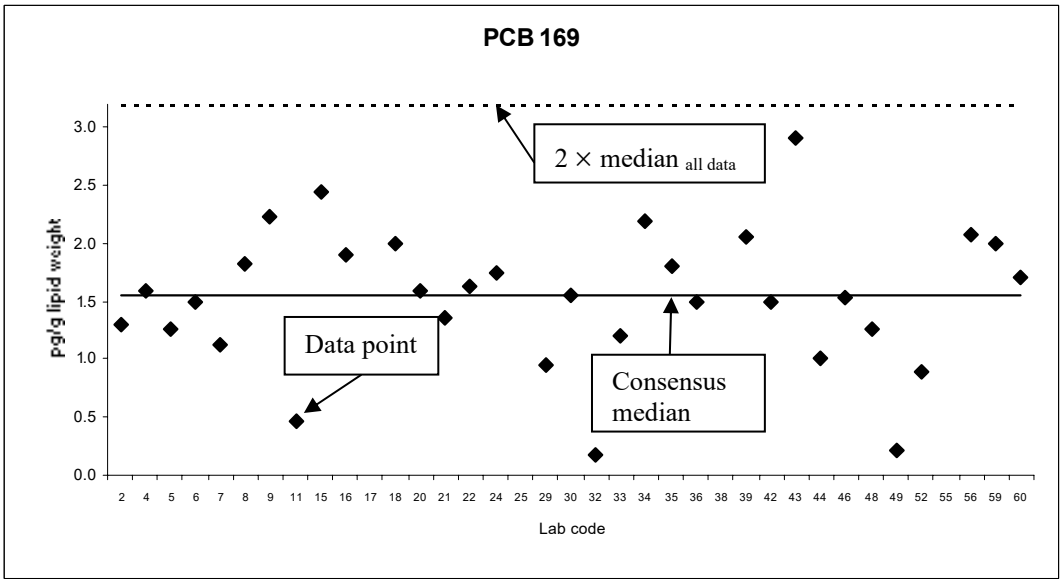
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.

Statistic calculations for indicator PCBs, PBDEs and HBCD

For each congener, the outliers were removed and the consensus calculated according to the following procedure:

1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners (NDs).
2. Values exceeding 2 × this median were defined as outliers and removed from the data set. The NDs were also removed.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.
4. For comparison, median, mean and standard deviation were also calculated without removing NDs.

The diagram shows the reported data up to approximately the limit for outliers (2 × the first median).



Z-Scores of individual congeners

Z-scores of each congener were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

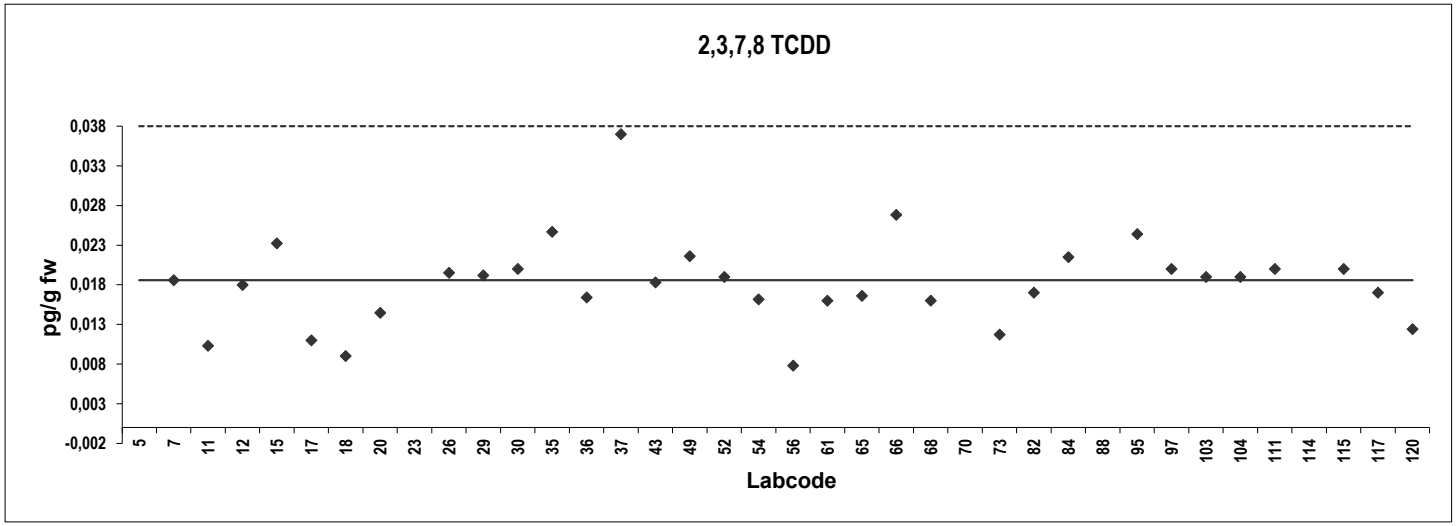
Reindeer

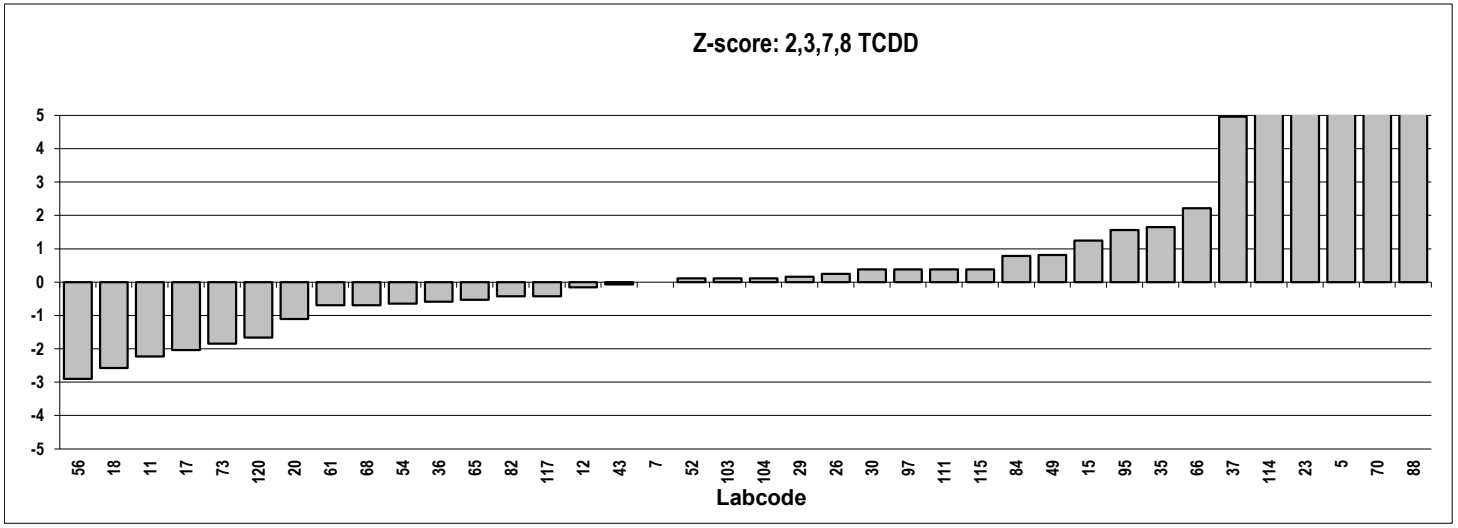
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,056	10	Outlier,ND			
7	0,019	0,0				
11	0,010	-2,2				
12	0,018	-0,16				
15	0,023	1,2				
17	0,011	-2,0				
18	0,0090	-2,6				
20	0,014	-1,1				
23	0,050	8,5	Outlier,ND			
26	0,020	0,25				
29	0,019	0,16				
30	0,020	0,38				
35	0,025	1,6				
36	0,016	-0,59	ND			
37	0,037	5,0	ND			
43	0,018	-0,074				
49	0,022	0,81				
52	0,019	0,11				
54	0,016	-0,65				
56	0,0078	-2,9				
61	0,016	-0,69				
65	0,017	-0,53				
66	0,027	2,2				
68	0,016	-0,69				
70	0,12	27	Outlier,ND			
73	0,012	-1,8				
82	0,017	-0,43	ND			
84	0,022	0,79				
88	1,00	264	Outlier,ND			
95	0,024	1,6	ND			
97	0,020	0,38				
103	0,019	0,11				
104	0,019	0,11				
111	0,020	0,38				
114	0,040	5,8	Outlier,ND			
115	0,020	0,38				
117	0,017	-0,43				
120	0,012	-1,7	ND			

Consenus statistics

Consensus median, pg/g	0,019
Median all values pg/g	0,019
Consensus mean, pg/g	0,018
Standard deviation, pg/g	0,0056
Relative standard deviation, %	31
No. of values reported	38
No. of values removed	5
No. of reported non-detects	10


2,3,7,8 TCDD
pg/g fw
0,038
0,033
0,028
0,023
0,018
0,013
0,008
0,003
-0,002
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 18 11 17 73 120 20 61 68 54 36 65 82 117 12 43 7 52 103 104 29 26 30 97 111 115 84 49 15 95 35 66 37 114 23 5 70 88
Labcode

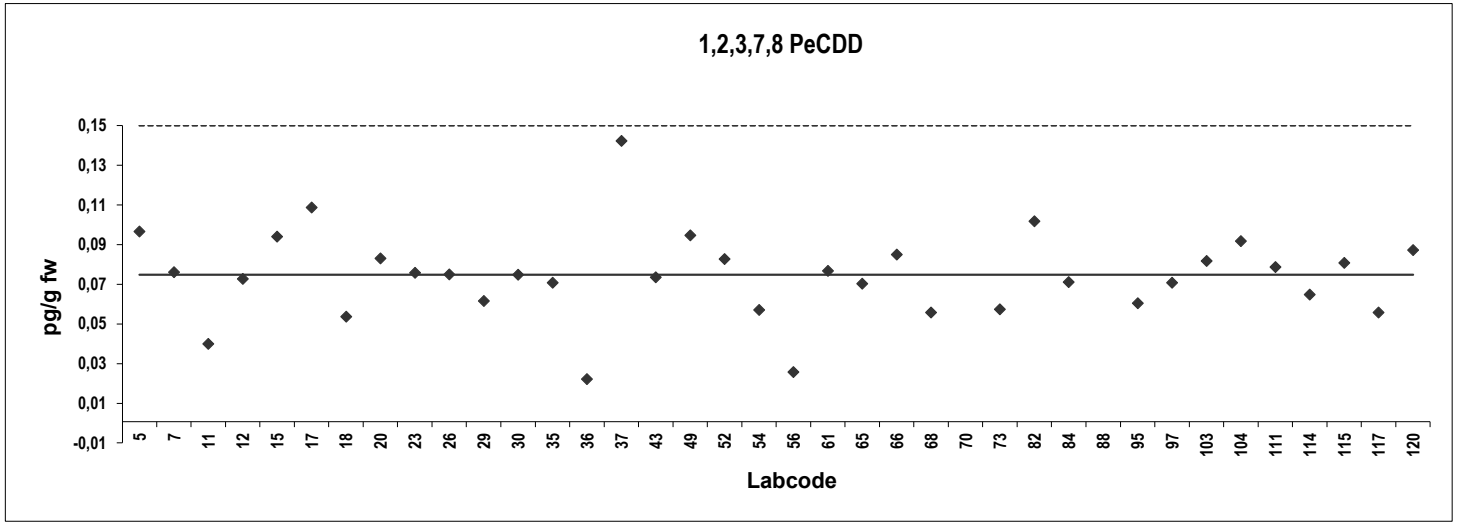
Reindeer

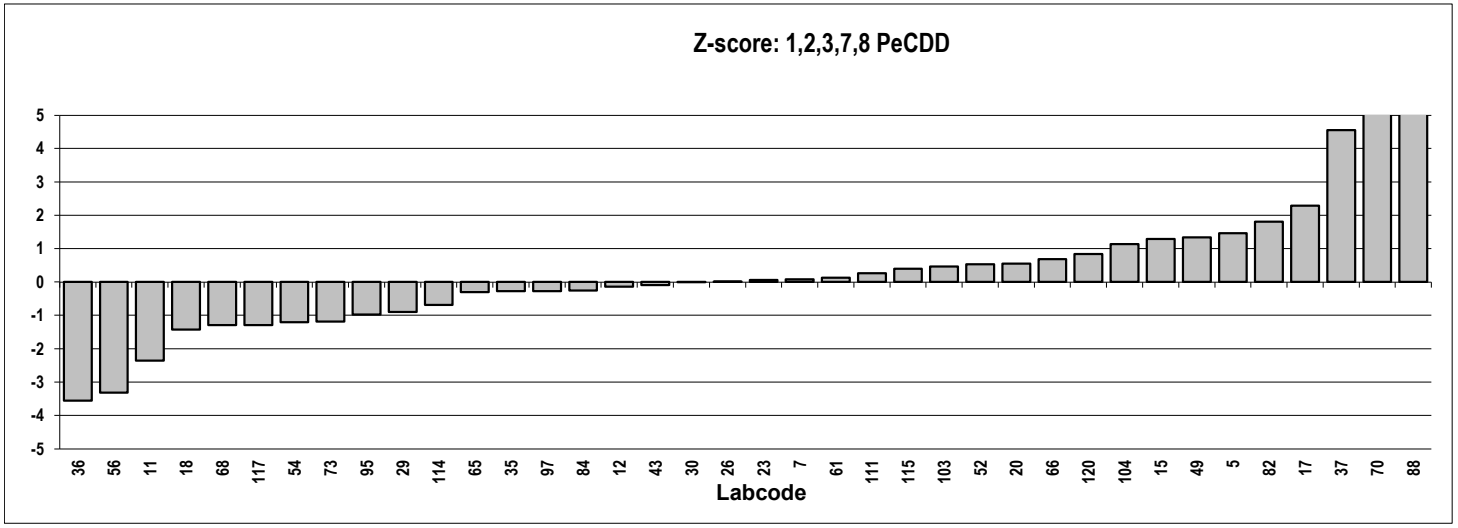
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,096	1,5	ND			
7	0,075	0,081				
11	0,039	-2,4				
12	0,072	-0,14				
15	0,093	1,3				
17	0,11	2,3				
18	0,053	-1,4				
20	0,082	0,55				
23	0,075	0,057				
26	0,074	0,010				
29	0,061	-0,90				
30	0,074	-0,010				
35	0,070	-0,28				
36	0,021	-3,6	ND			
37	0,14	4,5				
43	0,073	-0,095				
49	0,094	1,3				
52	0,082	0,53				
54	0,056	-1,2				
56	0,025	-3,3				
61	0,076	0,12				
65	0,070	-0,31				
66	0,084	0,68				
68	0,055	-1,3				
70	0,15	5,1	Outlier,ND			
73	0,057	-1,2				
82	0,10	1,8				
84	0,070	-0,26				
88	5,0	330	Outlier,ND			
95	0,060	-0,97	ND			
97	0,070	-0,28				
103	0,081	0,46				
104	0,091	1,1				
111	0,078	0,26				
114	0,064	-0,68				
115	0,080	0,39				
117	0,055	-1,3				
120	0,087	0,83				

Consenus statistics

Consensus median, pg/g	0,074
Median all values pg/g	0,075
Consensus mean, pg/g	0,073
Standard deviation, pg/g	0,022
Relative standard deviation, %	30
No. of values reported	38
No. of values removed	2
No. of reported non-detects	5


1,2,3,7,8 PeCDD
pg/g fw
0,15
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
36 56 11 18 68 117 54 73 95 29 114 65 35 97 84 12 43 30 26 23 7 61 111 115 103 52 20 66 120 104 15 49 5 82 17 37 70 88
Labcode

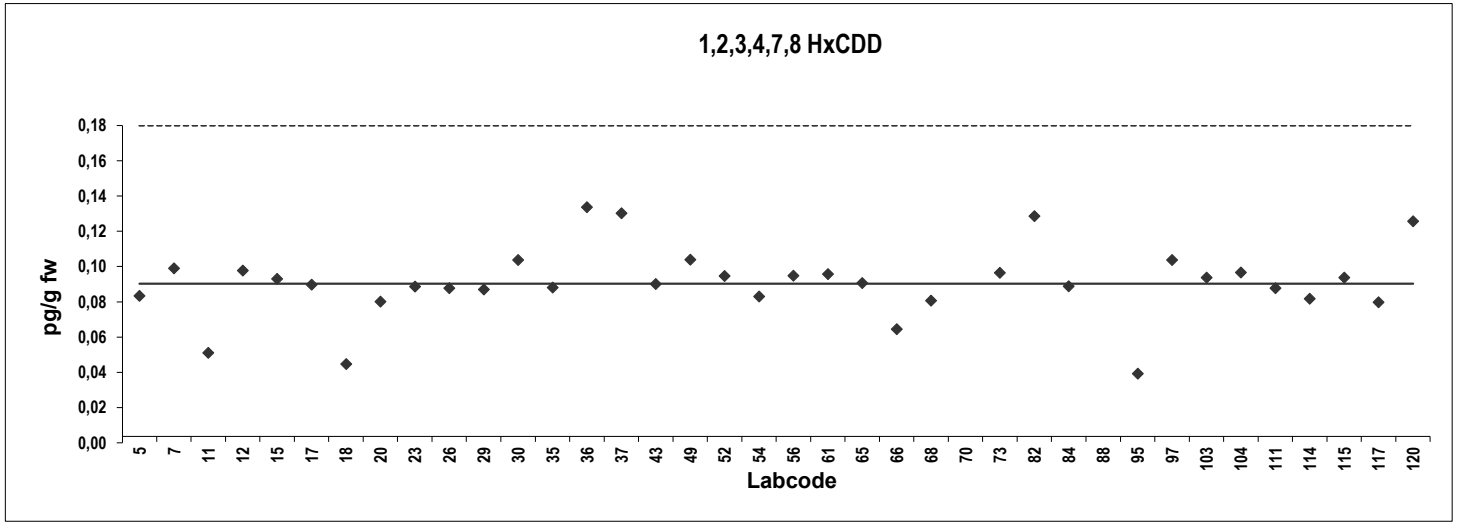
Reindeer

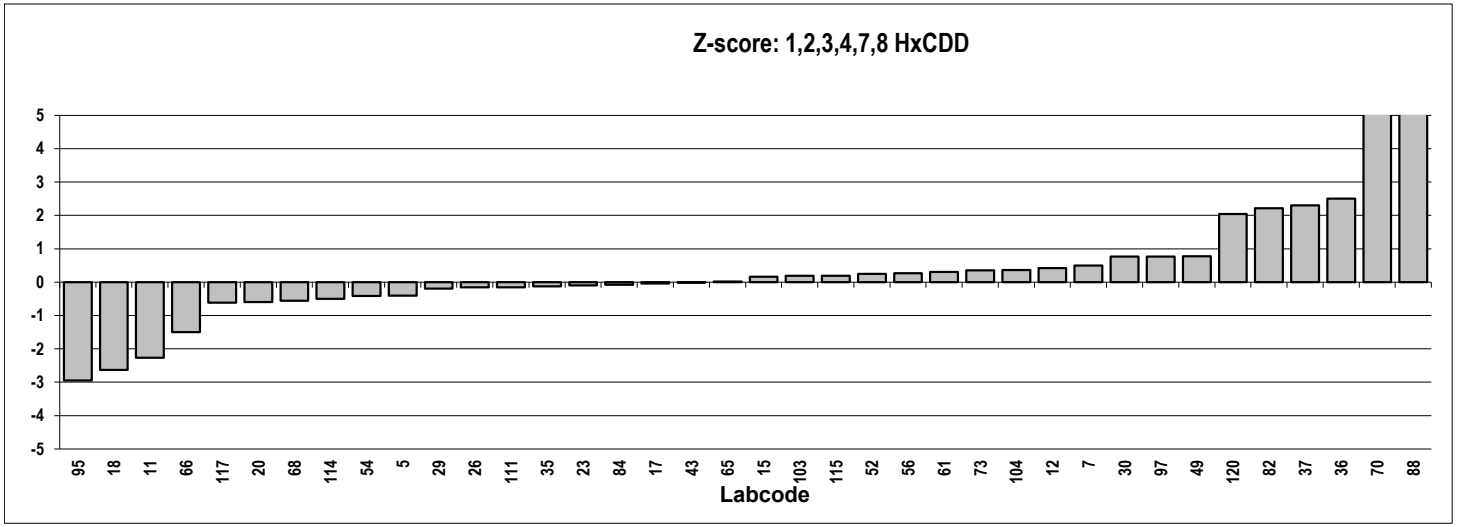
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,080	-0,40				
7	0,095	0,50				
11	0,047	-2,3				
12	0,094	0,42				
15	0,089	0,16				
17	0,086	-0,037				
18	0,041	-2,6				
20	0,076	-0,59				
23	0,085	-0,095				
26	0,084	-0,15				
29	0,083	-0,19				
30	0,10	0,77				
35	0,084	-0,13				
36	0,13	2,5				
37	0,13	2,3				
43	0,086	-0,015				
49	0,10	0,78				
52	0,091	0,25				
54	0,079	-0,42				
56	0,091	0,26				
61	0,092	0,31				
65	0,087	0,015				
66	0,061	-1,5				
68	0,077	-0,56				
70	0,32	13	Outlier,ND			
73	0,093	0,35				
82	0,13	2,2				
84	0,085	-0,083				
88	5,0	282	Outlier,ND			
95	0,036	-2,9	ND			
97	0,10	0,77				
103	0,090	0,19				
104	0,093	0,37				
111	0,084	-0,15				
114	0,078	-0,50				
115	0,090	0,19				
117	0,076	-0,61				
120	0,12	2,0				

Consenus statistics

Consensus median, pg/g	0,087
Median all values pg/g	0,088
Consensus mean, pg/g	0,087
Standard deviation, pg/g	0,020
Relative standard deviation, %	23
No. of values reported	38
No. of values removed	2
No. of reported non-detects	3


1,2,3,4,7,8 HxCDD
pg/g fw
0,18
0,16
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 18 11 66 117 20 68 114 54 5 29 26 111 35 23 84 17 43 65 15 103 115 52 56 61 73 104 12 7 30 97 49 120 82 37 36 70 88
Labcode

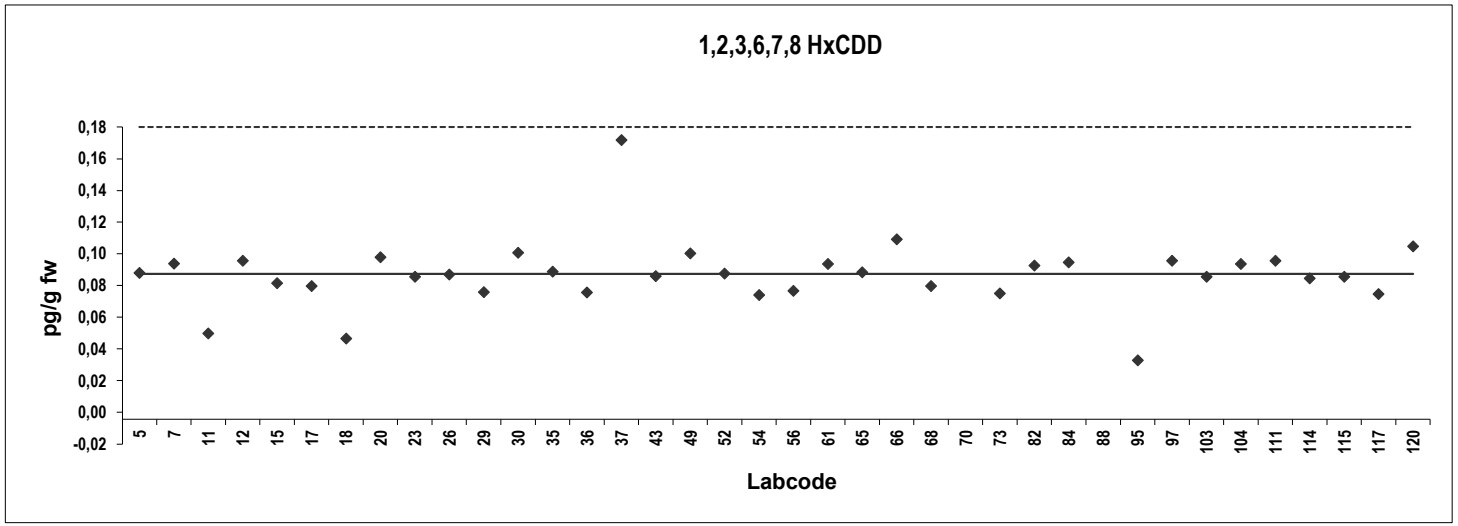
Reindeer

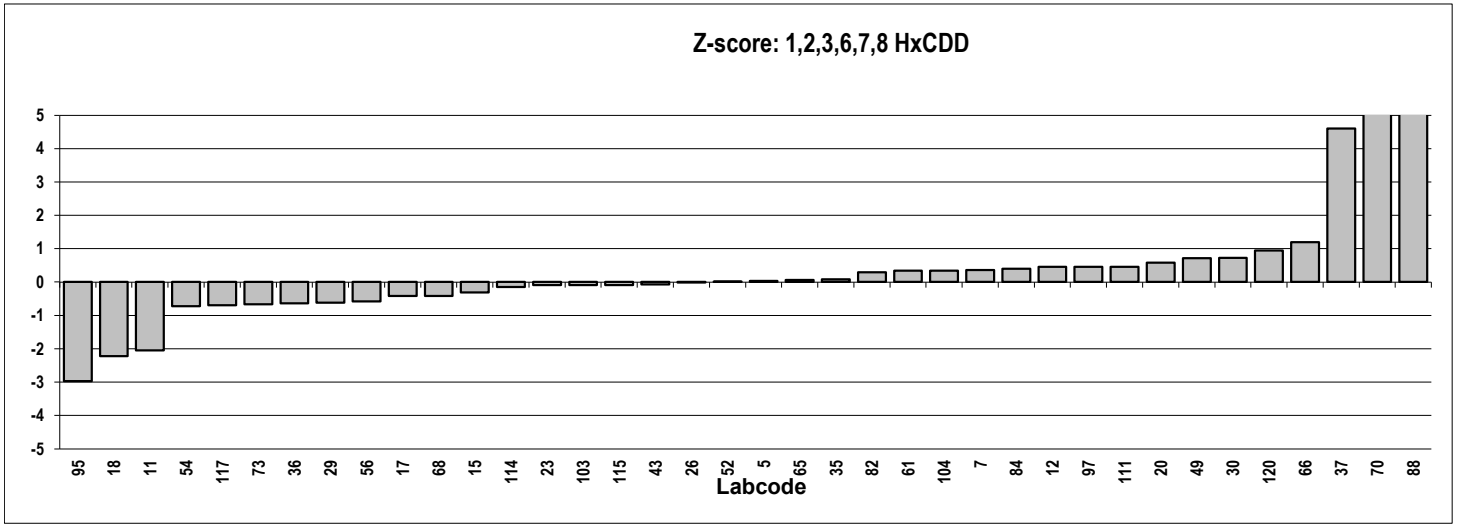
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,092	0,036				
7	0,098	0,36				
11	0,054	-2,1				
12	0,10	0,45				
15	0,086	-0,31				
17	0,084	-0,42				
18	0,051	-2,2				
20	0,10	0,58				
23	0,090	-0,093				
26	0,091	-0,016				
29	0,080	-0,63				
30	0,11	0,73				
35	0,093	0,082				
36	0,080	-0,64				
37	0,18	4,6				
43	0,090	-0,073				
49	0,10	0,71				
52	0,092	0,016				
54	0,078	-0,73				
56	0,081	-0,58				
61	0,098	0,34				
65	0,093	0,060				
66	0,11	1,2				
68	0,084	-0,42				
70	0,33	13	Outlier,ND			
73	0,079	-0,67				
82	0,097	0,29				
84	0,099	0,40				
88	5,0	266	Outlier,ND			
95	0,037	-3,0	ND			
97	0,10	0,45				
103	0,090	-0,093				
104	0,098	0,34				
111	0,10	0,45				
114	0,089	-0,15				
115	0,090	-0,093				
117	0,079	-0,69				
120	0,11	0,94				

Consenus statistics

Consensus median, pg/g	0,092
Median all values pg/g	0,092
Consensus mean, pg/g	0,091
Standard deviation, pg/g	0,021
Relative standard deviation, %	23
No. of values reported	38
No. of values removed	2
No. of reported non-detects	3


1,2,3,6,7,8 HxCDD
pg/g fw
0,18
0,16
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
-0,02
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 18 11 54 117 73 36 29 56 17 68 15 114 23 103 115 43 26 52 5 65 35 82 61 104 7 84 12 97 111 20 49 30 120 66 37 70 88
Labcode

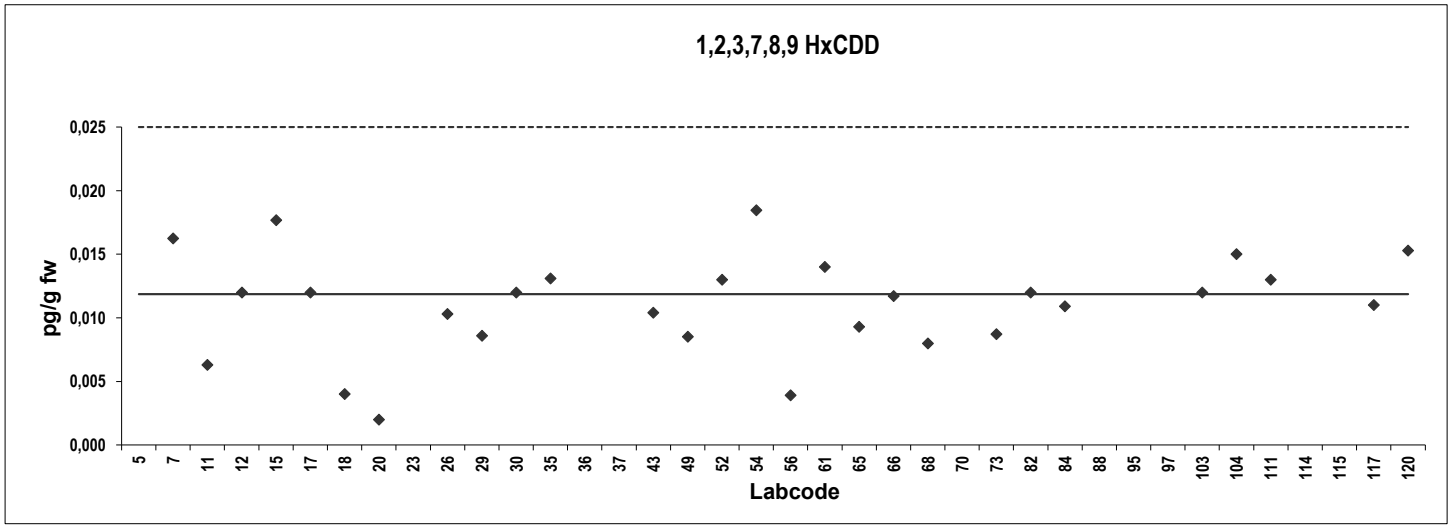
Reindeer

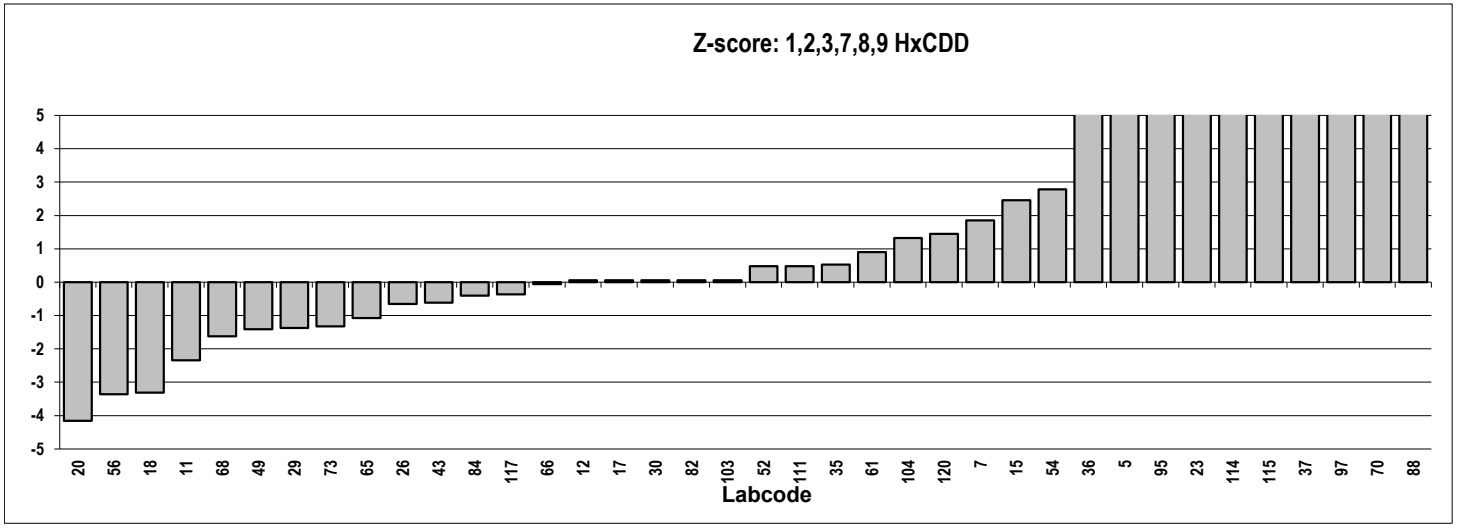
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,033	8,9	Outlier,ND			
7	0,016	1,8				
11	0,0063	-2,3				
12	0,012	0,061				
15	0,018	2,5				
17	0,012	0,061				
18	0,0040	-3,3				
20	0,0020	-4,2	ND			
23	0,050	16	Outlier,ND			
26	0,010	-0,66				
29	0,0086	-1,4				
30	0,012	0,061				
35	0,013	0,52				
36	0,025	5,6	Outlier,ND			
37	0,062	21	Outlier			
43	0,010	-0,61				
49	0,0085	-1,4				
52	0,013	0,48				
54	0,018	2,8				
56	0,0039	-3,4				
61	0,014	0,90	ND			
65	0,0093	-1,1				
66	0,012	-0,061				
68	0,0080	-1,6				
70	0,25	100	Outlier,ND			
73	0,0087	-1,3				
82	0,012	0,061	ND			
84	0,011	-0,40				
88	5,0	2091	Outlier,ND			
95	0,038	11	Outlier,ND			
97	0,10	37	Outlier			
103	0,012	0,061				
104	0,015	1,3				
111	0,013	0,48				
114	0,050	16	Outlier,ND			
115	0,050	16	Outlier,ND			
117	0,011	-0,36				
120	0,015	1,5				

Consenus statistics

Consensus median, pg/g	0,012
Median all values pg/g	0,013
Consensus mean, pg/g	0,011
Standard deviation, pg/g	0,0040
Relative standard deviation, %	36
No. of values reported	38
No. of values removed	10
No. of reported non-detects	11


1,2,3,7,8,9 HxCDD
pg/g fw
0,025
0,020
0,015
0,010
0,005
0,000
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 56 18 11 68 49 29 73 65 26 43 84 117 66 12 17 30 82 103 52 111 35 61 104 120 7 15 54 36 5 95 23 114 115 37 97 70 88
Labcode

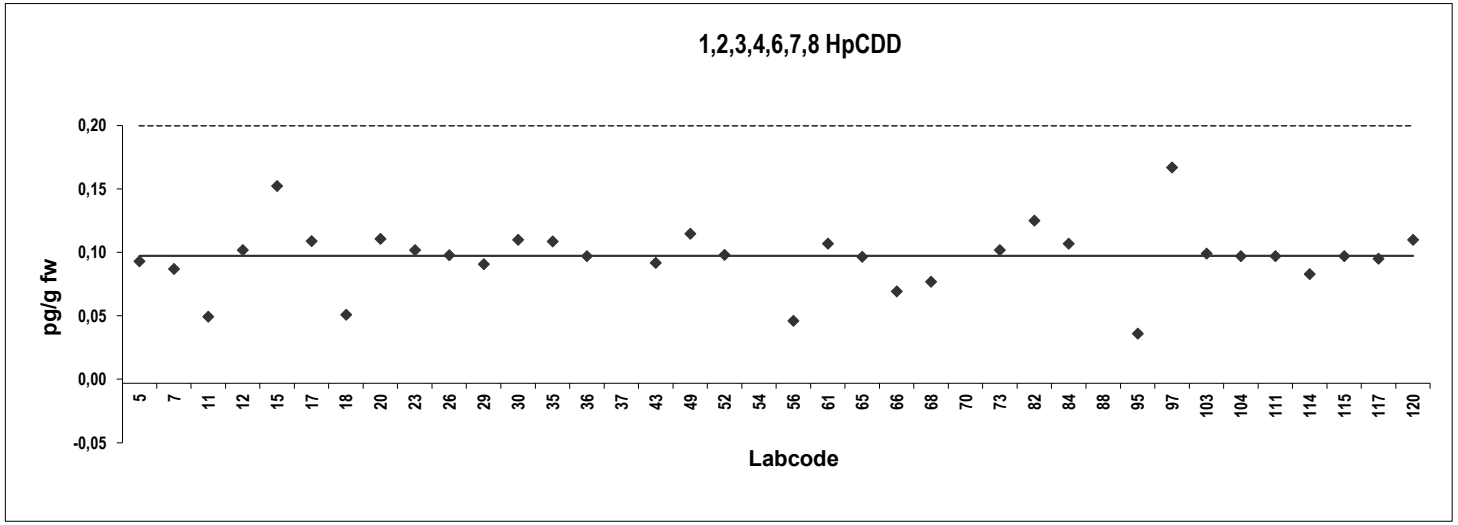
Reindeer

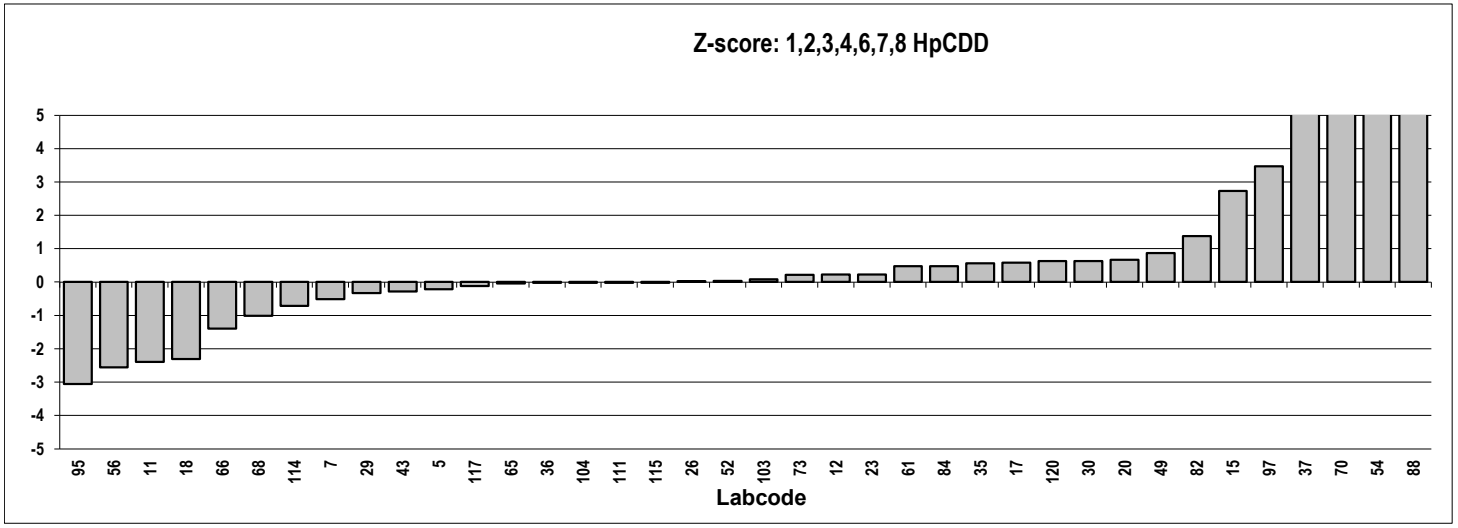
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,096	-0,22				
7	0,090	-0,51				
11	0,052	-2,4				
12	0,11	0,23				
15	0,16	2,7				
17	0,11	0,58				
18	0,054	-2,3				
20	0,11	0,67				
23	0,11	0,23				
26	0,10	0,020				
29	0,094	-0,33				
30	0,11	0,63				
35	0,11	0,56				
36	0,10	-0,020				
37	0,36	13	Outlier			
43	0,095	-0,28				
49	0,12	0,87				
52	0,10	0,030				
54	0,76	33	Outlier			
56	0,049	-2,6				
61	0,11	0,48				
65	0,100	-0,045				
66	0,072	-1,4				
68	0,080	-1,0				
70	0,41	15	Outlier,ND			
73	0,10	0,22				
82	0,13	1,4				
84	0,11	0,48				
88	5,0	243	Outlier,ND			
95	0,039	-3,1	ND			
97	0,17	3,5				
103	0,10	0,080				
104	0,10	-0,020				
111	0,10	-0,020				
114	0,086	-0,72				
115	0,10	-0,020				
117	0,098	-0,12				
120	0,11	0,63				

Consenus statistics

Consensus median, pg/g	0,10
Median all values pg/g	0,10
Consensus mean, pg/g	0,099
Standard deviation, pg/g	0,026
Relative standard deviation, %	26
No. of values reported	38
No. of values removed	4
No. of reported non-detects	3


1,2,3,4,6,7,8 HpCDD
pg/g fw
0,20
0,15
0,10
0,05
0,00
-0,05
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 56 11 18 66 68 114 7 29 43 5 117 65 36 104 111 115 26 52 103 73 12 23 61 84 35 17 120 30 20 49 82 15 97 37 70 54 88
Labcode

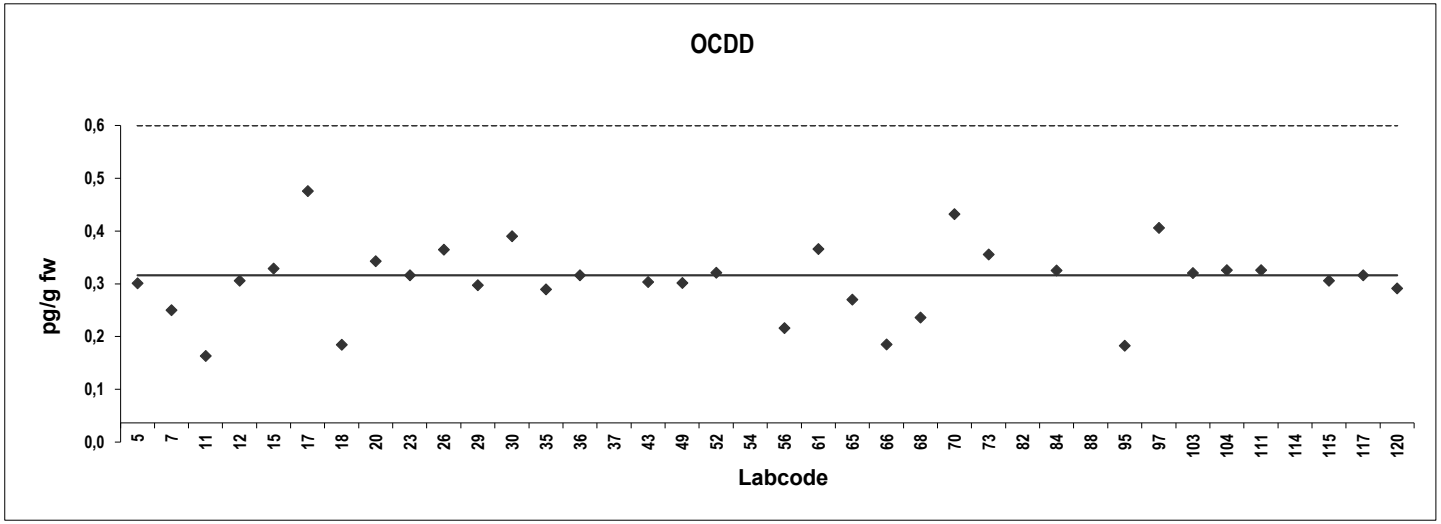
Reindeer

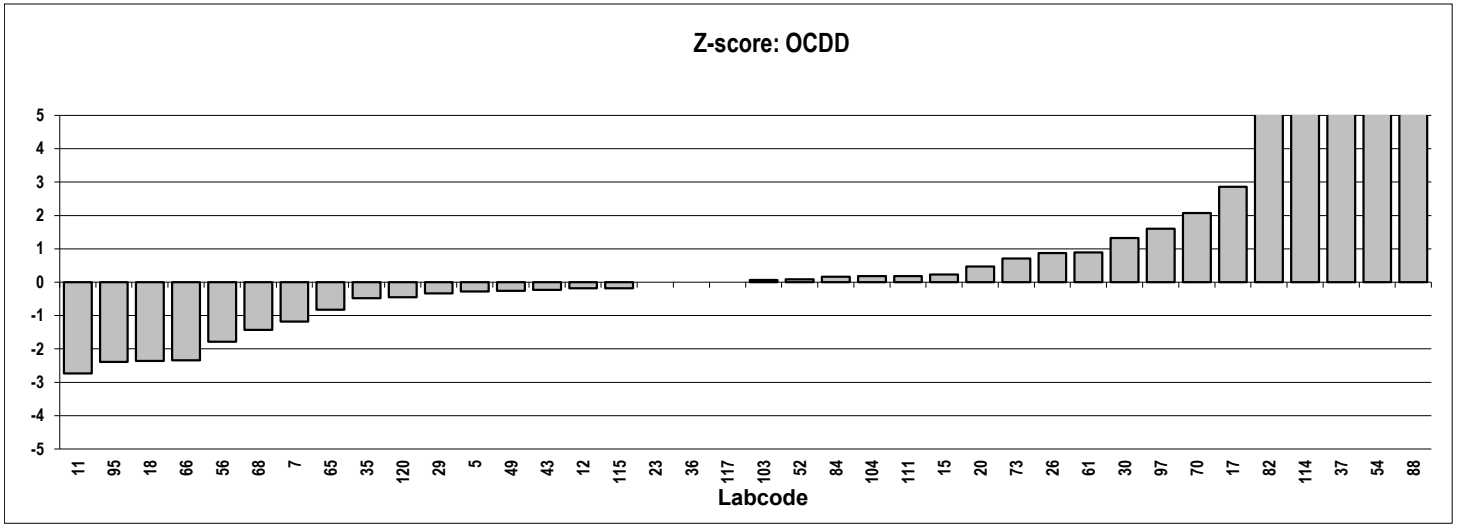
Congener: OCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,26	-0,28				
7	0,21	-1,2				
11	0,13	-2,7				
12	0,27	-0,18				
15	0,29	0,23				
17	0,44	2,9				
18	0,15	-2,4				
20	0,31	0,47				
23	0,28	0,0				
26	0,33	0,87				
29	0,26	-0,34				
30	0,35	1,3				
35	0,25	-0,48				
36	0,28	0,0				
37	2,4	37	Outlier,ND			
43	0,27	-0,23				
49	0,27	-0,26				
52	0,29	0,089				
54	5,4	91	Outlier			
56	0,18	-1,8				
61	0,33	0,89				
65	0,23	-0,82				
66	0,15	-2,3				
68	0,20	-1,4				
70	0,40	2,1				
73	0,32	0,71				
82	0,70	7,5	Outlier			
84	0,29	0,16				
88	9,9	173	Outlier,ND			
95	0,15	-2,4	ND			
97	0,37	1,6				
103	0,28	0,071				
104	0,29	0,18				
111	0,29	0,18				
114	2,0	31	Outlier,ND			
115	0,27	-0,18				
117	0,28	0,0				
120	0,26	-0,45				

Consenus statistics

Consensus median, pg/g	0,28
Median all values pg/g	0,28
Consensus mean, pg/g	0,27
Standard deviation, pg/g	0,070
Relative standard deviation, %	26
No. of values reported	38
No. of values removed	5
No. of reported non-detects	4


OCDD
pg/g fw
0,0
0,1
0,2
0,3
0,4
0,5
0,6
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 95 18 66 56 68 7 65 35 120 29 5 49 43 12 115 23 36 117 103 52 84 104 111 15 20 73 26 61 30 97 70 17 82 114 37 54 88
Labcode

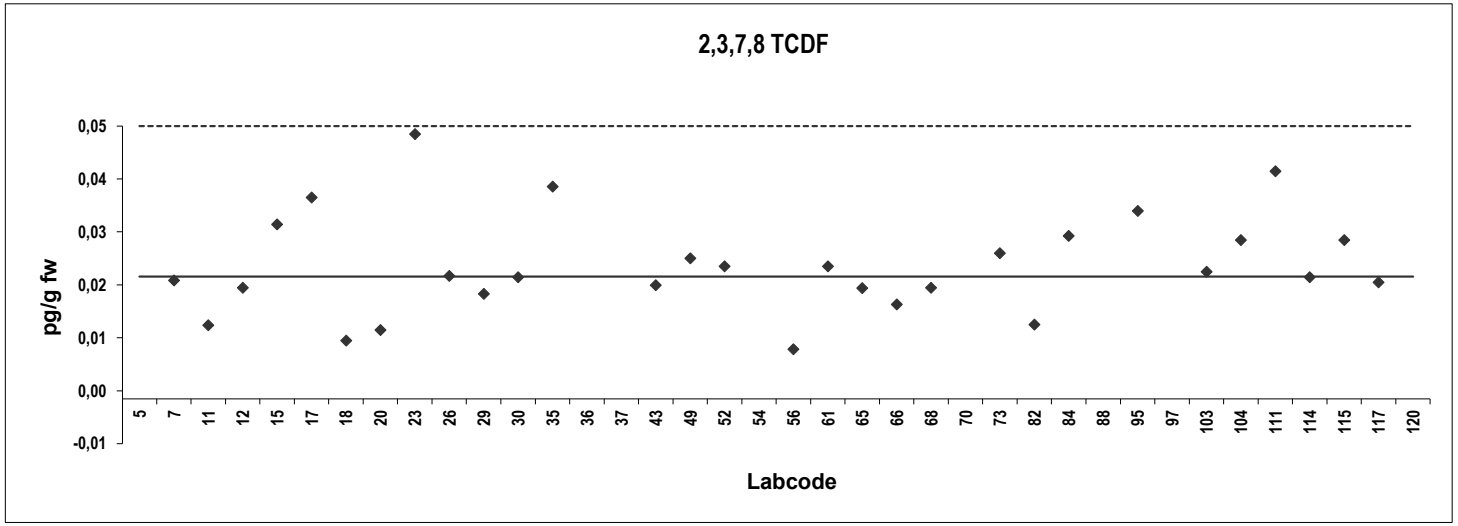
Reindeer

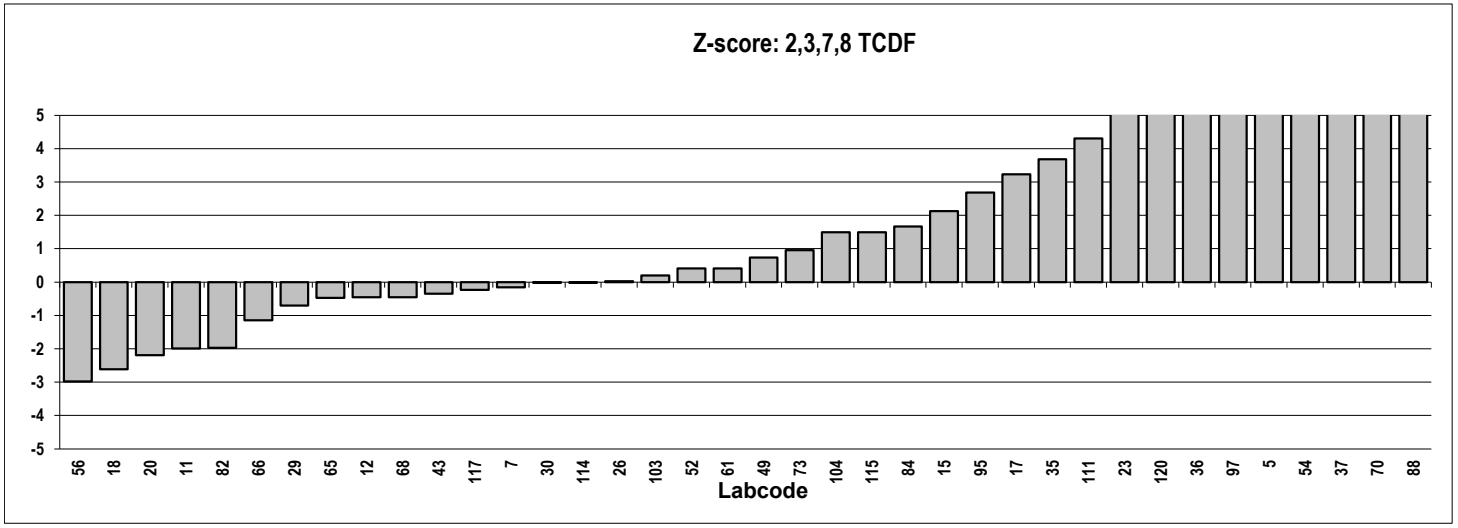
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,092	15	Outlier,ND			
7	0,022	-0,15				
11	0,014	-2,0				
12	0,021	-0,45				
15	0,033	2,1				
17	0,038	3,2				
18	0,011	-2,6				
20	0,013	-2,2				
23	0,050	5,8	ND			
26	0,023	0,022				
29	0,020	-0,71				
30	0,023	-0,022				
35	0,040	3,7				
36	0,060	8,0	Outlier			
37	0,11	18	Outlier,ND			
43	0,021	-0,35				
49	0,027	0,74				
52	0,025	0,41				
54	0,092	15	Outlier			
56	0,0094	-3,0				
61	0,025	0,41				
65	0,021	-0,48				
66	0,018	-1,1				
68	0,021	-0,45				
70	0,11	19	Outlier,ND			
73	0,028	0,96				
82	0,014	-2,0	ND			
84	0,031	1,7				
88	1,00	211	Outlier,ND			
95	0,036	2,7	ND			
97	0,060	8,0	Outlier			
103	0,024	0,19				
104	0,030	1,5				
111	0,043	4,3				
114	0,023	-0,022				
115	0,030	1,5				
117	0,022	-0,24				
120	0,054	6,7	Outlier			

Consenus statistics

Consensus median, pg/g	0,023
Median all values pg/g	0,026
Consensus mean, pg/g	0,025
Standard deviation, pg/g	0,0095
Relative standard deviation, %	38
No. of values reported	38
No. of values removed	8
No. of reported non-detects	7


2,3,7,8 TCDF
pg/g fw
0,05
0,04
0,03
0,02
0,01
0,00
-0,01
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 18 20 11 82 66 29 65 12 68 43 117 7 30 114 26 103 52 61 49 73 104 115 84 15 95 17 35 111 23 120 36 97 5 54 37 70 88
Labcode

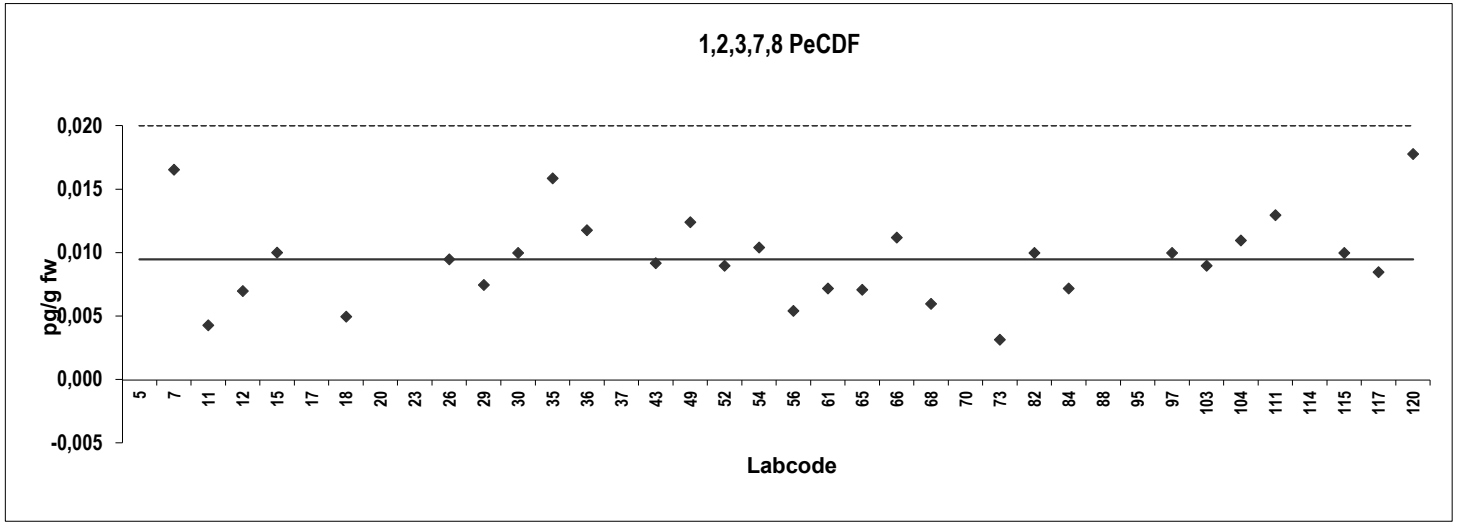
Reindeer

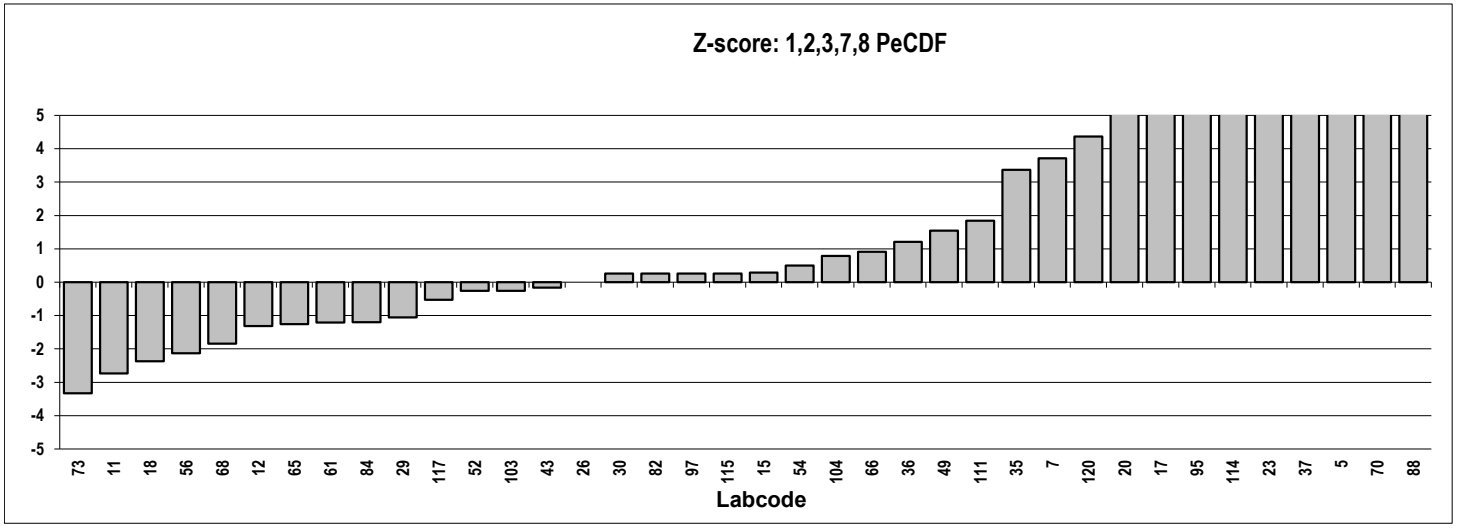
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,087	41	Outlier,ND			
7	0,017	3,7				
11	0,0043	-2,7				
12	0,0070	-1,3				
15	0,010	0,29				
17	0,022	6,6	Outlier			
18	0,0050	-2,4				
20	0,021	6,3	Outlier			
23	0,050	21	Outlier,ND			
26	0,0095	0,0				
29	0,0075	-1,1				
30	0,010	0,26	ND			
35	0,016	3,4				
36	0,012	1,2	ND			
37	0,056	25	Outlier			
43	0,0092	-0,16				
49	0,012	1,5				
52	0,0090	-0,26				
54	0,010	0,50				
56	0,0055	-2,1				
61	0,0072	-1,2				
65	0,0071	-1,3				
66	0,011	0,91				
68	0,0060	-1,8				
70	0,11	53	Outlier,ND			
73	0,0032	-3,3				
82	0,010	0,26	ND			
84	0,0072	-1,2				
88	5,0	2611	Outlier,ND			
95	0,023	6,8	Outlier,ND			
97	0,010	0,26	ND			
103	0,0090	-0,26				
104	0,011	0,79				
111	0,013	1,8				
114	0,040	16	Outlier,ND			
115	0,010	0,26	ND			
117	0,0085	-0,53				
120	0,018	4,4				

Consenus statistics

Consensus median, pg/g	0,010
Median all values pg/g	0,010
Consensus mean, pg/g	0,0095
Standard deviation, pg/g	0,0035
Relative standard deviation, %	37
No. of values reported	38
No. of values removed	9
No. of reported non-detects	11


1,2,3,7,8 PeCDF
0,020
0,015
0,010
0,005
0,000
-0,005
pg/g fw
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
73 11 18 56 68 12 65 61 84 29 117 52 103 43 26 30 82 97 115 15 54 104 66 36 49 111 35 7 120 20 17 95 114 23 37 5 70 88
Labcode

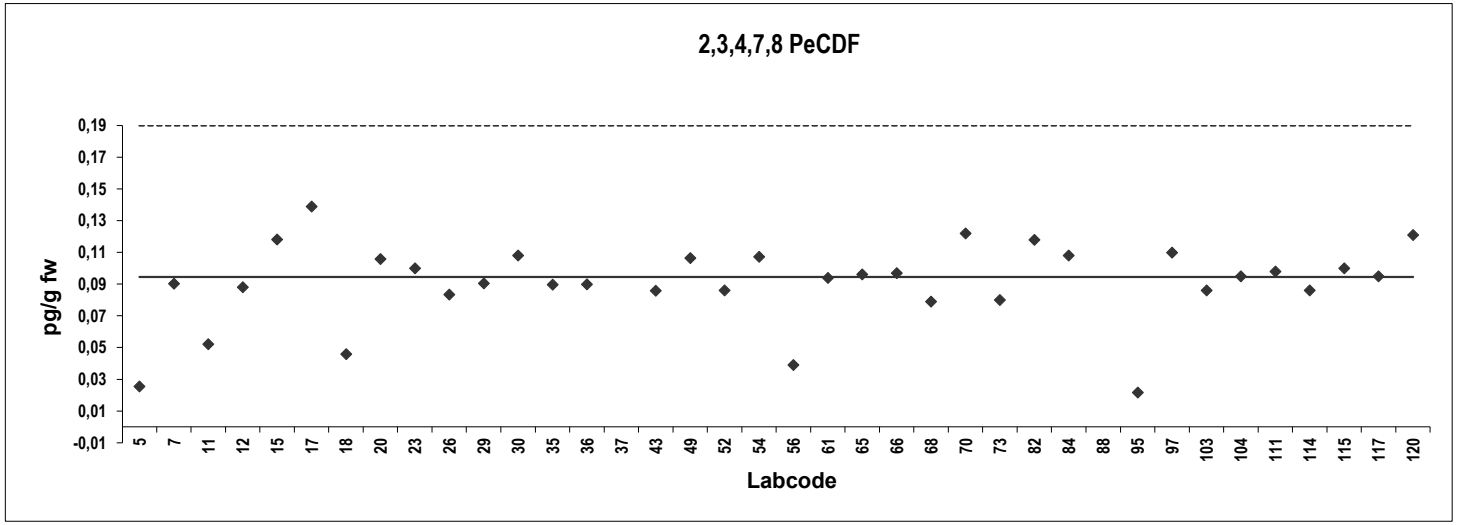
Reindeer

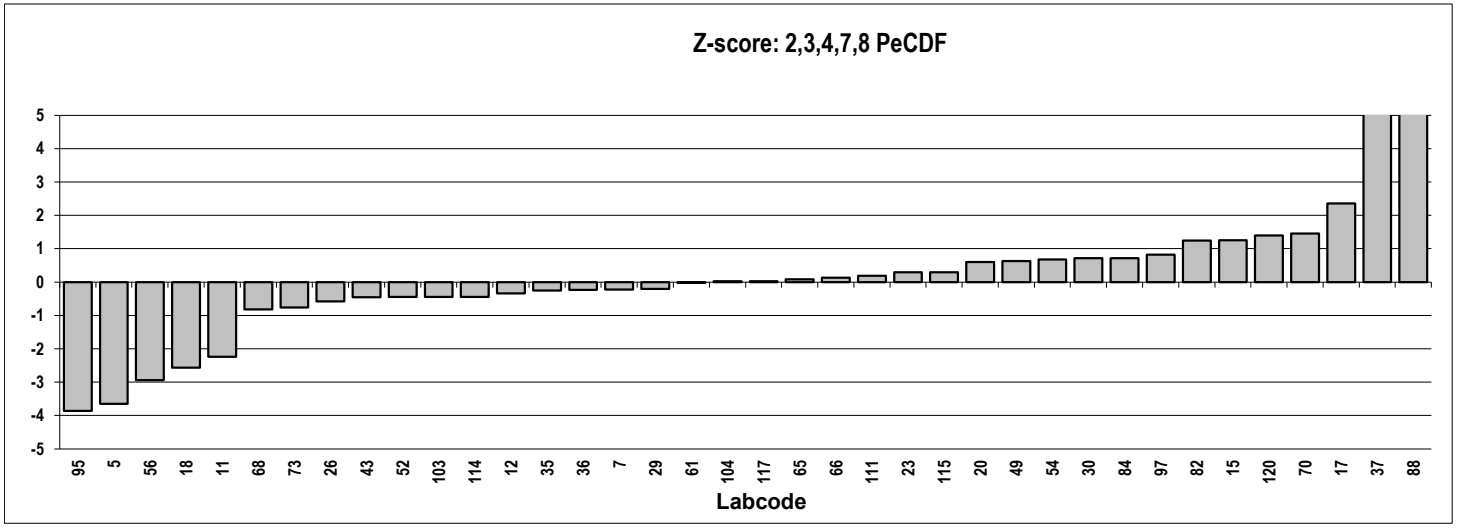
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,026	-3,6	ND			
7	0,090	-0,22				
11	0,052	-2,2				
12	0,088	-0,34				
15	0,12	1,3				
17	0,14	2,4				
18	0,046	-2,6				
20	0,11	0,60				
23	0,10	0,29				
26	0,084	-0,58				
29	0,091	-0,21				
30	0,11	0,71				
35	0,090	-0,25				
36	0,090	-0,24				
37	0,24	7,5	Outlier			
43	0,086	-0,45				
49	0,11	0,63				
52	0,086	-0,45				
54	0,11	0,68				
56	0,039	-2,9				
61	0,094	-0,026				
65	0,096	0,085				
66	0,097	0,13				
68	0,079	-0,82				
70	0,12	1,5				
73	0,080	-0,76				
82	0,12	1,2				
84	0,11	0,71				
88	5,0	258	Outlier,ND			
95	0,022	-3,9	ND			
97	0,11	0,82				
103	0,086	-0,45				
104	0,095	0,026				
111	0,098	0,19				
114	0,086	-0,45				
115	0,10	0,29				
117	0,095	0,026				
120	0,12	1,4				

Consenus statistics

Consensus median, pg/g	0,095
Median all values pg/g	0,095
Consensus mean, pg/g	0,091
Standard deviation, pg/g	0,026
Relative standard deviation, %	29
No. of values reported	38
No. of values removed	2
No. of reported non-detects	3


2,3,4,7,8 PeCDF
pg/g fw
0,19
0,17
0,15
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 5 56 18 11 68 73 26 43 52 103 114 12 35 36 7 29 61 104 117 65 66 111 23 115 20 49 54 30 84 97 82 15 120 70 17 37 88
Labcode

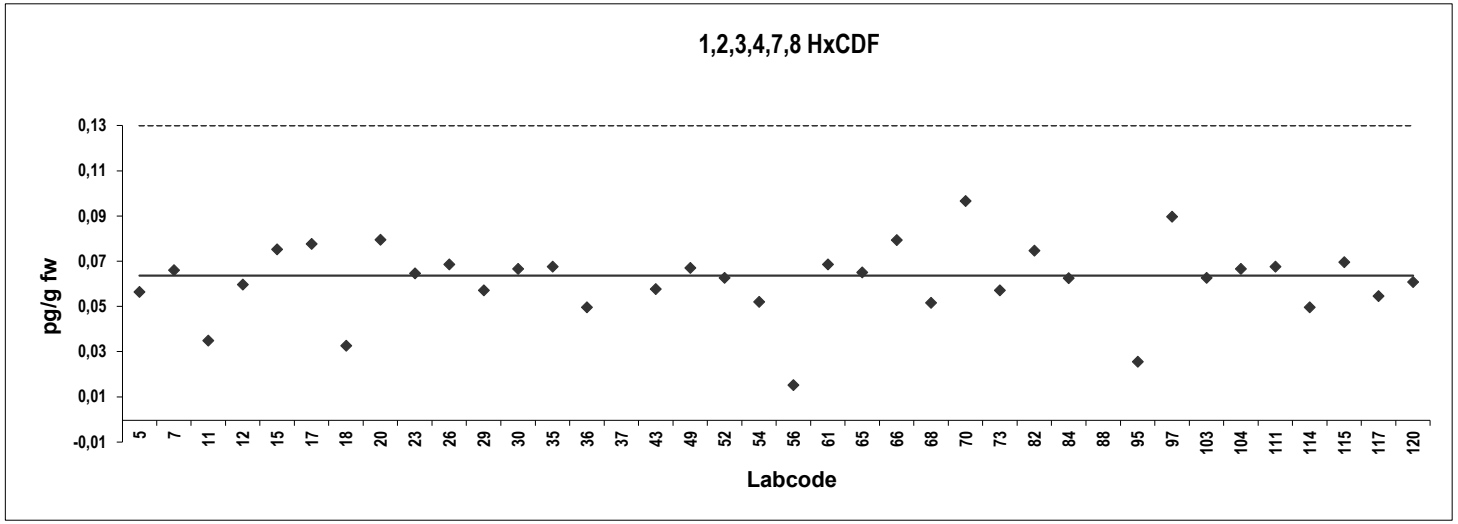
Reindeer

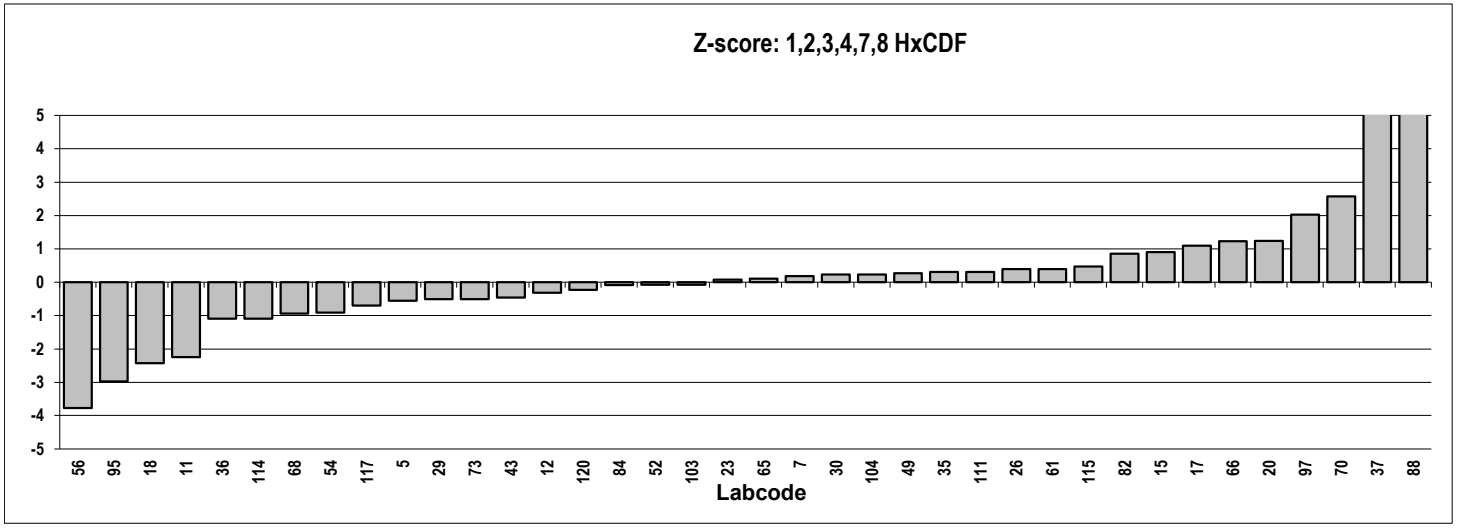
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,057	-0,56				
7	0,066	0,18				
11	0,035	-2,2				
12	0,060	-0,31				
15	0,076	0,90				
17	0,078	1,1				
18	0,033	-2,4				
20	0,080	1,2				
23	0,065	0,078				
26	0,069	0,39				
29	0,058	-0,51				
30	0,067	0,23				
35	0,068	0,31				
36	0,050	-1,1				
37	0,17	8,3	Outlier			
43	0,058	-0,46				
49	0,067	0,27				
52	0,063	-0,078				
54	0,052	-0,91				
56	0,016	-3,8				
61	0,069	0,39				
65	0,065	0,11				
66	0,080	1,2				
68	0,052	-0,94				
70	0,097	2,6	ND			
73	0,058	-0,50				
82	0,075	0,86				
84	0,063	-0,086				
88	5,0	383	Outlier,ND			
95	0,026	-3,0	ND			
97	0,090	2,0				
103	0,063	-0,078				
104	0,067	0,23				
111	0,068	0,31				
114	0,050	-1,1				
115	0,070	0,47				
117	0,055	-0,70				
120	0,061	-0,23				

Consenus statistics

Consensus median, pg/g	0,064
Median all values pg/g	0,065
Consensus mean, pg/g	0,062
Standard deviation, pg/g	0,016
Relative standard deviation, %	26
No. of values reported	38
No. of values removed	2
No. of reported non-detects	3


1,2,3,4,7,8 HxCDF
pg/g fw
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 95 18 11 36 114 68 54 117 5 29 73 43 12 120 84 52 103 23 65 7 30 104 49 35 111 26 61 115 82 15 17 66 20 97 70 37 88
Labcode

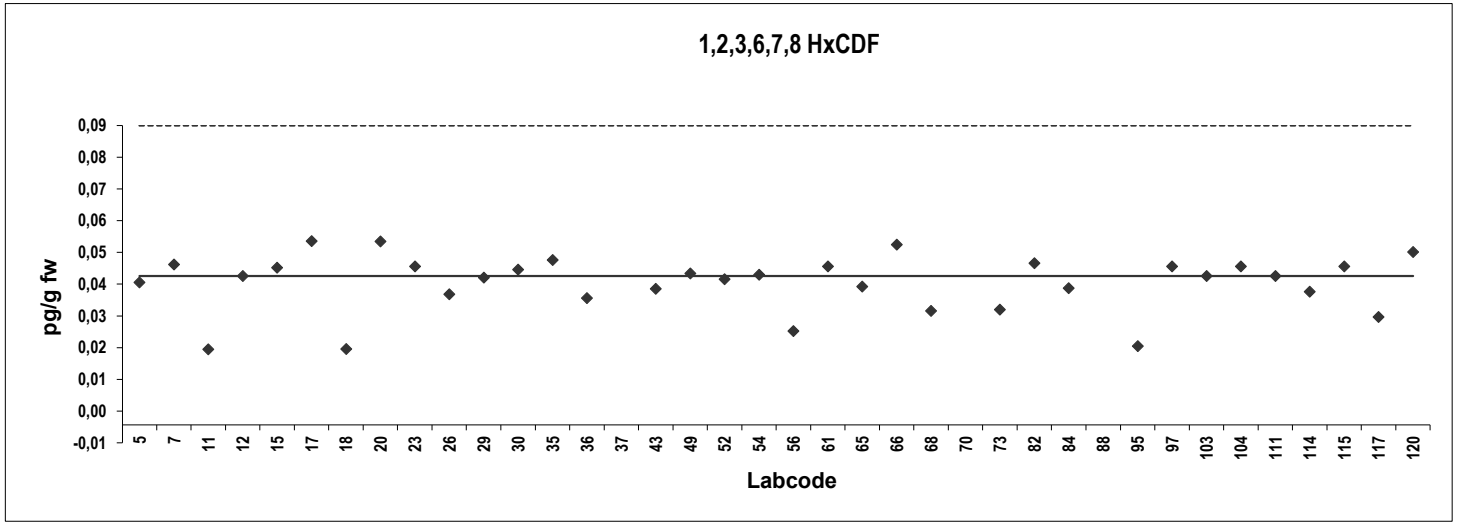
Reindeer

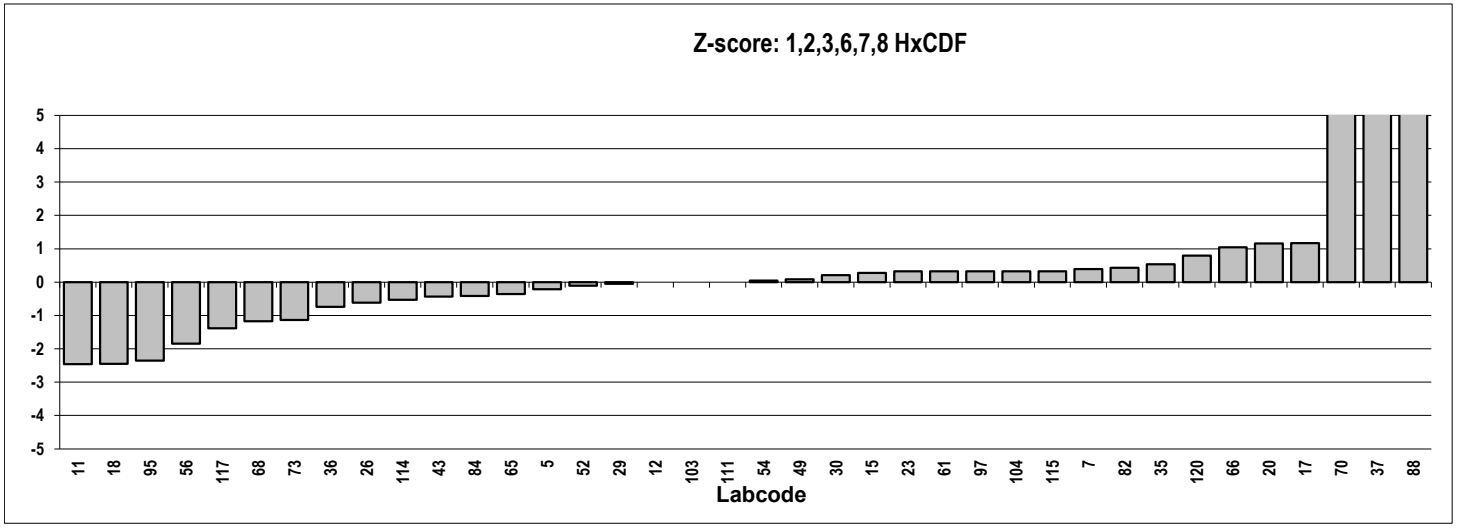
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,045	-0,22	ND			
7	0,051	0,39				
11	0,024	-2,5				
12	0,047	0,0				
15	0,050	0,27				
17	0,058	1,2				
18	0,024	-2,4				
20	0,058	1,2				
23	0,050	0,32	ND			
26	0,041	-0,62				
29	0,047	-0,052				
30	0,049	0,21				
35	0,052	0,53				
36	0,040	-0,74				
37	0,15	11	Outlier			
43	0,043	-0,44				
49	0,048	0,084				
52	0,046	-0,11				
54	0,047	0,041				
56	0,030	-1,8				
61	0,050	0,32				
65	0,044	-0,36				
66	0,057	1,0				
68	0,036	-1,2				
70	0,11	6,7	Outlier,ND			
73	0,036	-1,1				
82	0,051	0,43				
84	0,043	-0,41				
88	5,0	524	Outlier,ND			
95	0,025	-2,4	ND			
97	0,050	0,32				
103	0,047	0,0				
104	0,050	0,32				
111	0,047	0,0				
114	0,042	-0,53				
115	0,050	0,32	ND			
117	0,034	-1,4				
120	0,055	0,80				

Consenus statistics

Consensus median, pg/g	0,047
Median all values pg/g	0,047
Consensus mean, pg/g	0,045
Standard deviation, pg/g	0,0090
Relative standard deviation, %	20
No. of values reported	38
No. of values removed	3
No. of reported non-detects	6


1,2,3,6,7,8 HxCDF
pg/g fw
0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
-0,01
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 18 95 56 117 68 73 36 26 114 43 84 65 5 52 29 12 103 111 54 49 30 15 23 61 97 104 115 7 82 35 120 66 20 17 70 37 88
Labcode

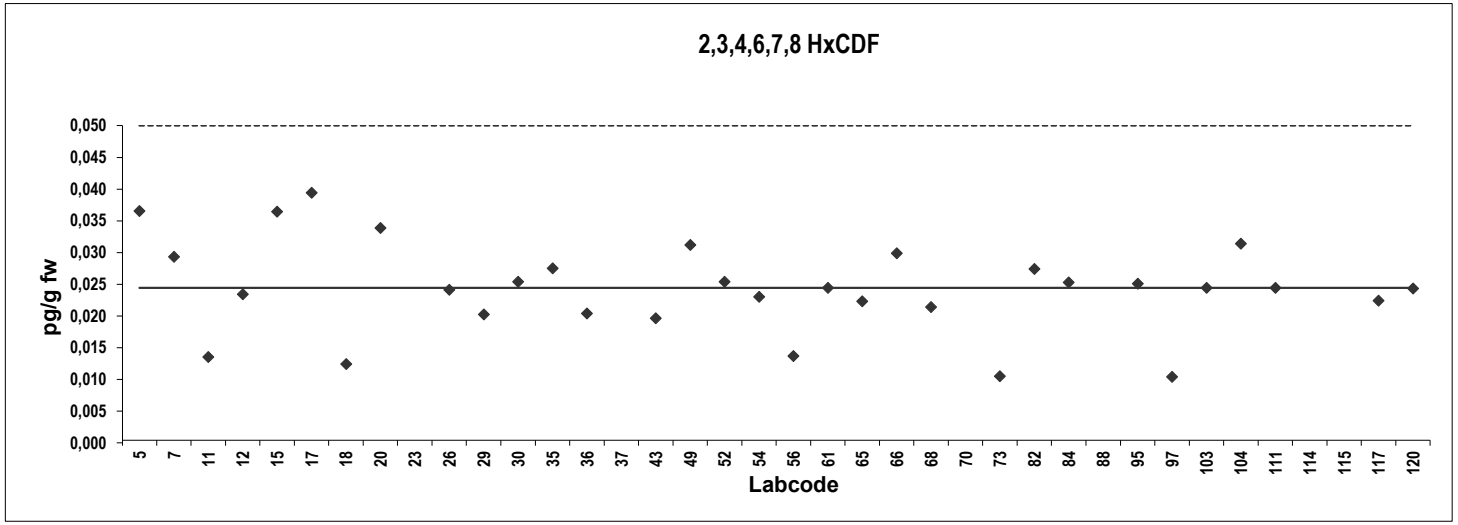
Reindeer

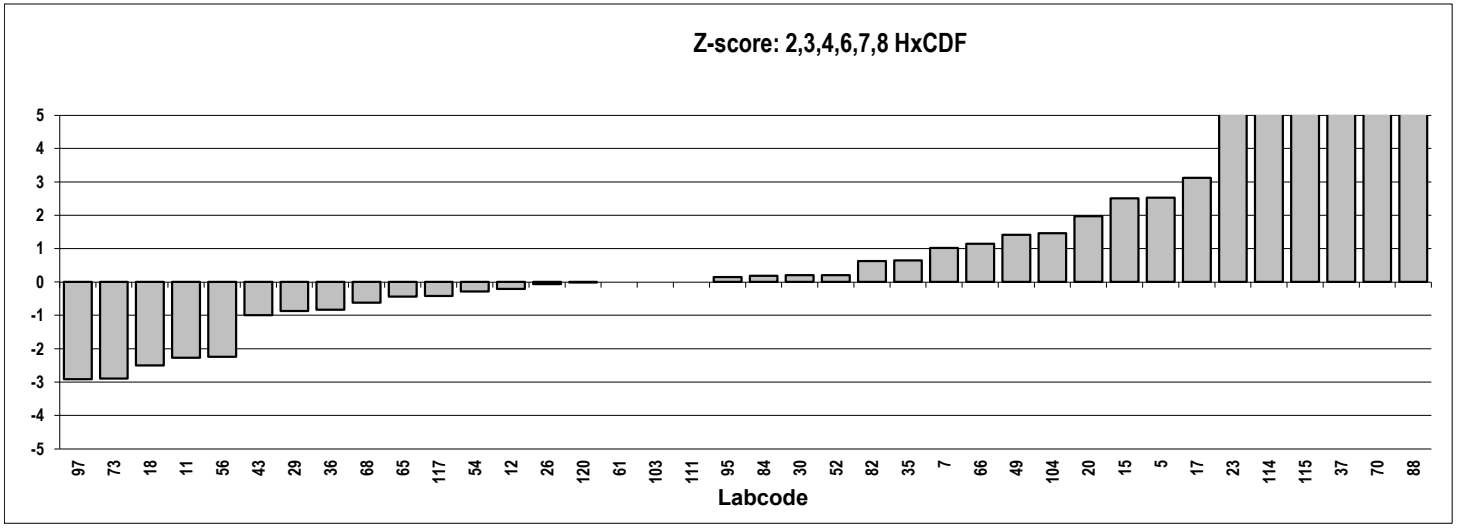
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,036	2,5	ND			
7	0,029	1,0				
11	0,013	-2,3				
12	0,023	-0,21				
15	0,036	2,5				
17	0,039	3,1				
18	0,012	-2,5				
20	0,033	2,0				
23	0,050	5,4	Outlier,ND			
26	0,024	-0,063				
29	0,020	-0,87				
30	0,025	0,21				
35	0,027	0,65				
36	0,020	-0,83				
37	0,11	17	Outlier			
43	0,019	-1,0				
49	0,031	1,4				
52	0,025	0,21				
54	0,023	-0,29				
56	0,013	-2,2				
61	0,024	0,0				
65	0,022	-0,44				
66	0,029	1,1				
68	0,021	-0,63				
70	0,12	20	Outlier,ND			
73	0,010	-2,9				
82	0,027	0,63				
84	0,025	0,19				
88	5,0	1031	Outlier,ND			
95	0,025	0,15	ND			
97	0,010	-2,9	ND			
103	0,024	0,0				
104	0,031	1,5				
111	0,024	0,0				
114	0,050	5,4	Outlier,ND			
115	0,050	5,4	Outlier,ND			
117	0,022	-0,42				
120	0,024	-0,021				

Consenus statistics

Consensus median, pg/g	0,024
Median all values pg/g	0,025
Consensus mean, pg/g	0,024
Standard deviation, pg/g	0,0072
Relative standard deviation, %	30
No. of values reported	38
No. of values removed	6
No. of reported non-detects	8


2,3,4,6,7,8 HxCDF
pg/g fw
0,050
0,045
0,040
0,035
0,030
0,025
0,020
0,015
0,010
0,005
0,000
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 73 18 11 56 43 29 36 68 65 117 54 12 26 120 61 103 111 95 84 30 52 82 35 7 66 49 104 20 15 5 17 23 114 115 37 70 88
Labcode

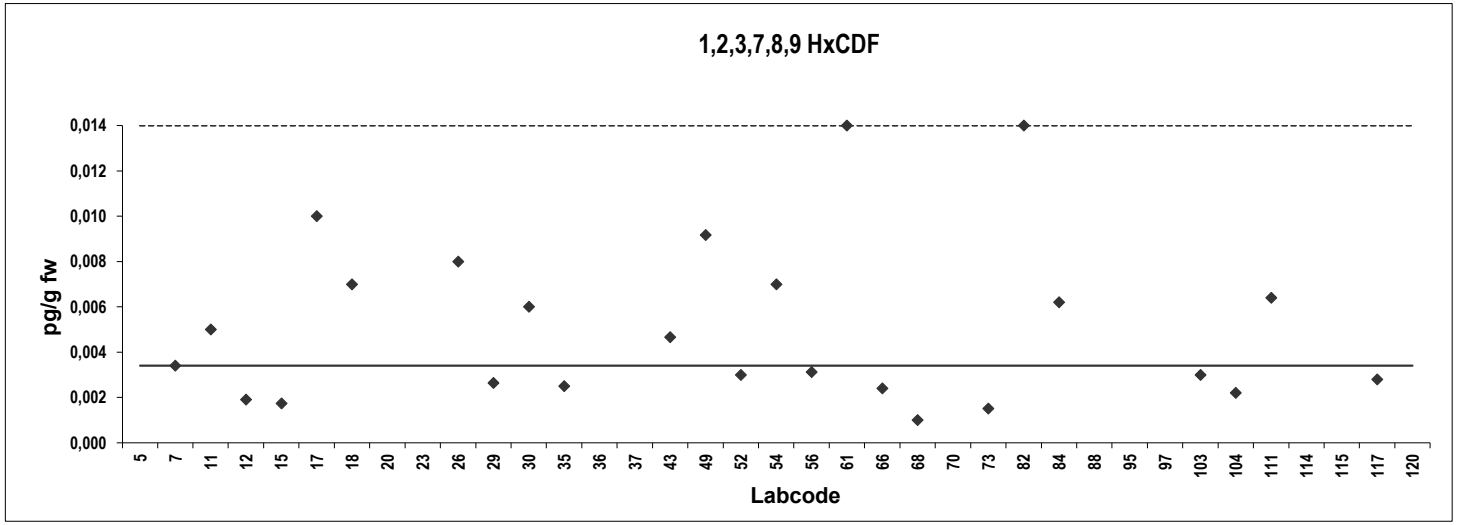
Reindeer

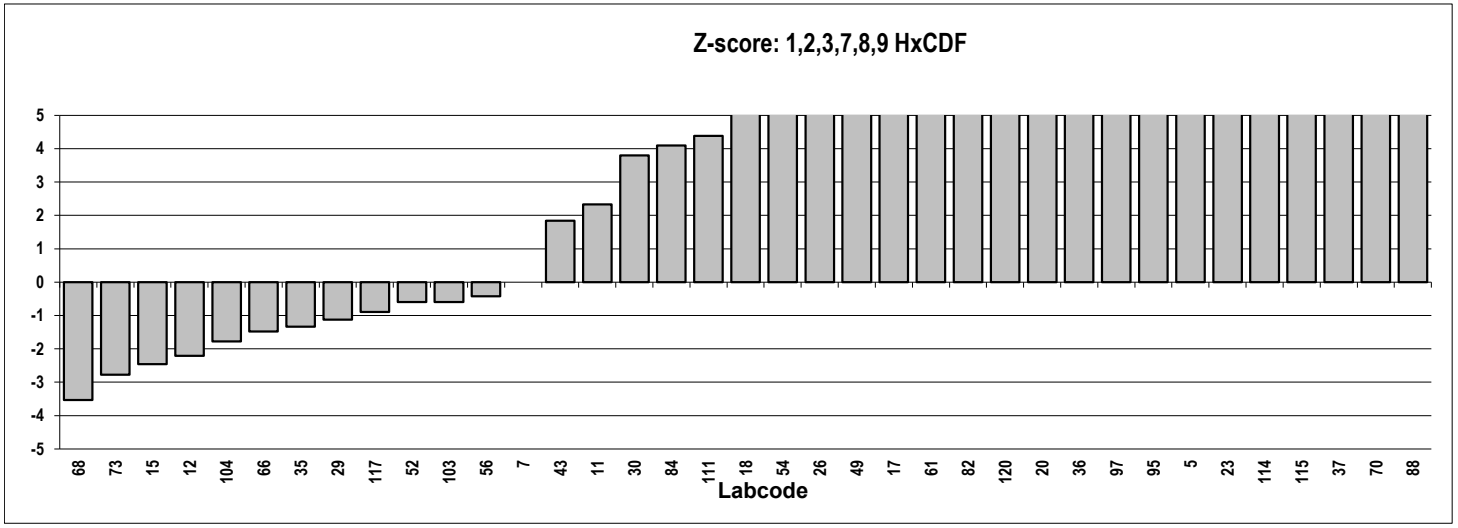
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,031	41	Outlier,ND			
7	0,0034	0,0				
11	0,0050	2,3	ND			
12	0,0019	-2,2	ND			
15	0,0017	-2,5				
17	0,010	9,7	ND			
18	0,0070	5,3				
20	0,015	17	Outlier			
23	0,050	68	Outlier,ND			
26	0,0080	6,7	ND			
29	0,0026	-1,1				
30	0,0060	3,8	ND			
35	0,0025	-1,3				
36	0,017	20	Outlier,ND			
37	0,062	85	Outlier			
43	0,0047	1,8	ND			
49	0,0092	8,4				
52	0,0030	-0,60				
54	0,0070	5,3	ND			
56	0,0031	-0,43				
61	0,014	16	ND			
66	0,0024	-1,5	ND			
68	0,0010	-3,5	ND			
70	0,13	186	Outlier,ND			
73	0,0015	-2,8	ND			
82	0,014	16	ND			
84	0,0062	4,1	ND			
88	5,0	7285	Outlier,ND			
95	0,029	37	Outlier,ND			
97	0,020	24	Outlier,ND			
103	0,0030	-0,60	ND			
104	0,0022	-1,8				
111	0,0064	4,4	ND			
114	0,050	68	Outlier,ND			
115	0,050	68	Outlier,ND			
117	0,0028	-0,89				
120	0,015	16	Outlier			

Consenus statistics

Consensus median, pg/g	0,0034
Median all values pg/g	0,0070
Consensus mean, pg/g	0,0051
Standard deviation, pg/g	0,0036
Relative standard deviation, %	71
No. of values reported	37
No. of values removed	12
No. of reported non-detects	24


1,2,3,7,8,9 HxCDF
pg/g fw
0,014
0,012
0,010
0,008
0,006
0,004
0,002
0,000
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
68 73 15 12 104 66 35 29 117 52 103 56 7 43 11 30 84 111 18 54 26 49 17 61 82 120 20 36 97 95 5 23 114 115 37 70 88
Labcode

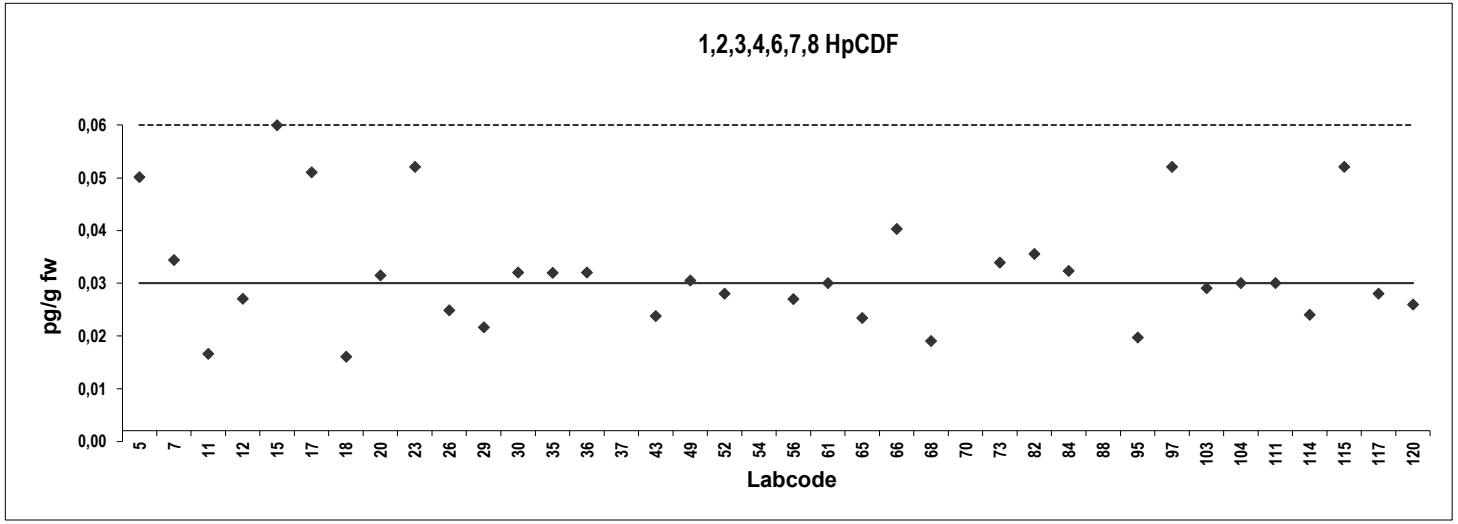
Reindeer

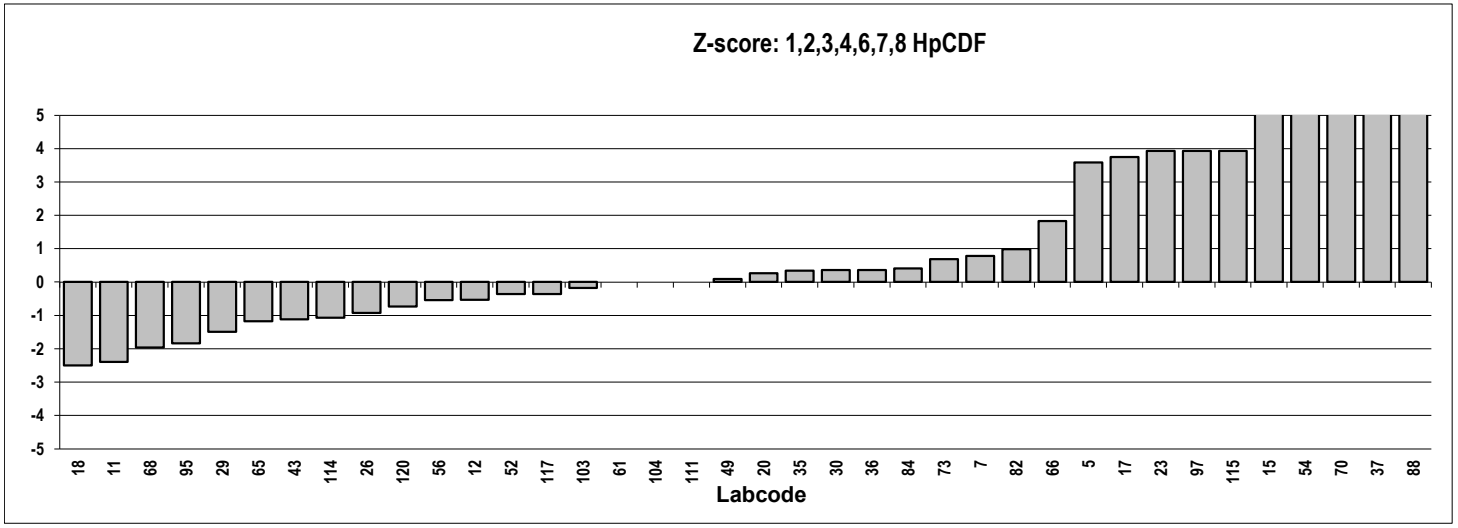
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,048	3,6				
7	0,032	0,78				
11	0,015	-2,4				
12	0,025	-0,54				
15	0,058	5,3				
17	0,049	3,8				
18	0,014	-2,5				
20	0,029	0,26				
23	0,050	3,9	ND			
26	0,023	-0,93				
29	0,020	-1,5				
30	0,030	0,36				
35	0,030	0,34				
36	0,030	0,36				
37	0,20	31	Outlier			
43	0,022	-1,1				
49	0,028	0,085				
52	0,026	-0,36				
54	0,081	9,4	Outlier			
56	0,025	-0,55				
61	0,028	0,0				
65	0,021	-1,2				
66	0,038	1,8				
68	0,017	-2,0				
70	0,14	20	Outlier,ND			
73	0,032	0,69				
82	0,034	0,98				
84	0,030	0,41				
88	5,0	883	Outlier,ND			
95	0,018	-1,8	ND			
97	0,050	3,9				
103	0,027	-0,18				
104	0,028	0,0				
111	0,028	0,0				
114	0,022	-1,1				
115	0,050	3,9	ND			
117	0,026	-0,36				
120	0,024	-0,73				

Consenus statistics

Consensus median, pg/g	0,028
Median all values pg/g	0,029
Consensus mean, pg/g	0,030
Standard deviation, pg/g	0,011
Relative standard deviation, %	37
No. of values reported	38
No. of values removed	4
No. of reported non-detects	5


1,2,3,4,6,7,8 HpCDF
pg/g fw
0,06
0,05
0,04
0,03
0,02
0,01
0,00
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 11 68 95 29 65 43 114 26 120 56 12 52 117 103 61 104 111 49 20 35 30 36 84 73 7 82 66 5 17 23 97 115 15 54 70 37 88
Labcode

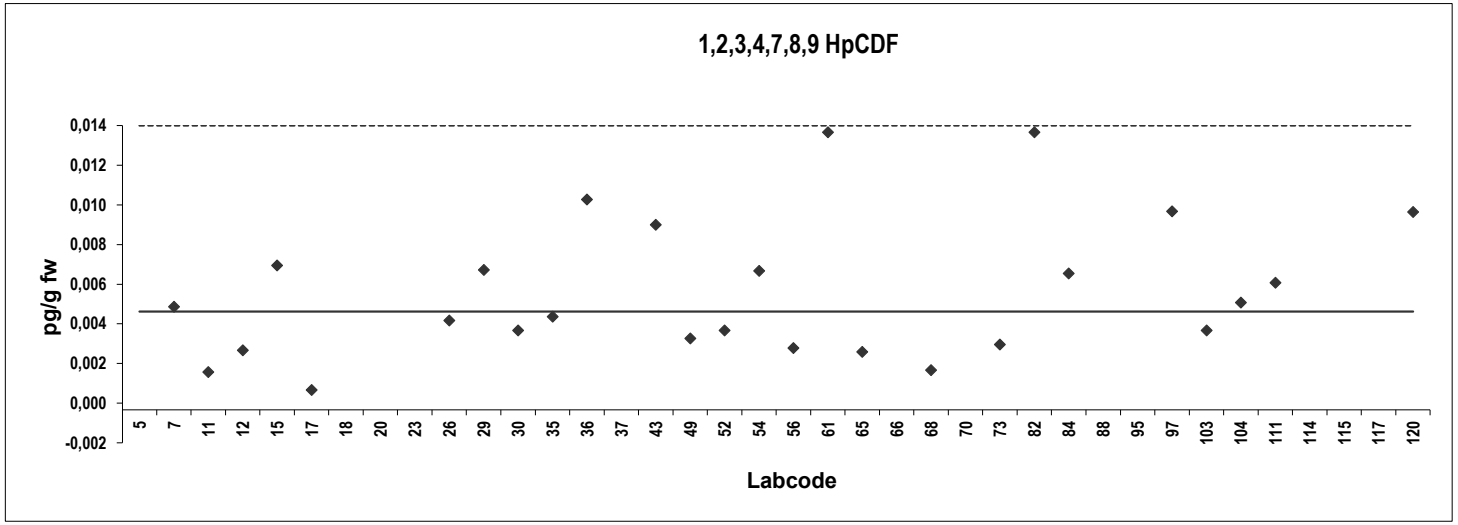
Reindeer

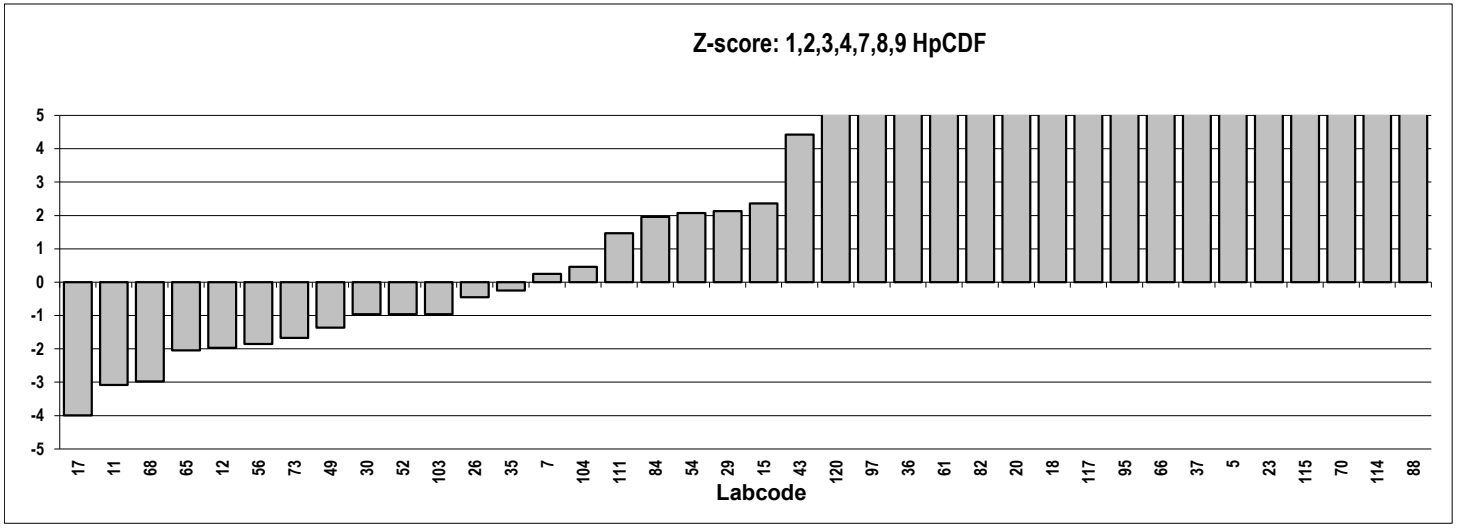
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,031	27	Outlier,ND			
7	0,0052	0,25				
11	0,0019	-3,1				
12	0,0030	-2,0				
15	0,0073	2,4				
17	0,0010	-4,0	ND			
18	0,019	14	Outlier			
20	0,014	9,6	Outlier			
23	0,050	46	Outlier,ND			
26	0,0045	-0,45	ND			
29	0,0071	2,1				
30	0,0040	-0,96	ND			
35	0,0047	-0,25				
36	0,011	5,7	ND			
37	0,031	26	Outlier,ND			
43	0,0093	4,4	ND			
49	0,0036	-1,4				
52	0,0040	-0,96				
54	0,0070	2,1	ND			
56	0,0031	-1,8				
61	0,014	9,1	ND			
65	0,0029	-2,0				
66	0,021	17	Outlier			
68	0,0020	-3,0				
70	0,14	136	Outlier,ND			
73	0,0033	-1,7	ND			
82	0,014	9,1	ND			
84	0,0069	2,0				
88	5,0	5019	Outlier,ND			
95	0,021	16	Outlier,ND			
97	0,010	5,1	ND			
103	0,0040	-0,96				
104	0,0054	0,46				
111	0,0064	1,5	ND			
114	0,15	147	Outlier,ND			
115	0,050	46	Outlier,ND			
117	0,019	14	Outlier			
120	0,0100	5,1	ND			

Consenus statistics

Consensus median, pg/g	0,0049
Median all values pg/g	0,0072
Consensus mean, pg/g	0,0060
Standard deviation, pg/g	0,0035
Relative standard deviation, %	59
No. of values reported	38
No. of values removed	12
No. of reported non-detects	20


1,2,3,4,7,8,9 HpCDF
pg/g fw
0,014
0,012
0,010
0,008
0,006
0,004
0,002
0,000
-0,002
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
17 11 68 65 12 56 73 49 30 52 103 26 35 7 104 111 84 54 29 15 43 120 97 36 61 82 20 18 117 95 66 37 5 23 115 70 114 88
Labcode

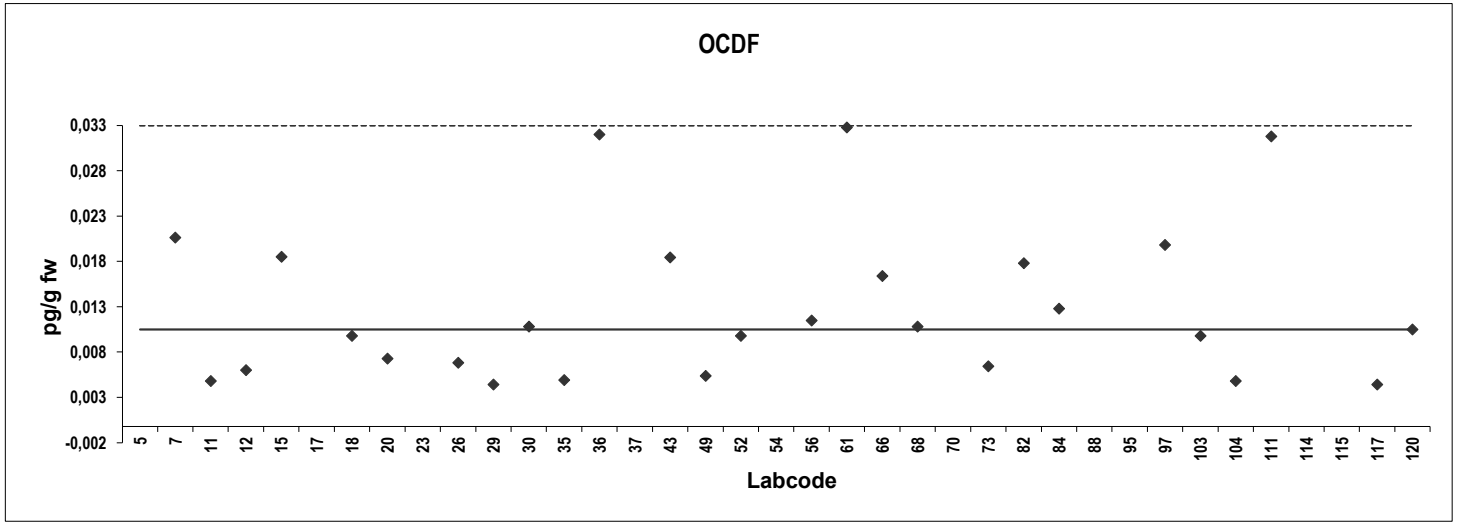
Reindeer

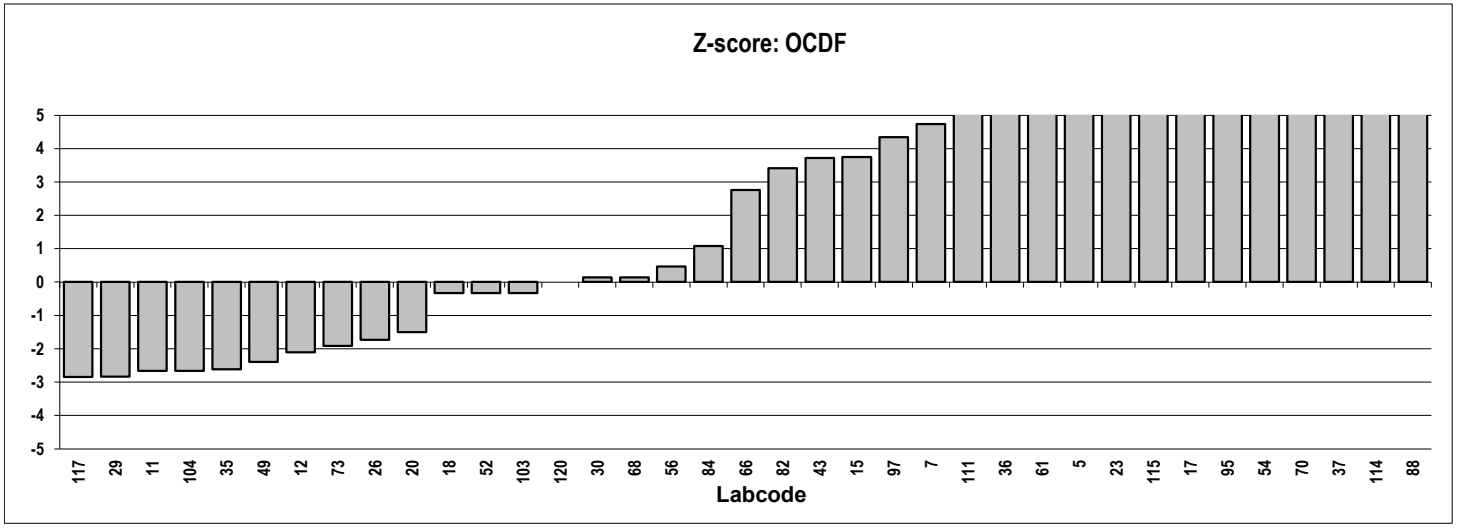
Congener: OCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,039	13	Outlier,ND			
7	0,021	4,7				
11	0,0050	-2,7	ND			
12	0,0062	-2,1	ND			
15	0,019	3,7				
17	0,073	29	Outlier			
18	0,010	-0,33	ND			
20	0,0075	-1,5	ND			
23	0,050	18	Outlier,ND			
26	0,0070	-1,7	ND			
29	0,0046	-2,8				
30	0,011	0,14	ND			
35	0,0051	-2,6				
36	0,032	10	ND			
37	0,22	100	Outlier			
43	0,019	3,7	ND			
49	0,0056	-2,4				
52	0,010	-0,33	ND			
54	0,11	46	Outlier			
56	0,012	0,46				
61	0,033	10	ND			
66	0,017	2,8				
68	0,011	0,14				
70	0,22	98	Outlier,ND			
73	0,0066	-1,9	ND			
82	0,018	3,4	ND			
84	0,013	1,1				
88	9,9	4641	Outlier,ND			
95	0,078	32	Outlier,ND			
97	0,020	4,3				
103	0,010	-0,33	ND			
104	0,0050	-2,7				
111	0,032	10,0	ND			
114	2,0	930	Outlier,ND			
115	0,050	18	Outlier,ND			
117	0,0046	-2,9	ND			
120	0,011	0,0				

Consenus statistics

Consensus median, pg/g	0,011
Median all values pg/g	0,017
Consensus mean, pg/g	0,013
Standard deviation, pg/g	0,0086
Relative standard deviation, %	66
No. of values reported	37
No. of values removed	10
No. of reported non-detects	22


OCDF
pg/g fw
0,033
0,028
0,023
0,018
0,013
0,008
0,003
-0,002
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 66 68 70 73 82 84 88 95 97 103 104 111 114 115 117 120
Labcode


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
117 29 11 104 35 49 12 73 26 20 18 52 103 120 30 68 56 84 66 82 43 15 97 7 111 36 61 5 23 115 17 95 54 70 37 114 88
Labcode

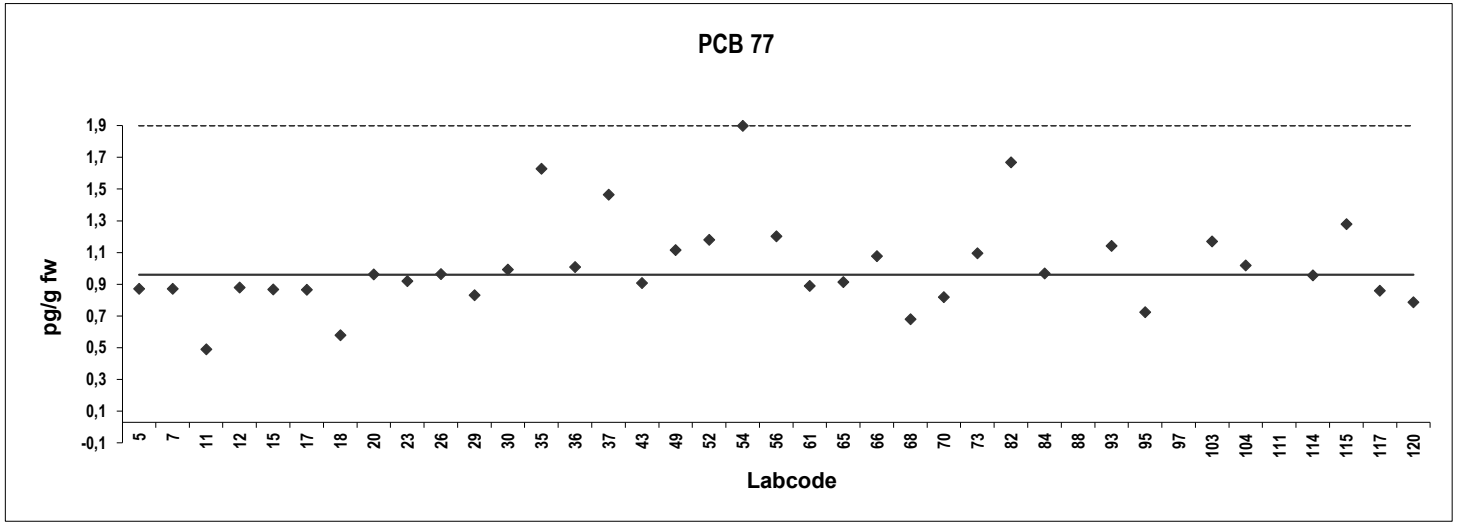
Reindeer

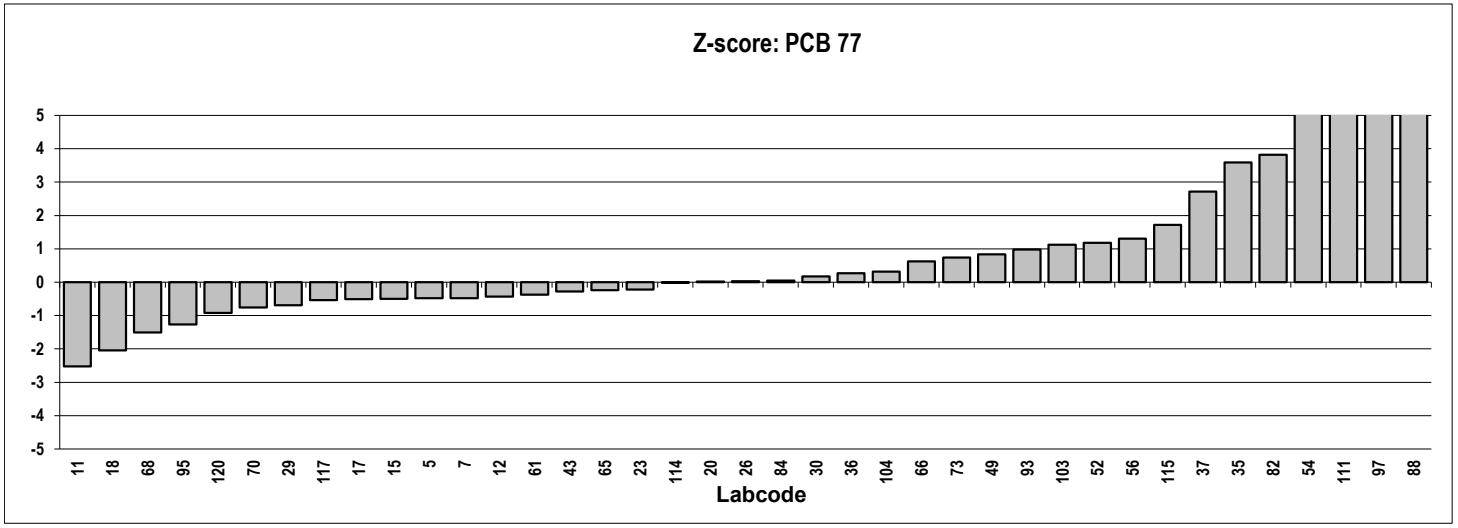
Congener: PCB 77

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,84	-0,48				
7	0,84	-0,48				
11	0,46	-2,5				
12	0,85	-0,43				
15	0,84	-0,50				
17	0,84	-0,51				
18	0,55	-2,0				
20	0,93	0,017				
23	0,89	-0,22				
26	0,94	0,028				
29	0,80	-0,69				
30	0,96	0,17				
35	1,6	3,6				
36	0,98	0,27				
37	1,4	2,7				
43	0,88	-0,28				
49	1,1	0,84				
52	1,2	1,2				
54	1,9	5,1				
56	1,2	1,3				
61	0,86	-0,38				
65	0,89	-0,24				
66	1,0	0,63				
68	0,65	-1,5				
70	0,79	-0,76				
73	1,1	0,73				
82	1,6	3,8				
84	0,94	0,047				
88	10,0	49	Outlier,ND			
93	1,1	1,0				
95	0,69	-1,3				
97	5,6	25	Outlier			
103	1,1	1,1				
104	0,99	0,32				
111	3,6	14	Outlier			
114	0,93	-0,017				
115	1,3	1,7				
117	0,83	-0,54				
120	0,76	-0,93				

Consenus statistics

Consensus median, pg/g	0,93
Median all values pg/g	0,94
Consensus mean, pg/g	0,99
Standard deviation, pg/g	0,29
Relative standard deviation, %	29
No. of values reported	39
No. of values removed	3
No. of reported non-detects	1


PCB 77
pg/g fw
1,9
1,7
1,5
1,3
1,1
0,9
0,7
0,5
0,3
0,1
-0,1
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 18 68 95 120 70 29 117 17 15 5 7 12 61 43 65 23 114 20 26 84 30 36 104 66 73 49 93 103 52 56 115 37 35 82 54 111 97 88
Labcode

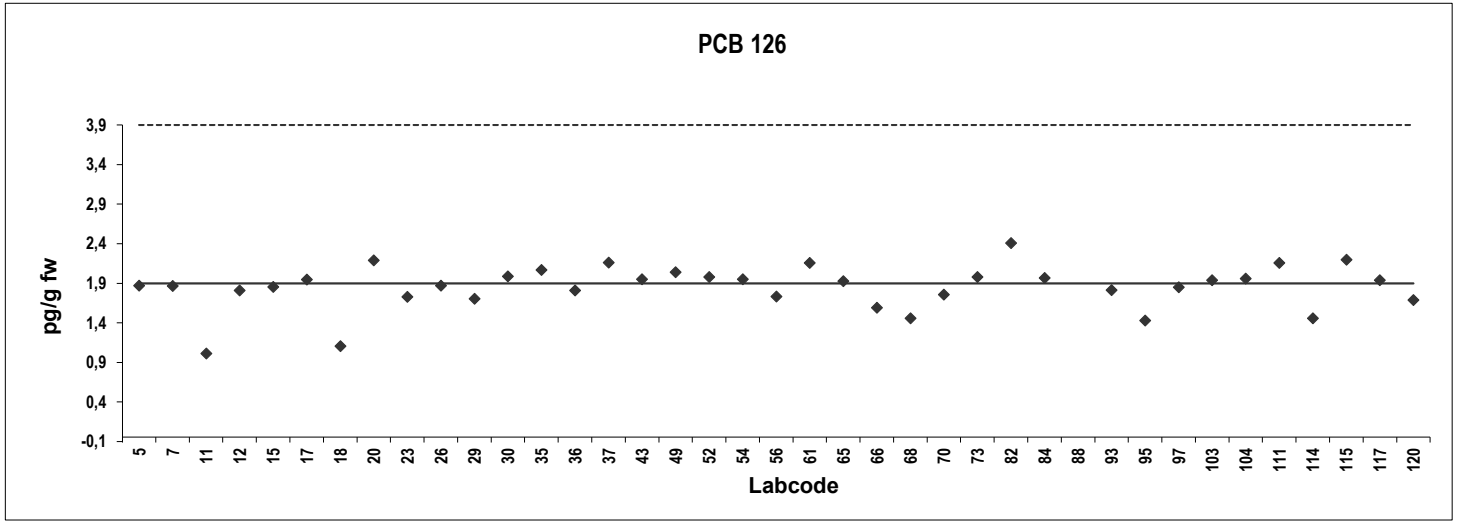
Reindeer

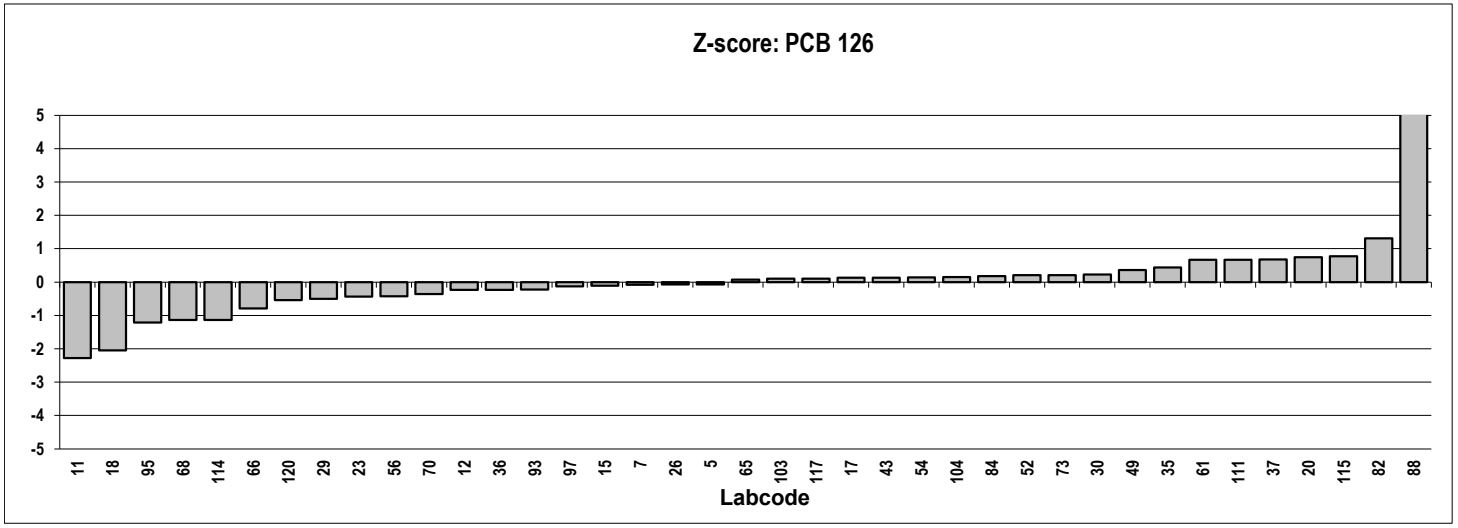
Congener: PCB 126

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,9	-0,074				
7	1,9	-0,085				
11	1,1	-2,3				
12	1,9	-0,23				
15	1,9	-0,11				
17	2,0	0,13				
18	1,1	-2,0				
20	2,2	0,75				
23	1,8	-0,44				
26	1,9	-0,076				
29	1,7	-0,51				
30	2,0	0,23				
35	2,1	0,44				
36	1,9	-0,23				
37	2,2	0,67				
43	2,0	0,13				
49	2,1	0,36				
52	2,0	0,20				
54	2,0	0,14				
56	1,8	-0,43				
61	2,2	0,67				
65	2,0	0,074				
66	1,6	-0,79				
68	1,5	-1,1				
70	1,8	-0,36				
73	2,0	0,21				
82	2,5	1,3				
84	2,0	0,18				
88	10,0	21	Outlier,ND			
93	1,9	-0,23				
95	1,5	-1,2				
97	1,9	-0,13				
103	2,0	0,10				
104	2,0	0,15				
111	2,2	0,67				
114	1,5	-1,1				
115	2,2	0,77				
117	2,0	0,10				
120	1,7	-0,54				

Consenus statistics

Consensus median, pg/g	1,9
Median all values pg/g	2,0
Consensus mean, pg/g	1,9
Standard deviation, pg/g	0,28
Relative standard deviation, %	15
No. of values reported	39
No. of values removed	1
No. of reported non-detects	1


PCB 126
pg/g fw
3,9
3,4
2,9
2,4
1,9
1,4
0,9
0,4
-0,1
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 18 95 68 114 66 120 29 23 56 70 12 36 93 97 15 7 26 5 65 103 117 17 43 54 104 84 52 73 30 49 35 61 111 37 20 115 82 88
Labcode

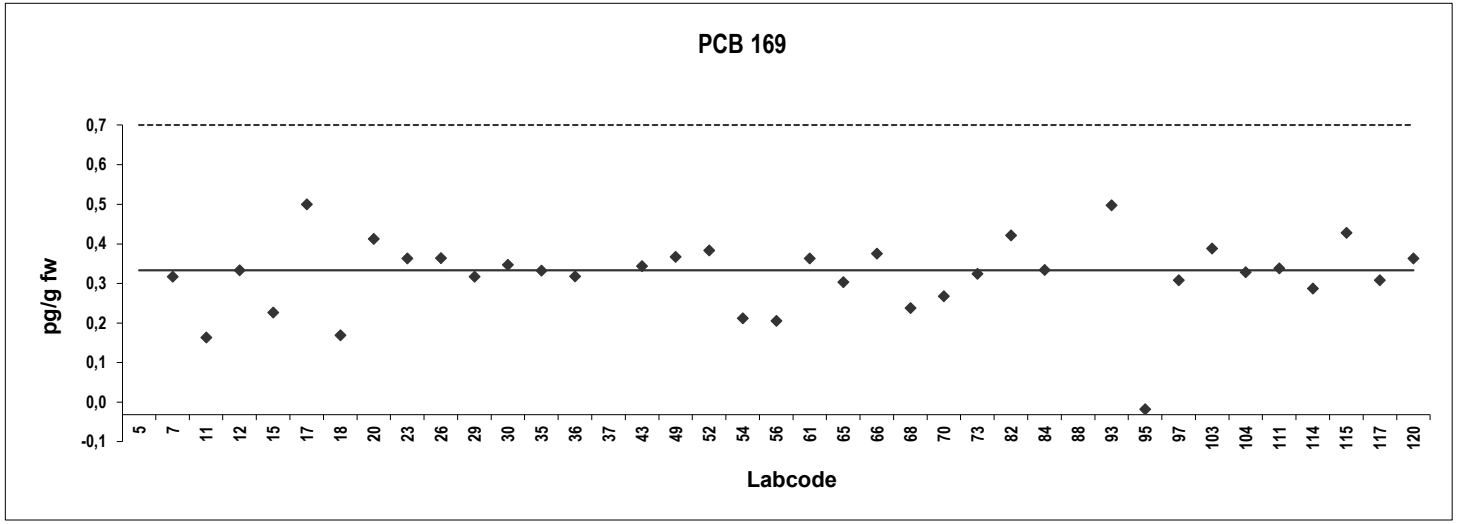
Reindeer

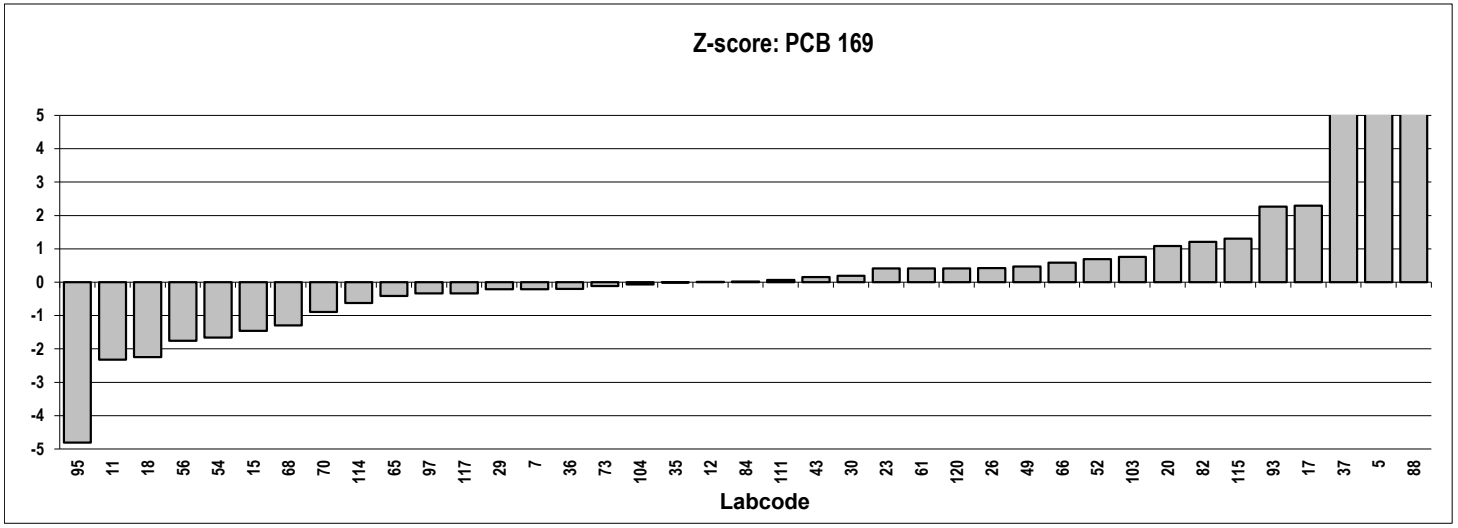
Congener: PCB 169

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,3	13	Outlier			
7	0,35	-0,21				
11	0,20	-2,3				
12	0,37	0,0034				
15	0,26	-1,5				
17	0,53	2,3				
18	0,20	-2,2				
20	0,44	1,1				
23	0,40	0,41				
26	0,40	0,43				
29	0,35	-0,21				
30	0,38	0,20				
35	0,36	-0,0034				
36	0,35	-0,20				
37	0,83	6,4	Outlier,ND			
43	0,38	0,15				
49	0,40	0,47				
52	0,42	0,69				
54	0,24	-1,7				
56	0,24	-1,8				
61	0,40	0,41				
65	0,34	-0,41				
66	0,41	0,58				
68	0,27	-1,3				
70	0,30	-0,89	ND			
73	0,36	-0,12				
82	0,45	1,2				
84	0,37	0,017				
88	10,0	132	Outlier,ND			
93	0,53	2,3				
95	0,014	-4,8	ND			
97	0,34	-0,34				
103	0,42	0,76				
104	0,36	-0,065				
111	0,37	0,072				
114	0,32	-0,63				
115	0,46	1,3				
117	0,34	-0,34				
120	0,40	0,41				

Consenus statistics

Consensus median, pg/g	0,36
Median all values pg/g	0,37
Consensus mean, pg/g	0,35
Standard deviation, pg/g	0,096
Relative standard deviation, %	27
No. of values reported	39
No. of values removed	3
No. of reported non-detects	4


PCB 169
pg/g fw
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 11 18 56 54 15 68 70 114 65 97 117 29 7 36 73 104 35 12 84 111 43 30 23 61 120 26 49 66 52 103 20 82 115 93 17 37 5 88
Labcode

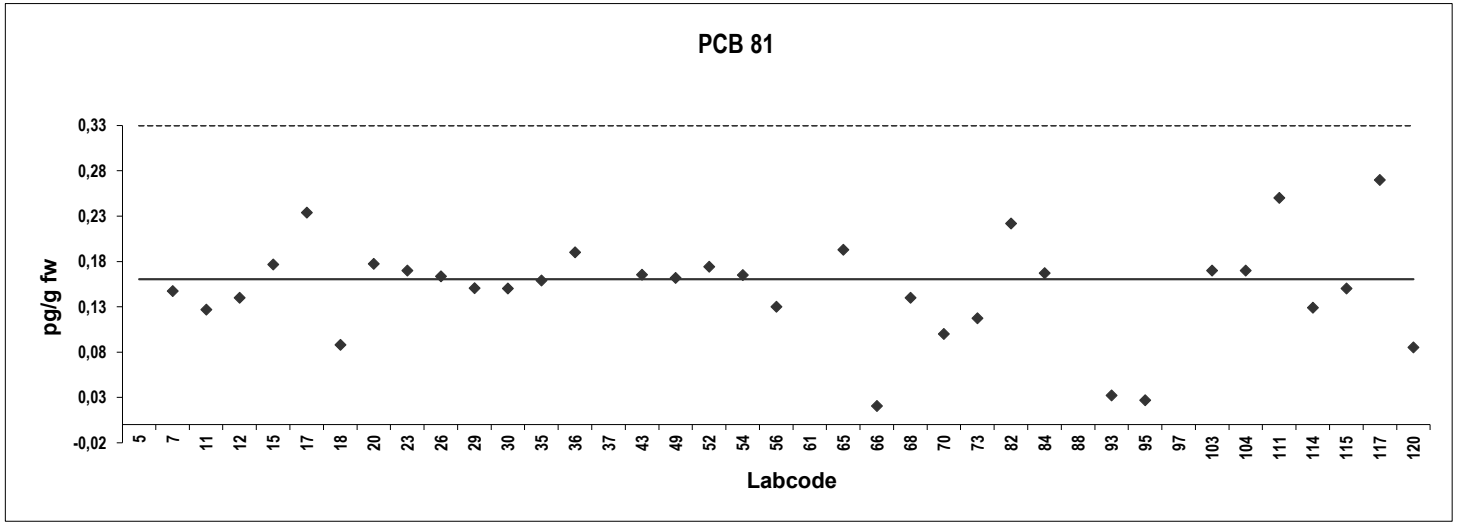
Reindeer

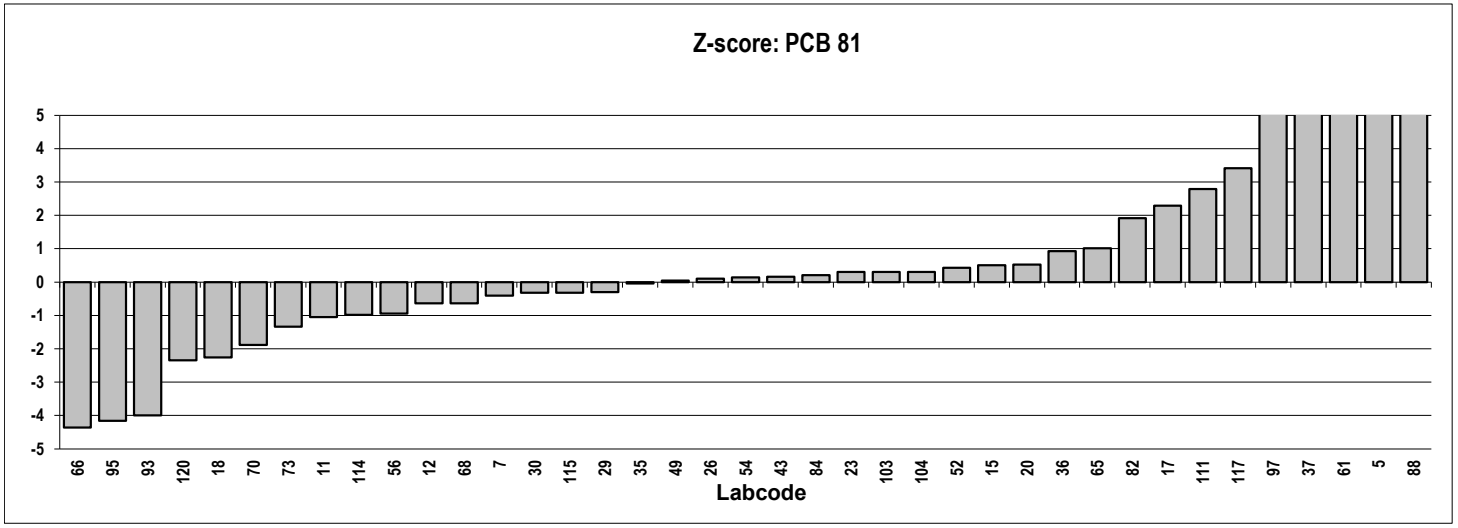
Congener: PCB 81

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,71	17	Outlier			
7	0,15	-0,41				
11	0,13	-1,0				
12	0,14	-0,64				
15	0,18	0,51				
17	0,23	2,3				
18	0,088	-2,3				
20	0,18	0,52				
23	0,17	0,30				
26	0,16	0,10				
29	0,15	-0,30				
30	0,15	-0,32				
35	0,16	-0,040				
36	0,19	0,92				
37	0,46	9,2	Outlier			
43	0,17	0,16				
49	0,16	0,040				
52	0,17	0,42				
54	0,16	0,14				
56	0,13	-0,94				
61	0,53	12	Outlier,ND			
65	0,19	1,0				
66	0,021	-4,4				
68	0,14	-0,64				
70	0,10	-1,9	ND			
73	0,12	-1,3				
82	0,22	1,9				
84	0,17	0,21				
88	10,0	307	Outlier,ND			
93	0,032	-4,0				
95	0,027	-4,2	ND			
97	0,33	5,3	Outlier			
103	0,17	0,30				
104	0,17	0,30				
111	0,25	2,8				
114	0,13	-0,98				
115	0,15	-0,32				
117	0,27	3,4				
120	0,085	-2,3				

Consenus statistics

Consensus median, pg/g	0,16
Median all values pg/g	0,16
Consensus mean, pg/g	0,15
Standard deviation, pg/g	0,056
Relative standard deviation, %	37
No. of values reported	39
No. of values removed	5
No. of reported non-detects	4


PCB 81
pg/g fw
0,33
0,28
0,23
0,18
0,13
0,08
0,03
-0,02
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 95 93 120 18 70 73 11 114 56 12 68 7 30 115 29 35 49 26 54 43 84 23 103 104 52 15 20 36 65 82 17 111 117 97 37 61 5 88
Labcode

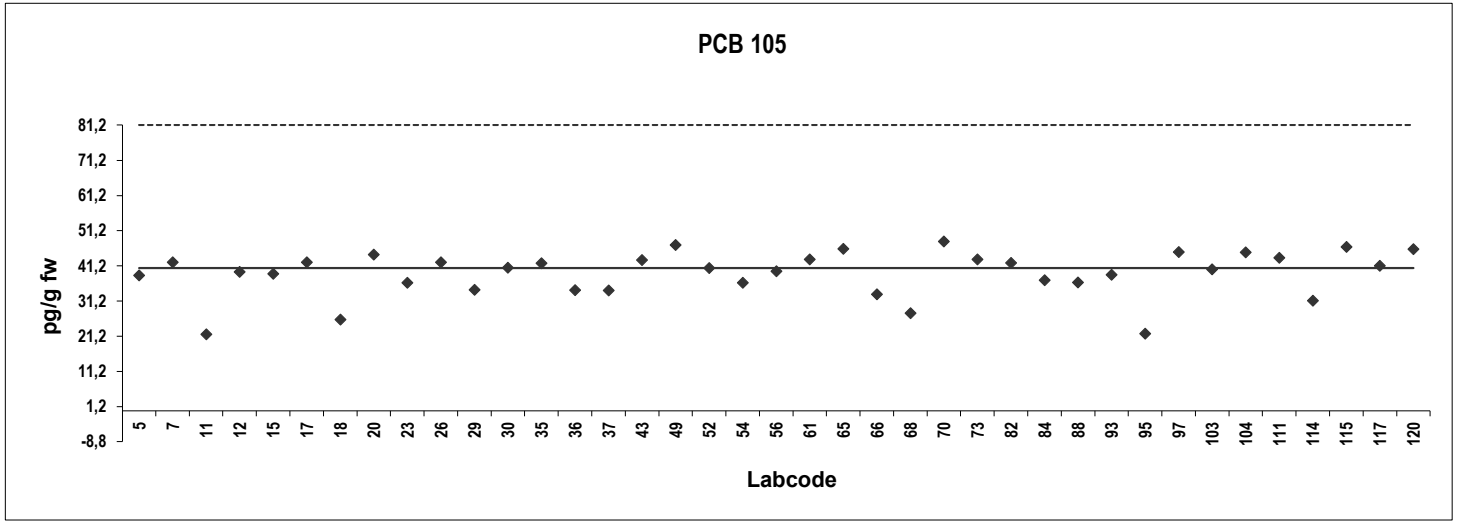
Reindeer

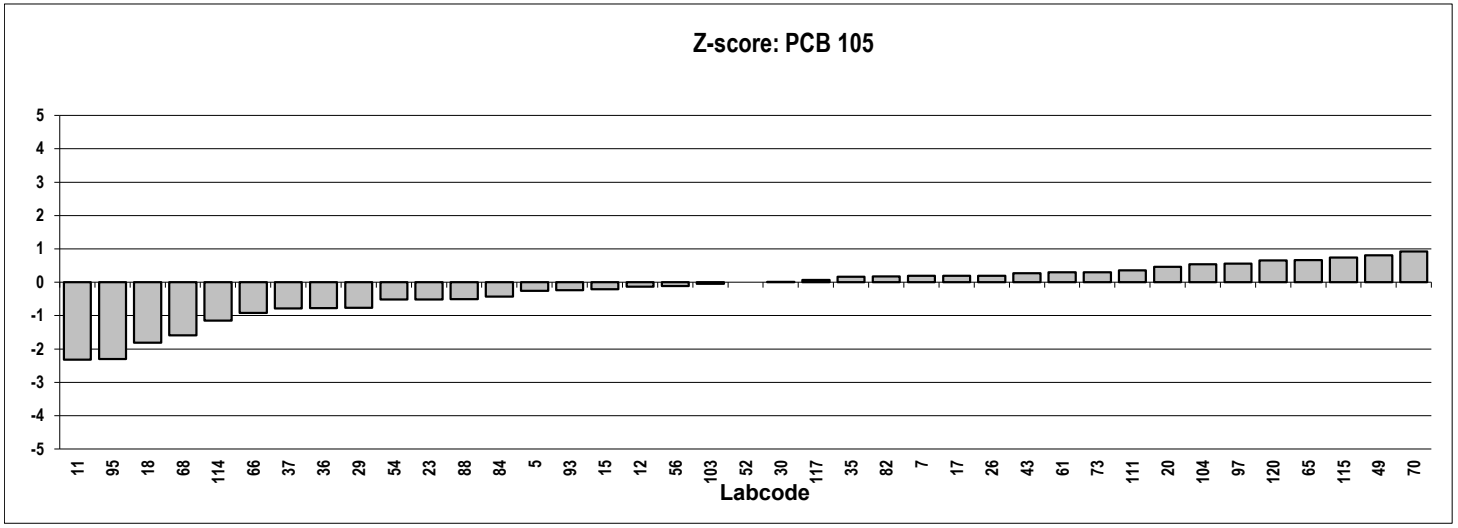
Congener: PCB 105

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	39	-0,26				
7	42	0,20				
11	22	-2,3				
12	40	-0,14				
15	39	-0,21				
17	42	0,20				
18	26	-1,8				
20	44	0,47				
23	36	-0,52				
26	42	0,20				
29	34	-0,77				
30	41	0,012				
35	42	0,16				
36	34	-0,78				
37	34	-0,79				
43	43	0,27				
49	47	0,80				
52	41	0,0				
54	36	-0,52				
56	40	-0,12				
61	43	0,30				
65	46	0,67				
66	33	-0,92				
68	28	-1,6				
70	48	0,92				
73	43	0,30				
82	42	0,17				
84	37	-0,43				
88	37	-0,50				
93	39	-0,24				
95	22	-2,3				
97	45	0,56				
103	40	-0,049				
104	45	0,54				
111	44	0,36				
114	31	-1,1				
115	47	0,74				
117	41	0,073				
120	46	0,65				

Consenus statistics

Consensus median, pg/g	41
Median all values pg/g	41
Consensus mean, pg/g	39
Standard deviation, pg/g	6,5
Relative standard deviation, %	17
No. of values reported	39
No. of values removed	0
No. of reported non-detects	0


PCB 105
pg/g fw
81,2
71,2
61,2
51,2
41,2
31,2
21,2
11,2
1,2
-8,8
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 95 18 68 114 66 37 36 29 54 23 88 84 5 93 15 12 56 103 52 30 117 35 82 7 17 26 43 61 73 111 20 104 97 120 65 115 49 70
Labcode

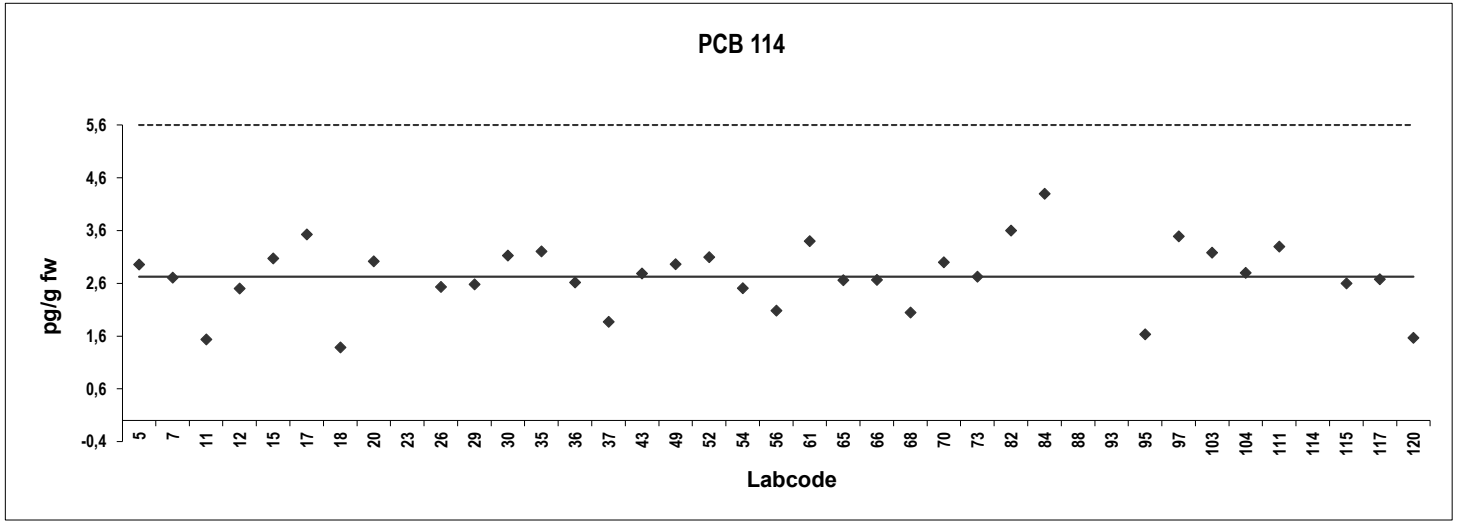
Reindeer

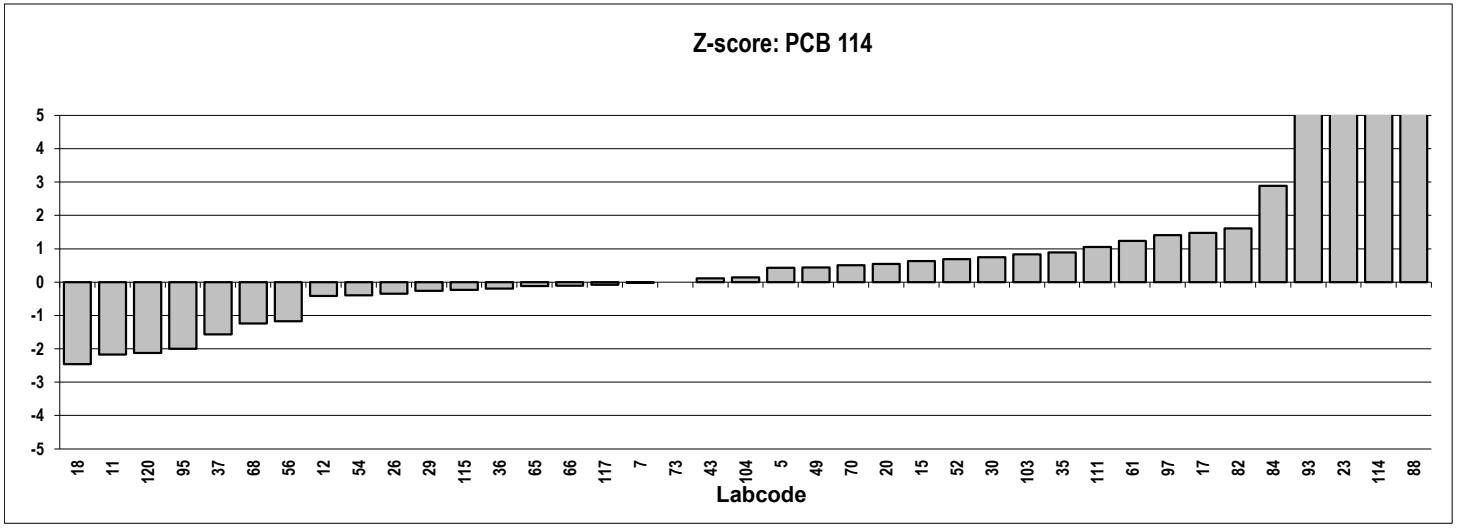
Congener: PCB 114

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	3,0	0,43				
7	2,7	-0,024				
11	1,5	-2,2				
12	2,5	-0,41				
15	3,1	0,63				
17	3,5	1,5				
18	1,4	-2,5				
20	3,0	0,54				
23	10	13	Outlier,ND			
26	2,5	-0,35				
29	2,6	-0,27				
30	3,1	0,74				
35	3,2	0,89				
36	2,6	-0,19				
37	1,9	-1,6				
43	2,8	0,11				
49	3,0	0,44				
52	3,1	0,69				
54	2,5	-0,39				
56	2,1	-1,2				
61	3,4	1,2				
65	2,7	-0,12				
66	2,7	-0,11				
68	2,1	-1,2				
70	3,0	0,50				
73	2,7	0,0				
82	3,6	1,6				
84	4,3	2,9	ND			
88	14	21	Outlier			
93	6,0	6,0	Outlier,ND			
95	1,6	-2,0				
97	3,5	1,4				
103	3,2	0,83				
104	2,8	0,14				
111	3,3	1,1				
114	10	13	Outlier,ND			
115	2,6	-0,23				
117	2,7	-0,082				
120	1,6	-2,1				

Consenus statistics

Consensus median, pg/g	2,7
Median all values pg/g	2,8
Consensus mean, pg/g	2,7
Standard deviation, pg/g	0,64
Relative standard deviation, %	23
No. of values reported	39
No. of values removed	4
No. of reported non-detects	4


PCB 114
pg/g fw
5,6
4,6
3,6
2,6
1,6
0,6
-0,4
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 11 120 95 37 68 56 12 54 26 29 115 36 65 66 117 7 73 43 104 5 49 70 20 15 52 30 103 35 111 61 97 17 82 84 93 23 114 88
Labcode

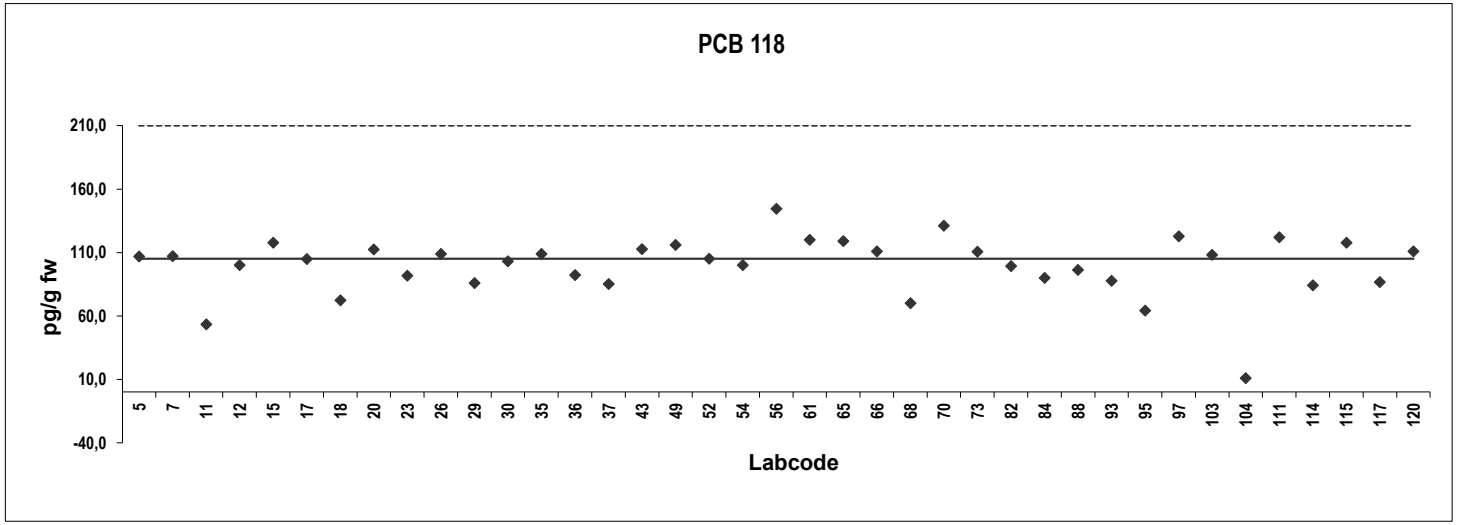
Reindeer

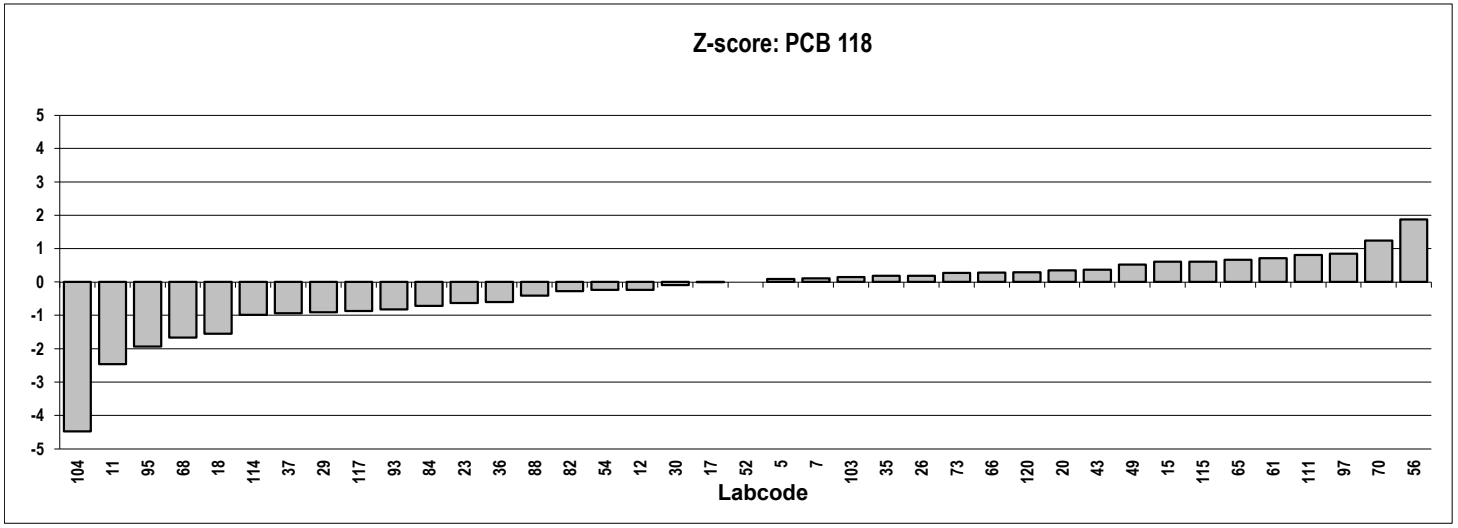
Congener: PCB 118

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	107	0,093				
7	107	0,10				
11	53	-2,5				
12	100	-0,24				
15	118	0,61				
17	105	-0,010				
18	72	-1,6				
20	112	0,35				
23	92	-0,63				
26	109	0,19				
29	86	-0,91				
30	103	-0,095				
35	109	0,18				
36	92	-0,60				
37	85	-0,94				
43	113	0,37				
49	116	0,52				
52	105	0,0				
54	100	-0,24				
56	144	1,9				
61	120	0,71				
65	119	0,67				
66	111	0,28				
68	70	-1,7				
70	131	1,2				
73	111	0,27				
82	99	-0,28				
84	90	-0,72				
88	96	-0,41				
93	88	-0,82				
95	64	-1,9				
97	123	0,85				
103	108	0,14				
104	11	-4,5				
111	122	0,81				
114	84	-0,99				
115	118	0,61				
117	87	-0,87				
120	111	0,29				

Consenus statistics

Consensus median, pg/g	105
Median all values pg/g	105
Consensus mean, pg/g	100
Standard deviation, pg/g	23
Relative standard deviation, %	24
No. of values reported	39
No. of values removed	0
No. of reported non-detects	0


PCB 118
210,0
160,0
110,0
60,0
10,0
-40,0
pg/g fw
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
104 11 95 68 18 114 37 29 117 93 84 23 36 88 82 54 12 30 17 52 5 7 103 35 26 73 66 120 20 43 49 15 115 65 61 111 97 70 56
Labcode

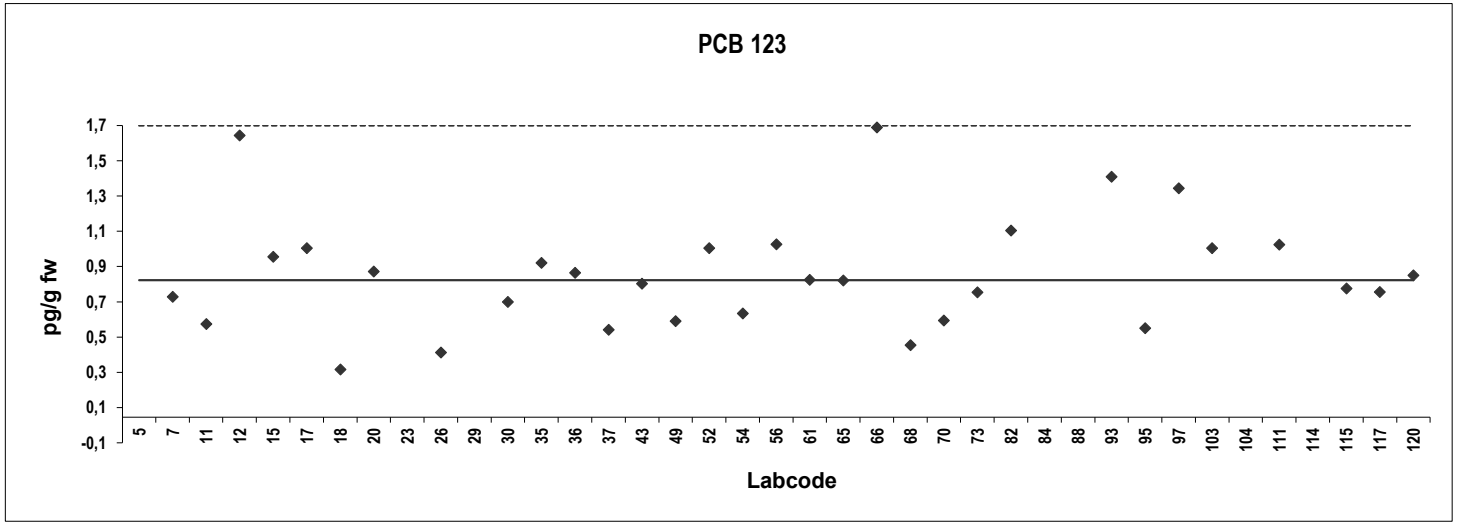
Reindeer

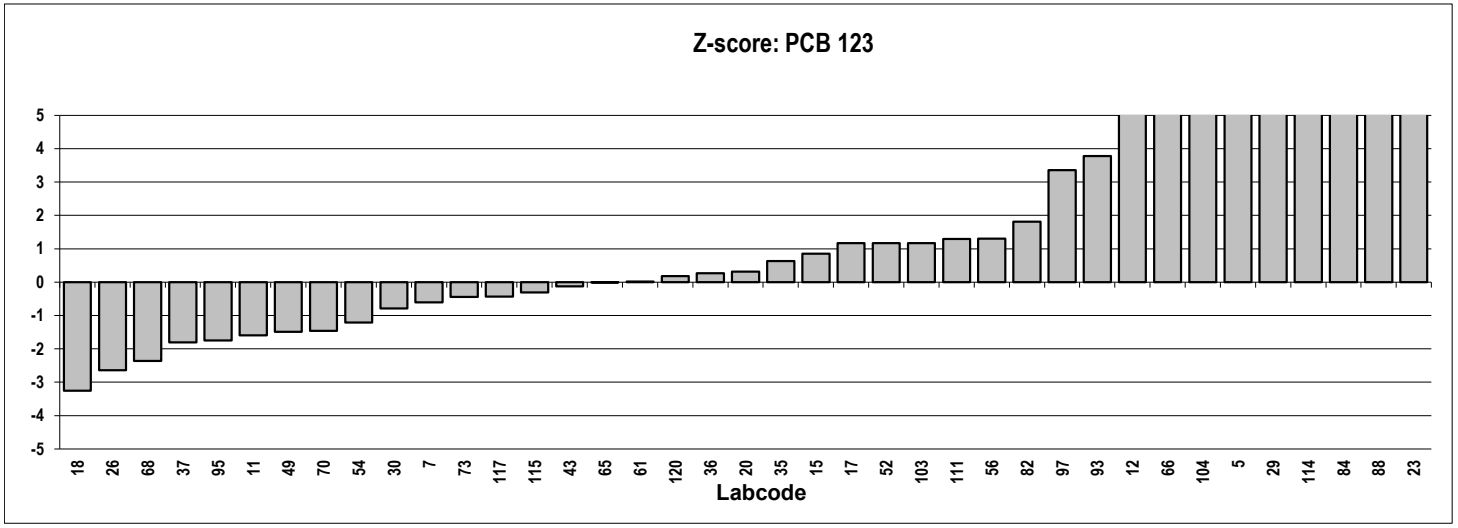
Congener: PCB 123

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	2,7	13	Outlier			
7	0,68	-0,61				
11	0,53	-1,6				
12	1,6	5,3	ND			
15	0,91	0,85				
17	0,96	1,2				
18	0,27	-3,3				
20	0,83	0,32				
23	10	59	Outlier,ND			
26	0,37	-2,6				
29	4,9	26	Outlier			
30	0,66	-0,79				
35	0,88	0,63				
36	0,82	0,27				
37	0,50	-1,8				
43	0,76	-0,13				
49	0,55	-1,5				
52	0,96	1,2				
54	0,59	-1,2				
56	0,98	1,3				
61	0,78	0,013				
65	0,78	-0,013				
66	1,6	5,6				
68	0,41	-2,4				
70	0,55	-1,5				
73	0,71	-0,44				
82	1,1	1,8				
84	5,1	28	Outlier,ND			
88	10,0	59	Outlier,ND			
93	1,4	3,8				
95	0,51	-1,8	ND			
97	1,3	3,4				
103	0,96	1,2				
104	1,8	6,6	Outlier,ND			
111	0,98	1,3				
114	5,0	27	Outlier,ND			
115	0,73	-0,31				
117	0,71	-0,44				
120	0,81	0,18				

Consenus statistics

Consensus median, pg/g	0,78
Median all values pg/g	0,83
Consensus mean, pg/g	0,82
Standard deviation, pg/g	0,32
Relative standard deviation, %	40
No. of values reported	39
No. of values removed	7
No. of reported non-detects	7


PCB 123
pg/g fw
1,7
1,5
1,3
1,1
0,9
0,7
0,5
0,3
0,1
-0,1
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 26 68 37 95 11 49 70 54 30 7 73 117 115 43 65 61 120 36 20 35 15 17 52 103 111 56 82 97 93 12 66 104 5 29 114 84 88 23
Labcode

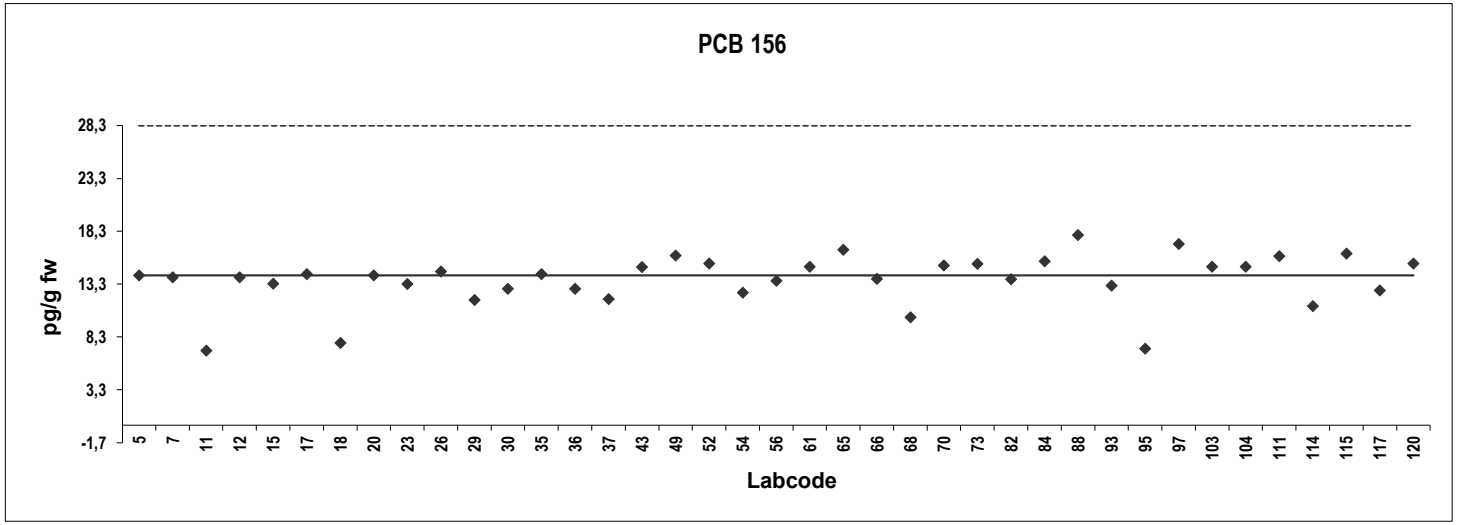
Reindeer

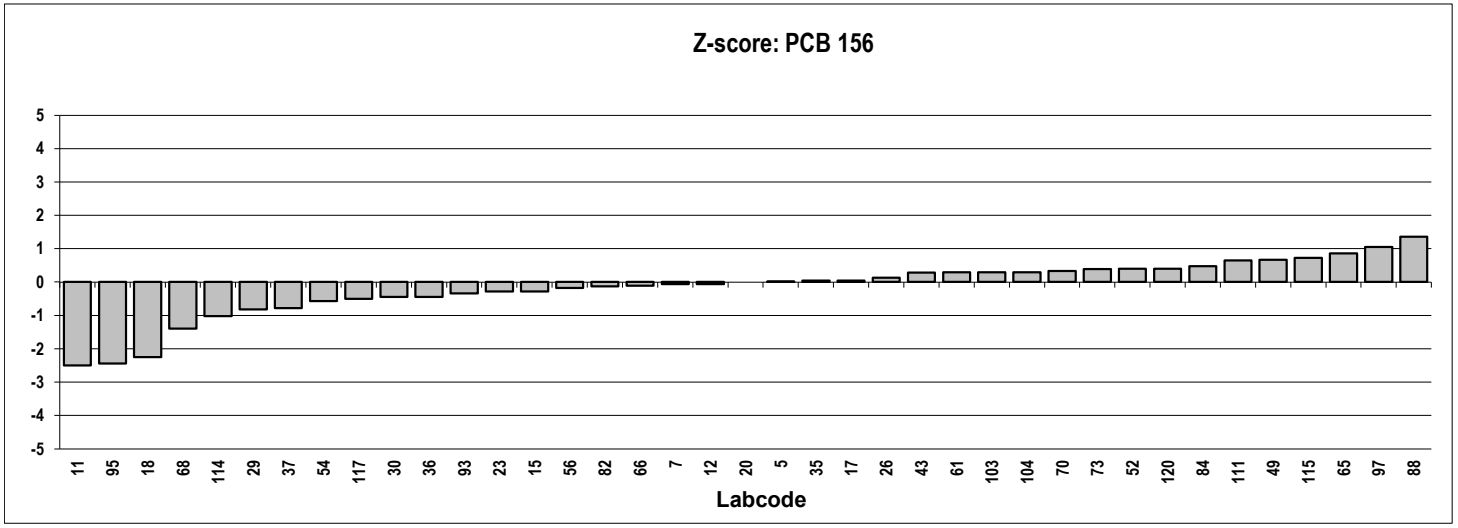
Congener: PCB 156

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	14	0,0062				
7	14	-0,065				
11	7,1	-2,5				
12	14	-0,059				
15	13	-0,28				
17	14	0,046				
18	7,8	-2,2				
20	14	0,0				
23	13	-0,28				
26	15	0,13				
29	12	-0,82				
30	13	-0,45				
35	14	0,041				
36	13	-0,45				
37	12	-0,79				
43	15	0,28				
49	16	0,66				
52	15	0,40				
54	13	-0,58				
56	14	-0,18				
61	15	0,29				
65	17	0,86				
66	14	-0,11				
68	10	-1,4				
70	15	0,33				
73	15	0,39				
82	14	-0,13				
84	16	0,47				
88	18	1,4				
93	13	-0,34				
95	7,2	-2,4				
97	17	1,0				
103	15	0,29				
104	15	0,29				
111	16	0,65				
114	11	-1,0				
115	16	0,72				
117	13	-0,50				
120	15	0,40				

Consenus statistics

Consensus median, pg/g	14
Median all values pg/g	14
Consensus mean, pg/g	14
Standard deviation, pg/g	2,4
Relative standard deviation, %	18
No. of values reported	39
No. of values removed	0
No. of reported non-detects	0


PCB 156
pg/g fw
28,3
23,3
18,3
13,3
8,3
3,3
-1,7
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 95 18 68 114 29 37 54 117 30 36 93 23 15 56 82 66 7 12 20 5 35 17 26 43 61 103 104 70 73 52 120 84 111 49 115 65 97 88
Labcode

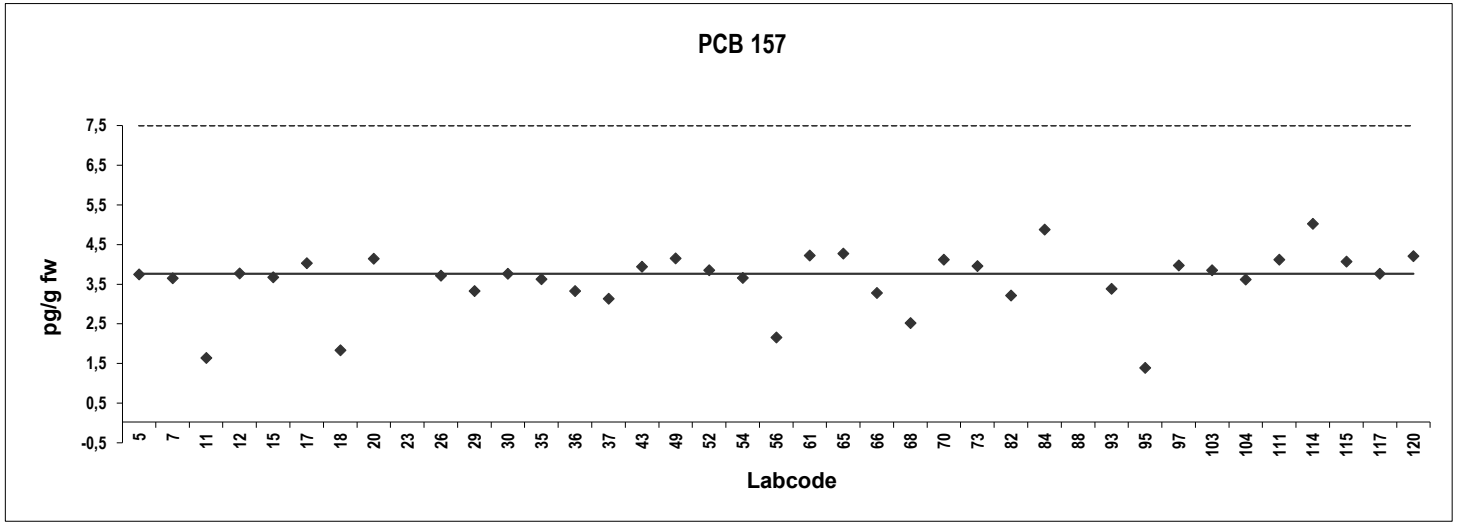
Reindeer

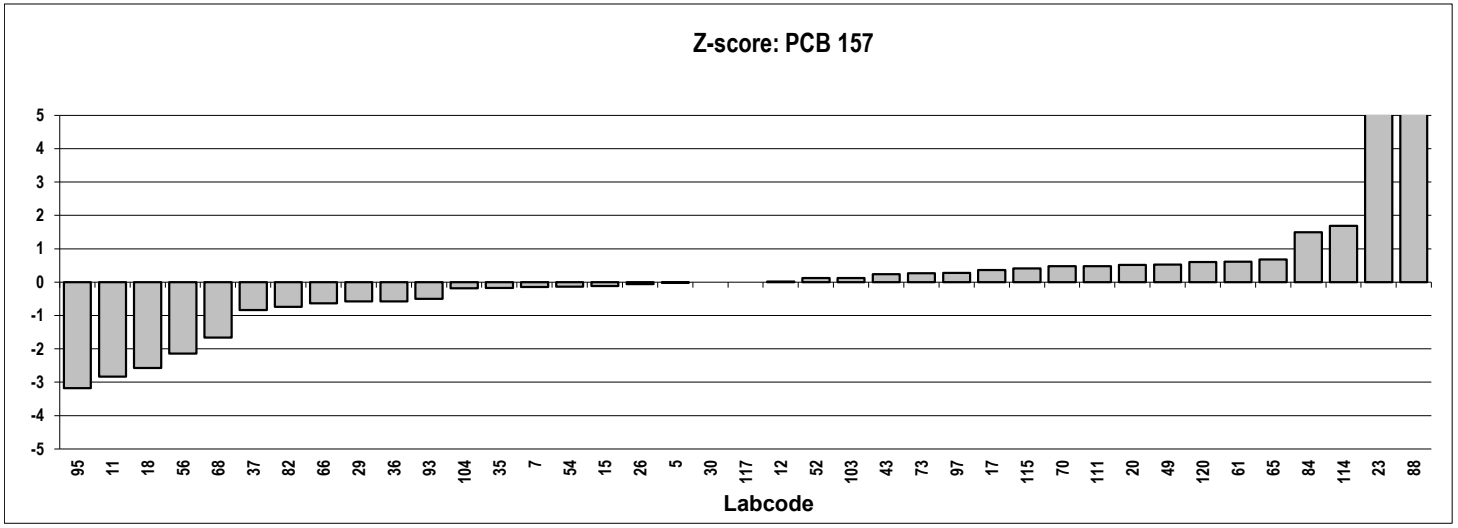
Congener: PCB 157

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	3,7	-0,017				
7	3,6	-0,15				
11	1,6	-2,8				
12	3,8	0,013				
15	3,7	-0,12				
17	4,0	0,36				
18	1,8	-2,6				
20	4,1	0,52				
23	10	8,4	Outlier,ND			
26	3,7	-0,061				
29	3,3	-0,58				
30	3,7	0,0				
35	3,6	-0,18				
36	3,3	-0,57				
37	3,1	-0,84				
43	3,9	0,24				
49	4,1	0,52				
52	3,8	0,12				
54	3,6	-0,14				
56	2,1	-2,1				
61	4,2	0,61				
65	4,3	0,68				
66	3,3	-0,64				
68	2,5	-1,7				
70	4,1	0,48				
73	3,9	0,27				
82	3,2	-0,74				
84	4,9	1,5				
88	20	22	Outlier,ND			
93	3,4	-0,50				
95	1,4	-3,2				
97	4,0	0,28				
103	3,8	0,12				
104	3,6	-0,19				
111	4,1	0,48				
114	5,0	1,7	ND			
115	4,1	0,41				
117	3,7	0,0				
120	4,2	0,60				

Consenus statistics

Consensus median, pg/g	3,7
Median all values pg/g	3,7
Consensus mean, pg/g	3,6
Standard deviation, pg/g	0,80
Relative standard deviation, %	22
No. of values reported	39
No. of values removed	2
No. of reported non-detects	3


PCB 157
pg/g fw
7,5
6,5
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 11 18 56 68 37 82 66 29 36 93 104 35 7 54 15 26 5 30 117 12 52 103 43 73 97 17 115 70 111 20 49 120 61 65 84 114 23 88
Labcode

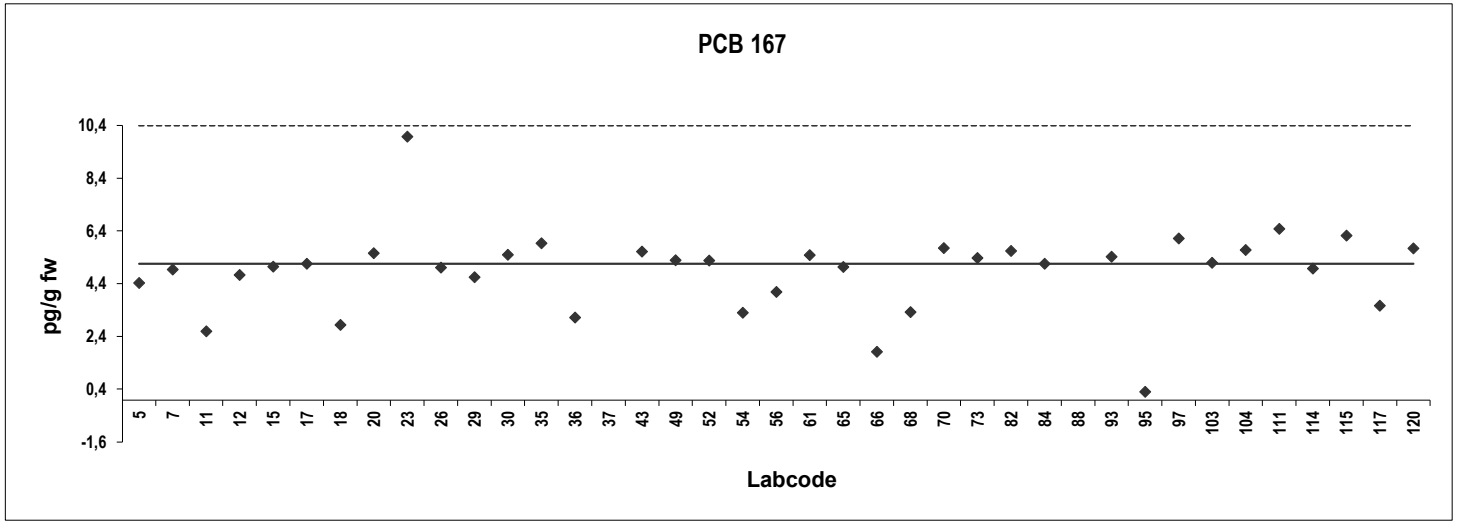
Reindeer

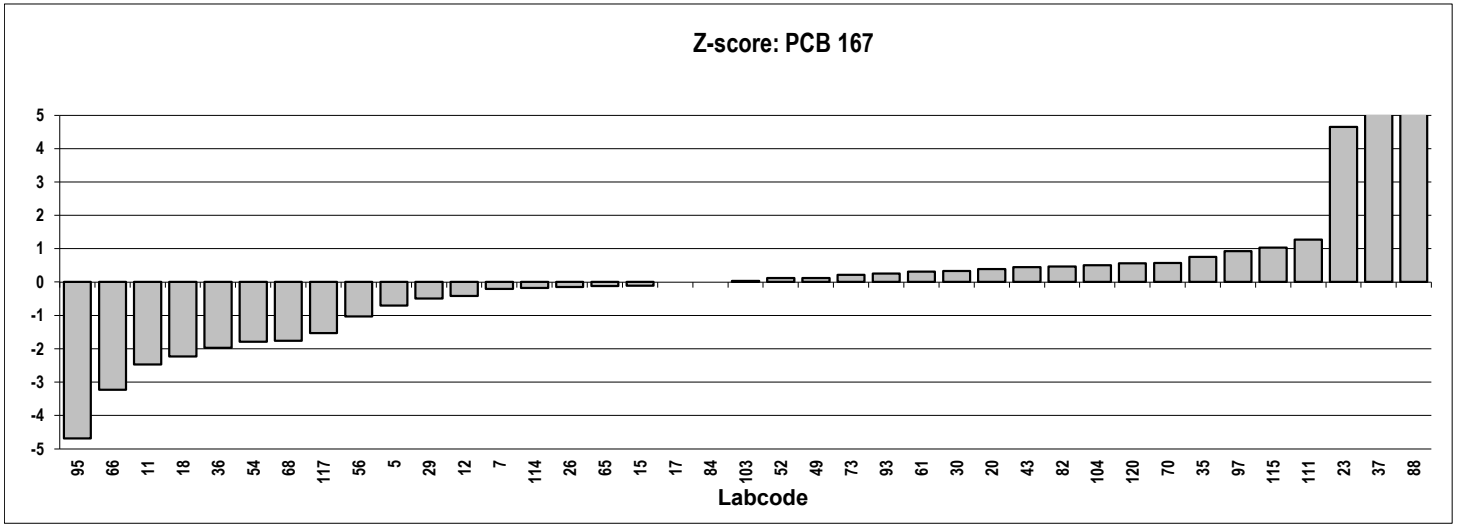
Congener: PCB 167

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	4,5	-0,70				
7	5,0	-0,21				
11	2,6	-2,5				
12	4,8	-0,42				
15	5,1	-0,11				
17	5,2	0,0				
18	2,9	-2,2				
20	5,6	0,38				
23	10	4,7	ND			
26	5,0	-0,15				
29	4,7	-0,49				
30	5,5	0,33				
35	6,0	0,75				
36	3,1	-2,0				
37	15	9,4	Outlier			
43	5,6	0,44				
49	5,3	0,12				
52	5,3	0,12				
54	3,3	-1,8				
56	4,1	-1,0				
61	5,5	0,31				
65	5,1	-0,12				
66	1,8	-3,2				
68	3,4	-1,8				
70	5,8	0,57				
73	5,4	0,21				
82	5,7	0,46				
84	5,2	0,0				
88	20	14	Outlier,ND			
93	5,4	0,25				
95	0,32	-4,7	ND			
97	6,1	0,93				
103	5,2	0,029				
104	5,7	0,50				
111	6,5	1,3				
114	5,0	-0,17	ND			
115	6,3	1,0				
117	3,6	-1,5				
120	5,8	0,56				

Consenus statistics

Consensus median, pg/g	5,2
Median all values pg/g	5,2
Consensus mean, pg/g	4,9
Standard deviation, pg/g	1,6
Relative standard deviation, %	32
No. of values reported	39
No. of values removed	2
No. of reported non-detects	4


PCB 167
pg/g fw
10,4
8,4
6,4
4,4
2,4
0,4
-1,6
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 66 11 18 36 54 68 117 56 5 29 12 7 114 26 65 15 17 84 103 52 49 73 93 61 30 20 43 82 104 120 70 35 97 115 111 23 37 88
Labcode

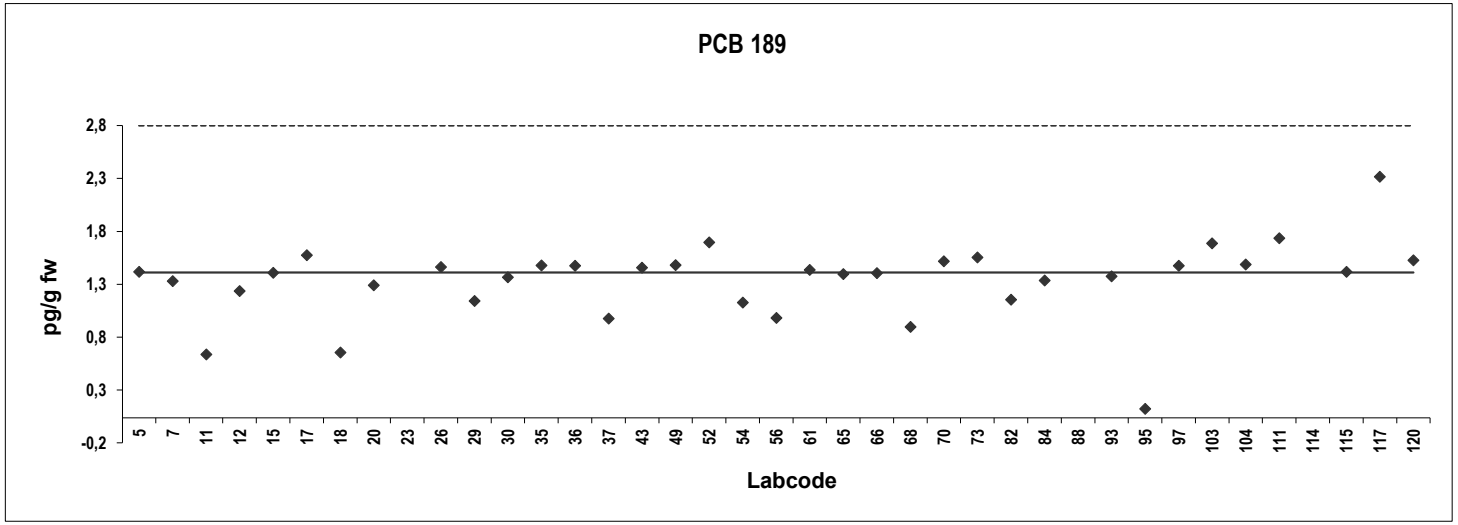
Reindeer

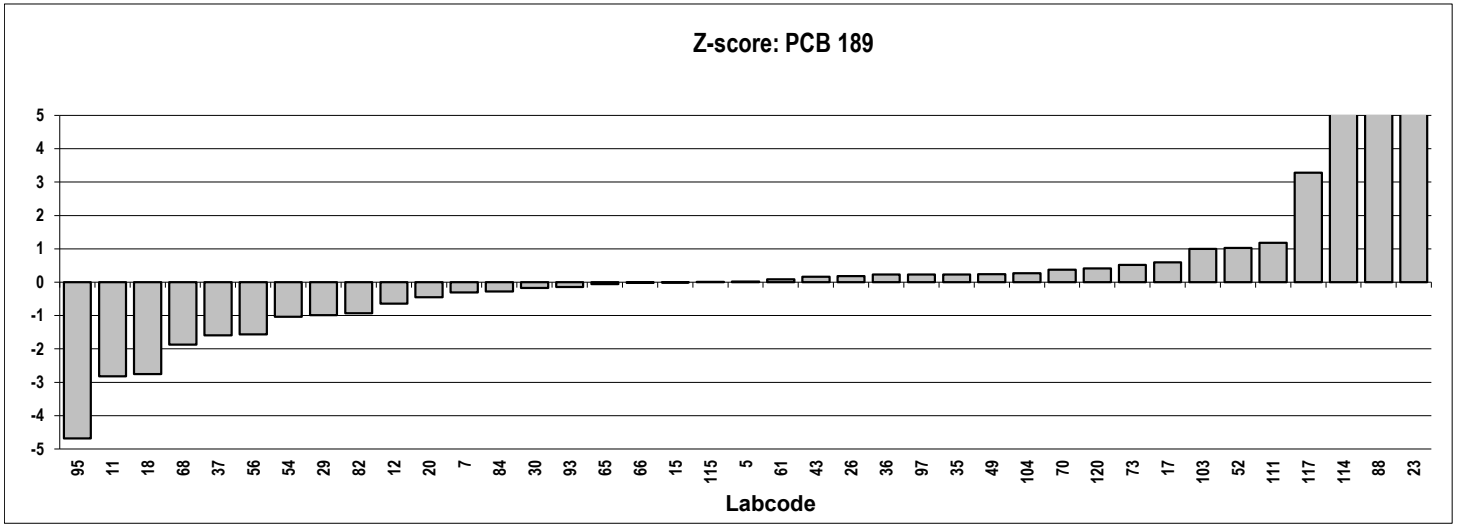
Congener: PCB 189

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,4	0,021				
7	1,3	-0,31				
11	0,60	-2,8				
12	1,2	-0,64				
15	1,4	-0,013				
17	1,5	0,59				
18	0,62	-2,8				
20	1,3	-0,45				
23	10	31	Outlier,ND			
26	1,4	0,18				
29	1,1	-0,99				
30	1,3	-0,17				
35	1,4	0,23				
36	1,4	0,23				
37	0,94	-1,6				
43	1,4	0,16				
49	1,4	0,24				
52	1,7	1,0				
54	1,1	-1,0				
56	0,95	-1,6				
61	1,4	0,086				
65	1,4	-0,059				
66	1,4	-0,023				
68	0,86	-1,9				
70	1,5	0,38				
73	1,5	0,51				
82	1,1	-0,93				
84	1,3	-0,28	ND			
88	10,0	31	Outlier,ND			
93	1,3	-0,14				
95	0,086	-4,7	ND			
97	1,4	0,23				
103	1,7	0,99				
104	1,5	0,27				
111	1,7	1,2				
114	5,0	13	Outlier,ND			
115	1,4	0,013				
117	2,3	3,3				
120	1,5	0,41				

Consenus statistics

Consensus median, pg/g	1,4
Median all values pg/g	1,4
Consensus mean, pg/g	1,3
Standard deviation, pg/g	0,37
Relative standard deviation, %	28
No. of values reported	39
No. of values removed	3
No. of reported non-detects	5


PCB 189
pg/g fw
2,8
2,3
1,8
1,3
0,8
0,3
-0,2
5 7 11 12 15 17 18 20 23 26 29 30 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 88 93 95 97 103 104 111 114 115 117 120
Labcode


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 11 18 68 37 56 54 29 82 12 20 7 84 30 93 65 66 15 115 5 61 43 26 36 97 35 49 104 70 120 73 17 103 52 111 117 114 88 23
Labcode

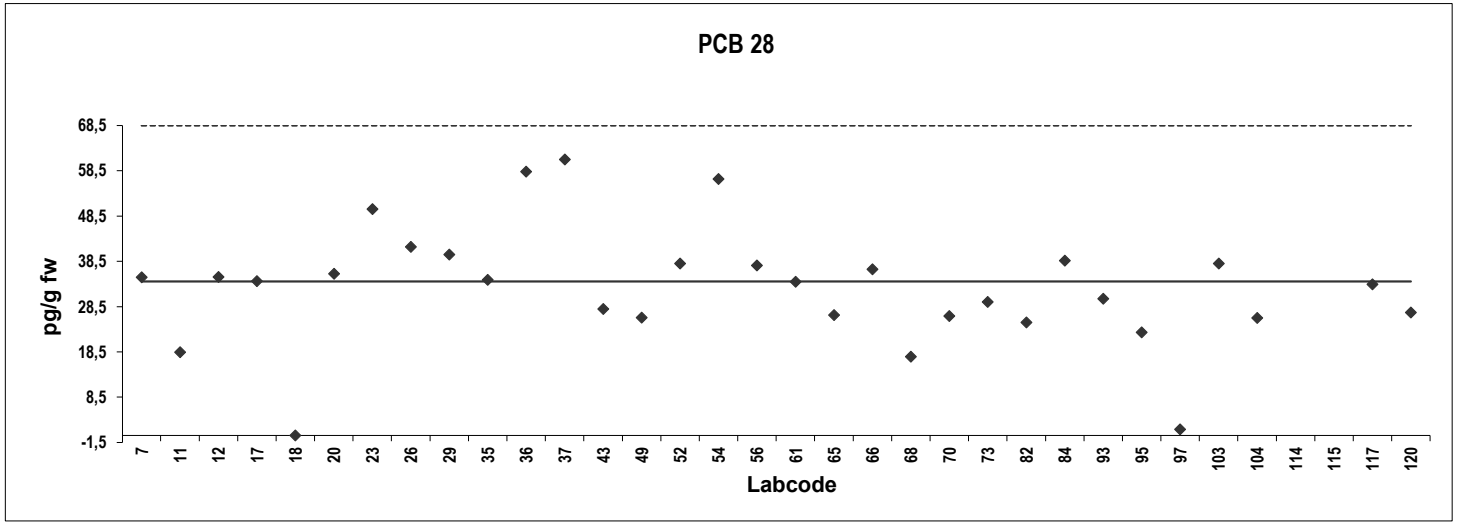
Reindeer

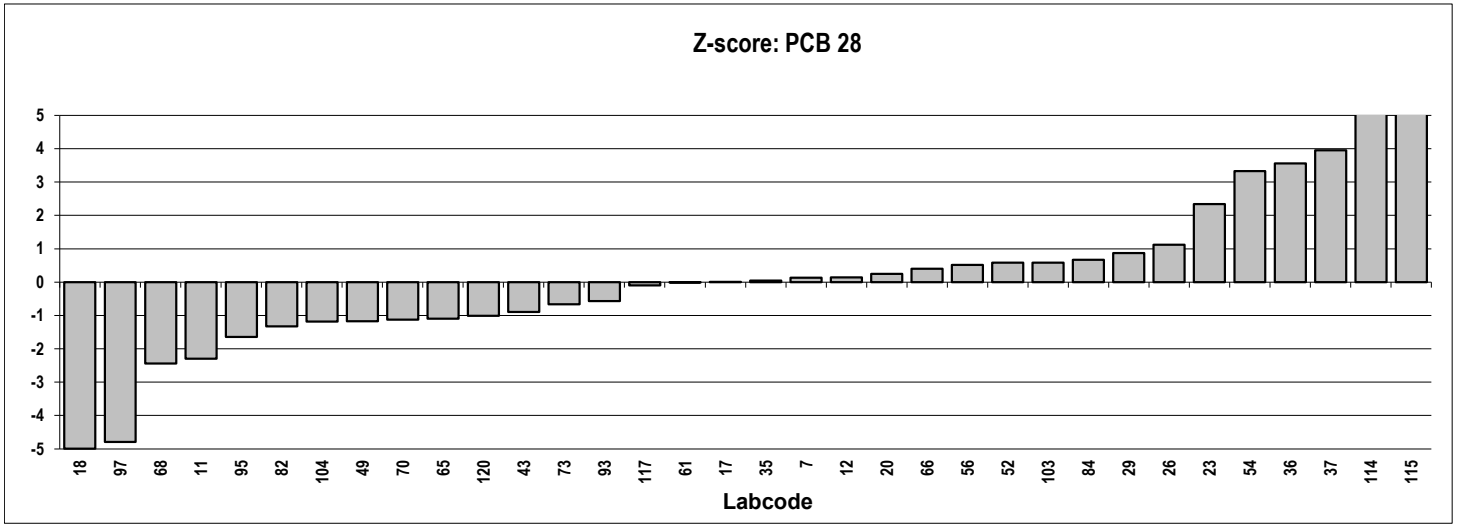
Congener: PCB 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	35	0,13				
11	18	-2,3				
12	35	0,14				
17	34	0,0073				
18	0,014	-5,0				
20	36	0,25				
23	50	2,3	ND			
26	42	1,1				
29	40	0,87				
35	34	0,048				
36	58	3,6				
37	61	4,0				
43	28	-0,89				
49	26	-1,2				
52	38	0,58				
54	57	3,3				
56	38	0,52				
61	34	-0,0073				
65	27	-1,1				
66	37	0,40				
68	17	-2,4				
70	26	-1,1				
73	30	-0,66				
82	25	-1,3				
84	39	0,67				
93	30	-0,57				
95	23	-1,6				
97	1,4	-4,8	ND			
103	38	0,58				
104	26	-1,2				
114	100	9,7	Outlier,ND			
115	100	9,7	Outlier,ND			
117	33	-0,10				
120	27	-1,0				

Consenus statistics

Consensus median, pg/g	34
Median all values pg/g	34
Consensus mean, pg/g	33
Standard deviation, pg/g	13
Relative standard deviation, %	41
No. of values reported	34
No. of values removed	2
No. of reported non-detects	4


PCB 28
pg/g fw
68,5
58,5
48,5
38,5
28,5
18,5
8,5
-1,5
7 11 12 17 18 20 23 26 29 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 93 95 97 103 104 114 115 117 120
Labcode


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 68 11 95 82 104 49 70 65 120 43 73 93 117 61 17 35 7 12 20 66 56 52 103 84 29 26 23 54 36 37 114 115
Labcode

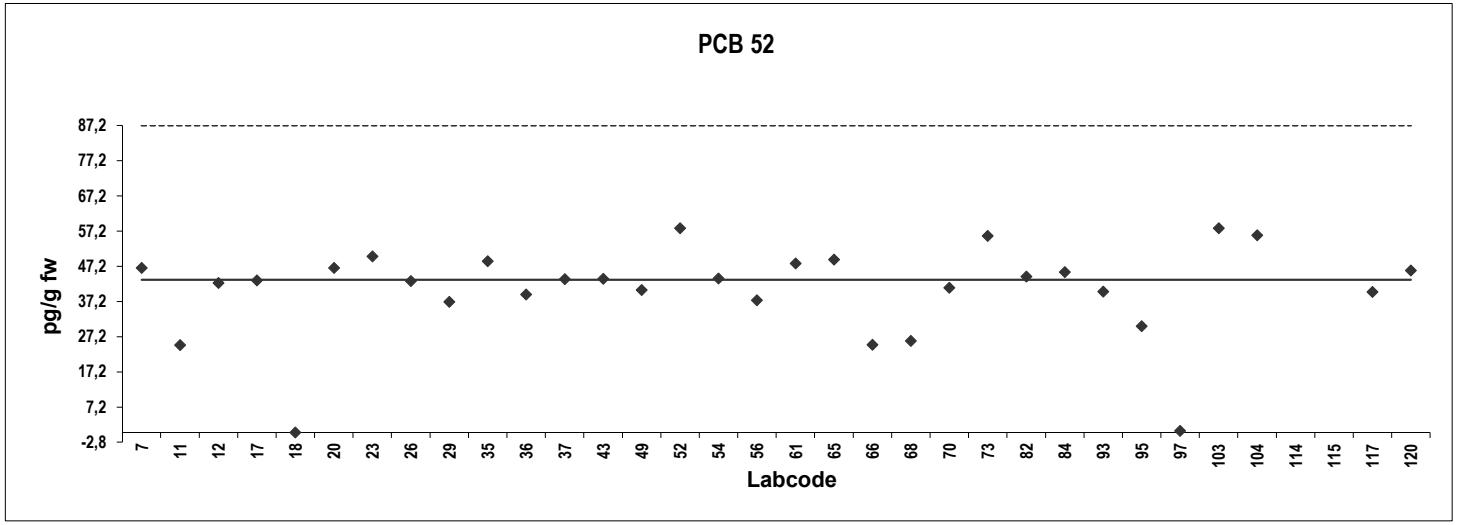
Reindeer

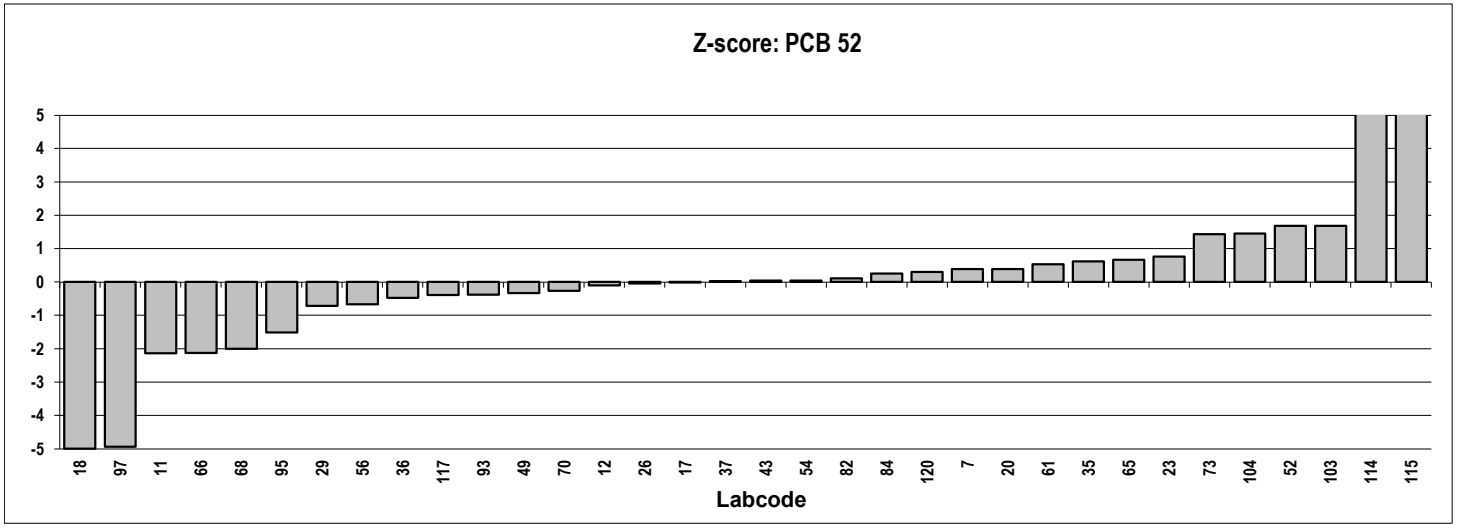
Congener: PCB 52

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	47	0,38				
11	25	-2,1				
12	43	-0,10				
17	43	-0,020				
18	0,025	-5,0				
20	47	0,39				
23	50	0,76	ND			
26	43	-0,043				
29	37	-0,72				
35	49	0,61				
36	39	-0,48				
37	44	0,020				
43	44	0,036				
49	41	-0,33				
52	58	1,7				
54	44	0,043				
56	38	-0,67				
61	48	0,53				
65	49	0,66				
66	25	-2,1				
68	26	-2,0				
70	41	-0,26				
73	56	1,4				
82	44	0,11				
84	46	0,26				
93	40	-0,39				
95	30	-1,5				
97	0,48	-4,9	ND			
103	58	1,7				
104	56	1,5				
114	100	6,5	Outlier,ND			
115	100	6,5	Outlier,ND			
117	40	-0,39				
120	46	0,30				

Consenus statistics

Consensus median, pg/g	43
Median all values pg/g	44
Consensus mean, pg/g	40
Standard deviation, pg/g	13
Relative standard deviation, %	33
No. of values reported	34
No. of values removed	2
No. of reported non-detects	4


PCB 52
pg/g fw
87,2
77,2
67,2
57,2
47,2
37,2
27,2
17,2
7,2
-2,8
7 11 12 17 18 20 23 26 29 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 93 95 97 103 104 114 115 117 120
Labcode


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 11 66 68 95 29 56 36 117 93 49 70 12 26 17 37 43 54 82 84 120 7 20 61 35 65 23 73 104 52 103 114 115
Labcode

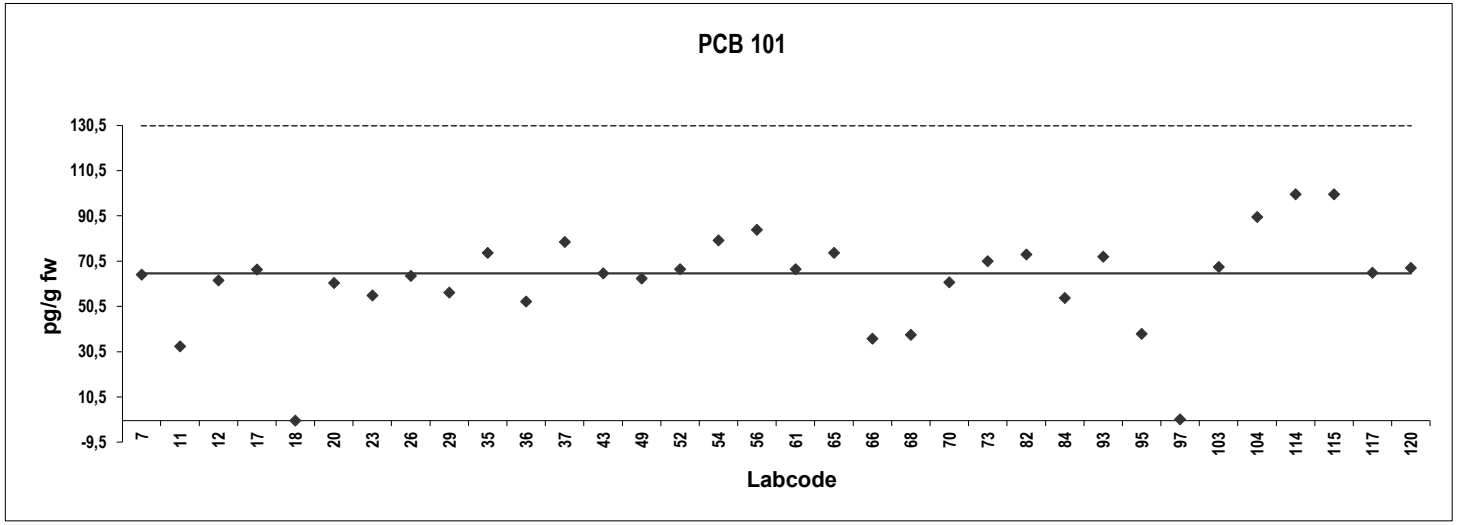
Reindeer

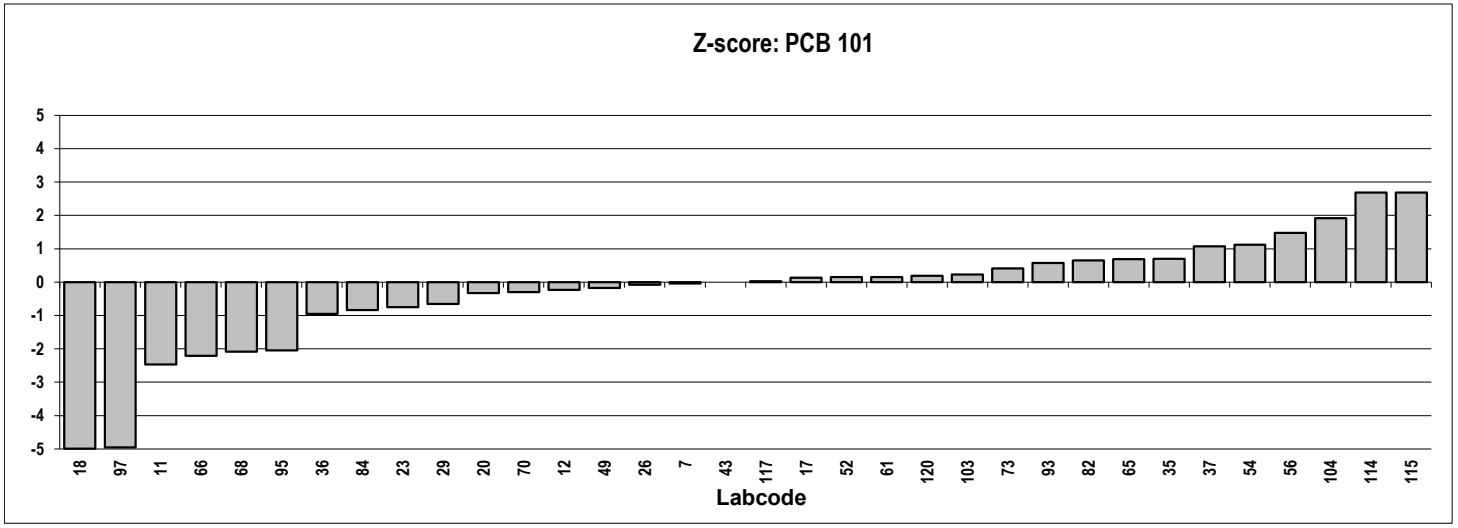
Congener: PCB 101

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	65	-0,040				
11	33	-2,5				
12	62	-0,24				
17	67	0,13				
18	0,036	-5,0				
20	61	-0,33				
23	55	-0,75				
26	64	-0,083				
29	57	-0,65				
35	74	0,70				
36	53	-0,95				
37	79	1,1				
43	65	0,0				
49	63	-0,17				
52	67	0,15				
54	80	1,1				
56	84	1,5				
61	67	0,15				
65	74	0,69				
66	36	-2,2				
68	38	-2,1				
70	61	-0,30				
73	70	0,41				
82	74	0,65				
84	54	-0,84				
93	73	0,57				
95	38	-2,0				
97	0,65	-5,0	ND			
103	68	0,22				
104	90	1,9				
114	100	2,7	ND			
115	100	2,7	ND			
117	65	0,027				
120	68	0,19				

Consenus statistics

Consensus median, pg/g	65
Median all values pg/g	65
Consensus mean, pg/g	62
Standard deviation, pg/g	22
Relative standard deviation, %	36
No. of values reported	34
No. of values removed	0
No. of reported non-detects	3


PCB 101
pg/g fw
130,5
110,5
90,5
70,5
50,5
30,5
10,5
-9,5
7 11 12 17 18 20 23 26 29 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 93 95 97 103 104 114 115 117 120
Labcode


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 11 66 68 95 36 84 23 29 20 70 12 49 26 7 43 117 17 52 61 120 103 73 93 82 65 35 37 54 56 104 114 115
Labcode

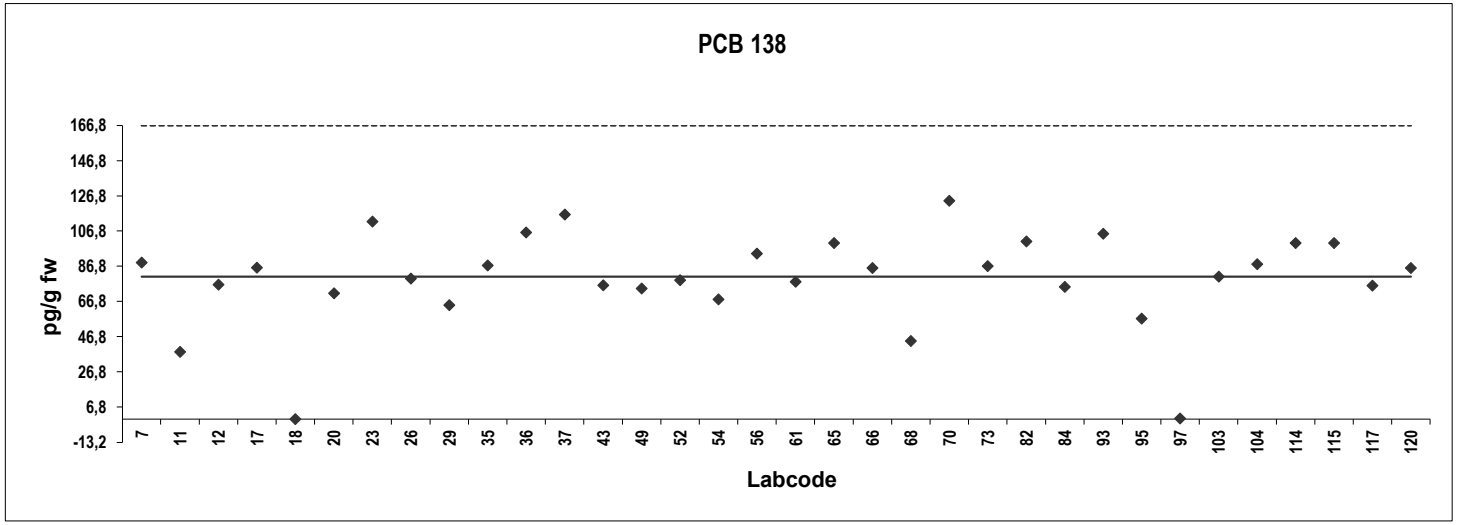
Reindeer

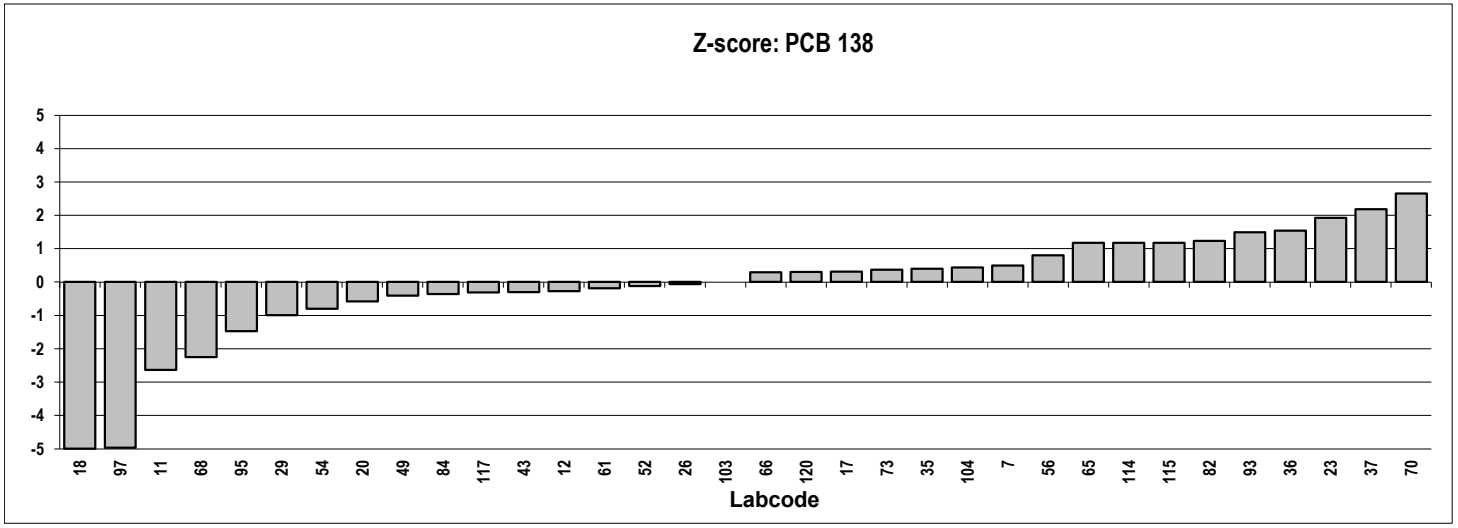
Congener: PCB 138

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	89	0,49				
11	38	-2,6				
12	77	-0,28				
17	86	0,31				
18	0,049	-5,0				
20	72	-0,59				
23	112	1,9				
26	80	-0,068				
29	65	-1,0				
35	87	0,39				
36	106	1,5				
37	116	2,2				
43	76	-0,30				
49	74	-0,41				
52	79	-0,12				
54	68	-0,80				
56	94	0,80				
61	78	-0,19				
65	100	1,2				
66	86	0,30				
68	45	-2,3				
70	124	2,7				
73	87	0,37				
82	101	1,2				
84	75	-0,36				
93	105	1,5				
95	57	-1,5				
97	0,49	-5,0	ND			
103	81	0,0				
104	88	0,43				
114	100	1,2	ND			
115	100	1,2	ND			
117	76	-0,32				
120	86	0,30				

Consenus statistics

Consensus median, pg/g	81
Median all values pg/g	83
Consensus mean, pg/g	80
Standard deviation, pg/g	27
Relative standard deviation, %	34
No. of values reported	34
No. of values removed	0
No. of reported non-detects	3


PCB 138
pg/g fw
166,8
146,8
126,8
106,8
86,8
66,8
46,8
26,8
6,8
-13,2
7 11 12 17 18 20 23 26 29 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 93 95 97 103 104 114 115 117 120
Labcode


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 11 68 95 29 54 20 49 84 117 43 12 61 52 26 103 66 120 17 73 35 104 7 56 65 114 115 82 93 36 23 37 70
Labcode

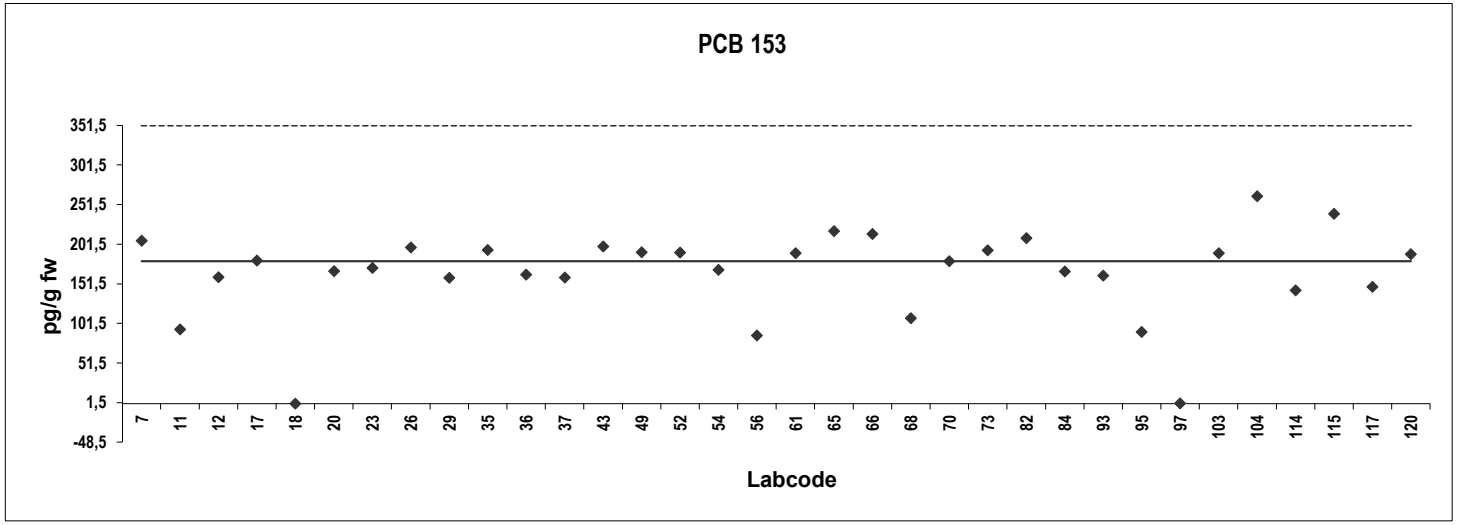
Reindeer

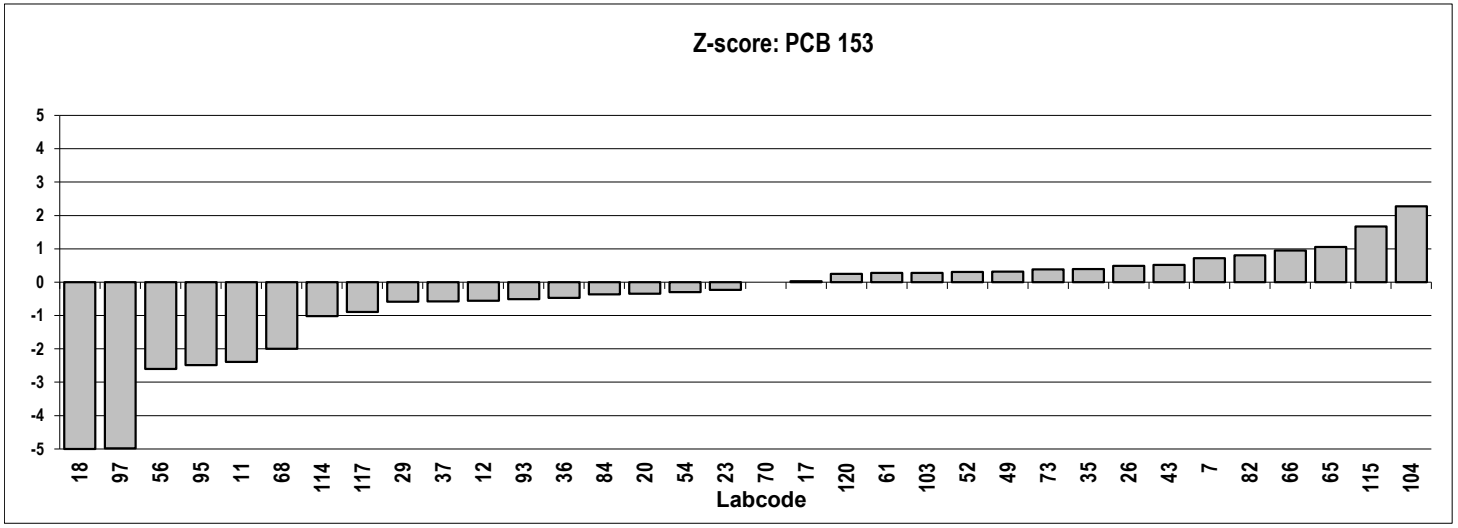
Congener: PCB 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	206	0,71				
11	94	-2,4				
12	160	-0,56				
17	181	0,028				
18	0,10	-5,0				
20	167	-0,35				
23	172	-0,24				
26	198	0,49				
29	159	-0,58				
35	194	0,39				
36	163	-0,47				
37	159	-0,58				
43	199	0,52				
49	191	0,31				
52	191	0,31				
54	169	-0,30				
56	86	-2,6				
61	190	0,28				
65	218	1,1				
66	214	0,95				
68	108	-2,0				
70	180	0,0				
73	194	0,38				
82	209	0,81				
84	167	-0,36				
93	162	-0,51				
95	91	-2,5				
97	0,49	-5,0	ND			
103	190	0,28				
104	262	2,3				
114	143	-1,0				
115	240	1,7				
117	148	-0,90				
120	189	0,25				

Consenus statistics

Consensus median, pg/g	180
Median all values pg/g	176
Consensus mean, pg/g	165
Standard deviation, pg/g	57
Relative standard deviation, %	35
No. of values reported	34
No. of values removed	0
No. of reported non-detects	1


PCB 153
351,5
301,5
251,5
201,5
151,5
101,5
51,5
1,5
-48,5
pg/g fw
7 11 12 17 18 20 23 26 29 35 36 37 43 49 52 54 56 61 65 66 68 70 73 82 84 93 95 97 103 104 114 115 117 120
Labcode


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 56 95 11 68 114 117 29 37 12 93 36 84 20 54 23 70 17 120 61 103 52 49 73 35 26 43 7 82 66 65 115 104
Labcode

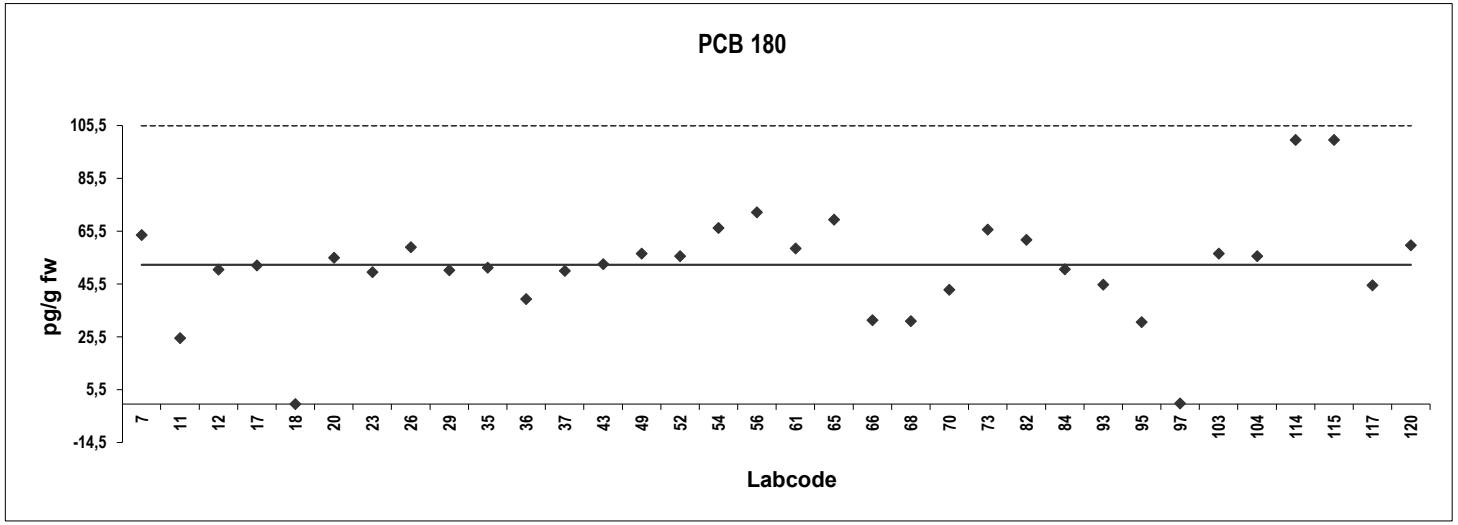
Reindeer

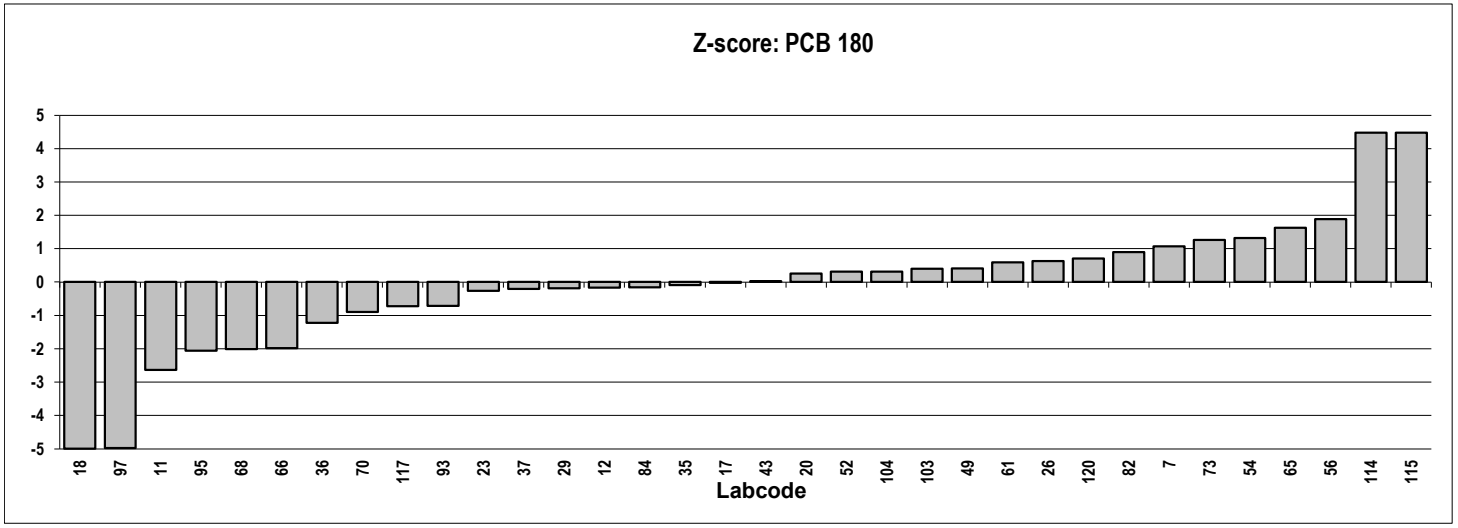
Congener: PCB 180

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	64	1,1				
11	25	-2,6				
12	51	-0,17				
17	53	-0,024				
18	0,030	-5,0				
20	55	0,26				
23	50	-0,26	ND			
26	59	0,63				
29	51	-0,19				
35	52	-0,10				
36	40	-1,2				
37	51	-0,21				
43	53	0,024				
49	57	0,41				
52	56	0,31				
54	67	1,3				
56	73	1,9				
61	59	0,59				
65	70	1,6				
66	32	-2,0				
68	32	-2,0				
70	43	-0,90				
73	66	1,3				
82	62	0,89				
84	51	-0,16				
93	45	-0,71				
95	31	-2,1				
97	0,24	-5,0	ND			
103	57	0,40				
104	56	0,31				
114	100	4,5	ND			
115	100	4,5	ND			
117	45	-0,73				
120	60	0,71				

Consenus statistics

Consensus median, pg/g	53
Median all values pg/g	53
Consensus mean, pg/g	52
Standard deviation, pg/g	21
Relative standard deviation, %	40
No. of values reported	34
No. of values removed	0
No. of reported non-detects	4


PCB 180
105,5
85,5
65,5
45,5
25,5
5,5
-14,5
pg/g fw
7
11
12
17
18
20
23
26
29
35
36
37
43
49
52
54
56
61
65
66
68
70
73
82
84
93
95
97
103
104
114
115
117
120
Labcode


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
18
97
11
95
68
66
36
70
117
93
23
37
29
12
84
35
17
43
20
52
104
103
49
61
26
120
82
7
73
54
65
56
114
115
Labcode

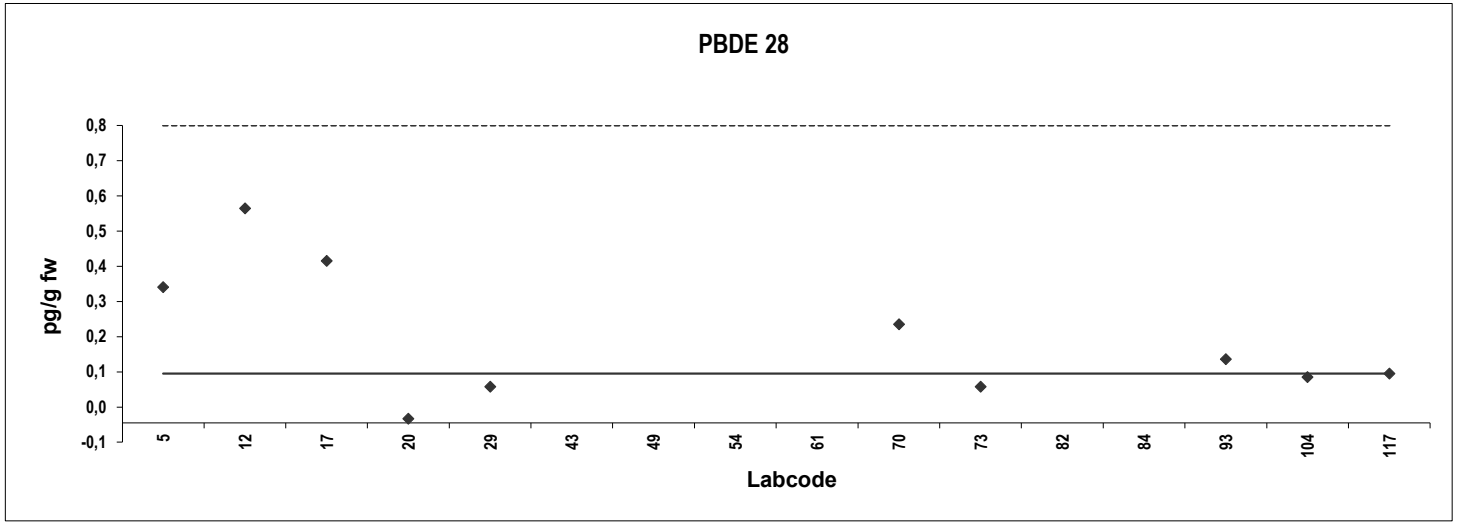
Reindeer

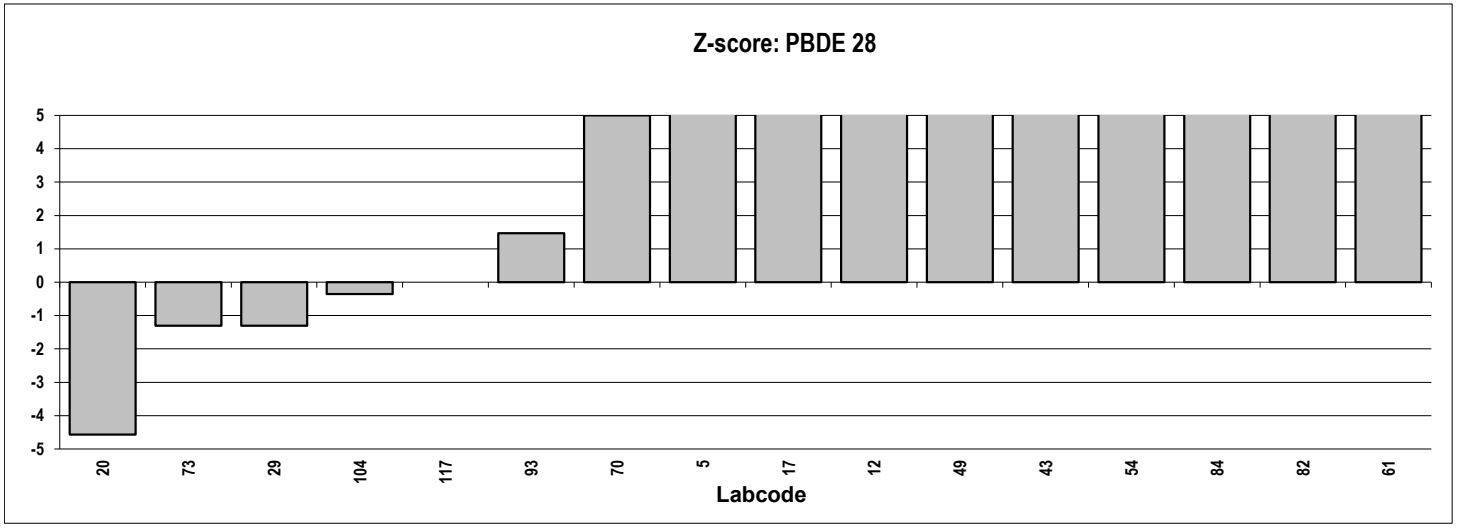
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,39	8,8				
12	0,61	17	ND			
17	0,46	11				
20	0,012	-4,6	ND			
29	0,10	-1,3				
43	0,93	28	Outlier,ND			
49	0,92	28	Outlier			
54	1,7	57	Outlier			
61	1000	35709	Outlier,ND			
70	0,28	5,0	ND			
73	0,10	-1,3				
82	6,1	215	Outlier,ND			
84	3,1	105	Outlier			
93	0,18	1,5				
104	0,13	-0,36				
117	0,14	0,0				

Consenus statistics

Consensus median, pg/g	0,14
Median all values pg/g	0,42
Consensus mean, pg/g	0,24
Standard deviation, pg/g	0,19
Relative standard deviation, %	79
No. of values reported	16
No. of values removed	6
No. of reported non-detects	6


PBDE 28
pg/g fw
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
Labcode


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
20
73
29
104
117
93
70
5
17
12
49
43
54
84
82
61
Labcode

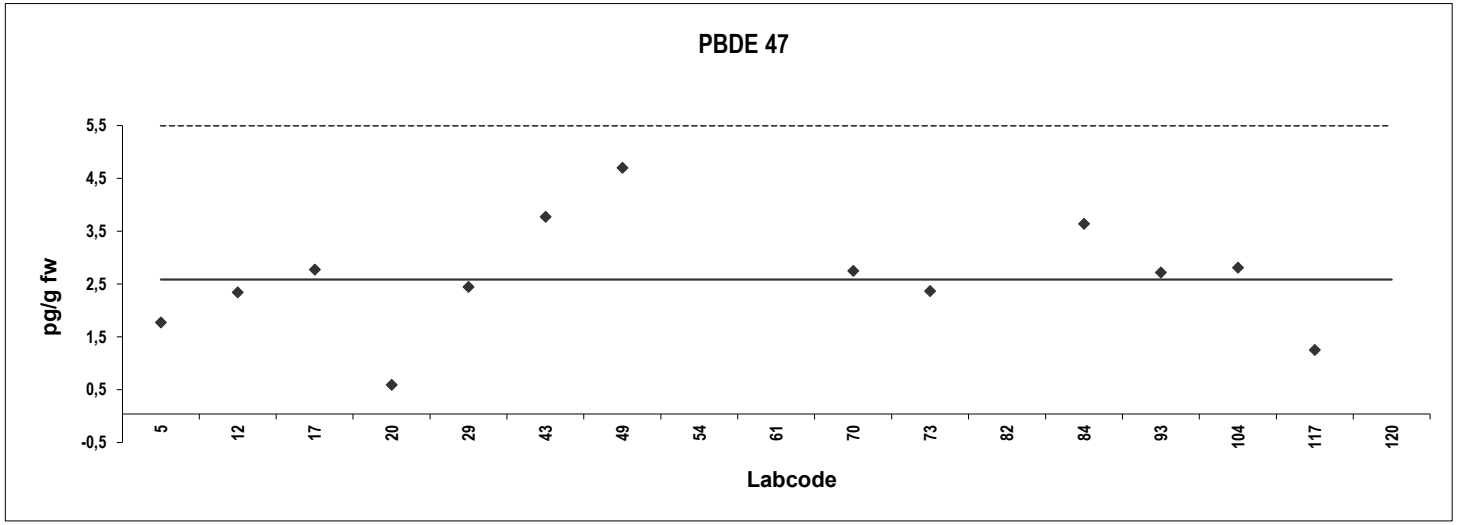
Reindeer

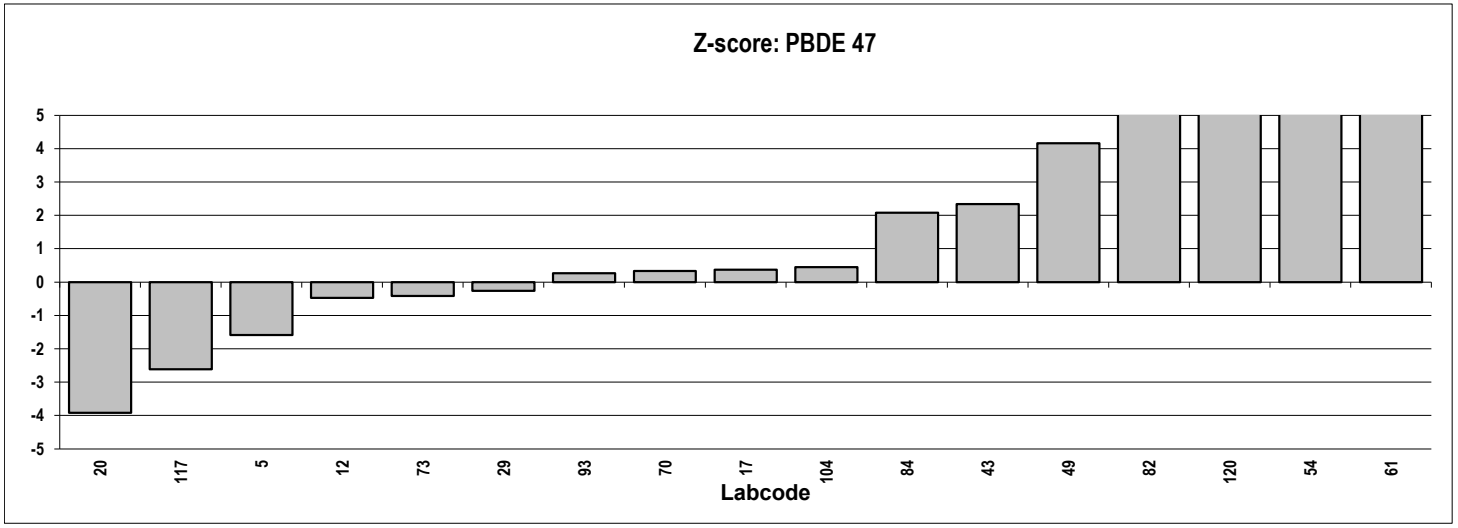
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,7	-1,6				
12	2,3	-0,48				
17	2,7	0,37				
20	0,55	-3,9				
29	2,4	-0,26				
43	3,7	2,3	ND			
49	4,7	4,2				
54	220	427	Outlier			
61	1000	1962	Outlier,ND			
70	2,7	0,33				
73	2,3	-0,42				
82	29	52	Outlier			
84	3,6	2,1				
93	2,7	0,26				
104	2,8	0,45				
117	1,2	-2,6				
120	190	369	Outlier			

Consenus statistics

Consensus median, pg/g	2,5
Median all values pg/g	2,7
Consensus mean, pg/g	2,6
Standard deviation, pg/g	1,1
Relative standard deviation, %	42
No. of values reported	17
No. of values removed	4
No. of reported non-detects	2


PBDE 47
pg/g fw
5,5
4,5
3,5
2,5
1,5
0,5
-0,5
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
120
Labcode


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
20
117
5
12
73
29
93
70
17
104
84
43
49
82
120
54
61
Labcode

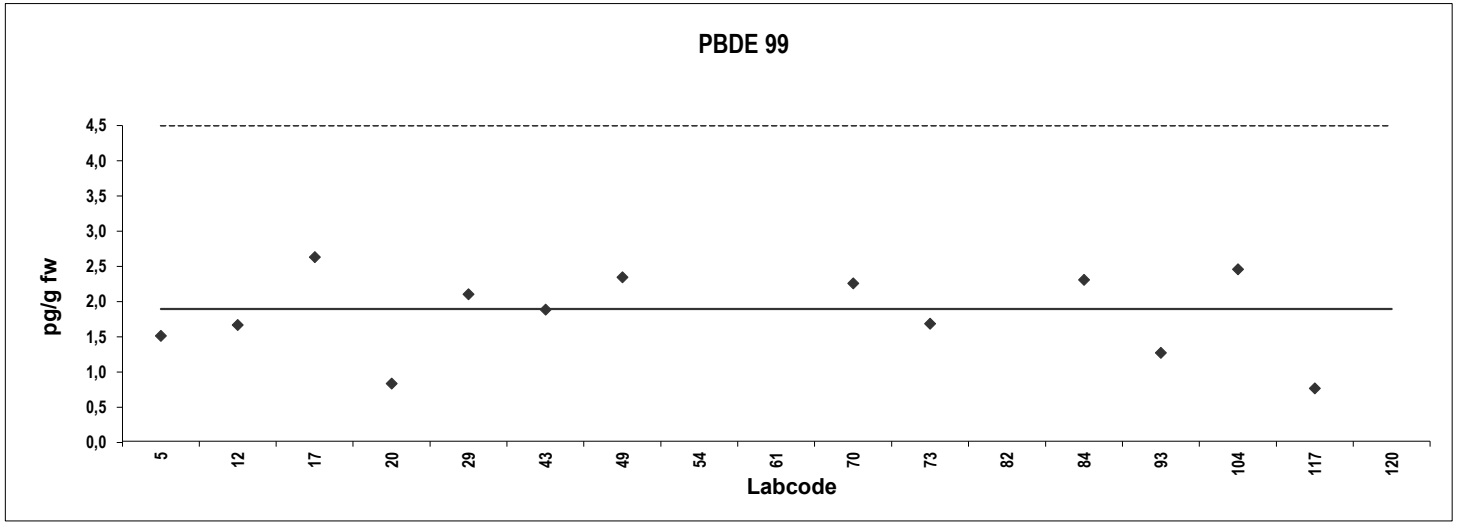
Reindeer

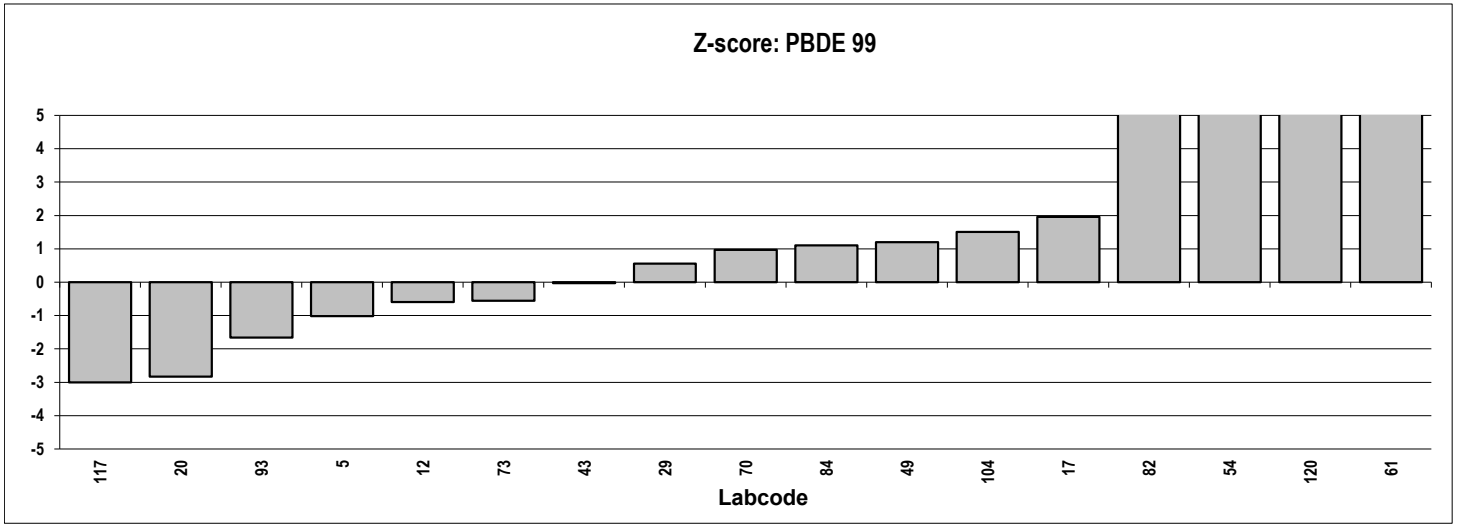
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,5	-1,0				
12	1,7	-0,60				
17	2,6	2,0				
20	0,82	-2,8				
29	2,1	0,56				
43	1,9	-0,025	ND			
49	2,3	1,2				
54	71	185	Outlier			
61	1000	2662	Outlier,ND			
70	2,2	0,97				
73	1,7	-0,56				
82	29	72	Outlier			
84	2,3	1,1				
93	1,3	-1,7				
104	2,4	1,5				
117	0,75	-3,0				
120	151	398	Outlier			

Consenus statistics

Consensus median, pg/g	1,9
Median all values pg/g	2,2
Consensus mean, pg/g	1,8
Standard deviation, pg/g	0,60
Relative standard deviation, %	33
No. of values reported	17
No. of values removed	4
No. of reported non-detects	2


PBDE 99
pg/g fw
4,5
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
120
Labcode


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
117
20
93
5
12
73
43
29
70
84
49
104
17
82
54
120
61
Labcode

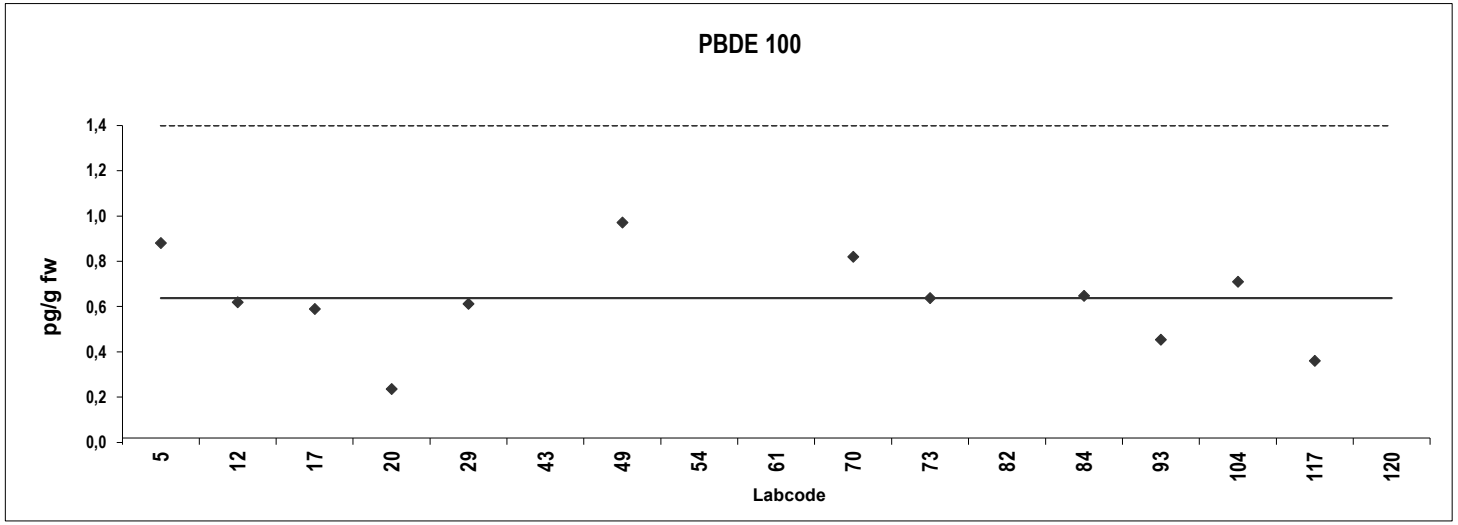
Reindeer

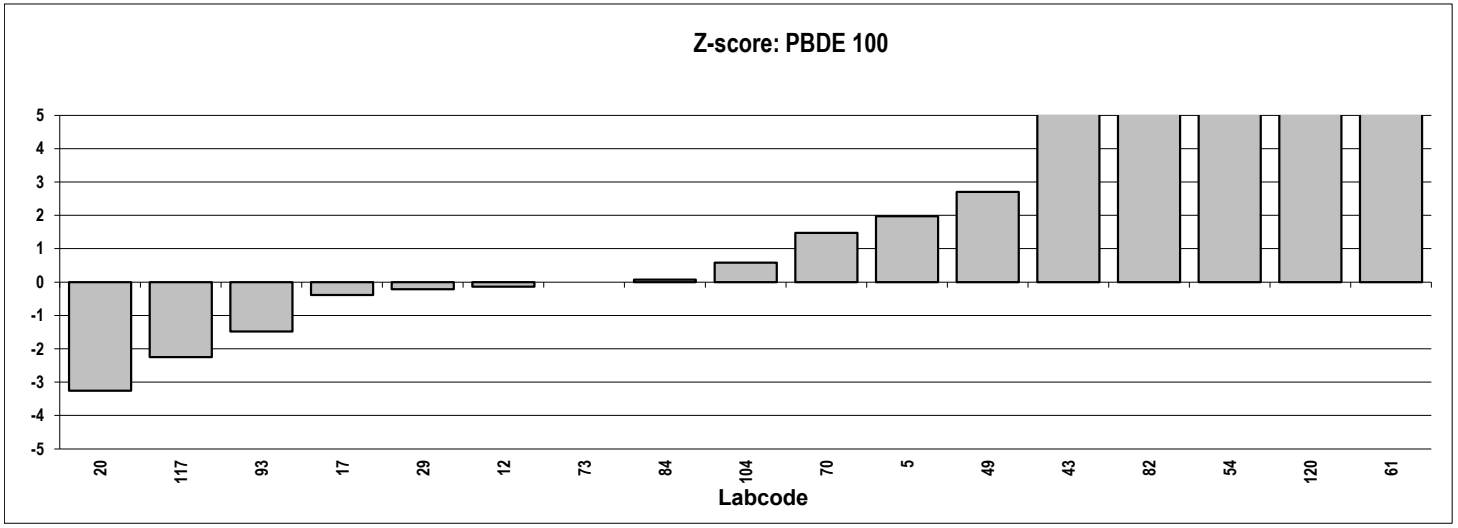
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,86	2,0				
12	0,60	-0,14	ND			
17	0,57	-0,39				
20	0,22	-3,3				
29	0,59	-0,21				
43	1,9	10	Outlier,ND			
49	0,95	2,7				
54	25	198	Outlier			
61	1000	8090	Outlier,ND			
70	0,80	1,5				
73	0,62	0,0				
82	20	154	Outlier			
84	0,63	0,076				
93	0,43	-1,5				
104	0,69	0,59				
117	0,34	-2,2				
120	49	392	Outlier			

Consenus statistics

Consensus median, pg/g	0,62
Median all values pg/g	0,69
Consensus mean, pg/g	0,61
Standard deviation, pg/g	0,21
Relative standard deviation, %	34
No. of values reported	17
No. of values removed	5
No. of reported non-detects	3


PBDE 100
pg/g fw
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
120
Labcode


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
20
117
93
17
29
12
73
84
104
70
5
49
43
82
54
120
61
Labcode

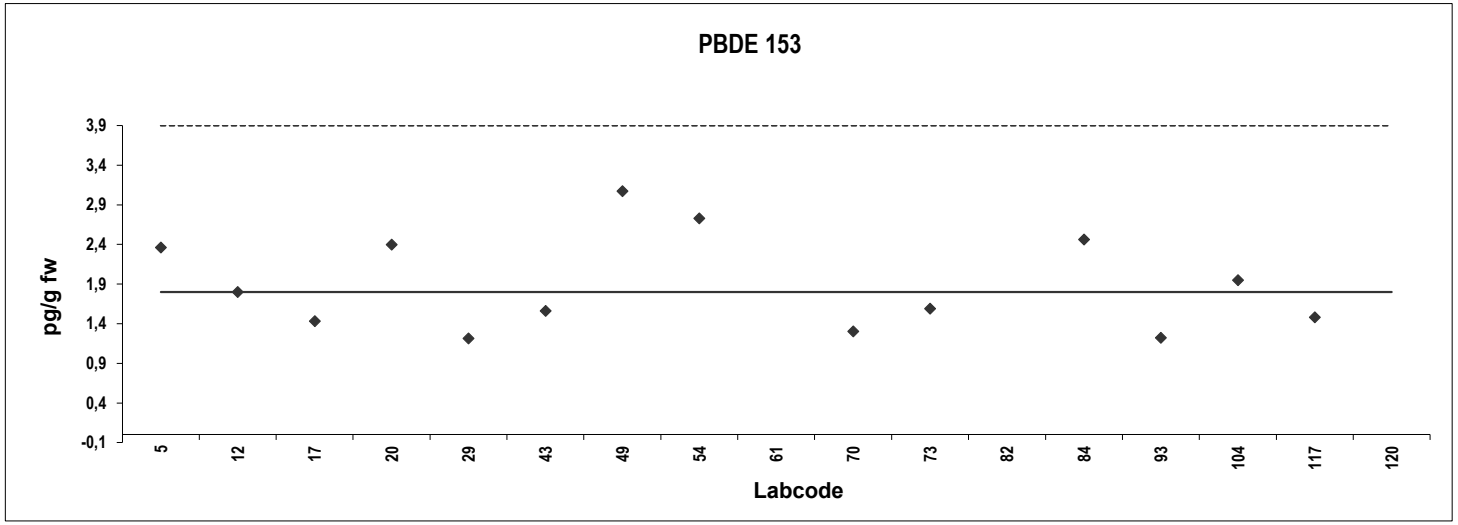
Reindeer

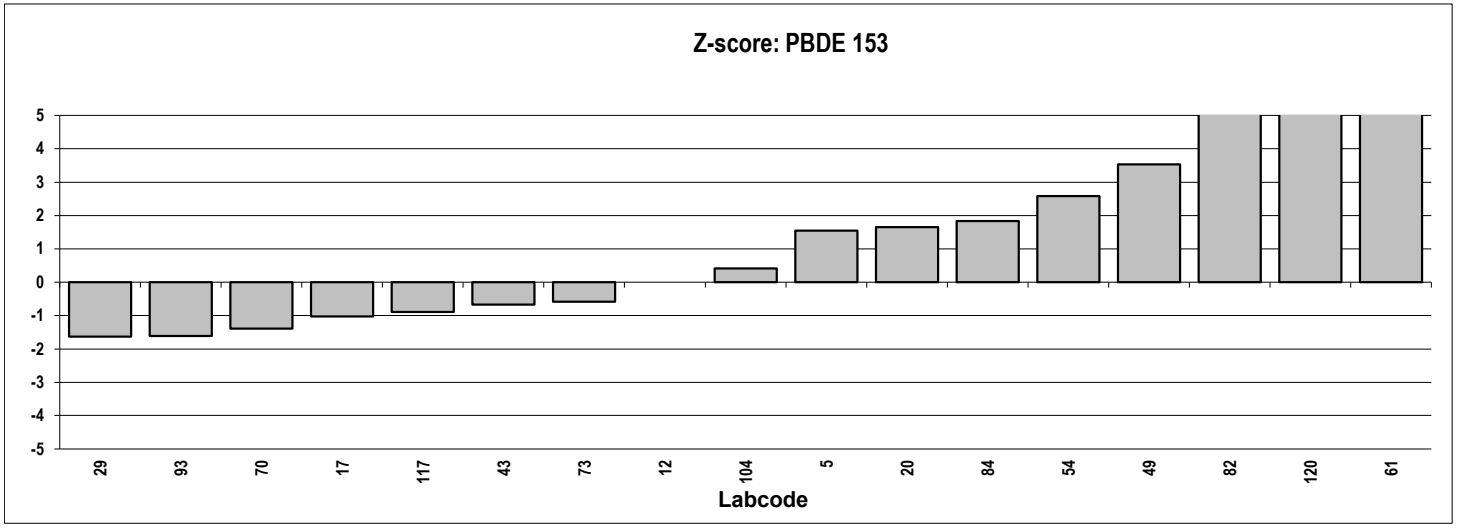
Congener: PBDE 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	2,4	1,6				
12	1,8	0,0				
17	1,4	-1,0				
20	2,4	1,7				
29	1,2	-1,6				
43	1,6	-0,67				
49	3,1	3,5				
54	2,7	2,6				
61	1000	2773	Outlier,ND			
70	1,3	-1,4	ND			
73	1,6	-0,59				
82	24	63	Outlier,ND			
84	2,5	1,8				
93	1,2	-1,6				
104	2,0	0,42				
117	1,5	-0,89				
120	204	562	Outlier			

Consenus statistics

Consensus median, pg/g	1,8
Median all values pg/g	2,0
Consensus mean, pg/g	1,9
Standard deviation, pg/g	0,60
Relative standard deviation, %	32
No. of values reported	17
No. of values removed	3
No. of reported non-detects	3


PBDE 153
pg/g fw
3,9
3,4
2,9
2,4
1,9
1,4
0,9
0,4
-0,1
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
120
Labcode


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
29
93
70
17
117
43
73
12
104
5
20
84
54
49
82
120
61
Labcode

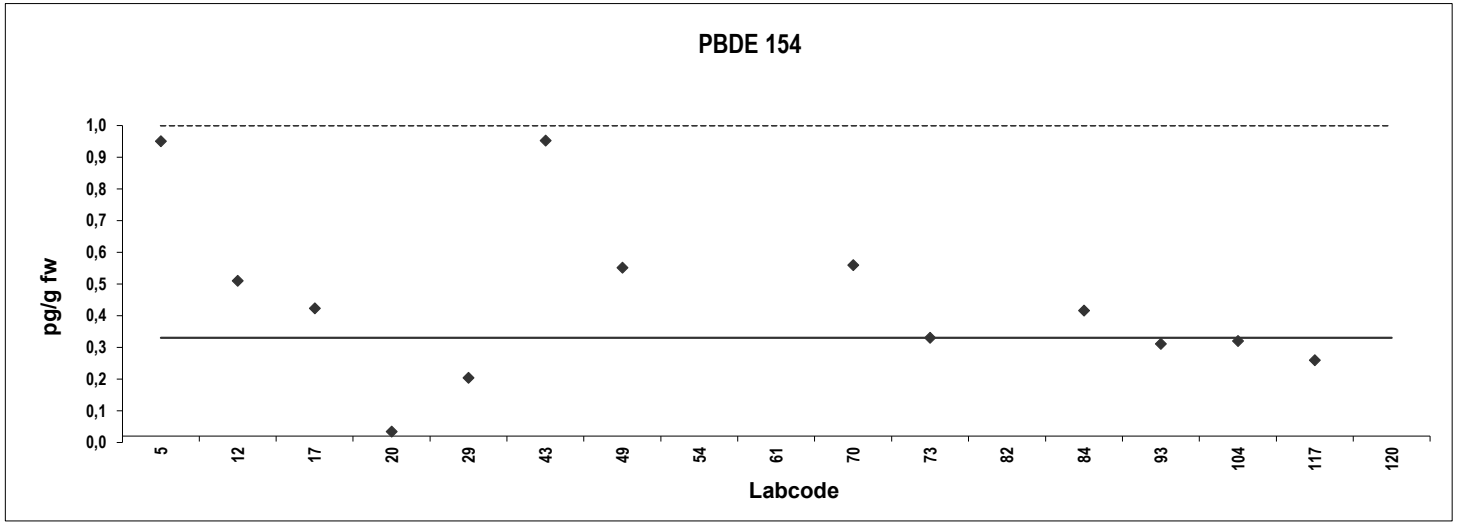
Reindeer

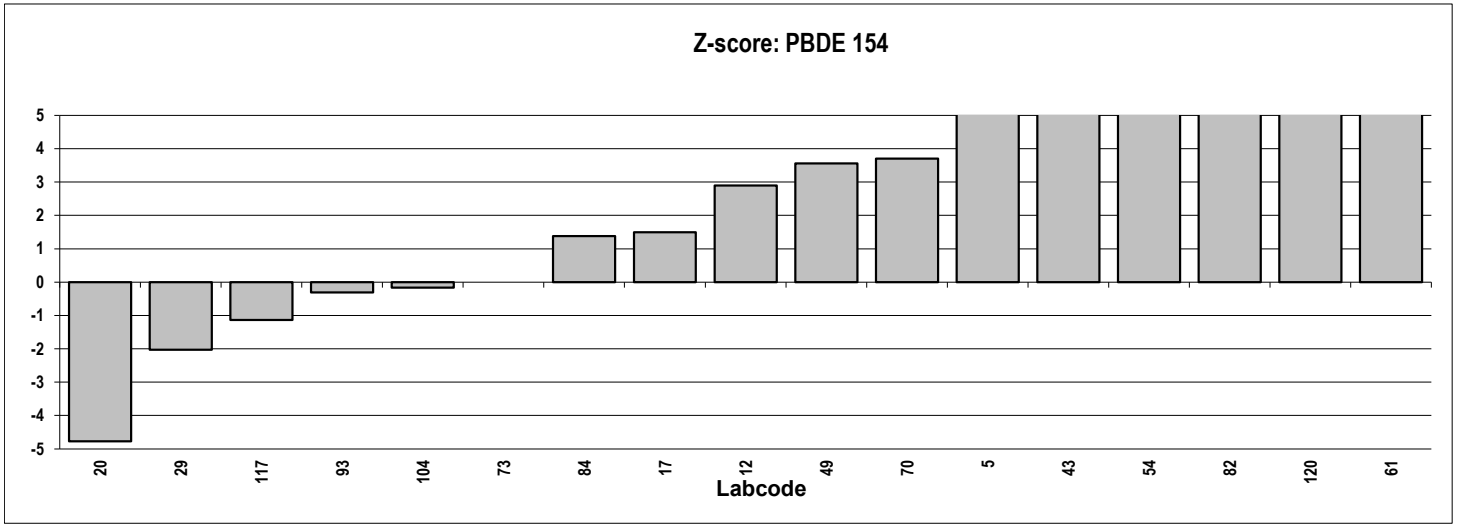
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	0,93	10				
12	0,49	2,9	ND			
17	0,40	1,5				
20	0,014	-4,8	ND			
29	0,18	-2,0				
43	0,93	10	ND			
49	0,53	3,6				
54	3,0	43	Outlier			
61	1000	16112	Outlier,ND			
70	0,54	3,7	ND			
73	0,31	0,0				
82	19	301	Outlier			
84	0,40	1,4				
93	0,29	-0,31				
104	0,30	-0,16				
117	0,24	-1,1				
120	25	393	Outlier			

Consenus statistics

Consensus median, pg/g	0,31
Median all values pg/g	0,49
Consensus mean, pg/g	0,43
Standard deviation, pg/g	0,27
Relative standard deviation, %	62
No. of values reported	17
No. of values removed	4
No. of reported non-detects	5


PBDE 154
pg/g fw
1,0
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
120
Labcode


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
20
29
117
93
104
73
84
17
12
49
70
5
43
54
82
120
61
Labcode

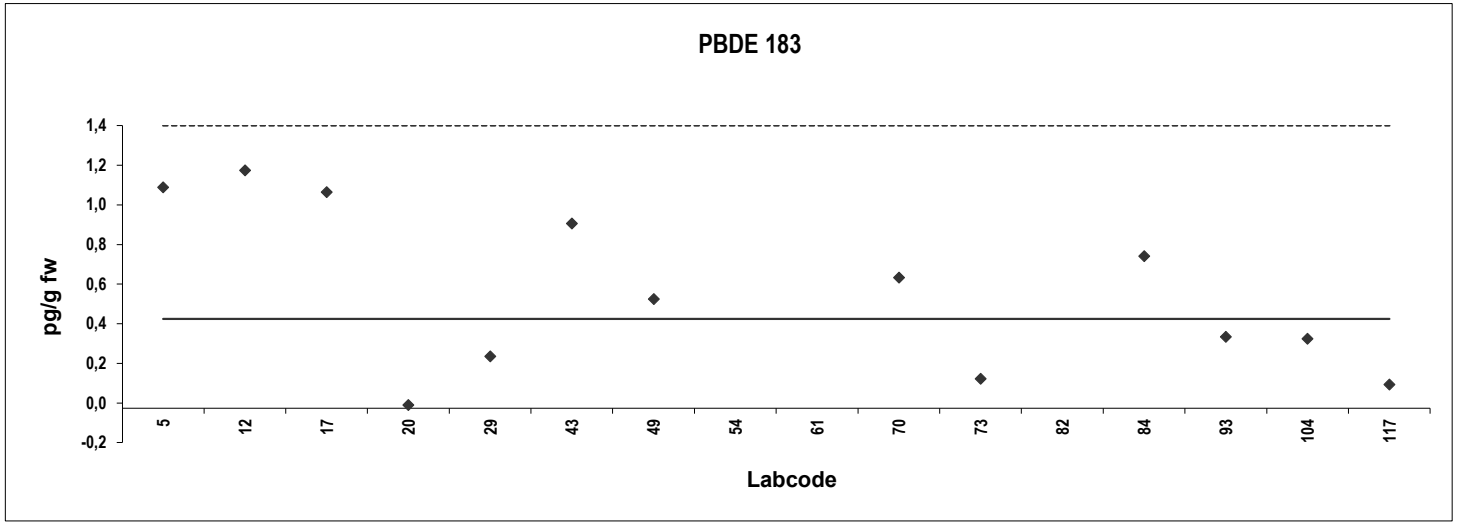
Reindeer

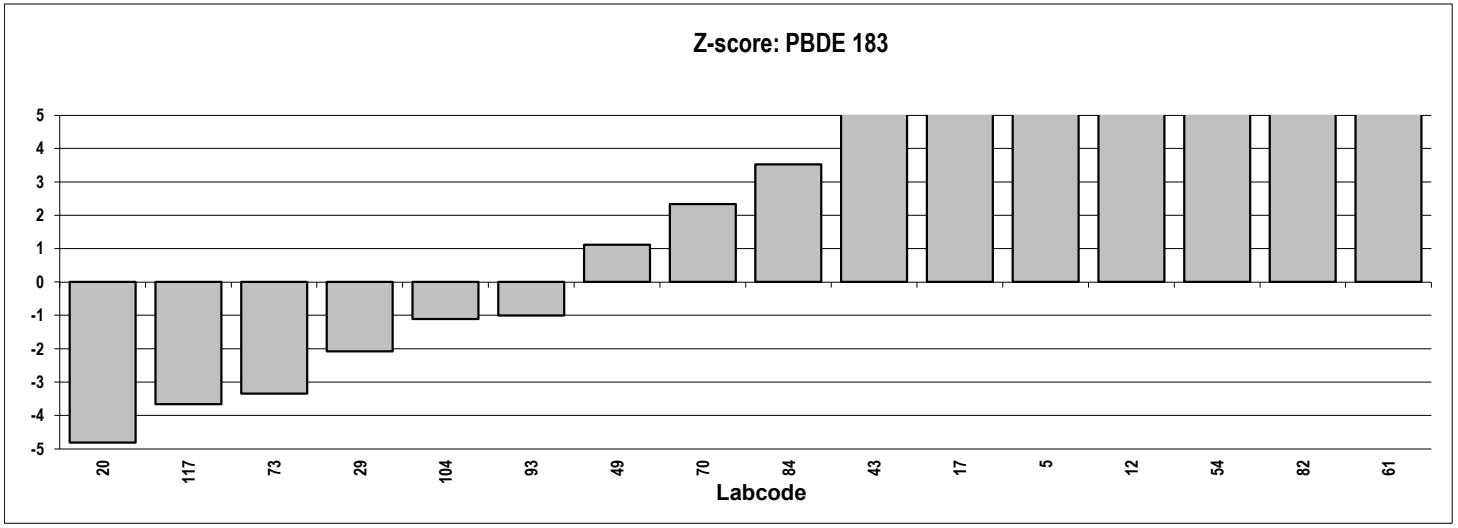
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,1	7,4				
12	1,2	8,3	ND			
17	1,1	7,1				
20	0,016	-4,8	ND			
29	0,26	-2,1				
43	0,93	5,4	ND			
49	0,55	1,1				
54	1,5	12	Outlier			
61	1000	11104	Outlier,ND			
70	0,66	2,3	ND			
73	0,15	-3,3				
82	17	179	Outlier,ND			
84	0,77	3,5				
93	0,36	-1,0	ND			
104	0,35	-1,1				
117	0,12	-3,7				

Consenus statistics

Consensus median, pg/g	0,45
Median all values pg/g	0,71
Consensus mean, pg/g	0,58
Standard deviation, pg/g	0,41
Relative standard deviation, %	70
No. of values reported	16
No. of values removed	3
No. of reported non-detects	7


PBDE 183
pg/g fw
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
-0,2
5
12
17
20
29
43
49
54
61
70
73
82
84
93
104
117
Labcode


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
20
117
73
29
104
93
49
70
84
43
17
5
12
54
82
61
Labcode

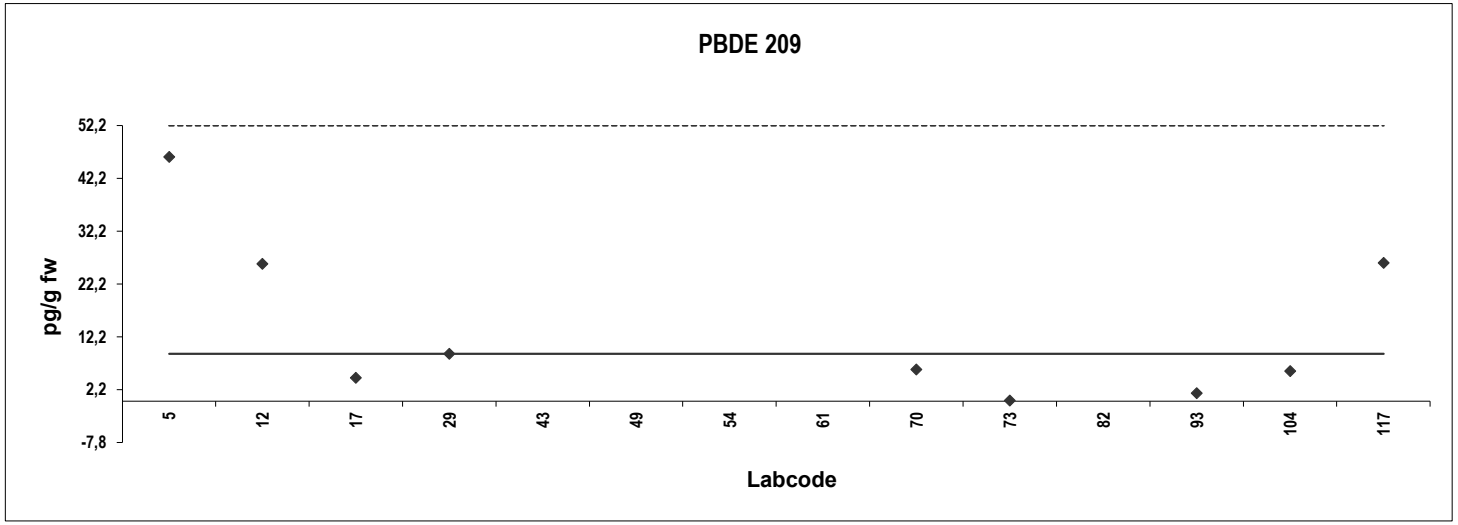
Reindeer

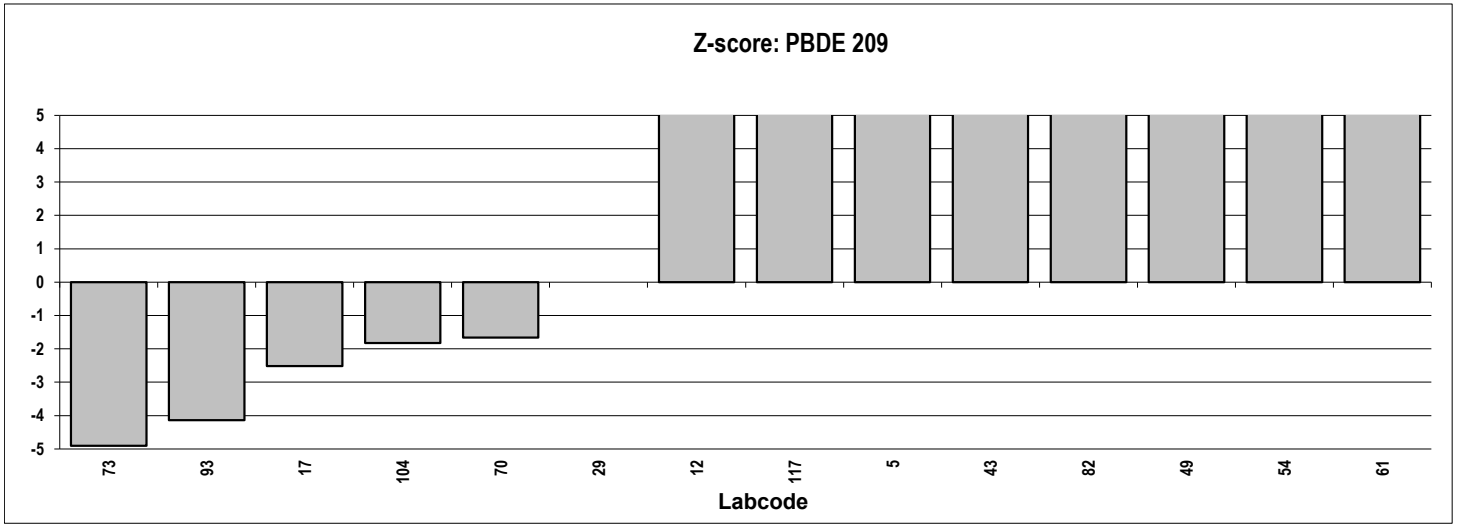
Congener: PBDE 209

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	46	21				
12	26	9,5				
17	4,5	-2,5				
29	9,0	0,0				
43	75	37	Outlier,ND			
49	219	117	Outlier			
54	281	151	Outlier			
61	50000	27848	Outlier,ND			
70	6,0	-1,7	ND			
73	0,16	-4,9	ND			
82	206	110	Outlier,ND			
93	1,6	-4,1				
104	5,7	-1,8				
117	26	9,6				

Consenus statistics

Consensus median, pg/g	9,0
Median all values pg/g	26
Consensus mean, pg/g	14
Standard deviation, pg/g	16
Relative standard deviation, %	112
No. of values reported	14
No. of values removed	5
No. of reported non-detects	5


PBDE 209
52,2
42,2
32,2
22,2
12,2
2,2
-7,8
pg/g fw
5
12
17
29
43
49
54
61
70
73
82
93
104
117
Labcode


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
73
93
17
104
70
29
12
117
5
43
82
49
54
61
Labcode

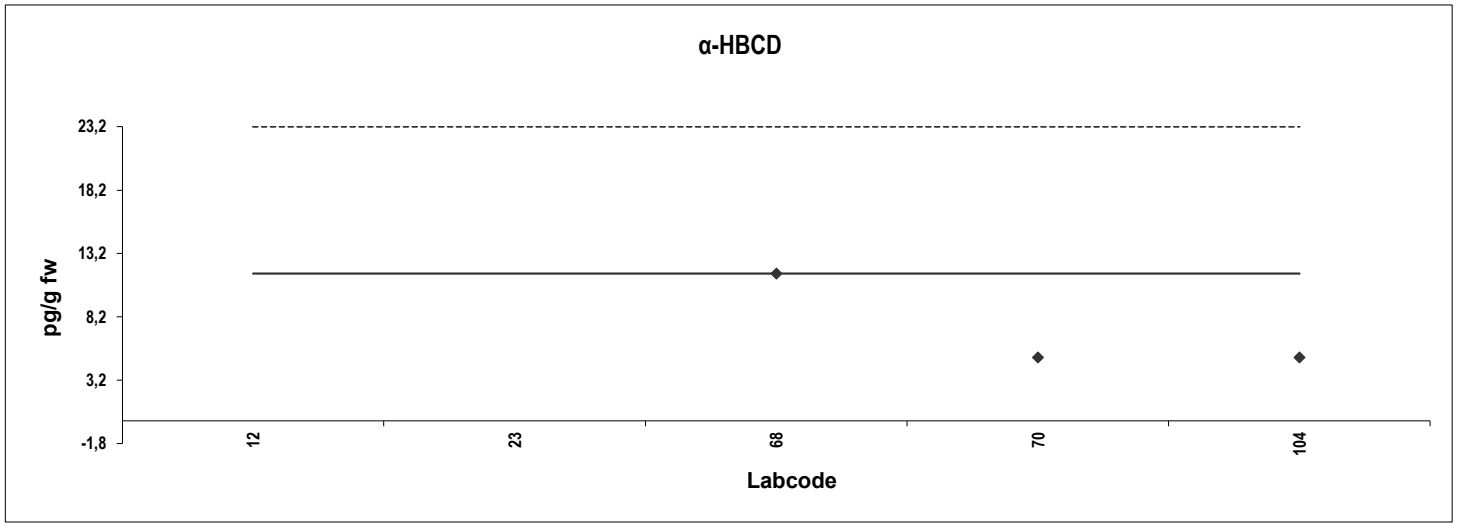
Reindeer

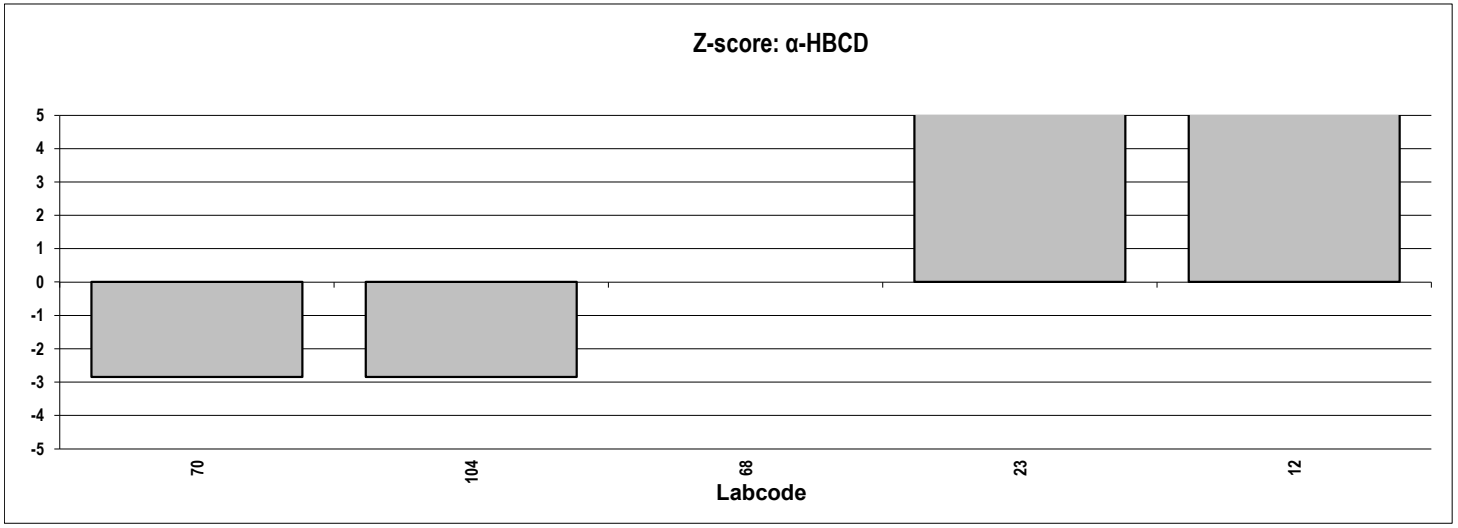
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
12	100	38	Outlier,ND			
23	30	7,9	Outlier,ND			
68	12	0,0				
70	5,0	-2,8	ND			
104	5,0	-2,8	ND			

Consenus statistics

Consensus median, pg/g	12
Median all values pg/g	12
Consensus mean, pg/g	7,2
Standard deviation, pg/g	3,8
Relative standard deviation, %	53
No. of values reported	5
No. of values removed	2
No. of reported non-detects	4


α-HBCD
23,2
18,2
13,2
8,2
3,2
-1,8
pg/g fw
12
23
68
70
104
Labcode


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
104
68
23
12
Labcode

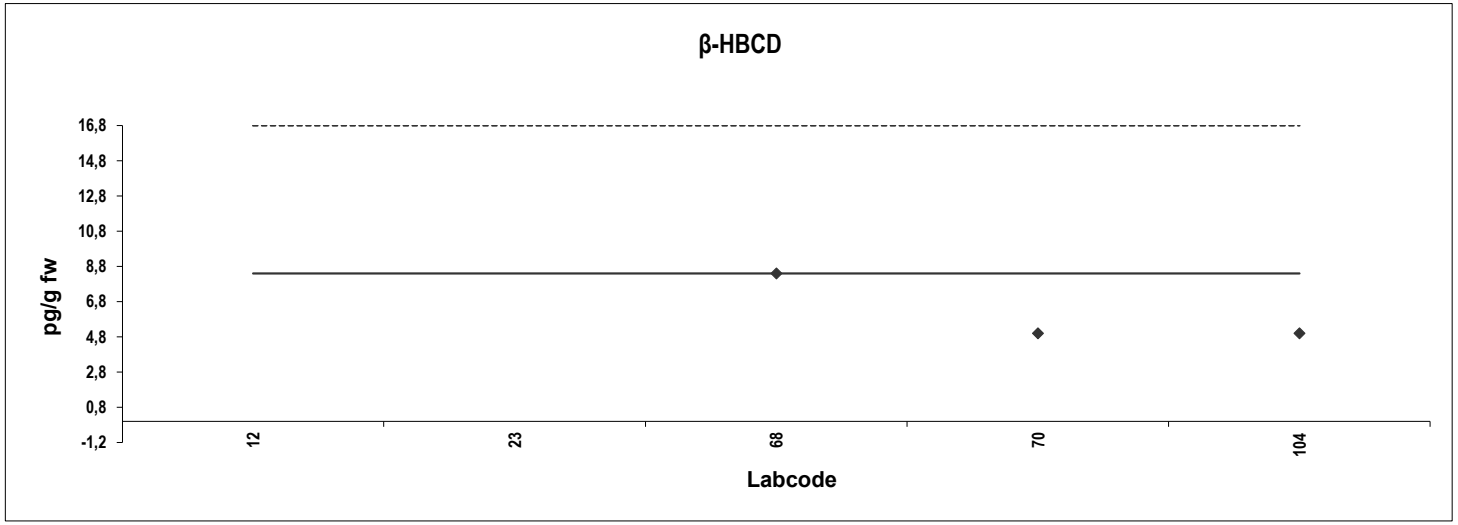
Reindeer

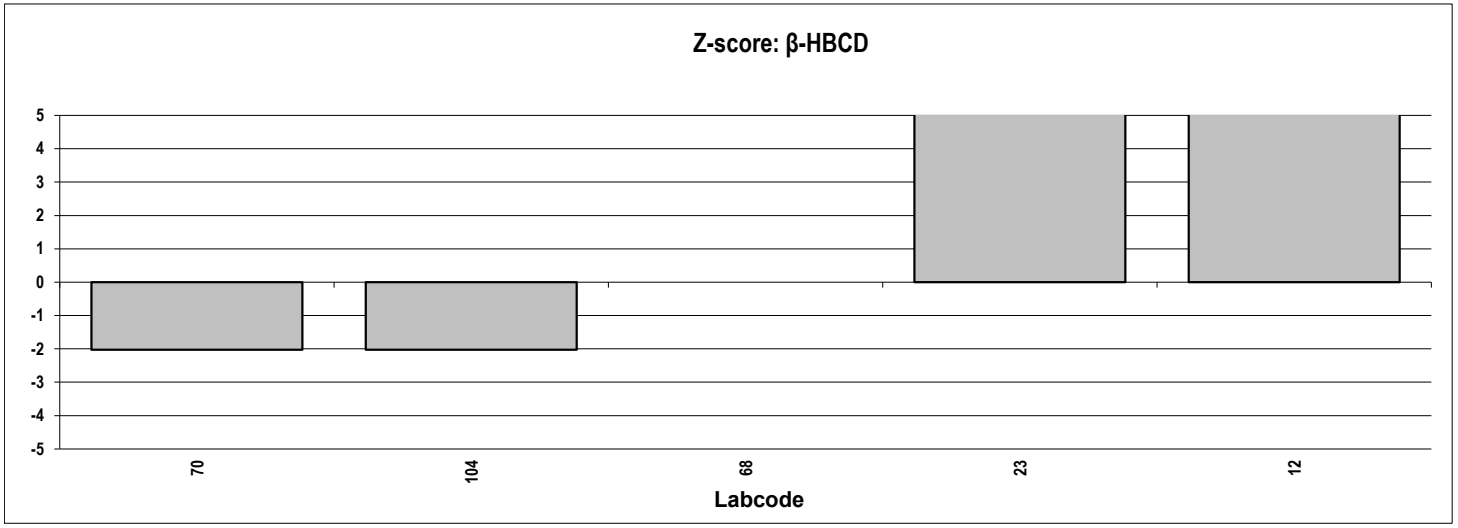
Congener: β-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
12	100	55	Outlier,ND			
23	30	13	Outlier,ND			
68	8,4	0,0				
70	5,0	-2,0	ND			
104	5,0	-2,0	ND			

Consenus statistics

Consensus median, pg/g	8,4
Median all values pg/g	8,4
Consensus mean, pg/g	6,1
Standard deviation, pg/g	2,0
Relative standard deviation, %	32
No. of values reported	5
No. of values removed	2
No. of reported non-detects	4


β-HBCD
pg/g fw
16,8
14,8
12,8
10,8
8,8
6,8
4,8
2,8
0,8
-1,2
12
23
68
70
104
Labcode


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
104
68
23
12
Labcode

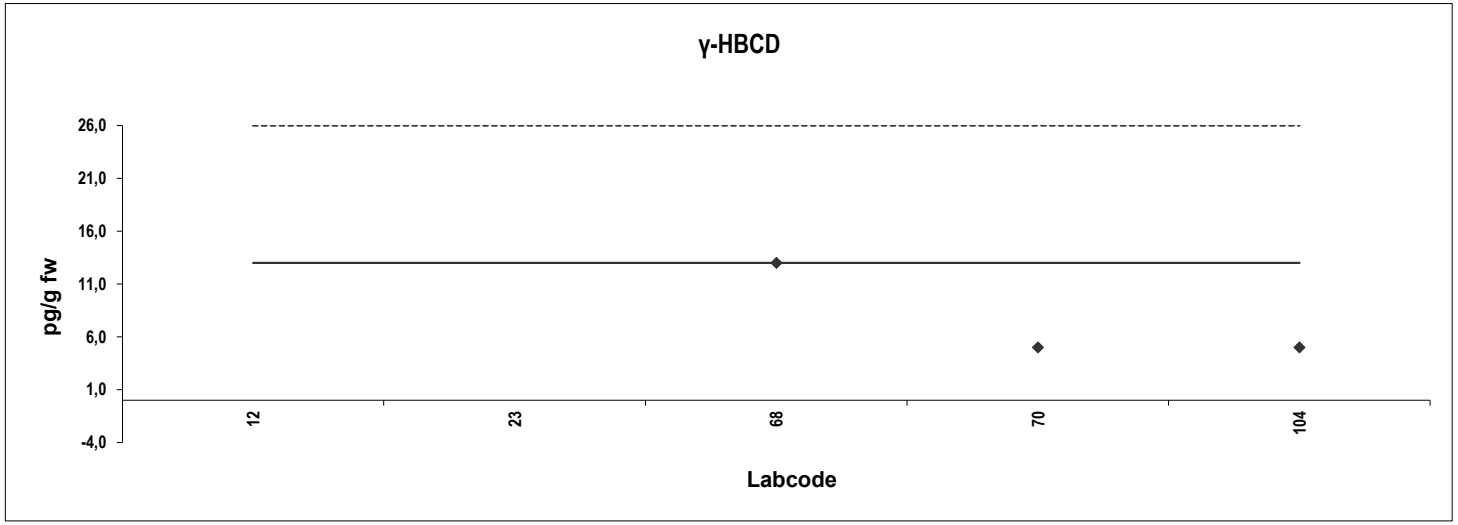
Reindeer

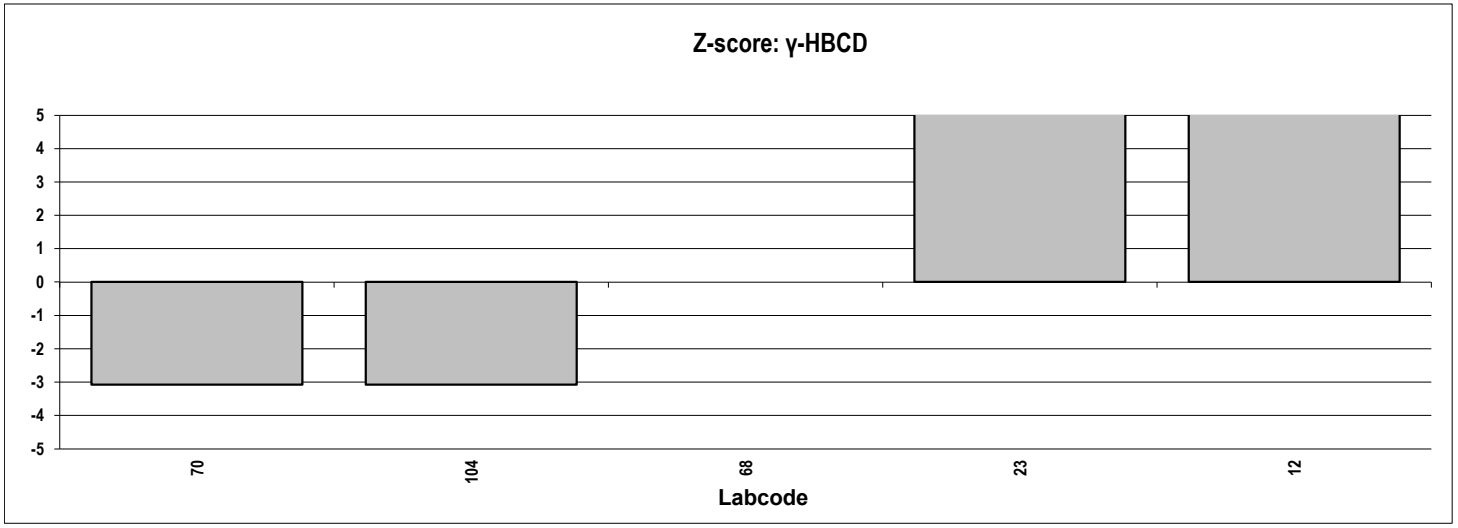
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
12	100	33	Outlier,ND			
23	30	6,5	Outlier,ND			
68	13	0,0				
70	5,0	-3,1	ND			
104	5,0	-3,1	ND			

Consenus statistics

Consensus median, pg/g	13
Median all values pg/g	13
Consensus mean, pg/g	7,7
Standard deviation, pg/g	4,6
Relative standard deviation, %	60
No. of values reported	5
No. of values removed	2
No. of reported non-detects	4


γ-HBCD
26,0
21,0
16,0
11,0
6,0
1,0
-4,0
pg/g fw
12
23
68
70
104
Labcode


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
104
68
23
12
Labcode

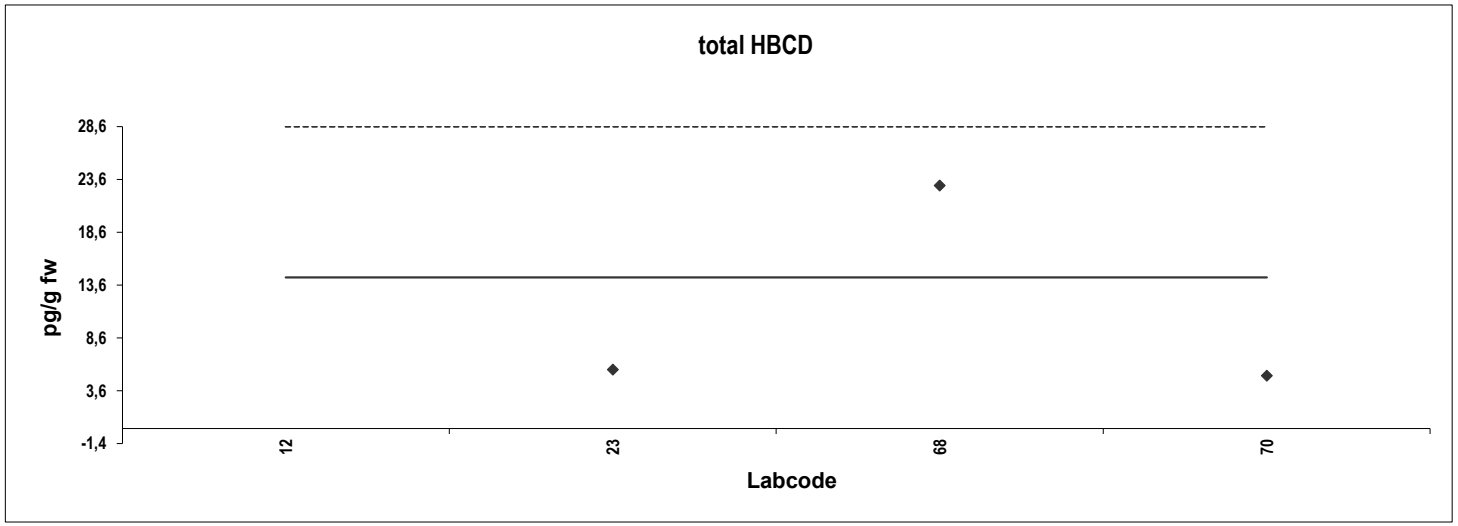
Reindeer

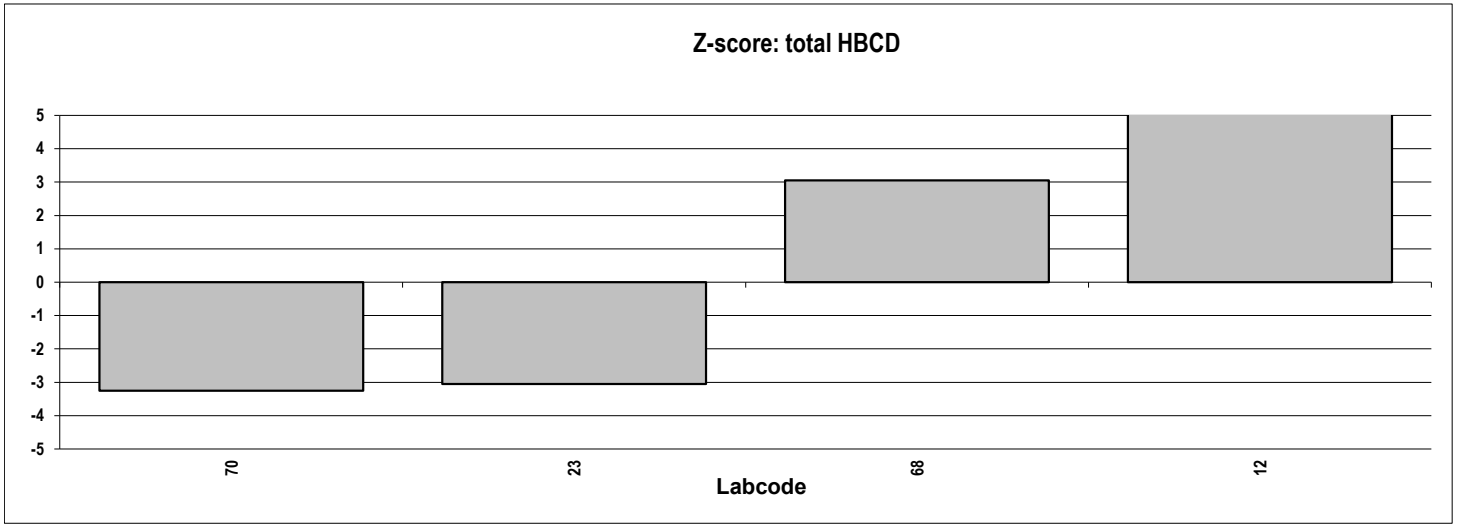
Congener: total HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
12	100	30	Outlier,ND			
23	5,6	-3,1				
68	23	3,1				
70	5,0	-3,2	ND			

Consenus statistics

Consensus median, pg/g	14
Median all values pg/g	14
Consensus mean, pg/g	11
Standard deviation, pg/g	10
Relative standard deviation, %	91
No. of values reported	4
No. of values removed	1
No. of reported non-detects	2


total HBCD
28,6
23,6
18,6
13,6
8,6
3,6
-1,4
pg/g fw
12
23
68
70
Labcode


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
23
68
12
Labcode

Appendix 3:

Presentation of results for
Herring 2023

Appendix 3: Presentation of results: Herring 2023

Statistic calculations for PCDDs, PCDFs and dioxin-like PCBs

For each congener, the outliers were removed, and the consensus calculated according to the following procedure:

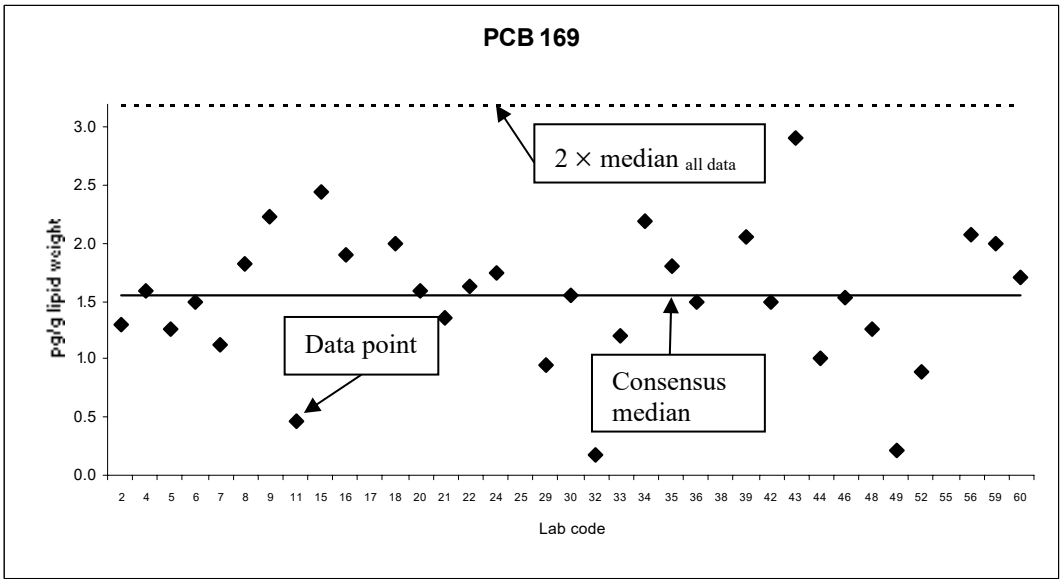
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.

Statistic calculations for indicator PCBs, PBDEs and HBCD

For each congener, the outliers were removed and the consensus calculated according to the following procedure:

1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners (NDs).
2. Values exceeding 2 × this median were defined as outliers and removed from the data set. The NDs were also removed.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.
4. For comparison, median, mean and standard deviation were also calculated without removing NDs.

The diagram shows the reported data up to approximately the limit for outliers (2 × the first median).



Z-Scores of individual congeners

Z-scores of each congener were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

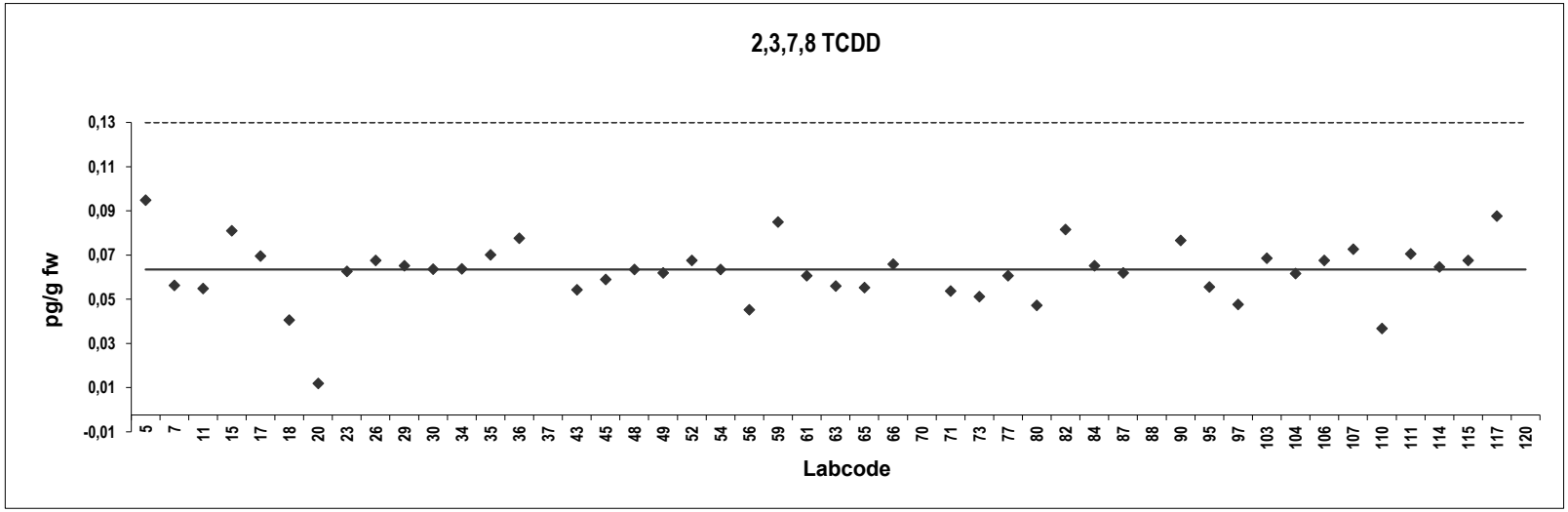
Herring

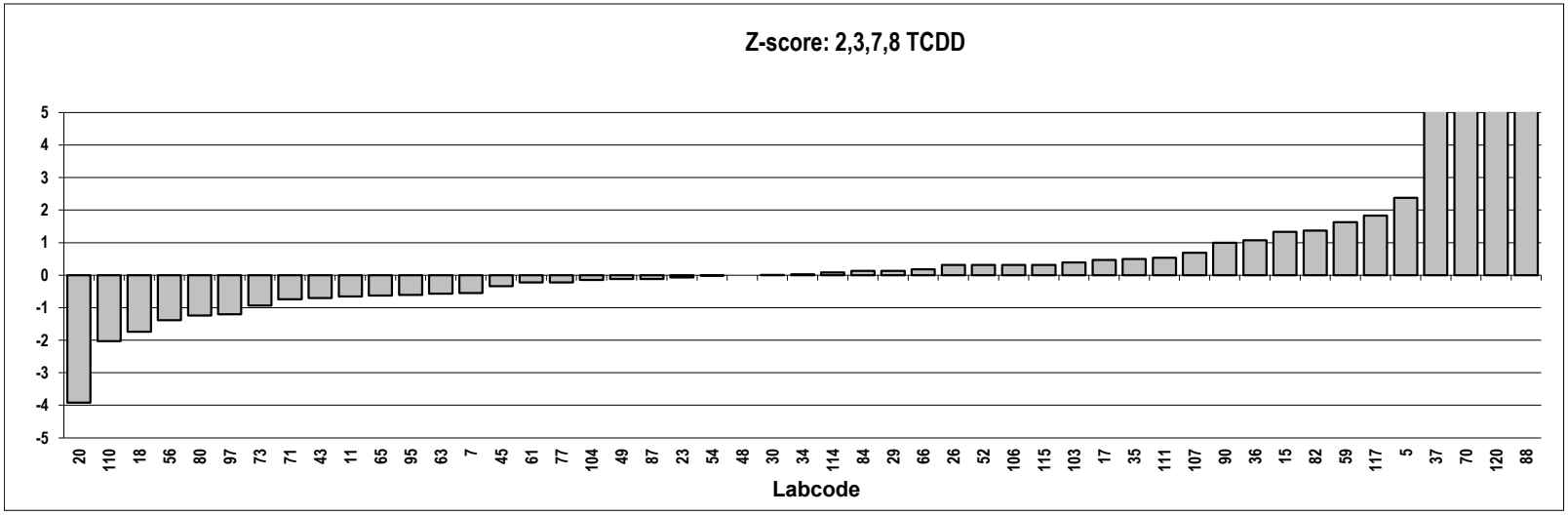
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,097	2,4		114	0,067	0,083	
7	0,059	-0,55		115	0,070	0,31	
11	0,057	-0,66		117	0,090	1,8	
15	0,083	1,3		120	0,23	13	Outlier
17	0,072	0,46					
18	0,043	-1,7					
20	0,014	-3,9					
23	0,065	-0,068					
26	0,070	0,31					
29	0,068	0,13					
30	0,066	0,0076					
34	0,066	0,023					
35	0,073	0,50					
36	0,080	1,1					
37	0,15	6,8	Outlier				
43	0,057	-0,70					
45	0,061	-0,34					
48	0,066	0,0					
49	0,064	-0,12					
52	0,070	0,31					
54	0,066	-0,0071					
56	0,048	-1,4					
59	0,087	1,6					
61	0,063	-0,22	ND				
63	0,058	-0,57					
65	0,058	-0,62					
66	0,068	0,18					
70	0,21	11	Outlier,ND				
71	0,056	-0,74					
73	0,054	-0,93					
77	0,063	-0,22					
80	0,050	-1,2					
82	0,084	1,4					
84	0,068	0,13					
87	0,064	-0,12					
88	1,0	71	Outlier,ND				
90	0,079	0,99					
95	0,058	-0,61	ND				
97	0,050	-1,2					
103	0,071	0,39					
104	0,064	-0,14					
106	0,070	0,31					
107	0,075	0,69	ND				
110	0,039	-2,0					
111	0,073	0,54					

Consenus statistics

Consensus median, pg/g	0,066
Median all values pg/g	0,066
Consensus mean, pg/g	0,065
Standard deviation, pg/g	0,014
Relative standard deviation, %	22
No. of values reported	49
No. of values removed	4
No. of reported non-detects	5


2,3,7,8 TCDD
pg/g fw
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 110 18 56 80 97 73 71 43 11 65 95 63 7 45 61 77 104 49 87 23 54 48 30 34 114 84 29 66 26 52 106 115 103 17 35 111 107 90 36 15 82 59 117 5 37 70 120 88
Labcode

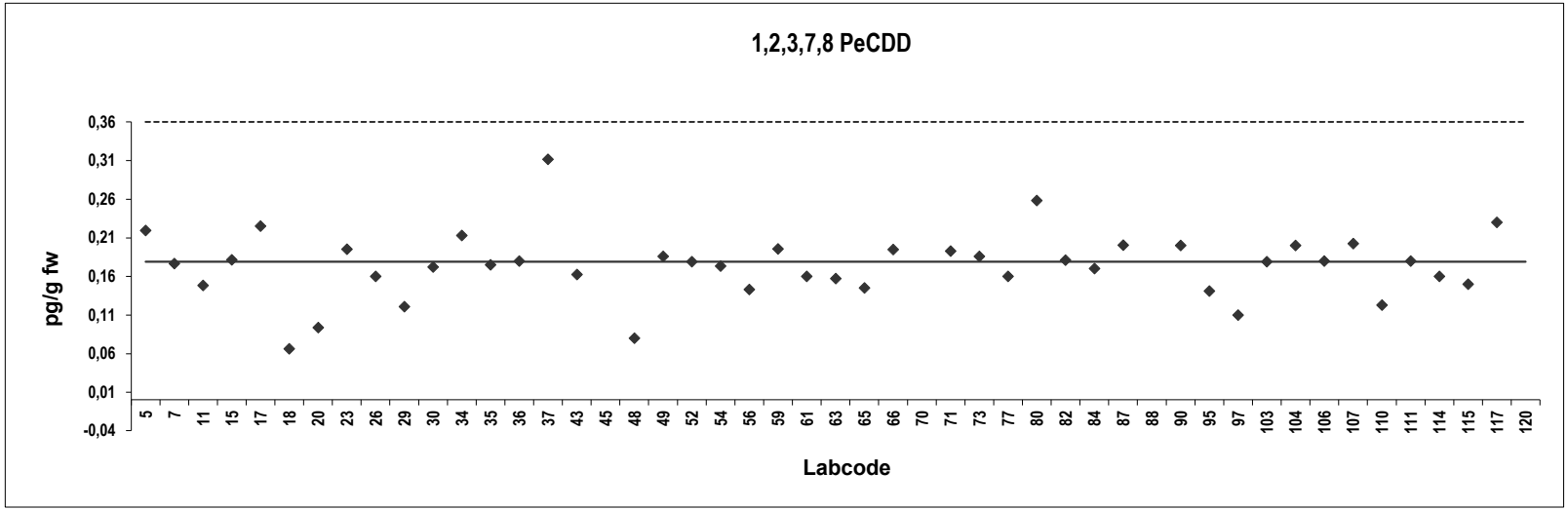
Herring

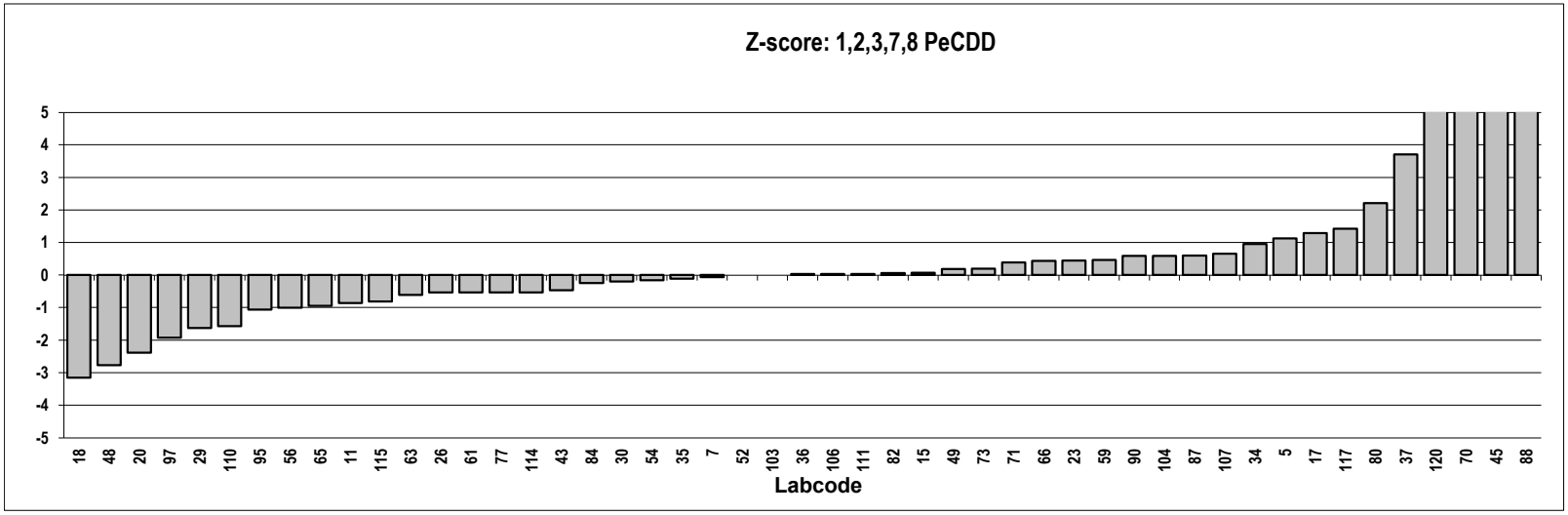
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,22	1,1		114	0,16	-0,53	
7	0,18	-0,066		115	0,15	-0,81	
11	0,15	-0,86		117	0,23	1,4	
15	0,18	0,067		120	0,37	5,4	Outlier
17	0,23	1,3					
18	0,066	-3,2					
20	0,094	-2,4					
23	0,20	0,45					
26	0,16	-0,53					
29	0,12	-1,6					
30	0,17	-0,20					
34	0,21	0,95					
35	0,18	-0,11					
36	0,18	0,028					
37	0,31	3,7					
43	0,16	-0,47					
45	0,62	12	Outlier				
48	0,080	-2,8					
49	0,19	0,19					
52	0,18	0,0					
54	0,17	-0,16					
56	0,14	-1,0					
59	0,20	0,46					
61	0,16	-0,53					
63	0,16	-0,61					
65	0,15	-0,95					
66	0,19	0,44					
70	0,41	6,5	Outlier,ND				
71	0,19	0,38					
73	0,19	0,19					
77	0,16	-0,53					
80	0,26	2,2					
82	0,18	0,056					
84	0,17	-0,25					
87	0,20	0,60					
88	5,0	135	Outlier,ND				
90	0,20	0,59					
95	0,14	-1,1	ND				
97	0,11	-1,9					
103	0,18	0,0					
104	0,20	0,59					
106	0,18	0,028					
107	0,20	0,66					
110	0,12	-1,6					
111	0,18	0,028					

Consenus statistics

Consensus median, pg/g	0,18
Median all values pg/g	0,18
Consensus mean, pg/g	0,17
Standard deviation, pg/g	0,043
Relative standard deviation, %	25
No. of values reported	49
No. of values removed	4
No. of reported non-detects	3


1,2,3,7,8 PeCDD
pg/g fw
0,36
0,31
0,26
0,21
0,16
0,11
0,06
0,01
-0,04
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 48 20 97 29 110 95 56 65 11 115 63 26 61 77 114 43 84 30 54 35 7 52 103 36 106 111 82 15 49 73 71 66 23 59 90 104 87 107 34 5 17 117 80 37 120 70 45 88
Labcode

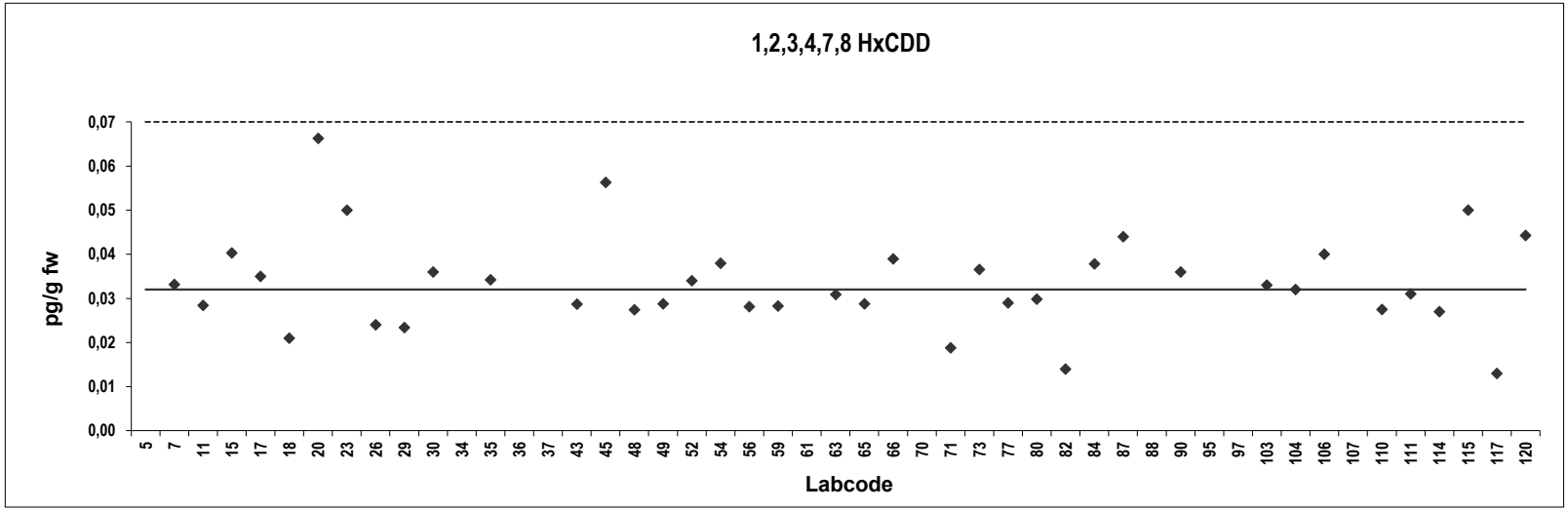
Herring

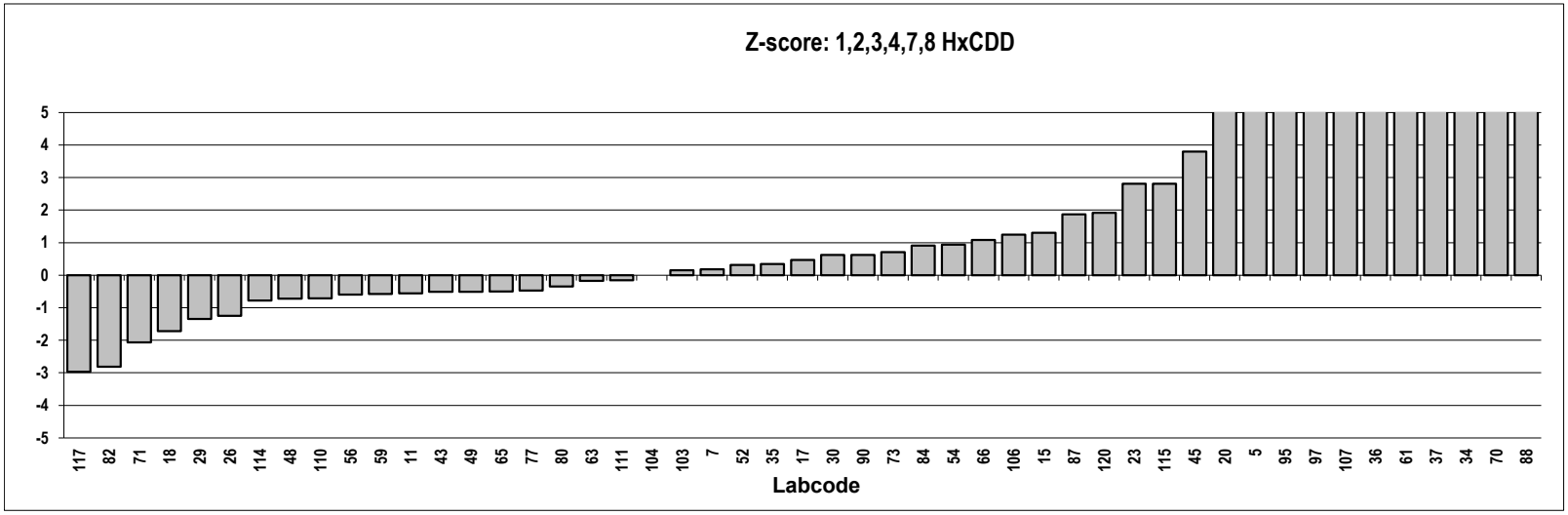
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,075	6,8	Outlier,ND	114	0,027	-0,78	
7	0,033	0,18		115	0,050	2,8	ND
11	0,028	-0,56		117	0,013	-3,0	
15	0,040	1,3		120	0,044	1,9	
17	0,035	0,47					
18	0,021	-1,7					
20	0,066	5,4					
23	0,050	2,8	ND				
26	0,024	-1,3					
29	0,023	-1,3					
30	0,036	0,62					
34	0,15	18	Outlier,ND				
35	0,034	0,34					
36	0,11	12	Outlier				
37	0,14	17	Outlier				
43	0,029	-0,51					
45	0,056	3,8					
48	0,027	-0,72					
49	0,029	-0,51					
52	0,034	0,31					
54	0,038	0,94					
56	0,028	-0,60					
59	0,028	-0,58	ND				
61	0,13	15	Outlier,ND				
63	0,031	-0,17					
65	0,029	-0,50					
66	0,039	1,1					
70	0,42	61	Outlier,ND				
71	0,019	-2,1					
73	0,037	0,71					
77	0,029	-0,47					
80	0,030	-0,34	ND				
82	0,014	-2,8	ND				
84	0,038	0,91					
87	0,044	1,9					
88	5,0	776	Outlier,ND				
90	0,036	0,62					
95	0,079	7,4	Outlier,ND				
97	0,090	9,1	Outlier				
103	0,033	0,16					
104	0,032	0,0					
106	0,040	1,3					
107	0,10	11	Outlier,ND				
110	0,027	-0,71					
111	0,031	-0,16					

Consenus statistics

Consensus median, pg/g	0,032
Median all values pg/g	0,035
Consensus mean, pg/g	0,033
Standard deviation, pg/g	0,011
Relative standard deviation, %	32
No. of values reported	49
No. of values removed	10
No. of reported non-detects	12


1,2,3,4,7,8 HxCDD
pg/g fw
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
117 82 71 18 29 26 114 48 110 56 59 11 43 49 65 77 80 63 111 104 103 7 52 35 17 30 90 73 84 54 66 106 15 87 120 23 115 45 20 5 95 97 107 36 61 37 34 70 88
Labcode

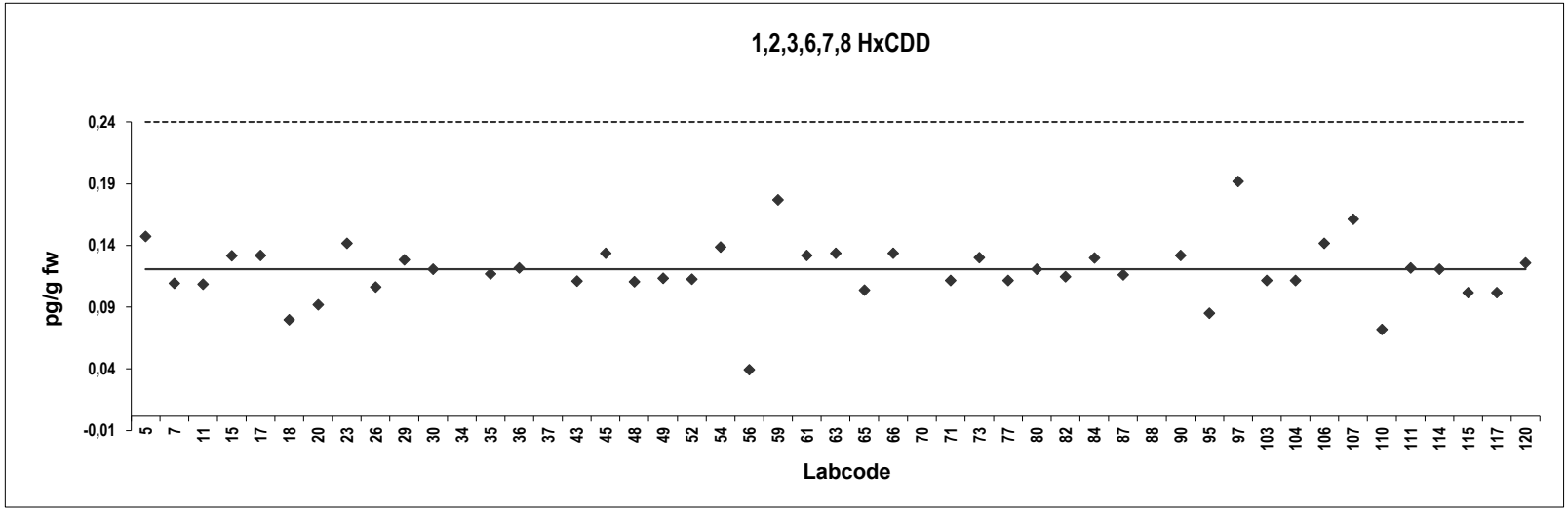
Herring

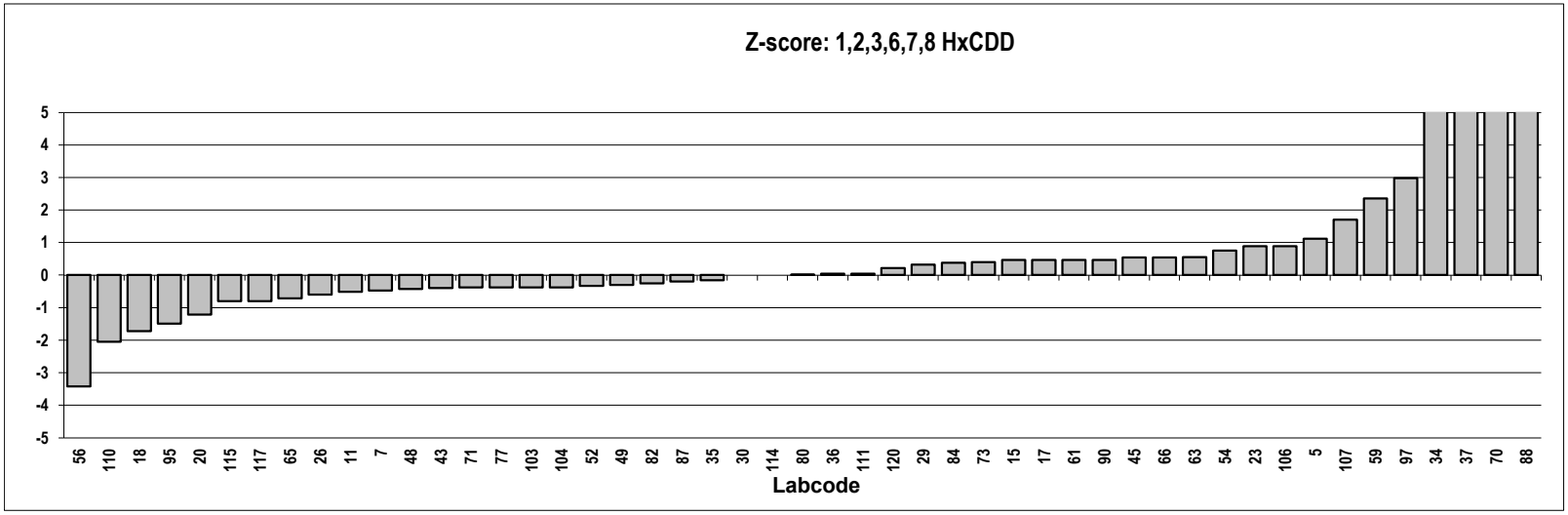
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,15	1,1		114	0,12	0,0	
7	0,11	-0,48		115	0,10	-0,80	
11	0,11	-0,51		117	0,10	-0,80	
15	0,13	0,46		120	0,12	0,21	
17	0,13	0,46					
18	0,078	-1,7					
20	0,090	-1,2					
23	0,14	0,88					
26	0,10	-0,61					
29	0,13	0,32					
30	0,12	0,0					
34	0,25	5,5	Outlier,ND				
35	0,12	-0,16					
36	0,12	0,042					
37	0,40	12	Outlier				
43	0,11	-0,40					
45	0,13	0,54					
48	0,11	-0,43					
49	0,11	-0,31					
52	0,11	-0,34					
54	0,14	0,75					
56	0,038	-3,4					
59	0,18	2,4					
61	0,13	0,46	ND				
63	0,13	0,55					
65	0,10	-0,71					
66	0,13	0,54					
70	0,43	13	Outlier,ND				
71	0,11	-0,38					
73	0,13	0,40					
77	0,11	-0,38					
80	0,12	0,0042					
82	0,11	-0,25					
84	0,13	0,38					
87	0,11	-0,20					
88	5,0	205	Outlier,ND				
90	0,13	0,46					
95	0,083	-1,5	ND				
97	0,19	3,0					
103	0,11	-0,38					
104	0,11	-0,38					
106	0,14	0,88					
107	0,16	1,7					
110	0,070	-2,1					
111	0,12	0,042					

Consenus statistics

Consensus median, pg/g	0,12
Median all values pg/g	0,12
Consensus mean, pg/g	0,12
Standard deviation, pg/g	0,025
Relative standard deviation, %	21
No. of values reported	49
No. of values removed	4
No. of reported non-detects	5


1,2,3,6,7,8 HxCDD
pg/g fw
0,24
0,19
0,14
0,09
0,04
-0,01
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 110 18 95 20 115 117 65 26 11 7 48 43 71 77 103 104 52 49 82 87 35 30 114 80 36 111 120 29 84 73 15 17 61 90 45 66 63 54 23 106 5 107 59 97 34 37 70 88
Labcode

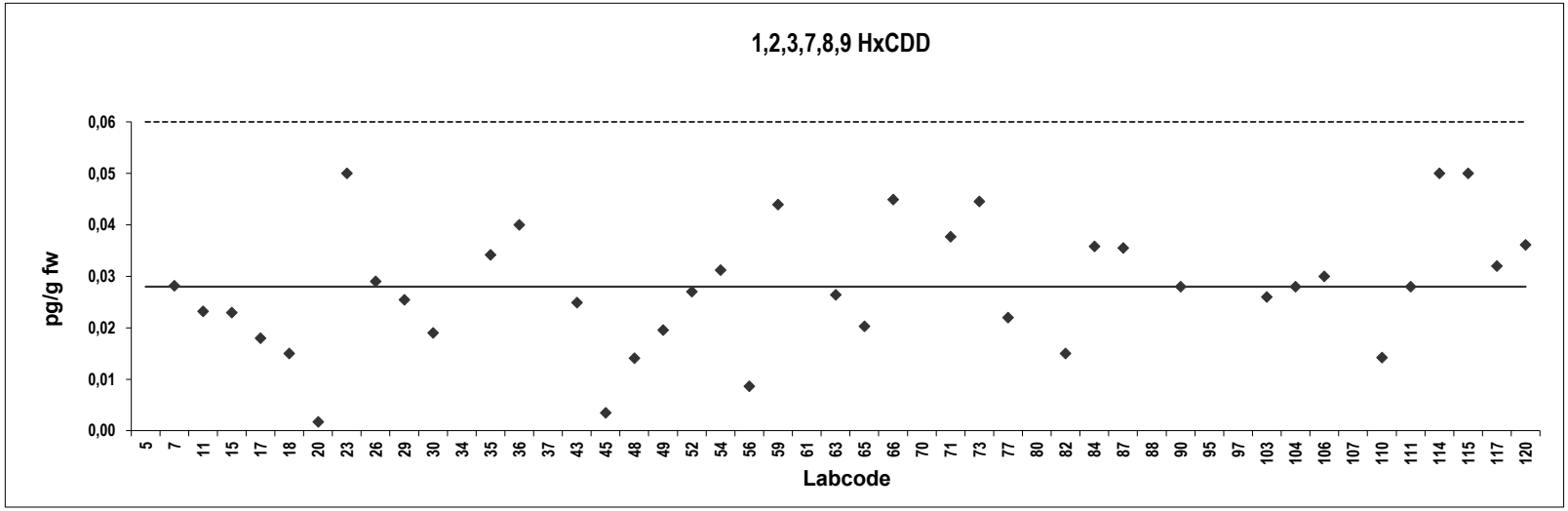
Herring

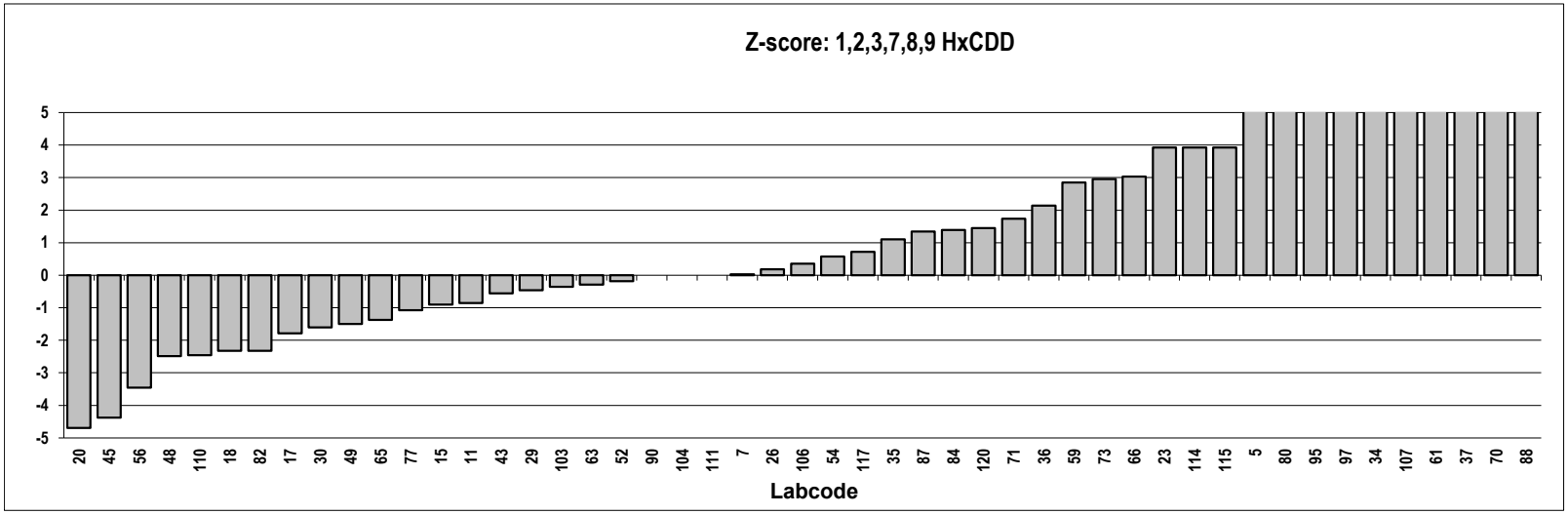
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,068	7,2	Outlier,ND	114	0,050	3,9	ND
7	0,028	0,030		115	0,050	3,9	ND
11	0,023	-0,86		117	0,032	0,71	
15	0,023	-0,90		120	0,036	1,4	
17	0,018	-1,8					
18	0,015	-2,3					
20	0,0017	-4,7	ND				
23	0,050	3,9	ND				
26	0,029	0,18					
29	0,025	-0,46					
30	0,019	-1,6					
34	0,10	13	Outlier,ND				
35	0,034	1,1					
36	0,040	2,1					
37	0,23	36	Outlier				
43	0,025	-0,55					
45	0,0035	-4,4	ND				
48	0,014	-2,5					
49	0,020	-1,5					
52	0,027	-0,18					
54	0,031	0,57					
56	0,0087	-3,5					
59	0,044	2,9					
61	0,13	18	Outlier,ND				
63	0,026	-0,29					
65	0,020	-1,4					
66	0,045	3,0					
70	0,33	54	Outlier,ND				
71	0,038	1,7					
73	0,045	3,0					
77	0,022	-1,1					
80	0,070	7,4	Outlier				
82	0,015	-2,3	ND				
84	0,036	1,4	ND				
87	0,036	1,3					
88	5,0	888	Outlier,ND				
90	0,028	0,0					
95	0,085	10	Outlier,ND				
97	0,090	11	Outlier				
103	0,026	-0,36					
104	0,028	0,0					
106	0,030	0,36					
107	0,10	13	Outlier,ND				
110	0,014	-2,5					
111	0,028	0,0					

Consenus statistics

Consensus median, pg/g	0,028
Median all values pg/g	0,030
Consensus mean, pg/g	0,028
Standard deviation, pg/g	0,012
Relative standard deviation, %	44
No. of values reported	49
No. of values removed	10
No. of reported non-detects	14


1,2,3,7,8,9 HxCDD
pg/g fw
0,06
0,05
0,04
0,03
0,02
0,01
0,00
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 45 56 48 110 18 82 17 30 49 65 77 15 11 43 29 103 63 52 90 104 111 7 26 106 54 117 35 87 84 120 71 36 59 73 66 23 114 115 5 80 95 97 34 107 61 37 70 88
Labcode

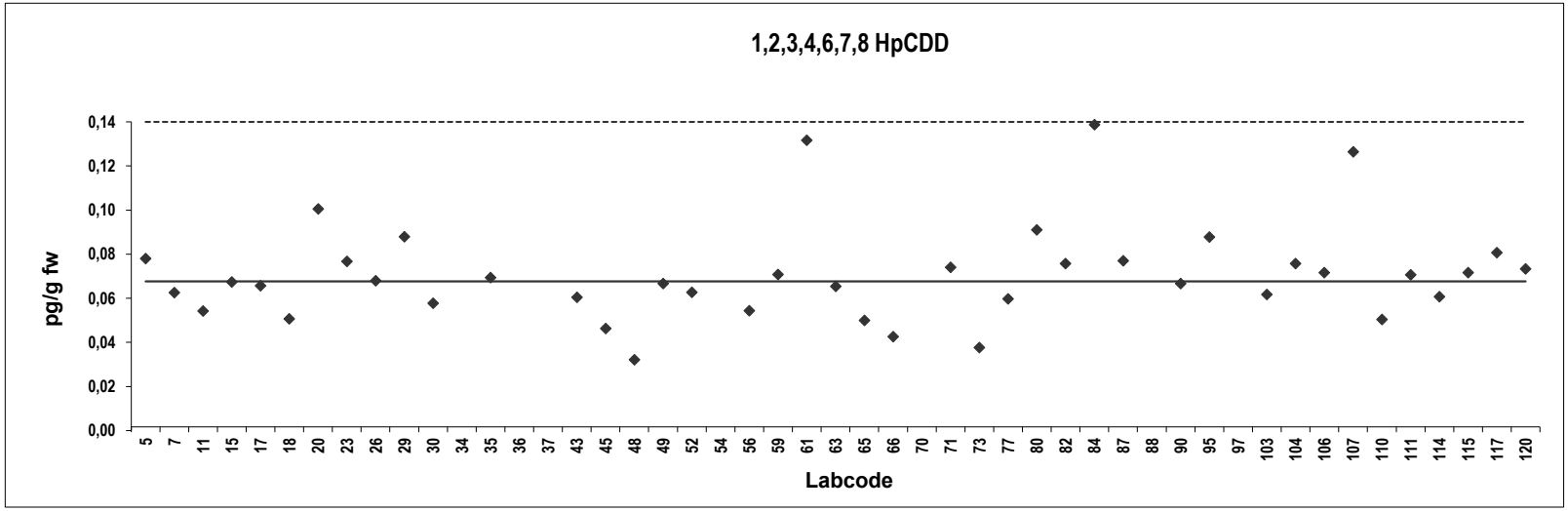
Herring

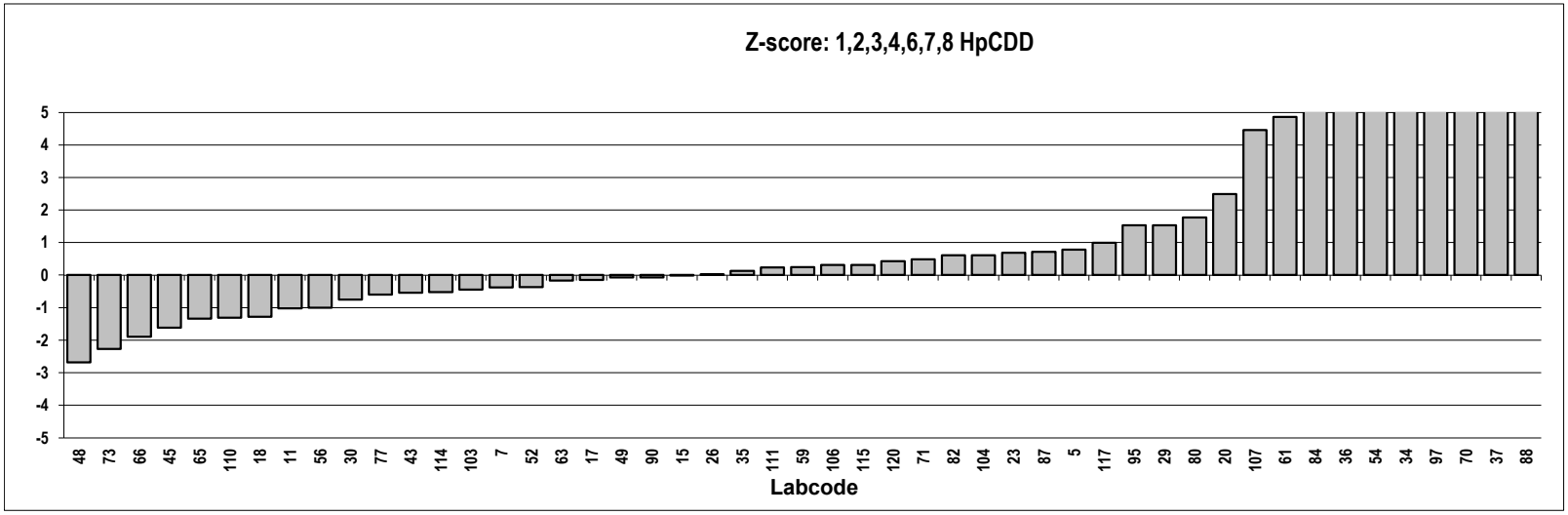
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,076	0,78		114	0,059	-0,53	
7	0,061	-0,38		115	0,070	0,31	
11	0,053	-1,0		117	0,079	0,99	
15	0,066	-0,020		120	0,072	0,43	
17	0,064	-0,15					
18	0,049	-1,3					
20	0,099	2,5					
23	0,075	0,69					
26	0,066	0,020					
29	0,086	1,5					
30	0,056	-0,75					
34	0,50	33	Outlier,ND				
35	0,068	0,13					
36	0,14	5,6	Outlier				
37	2,1	153	Outlier				
43	0,059	-0,54					
45	0,045	-1,6					
48	0,031	-2,7					
49	0,065	-0,073					
52	0,061	-0,37					
54	0,28	17	Outlier				
56	0,053	-1,0					
59	0,069	0,24					
61	0,13	4,9	ND				
63	0,064	-0,17					
65	0,048	-1,3					
66	0,041	-1,9					
70	0,60	40	Outlier,ND				
71	0,072	0,48					
73	0,036	-2,3					
77	0,058	-0,60					
80	0,089	1,8					
82	0,074	0,61					
84	0,14	5,4					
87	0,075	0,71					
88	5,0	374	Outlier,ND				
90	0,065	-0,071					
95	0,086	1,5	ND				
97	0,56	37	Outlier				
103	0,060	-0,45					
104	0,074	0,61					
106	0,070	0,31					
107	0,12	4,5					
110	0,049	-1,3					
111	0,069	0,23					

Consenus statistics

Consensus median, pg/g	0,066
Median all values pg/g	0,069
Consensus mean, pg/g	0,069
Standard deviation, pg/g	0,022
Relative standard deviation, %	32
No. of values reported	49
No. of values removed	7
No. of reported non-detects	5


1,2,3,4,6,7,8 HpCDD
pg/g fw
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
48 73 66 45 65 110 18 11 56 30 77 43 114 103 7 52 63 17 49 90 15 26 35 111 59 106 115 120 71 82 104 23 87 5 117 95 29 80 20 107 61 84 36 54 34 97 70 37 88
Labcode

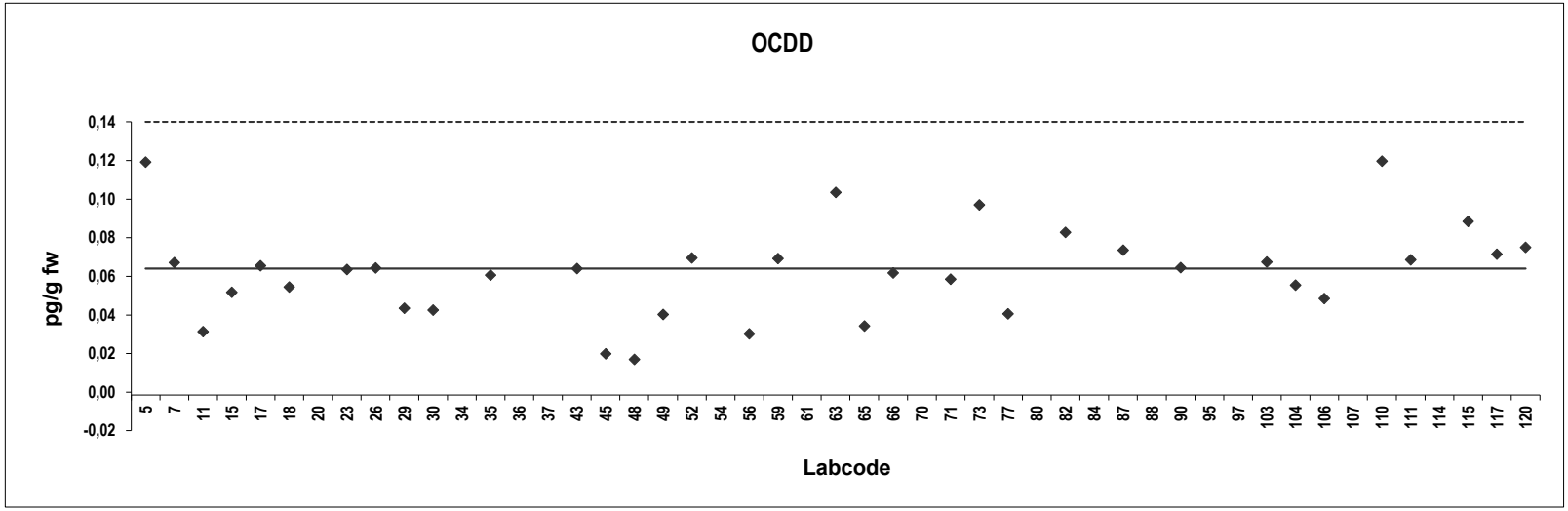
Herring

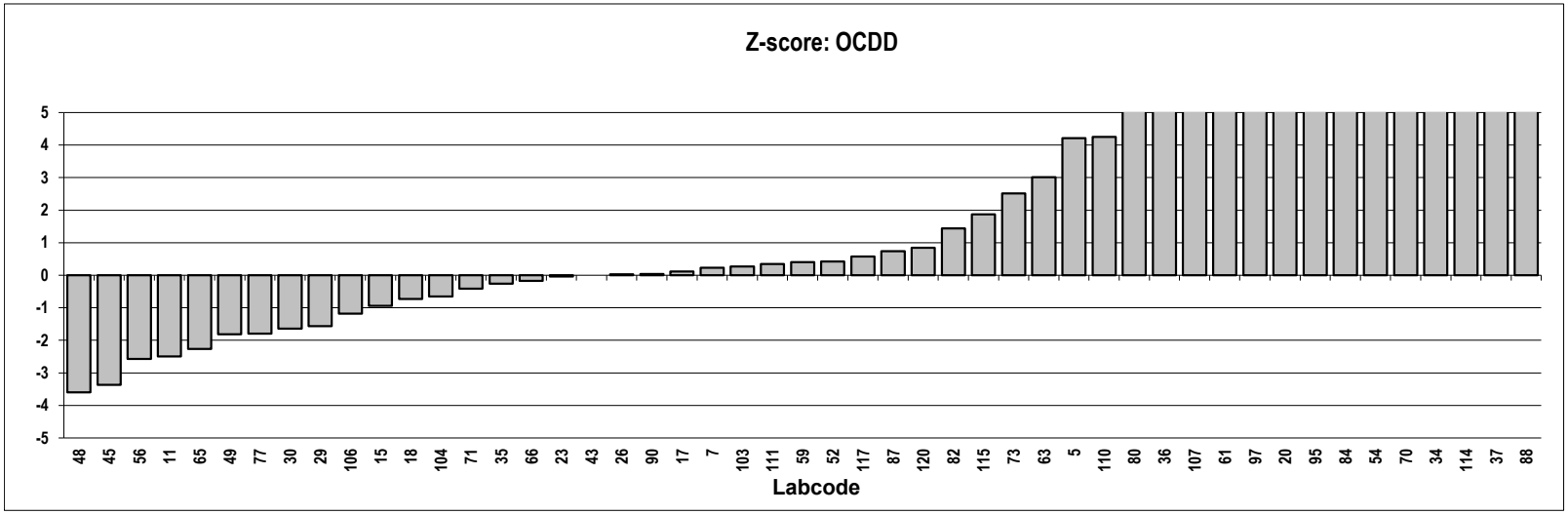
Congener: OCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,12	4,2		114	2,0	148	Outlier,ND
7	0,069	0,23		115	0,090	1,9	
11	0,033	-2,5		117	0,073	0,57	
15	0,053	-0,94		120	0,077	0,84	
17	0,067	0,11					
18	0,056	-0,73					
20	0,32	19	Outlier				
23	0,065	-0,038					
26	0,066	0,031					
29	0,045	-1,6					
30	0,044	-1,6					
34	1,0	71	Outlier,ND				
35	0,062	-0,26					
36	0,19	9,5	Outlier				
37	3,6	272	Outlier				
43	0,065	0,0	ND				
45	0,021	-3,4					
48	0,018	-3,6					
49	0,042	-1,8					
52	0,071	0,42					
54	0,61	42	Outlier				
56	0,032	-2,6					
59	0,071	0,40	ND				
61	0,31	19	Outlier,ND				
63	0,11	3,0					
65	0,036	-2,3					
66	0,063	-0,17					
70	0,66	45	Outlier,ND				
71	0,060	-0,42					
73	0,098	2,5					
77	0,042	-1,8					
80	0,17	7,9	Outlier				
82	0,084	1,4					
84	0,37	24	Outlier				
87	0,075	0,74					
88	10	758	Outlier,ND				
90	0,066	0,038					
95	0,35	22	Outlier,ND				
97	0,31	19	Outlier				
103	0,069	0,27					
104	0,057	-0,65					
106	0,050	-1,2					
107	0,20	10	Outlier,ND				
110	0,12	4,2	ND				
111	0,070	0,34					

Consenus statistics

Consensus median, pg/g	0,065
Median all values pg/g	0,071
Consensus mean, pg/g	0,064
Standard deviation, pg/g	0,024
Relative standard deviation, %	38
No. of values reported	49
No. of values removed	14
No. of reported non-detects	10


OCDD
pg/g fw
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
-0,02
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
48 45 56 11 65 49 77 30 29 106 15 18 104 71 35 66 23 43 26 90 17 7 103 111 59 52 117 87 120 82 115 73 63 5 110 80 36 107 61 97 20 95 84 54 70 34 114 37 88
Labcode

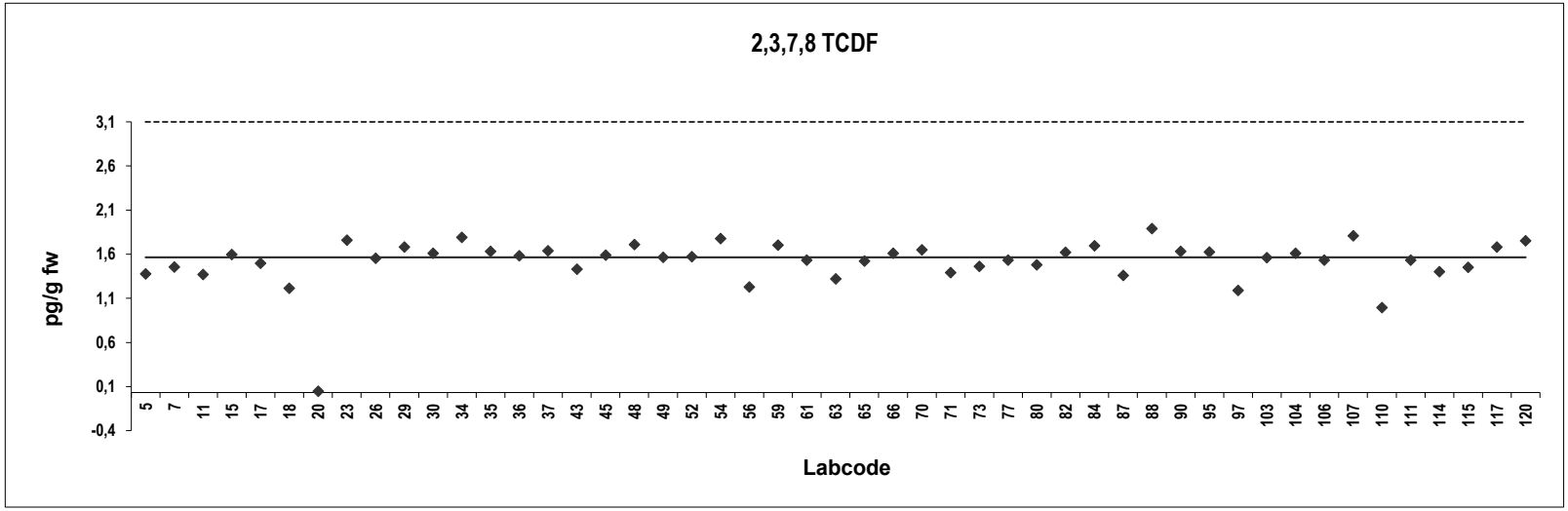
Herring

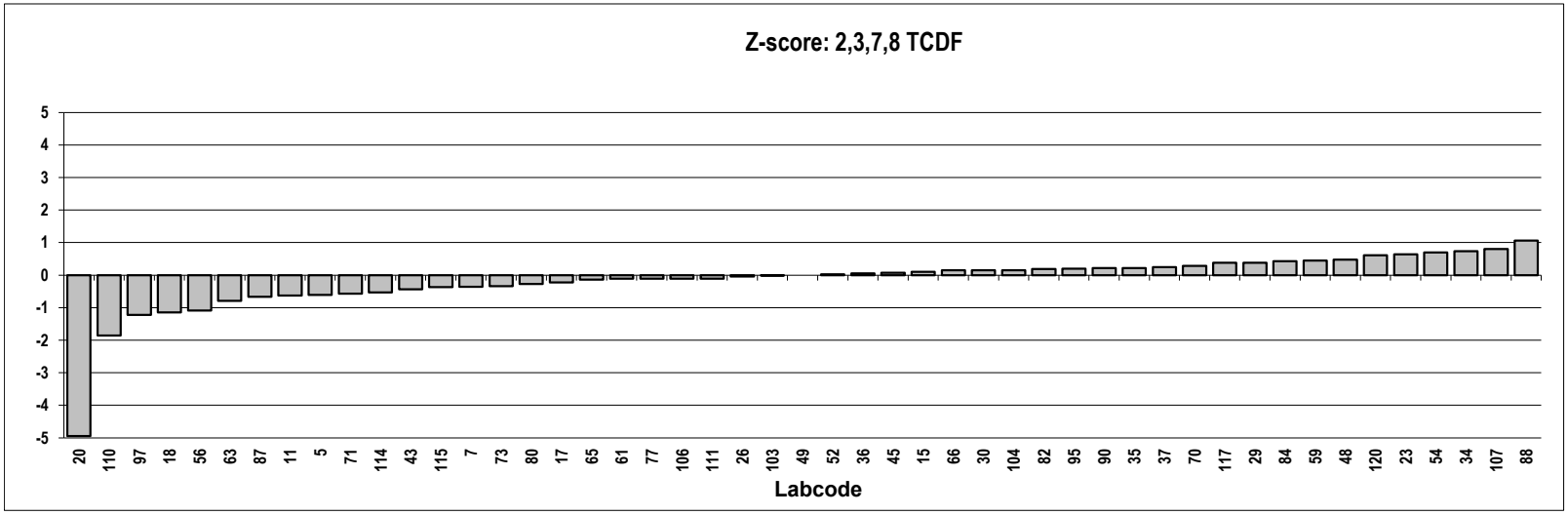
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	1,3	-0,61		114	1,4	-0,53	
7	1,4	-0,36		115	1,4	-0,37	
11	1,3	-0,63		117	1,7	0,38	
15	1,6	0,10		120	1,7	0,61	
17	1,5	-0,22					
18	1,2	-1,1					
20	0,015	-5,0					
23	1,7	0,64					
26	1,5	-0,039					
29	1,7	0,38					
30	1,6	0,15					
34	1,8	0,74					
35	1,6	0,22					
36	1,6	0,052					
37	1,6	0,24					
43	1,4	-0,43					
45	1,6	0,076					
48	1,7	0,48					
49	1,5	0,0					
52	1,5	0,020					
54	1,7	0,69					
56	1,2	-1,1					
59	1,7	0,45					
61	1,5	-0,11					
63	1,3	-0,80					
65	1,5	-0,14					
66	1,6	0,15					
70	1,6	0,28					
71	1,4	-0,57					
73	1,4	-0,34					
77	1,5	-0,11					
80	1,4	-0,28					
82	1,6	0,18					
84	1,7	0,43					
87	1,3	-0,67					
88	1,9	1,1					
90	1,6	0,22					
95	1,6	0,20					
97	1,2	-1,2					
103	1,5	-0,013					
104	1,6	0,15					
106	1,5	-0,11					
107	1,8	0,80					
110	0,96	-1,9					
111	1,5	-0,11					

Consenus statistics

Consensus median, pg/g	1,5
Median all values pg/g	1,5
Consensus mean, pg/g	1,5
Standard deviation, pg/g	0,28
Relative standard deviation, %	19
No. of values reported	49
No. of values removed	0
No. of reported non-detects	0


2,3,7,8 TCDF
pg/g fw
3,1
2,6
2,1
1,6
1,1
0,6
0,1
-0,4
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 110 97 18 56 63 87 11 5 71 114 43 115 7 73 80 17 65 61 77 106 111 26 103 49 52 36 45 15 66 30 104 82 95 90 35 37 70 117 29 84 59 48 120 23 54 34 107 88
Labcode

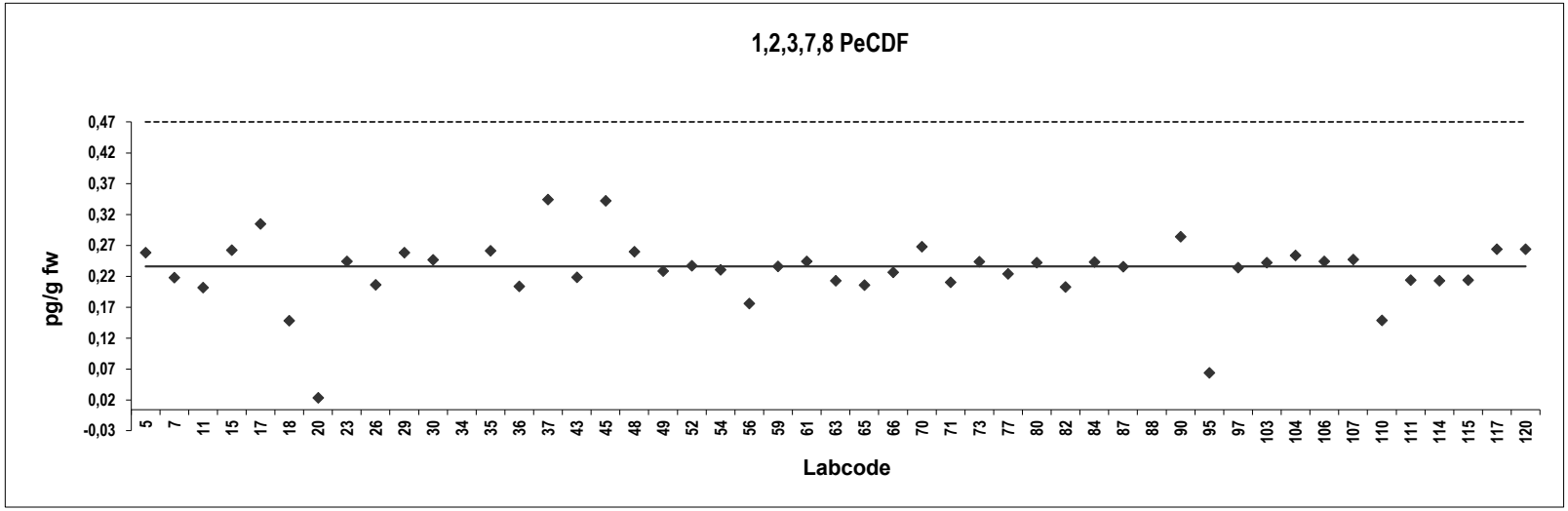
Herring

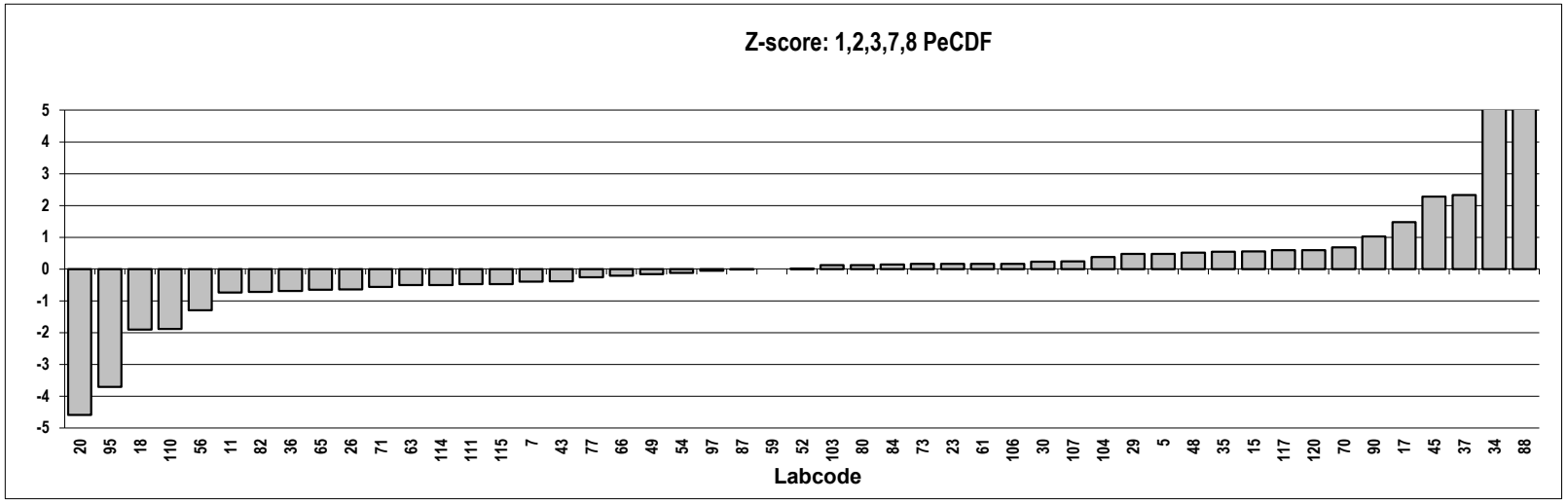
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,25	0,48		114	0,21	-0,50	
7	0,21	-0,40		115	0,21	-0,48	
11	0,20	-0,73		117	0,26	0,60	
15	0,26	0,56		120	0,26	0,60	
17	0,30	1,5					
18	0,14	-1,9					
20	0,019	-4,6					
23	0,24	0,17					
26	0,20	-0,64					
29	0,25	0,47					
30	0,24	0,23					
34	0,50	5,8	Outlier,ND				
35	0,26	0,54					
36	0,20	-0,69					
37	0,34	2,3					
43	0,21	-0,38					
45	0,34	2,3					
48	0,26	0,51					
49	0,22	-0,16					
52	0,23	0,019					
54	0,23	-0,12					
56	0,17	-1,3					
59	0,23	0,0					
61	0,24	0,17					
63	0,21	-0,50					
65	0,20	-0,65					
66	0,22	-0,21					
70	0,26	0,69					
71	0,21	-0,56					
73	0,24	0,16					
77	0,22	-0,26					
80	0,24	0,13					
82	0,20	-0,71					
84	0,24	0,15					
87	0,23	-0,011					
88	5,0	103	Outlier,ND				
90	0,28	1,0					
95	0,060	-3,7	ND				
97	0,23	-0,046					
103	0,24	0,13					
104	0,25	0,39					
106	0,24	0,17					
107	0,24	0,24					
110	0,14	-1,9					
111	0,21	-0,48					

Consenus statistics

Consensus median, pg/g	0,23
Median all values pg/g	0,23
Consensus mean, pg/g	0,22
Standard deviation, pg/g	0,055
Relative standard deviation, %	24
No. of values reported	49
No. of values removed	2
No. of reported non-detects	3


1,2,3,7,8 PeCDF
pg/g fw
0,47
0,42
0,37
0,32
0,27
0,22
0,17
0,12
0,07
0,02
-0,03
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 95 18 110 56 11 82 36 65 26 71 63 114 111 115 7 43 77 66 49 54 97 87 59 52 103 80 84 73 23 61 106 30 107 104 29 5 48 35 15 117 120 70 90 17 45 37 34 88
Labcode

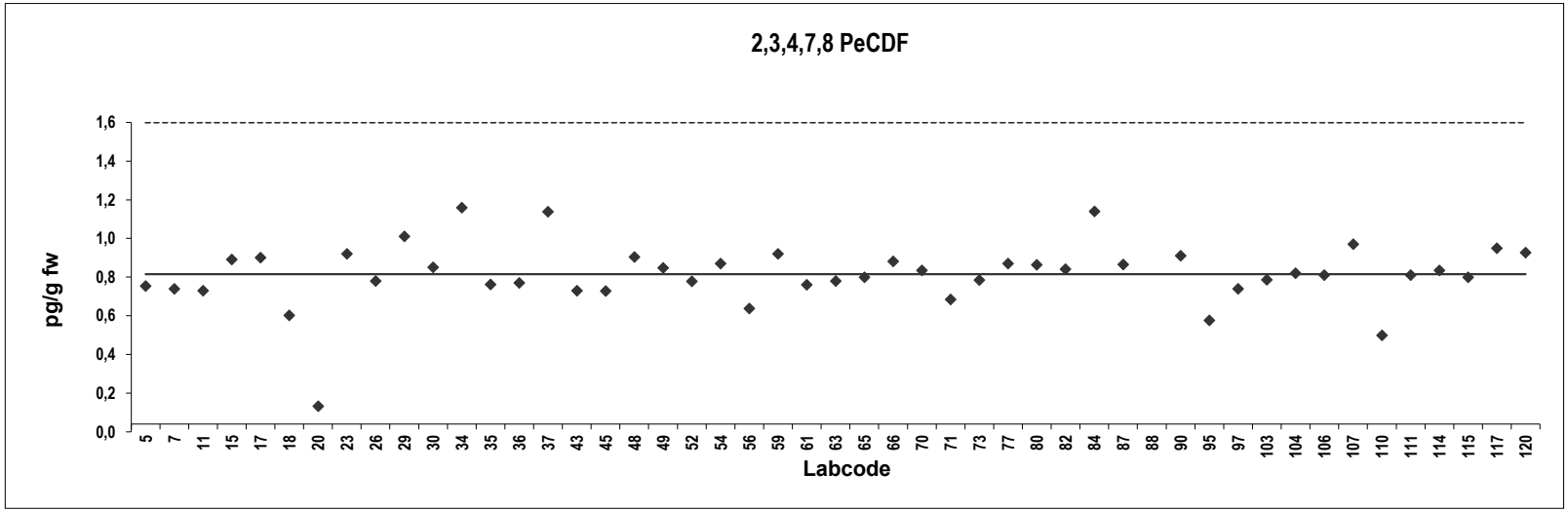
Herring

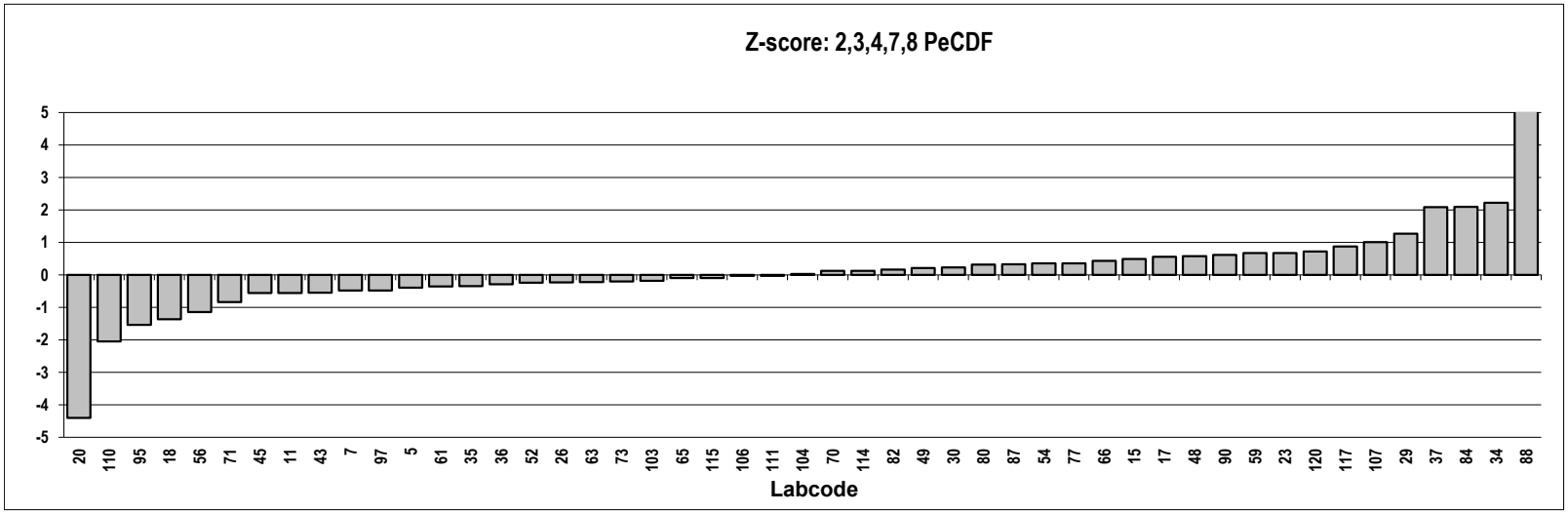
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,71	-0,40		114	0,80	0,13	
7	0,70	-0,48		115	0,76	-0,10	
11	0,69	-0,55		117	0,91	0,87	
15	0,85	0,49		120	0,89	0,72	
17	0,86	0,55					
18	0,56	-1,4					
20	0,092	-4,4					
23	0,88	0,68					
26	0,74	-0,23					
29	0,97	1,3					
30	0,81	0,23					
34	1,1	2,2					
35	0,72	-0,34					
36	0,73	-0,29					
37	1,1	2,1					
43	0,69	-0,55					
45	0,69	-0,56					
48	0,86	0,57					
49	0,81	0,21					
52	0,74	-0,24					
54	0,83	0,35					
56	0,60	-1,1					
59	0,88	0,68					
61	0,72	-0,35					
63	0,74	-0,23					
65	0,76	-0,10					
66	0,84	0,43					
70	0,80	0,13					
71	0,65	-0,84					
73	0,74	-0,20					
77	0,83	0,35					
80	0,82	0,31					
82	0,80	0,17					
84	1,1	2,1					
87	0,83	0,32					
88	5,0	27	Outlier,ND				
90	0,87	0,61					
95	0,54	-1,5					
97	0,70	-0,48					
103	0,75	-0,19					
104	0,78	0,032					
106	0,77	-0,032					
107	0,93	1,0					
110	0,46	-2,0	ND				
111	0,77	-0,032					

Consenus statistics

Consensus median, pg/g	0,78
Median all values pg/g	0,78
Consensus mean, pg/g	0,77
Standard deviation, pg/g	0,16
Relative standard deviation, %	21
No. of values reported	49
No. of values removed	1
No. of reported non-detects	2


2,3,4,7,8 PeCDF
pg/g fw
1,6
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 110 95 18 56 71 45 11 43 7 97 5 61 35 36 52 26 63 73 103 65 115 106 111 104 70 114 82 49 30 80 87 54 77 66 15 17 48 90 59 23 120 117 107 29 37 84 34 88
Labcode

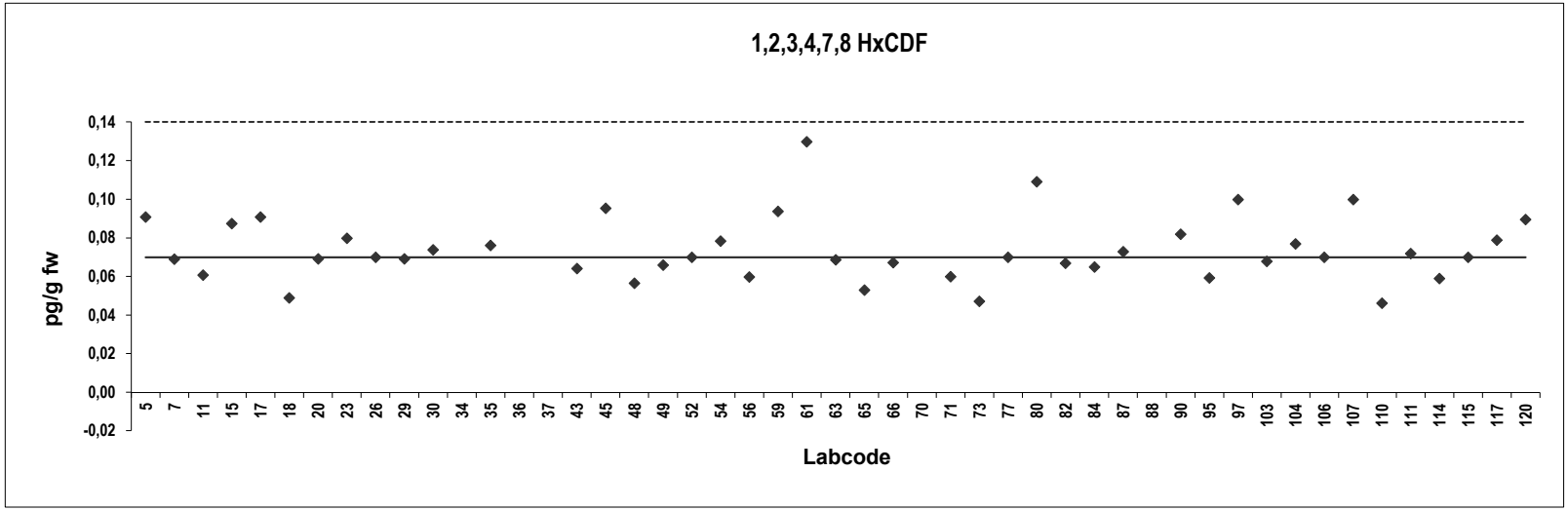
Herring

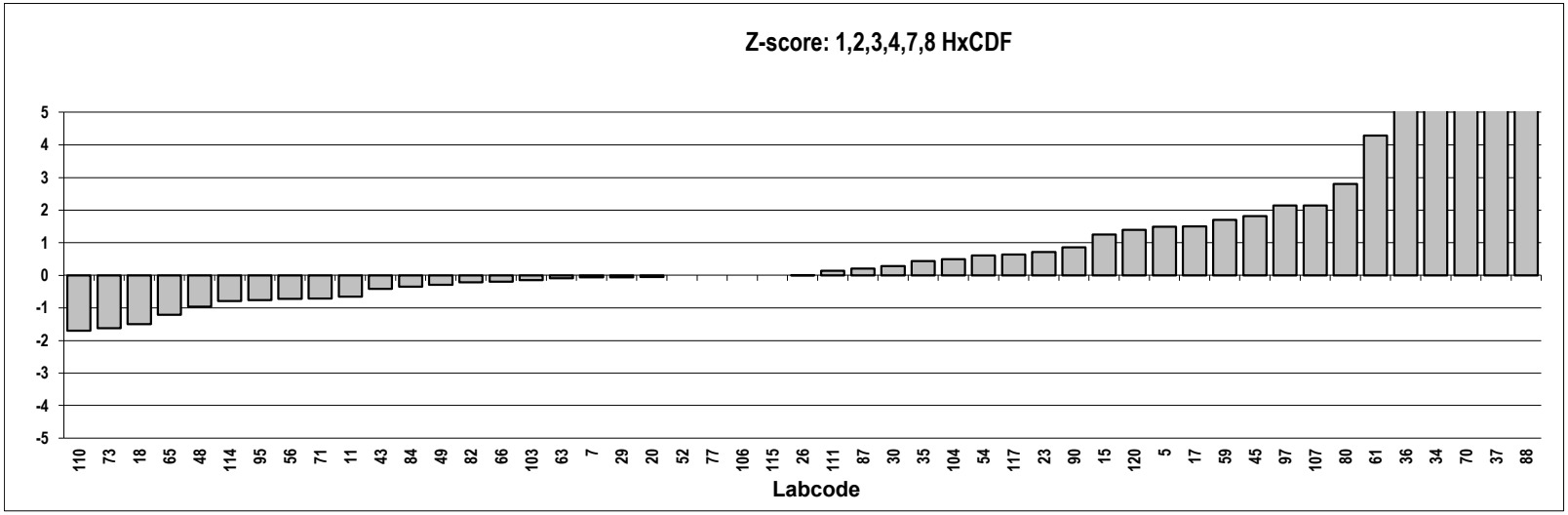
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,091	1,5		114	0,059	-0,79	
7	0,069	-0,062		115	0,070	0,0	
11	0,061	-0,65		117	0,079	0,64	
15	0,088	1,3		120	0,090	1,4	
17	0,091	1,5					
18	0,049	-1,5					
20	0,069	-0,049					
23	0,080	0,71					
26	0,070	0,0071					
29	0,069	-0,056					
30	0,074	0,29					
34	0,20	9,3	Outlier,ND				
35	0,076	0,44					
36	0,19	8,6	Outlier				
37	0,55	34	Outlier				
43	0,064	-0,41					
45	0,096	1,8					
48	0,057	-0,96					
49	0,066	-0,29					
52	0,070	0,0					
54	0,079	0,61					
56	0,060	-0,72					
59	0,094	1,7					
61	0,13	4,3	ND				
63	0,069	-0,086					
65	0,053	-1,2					
66	0,067	-0,20					
70	0,31	17	Outlier,ND				
71	0,060	-0,71					
73	0,047	-1,6					
77	0,070	0,0					
80	0,11	2,8					
82	0,067	-0,21					
84	0,065	-0,35					
87	0,073	0,21					
88	5,0	352	Outlier,ND				
90	0,082	0,86					
95	0,059	-0,76	ND				
97	0,10	2,1					
103	0,068	-0,14					
104	0,077	0,50					
106	0,070	0,0					
107	0,10	2,1	ND				
110	0,046	-1,7					
111	0,072	0,14					

Consenus statistics

Consensus median, pg/g	0,070
Median all values pg/g	0,070
Consensus mean, pg/g	0,074
Standard deviation, pg/g	0,017
Relative standard deviation, %	23
No. of values reported	49
No. of values removed	5
No. of reported non-detects	6


1,2,3,4,7,8 HxCDF
pg/g fw
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
-0,02
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
110 73 18 65 48 114 95 56 71 11 43 84 49 82 66 103 63 7 29 20 52 77 106 115 26 111 87 30 35 104 54 117 23 90 15 120 5 17 59 45 97 107 80 61 36 34 70 37 88
Labcode

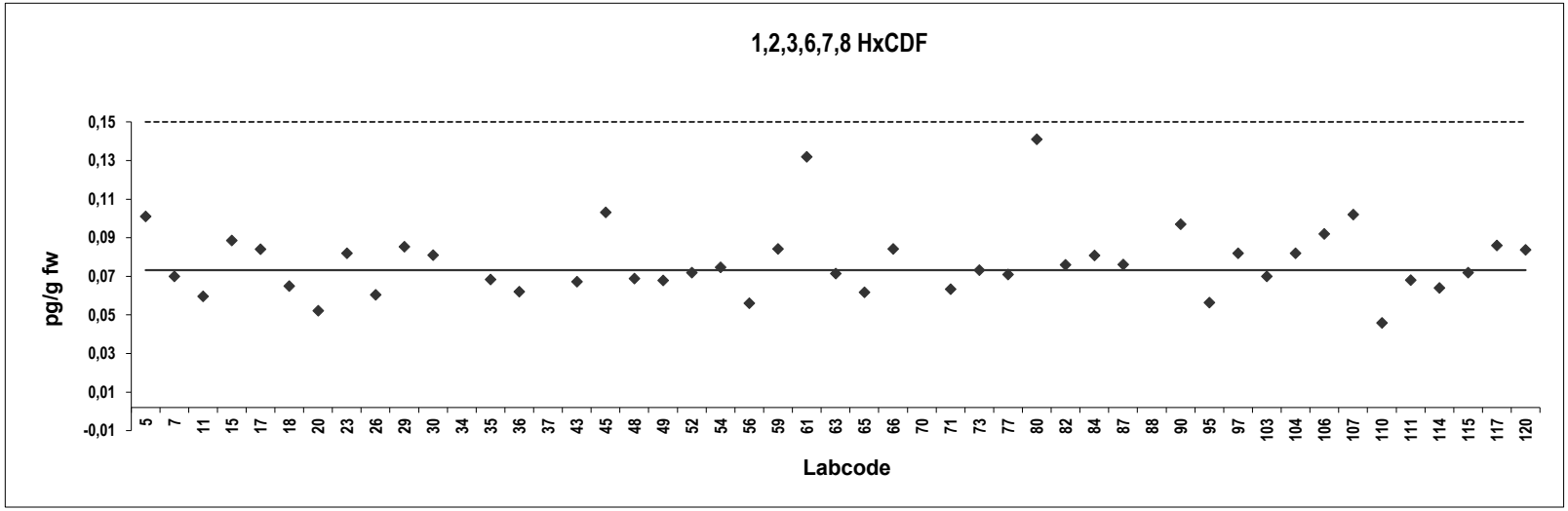
Herring

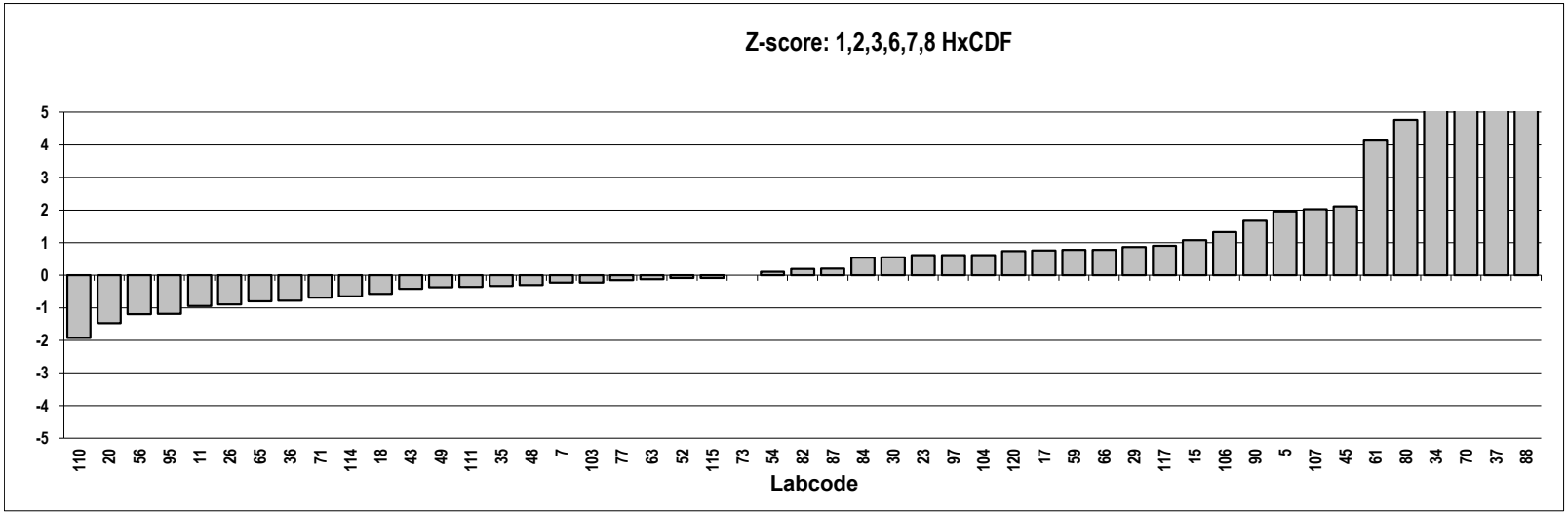
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,099	2,0		114	0,062	-0,64	
7	0,068	-0,23		115	0,070	-0,082	
11	0,058	-0,95		117	0,084	0,90	
15	0,087	1,1		120	0,082	0,74	
17	0,082	0,76					
18	0,063	-0,57					
20	0,050	-1,5					
23	0,080	0,62					
26	0,058	-0,90					
29	0,083	0,86					
30	0,079	0,55					
34	0,30	16	Outlier,ND				
35	0,066	-0,34					
36	0,060	-0,78					
37	0,42	24	Outlier				
43	0,065	-0,41					
45	0,10	2,1					
48	0,067	-0,30					
49	0,066	-0,37					
52	0,070	-0,082					
54	0,073	0,10					
56	0,054	-1,2					
59	0,082	0,78					
61	0,13	4,1	ND				
63	0,069	-0,12					
65	0,060	-0,80					
66	0,082	0,78					
70	0,31	17	Outlier,ND				
71	0,061	-0,69					
73	0,071	0,0					
77	0,069	-0,15					
80	0,14	4,8					
82	0,074	0,20					
84	0,079	0,54					
87	0,074	0,20					
88	5,0	346	Outlier,ND				
90	0,095	1,7					
95	0,054	-1,2	ND				
97	0,080	0,62					
103	0,068	-0,22					
104	0,080	0,62					
106	0,090	1,3					
107	0,10	2,0	ND				
110	0,044	-1,9					
111	0,066	-0,36					

Consenus statistics

Consensus median, pg/g	0,071
Median all values pg/g	0,074
Consensus mean, pg/g	0,075
Standard deviation, pg/g	0,018
Relative standard deviation, %	24
No. of values reported	49
No. of values removed	4
No. of reported non-detects	6


1,2,3,6,7,8 HxCDF
pg/g fw
0,15
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
110 20 56 95 11 26 65 36 71 114 18 43 49 111 35 48 7 103 77 63 52 115 73 54 82 87 84 30 23 97 104 120 17 59 66 29 117 15 106 90 5 107 45 61 80 34 70 37 88
Labcode

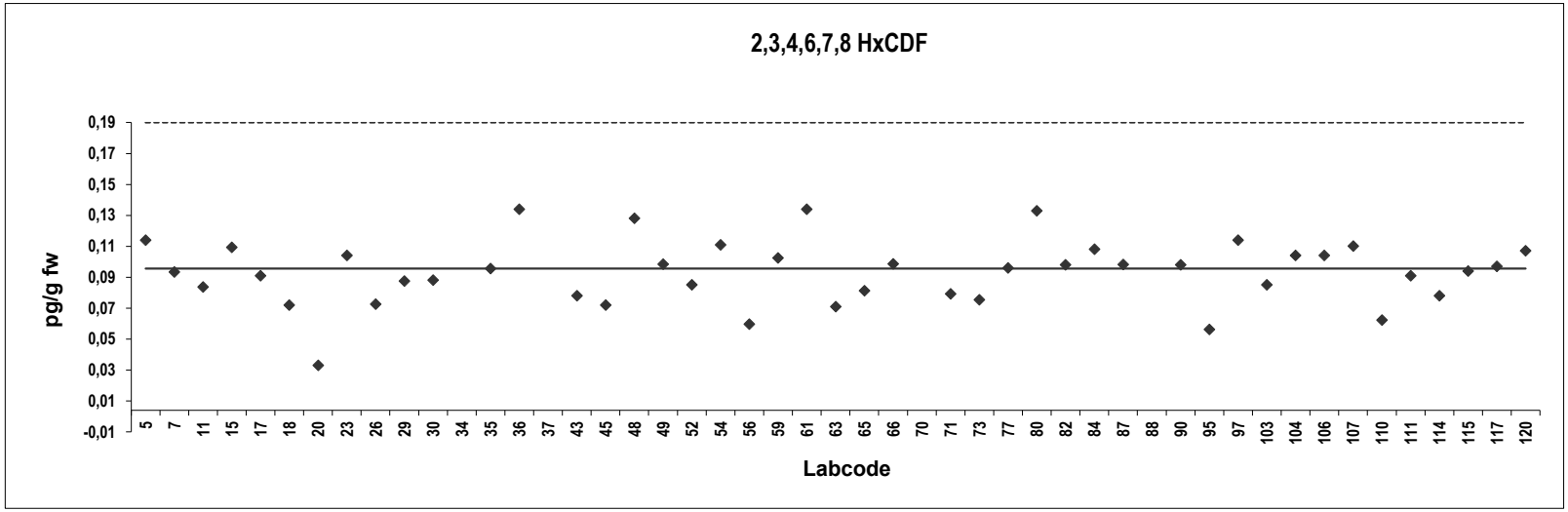
Herring

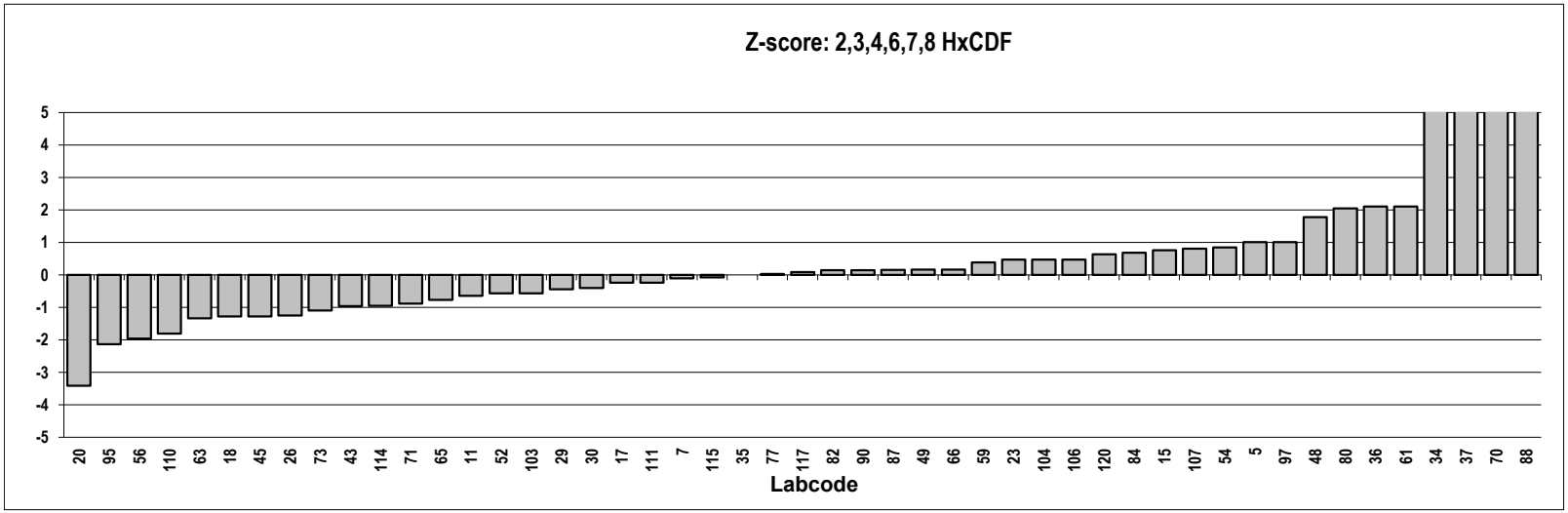
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,11	1,0		114	0,074	-0,96	
7	0,089	-0,11		115	0,090	-0,082	
11	0,080	-0,64		117	0,093	0,082	
15	0,11	0,75		120	0,10	0,63	
17	0,087	-0,25					
18	0,068	-1,3					
20	0,029	-3,4					
23	0,10	0,46					
26	0,069	-1,3					
29	0,083	-0,44					
30	0,084	-0,41					
34	0,20	5,9	Outlier,ND				
35	0,092	0,0					
36	0,13	2,1					
37	0,35	14	Outlier				
43	0,074	-0,96					
45	0,068	-1,3					
48	0,12	1,8					
49	0,094	0,16					
52	0,081	-0,57					
54	0,11	0,84					
56	0,056	-2,0					
59	0,098	0,38					
61	0,13	2,1	ND				
63	0,067	-1,3					
65	0,077	-0,78					
66	0,095	0,16					
70	0,35	14	Outlier,ND				
71	0,075	-0,88					
73	0,071	-1,1					
77	0,092	0,027					
80	0,13	2,0					
82	0,094	0,14					
84	0,10	0,68					
87	0,094	0,15					
88	5,0	268	Outlier,ND				
90	0,094	0,14					
95	0,052	-2,1	ND				
97	0,11	1,0					
103	0,081	-0,57					
104	0,10	0,46					
106	0,10	0,46					
107	0,11	0,80					
110	0,058	-1,8					
111	0,087	-0,25					

Consenus statistics

Consensus median, pg/g	0,092
Median all values pg/g	0,093
Consensus mean, pg/g	0,089
Standard deviation, pg/g	0,021
Relative standard deviation, %	23
No. of values reported	49
No. of values removed	4
No. of reported non-detects	5


2,3,4,6,7,8 HxCDF
pg/g fw
0,19
0,17
0,15
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 95 56 110 63 18 45 26 73 43 114 71 65 11 52 103 29 30 17 111 7 115 35 77 117 82 90 87 49 66 59 23 104 106 120 84 15 107 54 5 97 48 80 36 61 34 37 70 88
Labcode

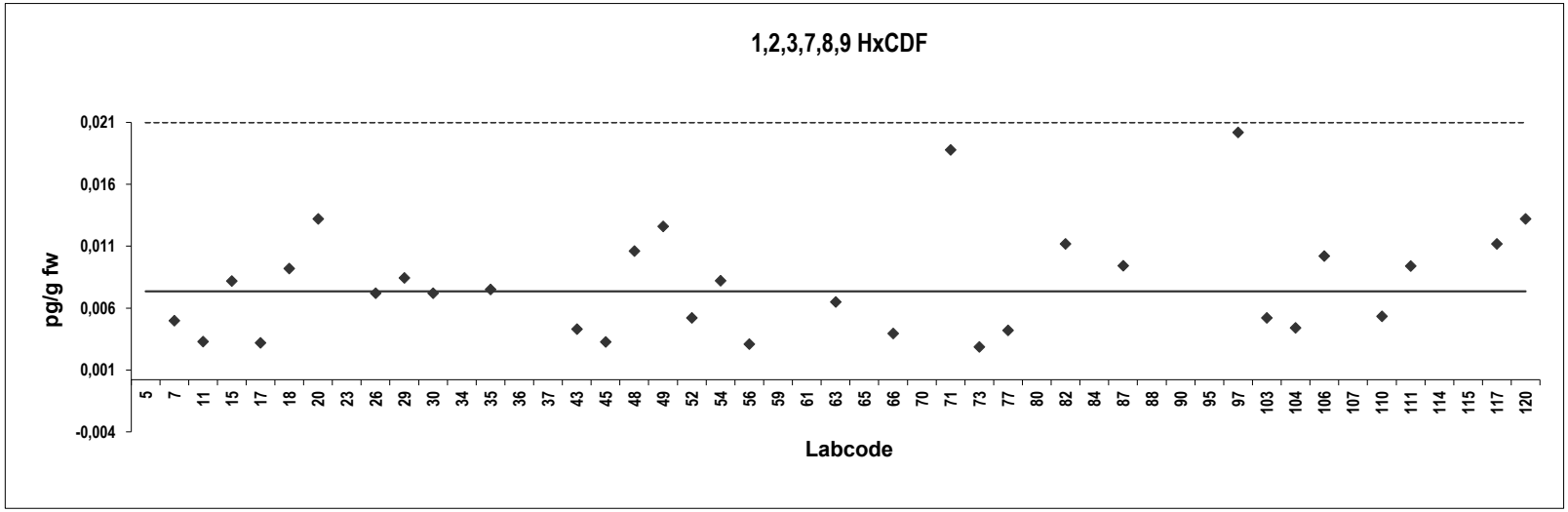
Herring

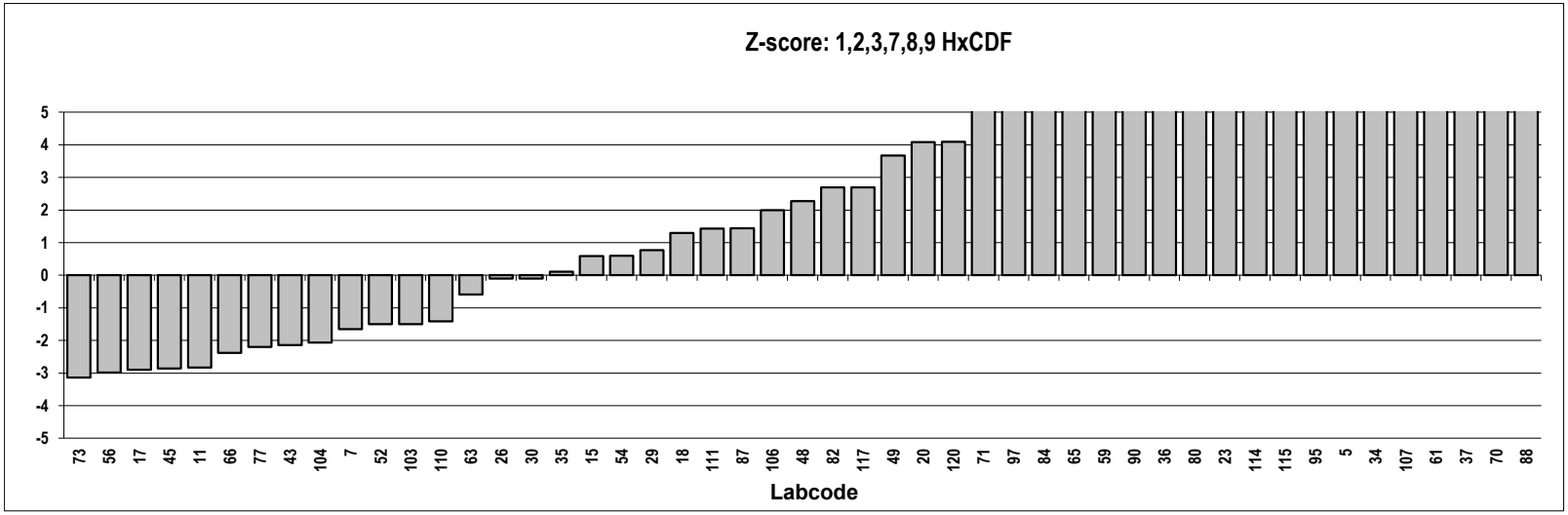
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,063	39	Outlier,ND	114	0,050	30	Outlier,ND
7	0,0048	-1,6		115	0,050	30	Outlier,ND
11	0,0031	-2,8		117	0,011	2,7	
15	0,0080	0,59		120	0,013	4,1	ND
17	0,0030	-2,9	ND				
18	0,0090	1,3	ND				
20	0,013	4,1					
23	0,050	30	Outlier,ND				
26	0,0070	-0,10	ND				
29	0,0083	0,77					
30	0,0070	-0,10	ND				
34	0,10	65	Outlier,ND				
35	0,0073	0,10					
36	0,040	23	Outlier				
37	0,21	144	Outlier				
43	0,0041	-2,1	ND				
45	0,0031	-2,9	ND				
48	0,010	2,3	ND				
49	0,012	3,7					
52	0,0050	-1,5					
54	0,0080	0,59	ND				
56	0,0029	-3,0					
59	0,028	15	Outlier,ND				
61	0,13	86	Outlier,ND				
63	0,0063	-0,59					
65	0,027	14	Outlier,ND				
66	0,0038	-2,4					
70	0,24	163	Outlier,ND				
71	0,019	8,0					
73	0,0027	-3,1	ND				
77	0,0040	-2,2	ND				
80	0,050	30	Outlier				
82	0,011	2,7	ND				
84	0,023	11	Outlier,ND				
87	0,0092	1,4	ND				
88	5,0	3492	Outlier,ND				
90	0,030	16	Outlier,ND				
95	0,057	35	Outlier,ND				
97	0,020	9,0	ND				
103	0,0050	-1,5					
104	0,0042	-2,1					
106	0,010	2,0	ND				
107	0,10	65	Outlier,ND				
110	0,0051	-1,4	ND				
111	0,0092	1,4	ND				

Consenus statistics

Consensus median, pg/g	0,0072
Median all values pg/g	0,010
Consensus mean, pg/g	0,0078
Standard deviation, pg/g	0,0044
Relative standard deviation, %	56
No. of values reported	49
No. of values removed	17
No. of reported non-detects	31


1,2,3,7,8,9 HxCDF
pg/g fw
0,021
0,016
0,011
0,006
0,001
-0,004
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
73 56 17 45 11 66 77 43 104 7 52 103 110 63 26 30 35 15 54 29 18 111 87 106 48 82 117 49 20 120 71 97 84 65 59 90 36 80 23 114 115 95 5 34 107 61 37 70 88
Labcode

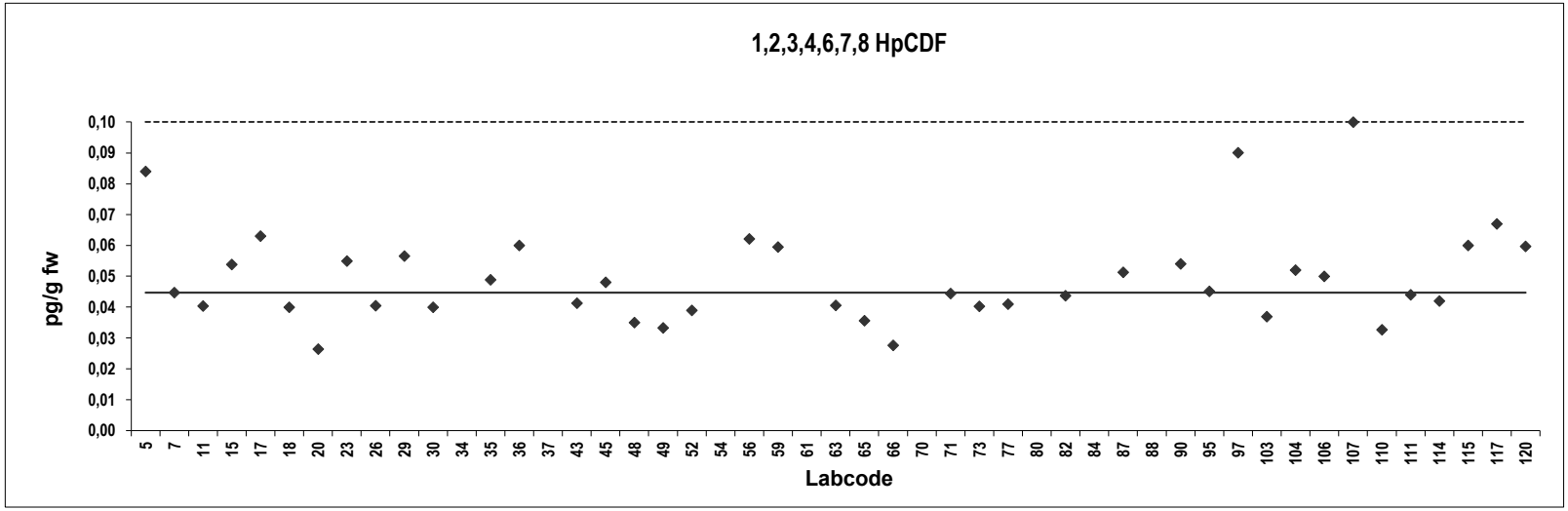
Herring

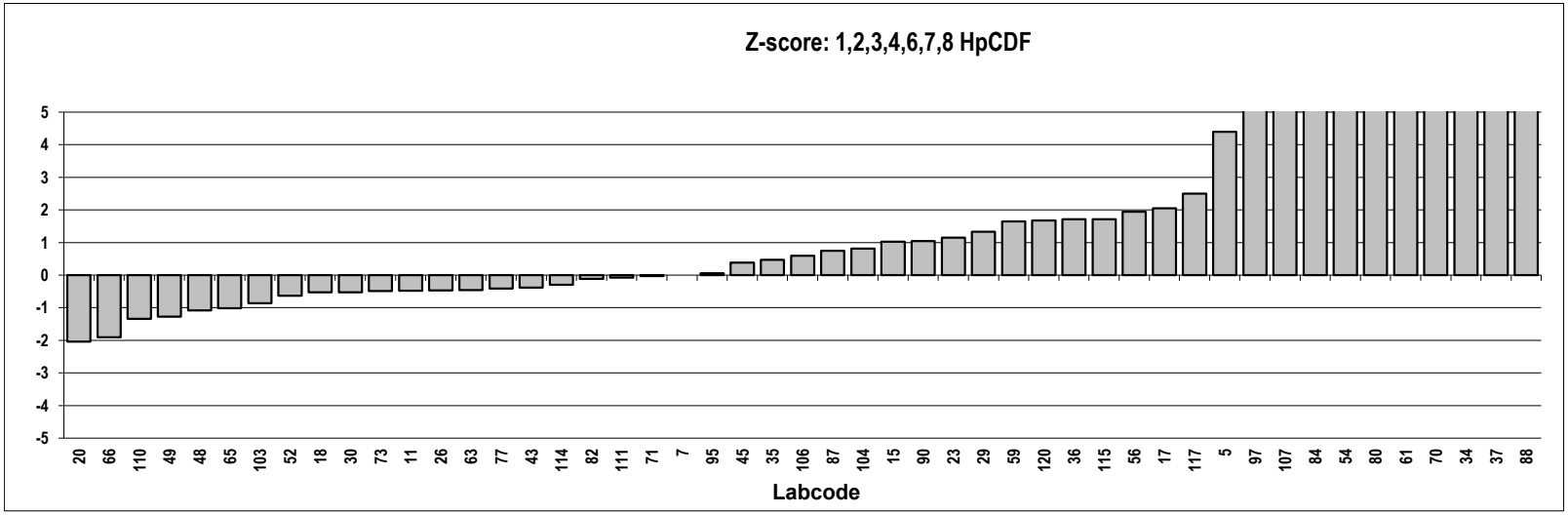
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,084	4,4		114	0,042	-0,30	
7	0,045	0,0		115	0,060	1,7	
11	0,040	-0,48		117	0,067	2,5	
15	0,054	1,0		120	0,060	1,7	
17	0,063	2,0					
18	0,040	-0,53					
20	0,026	-2,0					
23	0,055	1,2					
26	0,041	-0,47					
29	0,057	1,3					
30	0,040	-0,53					
34	0,50	51	Outlier,ND				
35	0,049	0,47					
36	0,060	1,7					
37	0,96	102	Outlier				
43	0,041	-0,38					
45	0,048	0,38					
48	0,035	-1,1					
49	0,033	-1,3					
52	0,039	-0,64					
54	0,10	6,4	Outlier				
56	0,062	1,9					
59	0,059	1,7					
61	0,13	9,5	Outlier,ND				
63	0,041	-0,46					
65	0,036	-1,0					
66	0,028	-1,9					
70	0,27	25	Outlier,ND				
71	0,044	-0,029					
73	0,040	-0,49					
77	0,041	-0,41					
80	0,13	9,4	Outlier				
82	0,044	-0,11					
84	0,10	6,3	Outlier				
87	0,051	0,74					
88	5,0	554	Outlier,ND				
90	0,054	1,0					
95	0,045	0,054	ND				
97	0,090	5,1					
103	0,037	-0,86					
104	0,052	0,82					
106	0,050	0,59					
107	0,10	6,2	ND				
110	0,033	-1,3					
111	0,044	-0,078					

Consenus statistics

Consensus median, pg/g	0,045
Median all values pg/g	0,050
Consensus mean, pg/g	0,050
Standard deviation, pg/g	0,016
Relative standard deviation, %	31
No. of values reported	49
No. of values removed	8
No. of reported non-detects	6


1,2,3,4,6,7,8 HpCDF
pg/g fw
0,10
0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 66 110 49 48 65 103 52 18 30 73 11 26 63 77 43 114 82 111 71 7 95 45 35 106 87 104 15 90 23 29 59 120 36 115 56 17 117 5 97 107 84 54 80 61 70 34 37 88
Labcode

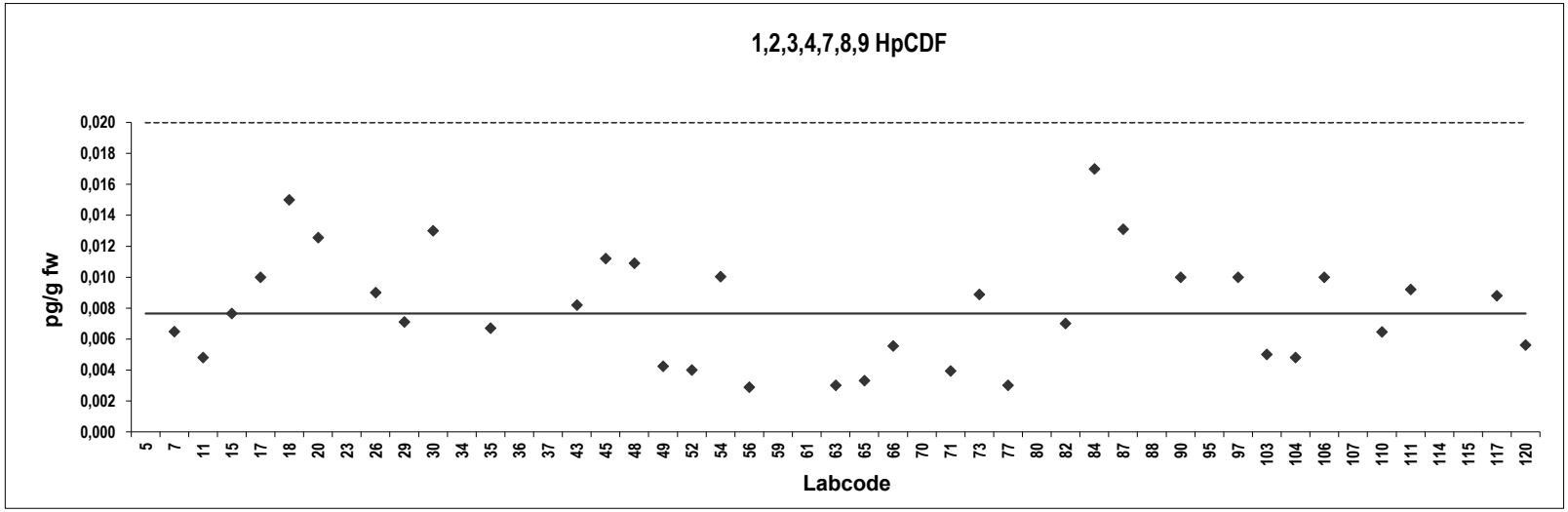
Herring

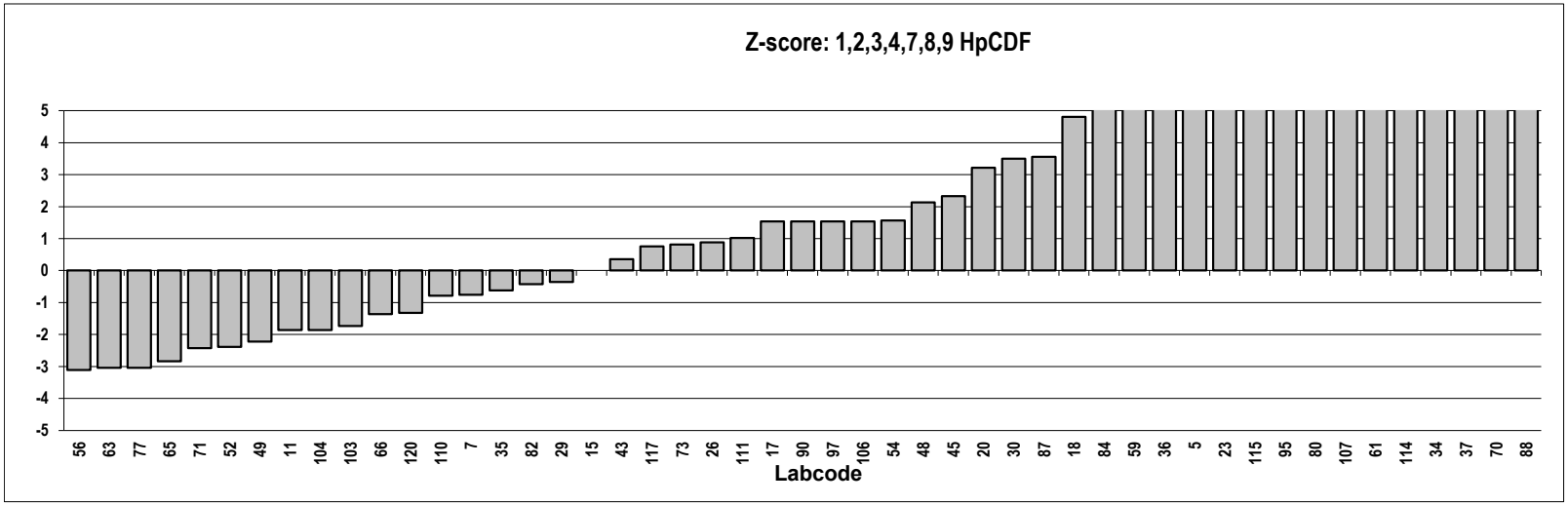
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,039	21	Outlier	114	0,15	93	Outlier,ND
7	0,0065	-0,76		115	0,050	28	Outlier,ND
11	0,0048	-1,9		117	0,0088	0,75	ND
15	0,0076	0,0		120	0,0056	-1,3	ND
17	0,010	1,5					
18	0,015	4,8	ND				
20	0,013	3,2					
23	0,050	28	Outlier,ND				
26	0,0090	0,89	ND				
29	0,0071	-0,35					
30	0,013	3,5	ND				
34	0,20	126	Outlier,ND				
35	0,0067	-0,62					
36	0,039	21	Outlier,ND				
37	0,26	168	Outlier				
43	0,0082	0,35	ND				
45	0,011	2,3					
48	0,011	2,1	ND				
49	0,0042	-2,2					
52	0,0040	-2,4					
54	0,010	1,6					
56	0,0029	-3,1					
59	0,028	14	Outlier,ND				
61	0,13	80	Outlier,ND				
63	0,0030	-3,0	ND				
65	0,0033	-2,8					
66	0,0056	-1,4					
70	0,32	204	Outlier,ND				
71	0,0039	-2,4					
73	0,0089	0,81	ND				
77	0,0030	-3,0	ND				
80	0,070	40	Outlier				
82	0,0070	-0,42	ND				
84	0,017	6,1	ND				
87	0,013	3,6	ND				
88	5,0	3265	Outlier,ND				
90	0,010	1,5	ND				
95	0,051	28	Outlier,ND				
97	0,010	1,5	ND				
103	0,0050	-1,7	ND				
104	0,0048	-1,9					
106	0,010	1,5	ND				
107	0,10	60	Outlier,ND				
110	0,0065	-0,78					
111	0,0092	1,0	ND				

Consenus statistics

Consensus median, pg/g	0,0076
Median all values pg/g	0,010
Consensus mean, pg/g	0,0080
Standard deviation, pg/g	0,0036
Relative standard deviation, %	45
No. of values reported	49
No. of values removed	14
No. of reported non-detects	29


1,2,3,4,7,8,9 HpCDF
pg/g fw
0,020
0,018
0,016
0,014
0,012
0,010
0,008
0,006
0,004
0,002
0,000
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 63 77 65 71 52 49 11 104 103 66 120 110 7 35 82 29 15 43 117 73 26 111 17 90 97 106 54 48 45 20 30 87 18 84 59 36 5 23 115 95 80 107 61 114 34 37 70 88
Labcode

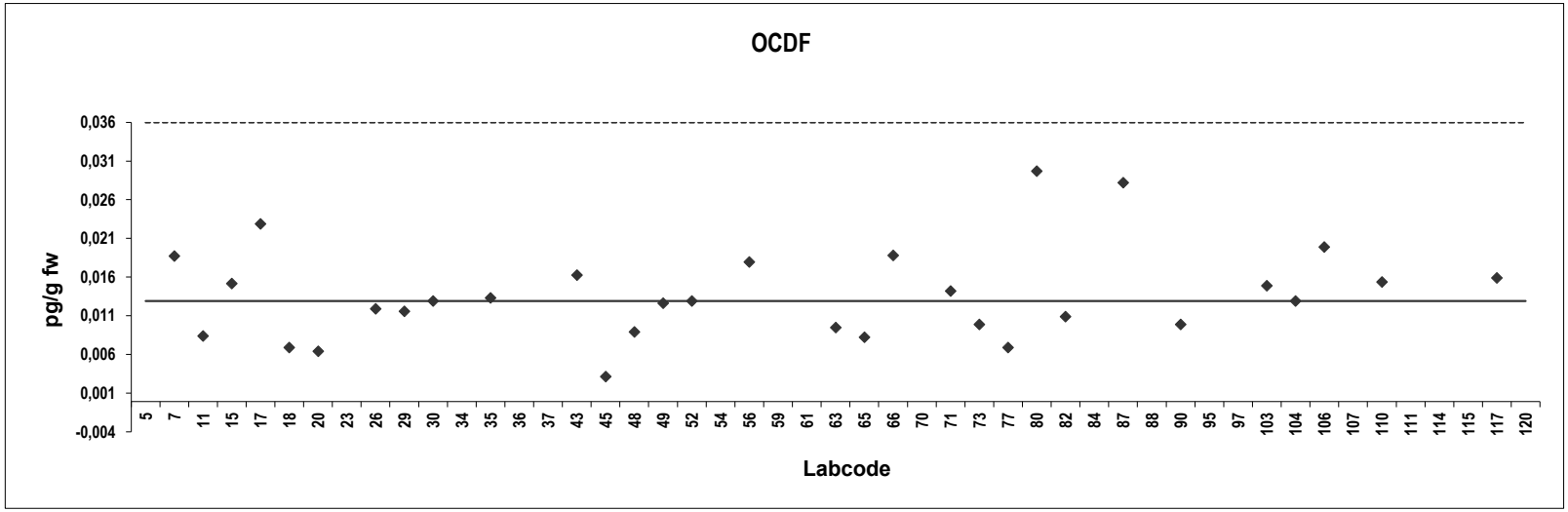
Herring

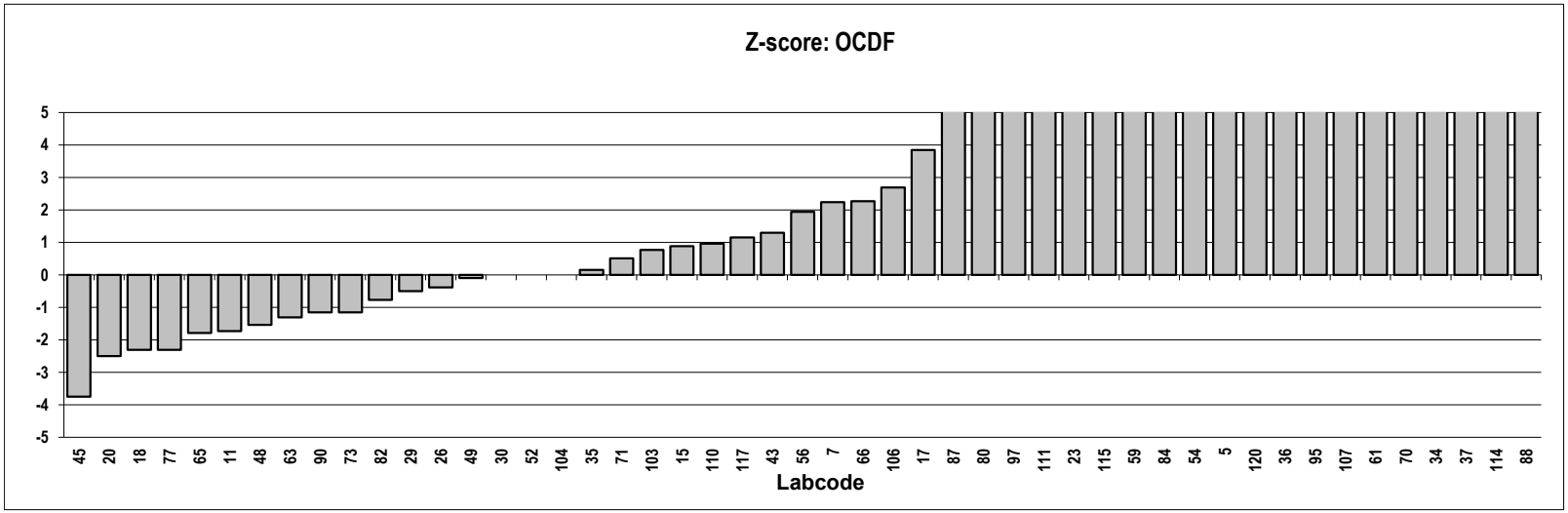
Congener: OCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	0,093	31	Outlier	114	2,0	764	Outlier,ND
7	0,019	2,2		115	0,050	14	Outlier,ND
11	0,0085	-1,7		117	0,016	1,2	
15	0,015	0,88		120	0,094	31	Outlier
17	0,023	3,8					
18	0,0070	-2,3					
20	0,0065	-2,5	ND				
23	0,050	14	Outlier,ND				
26	0,012	-0,38	ND				
29	0,012	-0,50					
30	0,013	0,0					
34	0,50	187	Outlier,ND				
35	0,013	0,15					
36	0,11	37	Outlier,ND				
37	0,85	321	Outlier				
43	0,016	1,3	ND				
45	0,0033	-3,7	ND				
48	0,0090	-1,5	ND				
49	0,013	-0,10					
52	0,013	0,0					
54	0,085	28	Outlier				
56	0,018	1,9					
59	0,071	22	Outlier,ND				
61	0,31	114	Outlier,ND				
63	0,0096	-1,3					
65	0,0084	-1,8					
66	0,019	2,3					
70	0,37	137	Outlier,ND				
71	0,014	0,51					
73	0,010	-1,2	ND				
77	0,0070	-2,3	ND				
80	0,030	6,5	ND				
82	0,011	-0,77	ND				
84	0,074	24	Outlier				
87	0,028	5,9					
88	10	3841	Outlier,ND				
90	0,010	-1,2	ND				
95	0,17	62	Outlier,ND				
97	0,040	10	Outlier				
103	0,015	0,77	ND				
104	0,013	0,0					
106	0,020	2,7	ND				
107	0,20	72	Outlier,ND				
110	0,015	0,96	ND				
111	0,046	13	Outlier,ND				

Consenus statistics

Consensus median, pg/g	0,013
Median all values pg/g	0,018
Consensus mean, pg/g	0,014
Standard deviation, pg/g	0,0060
Relative standard deviation, %	43
No. of values reported	49
No. of values removed	18
No. of reported non-detects	25


OCDF
pg/g fw
0,036
0,031
0,026
0,021
0,016
0,011
0,006
0,001
-0,004
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 20 18 77 65 11 48 63 90 73 82 29 26 49 30 52 104 35 71 103 15 110 117 43 56 7 66 106 17 87 80 97 111 23 115 59 84 54 5 120 36 95 107 61 70 34 37 114 88
Labcode

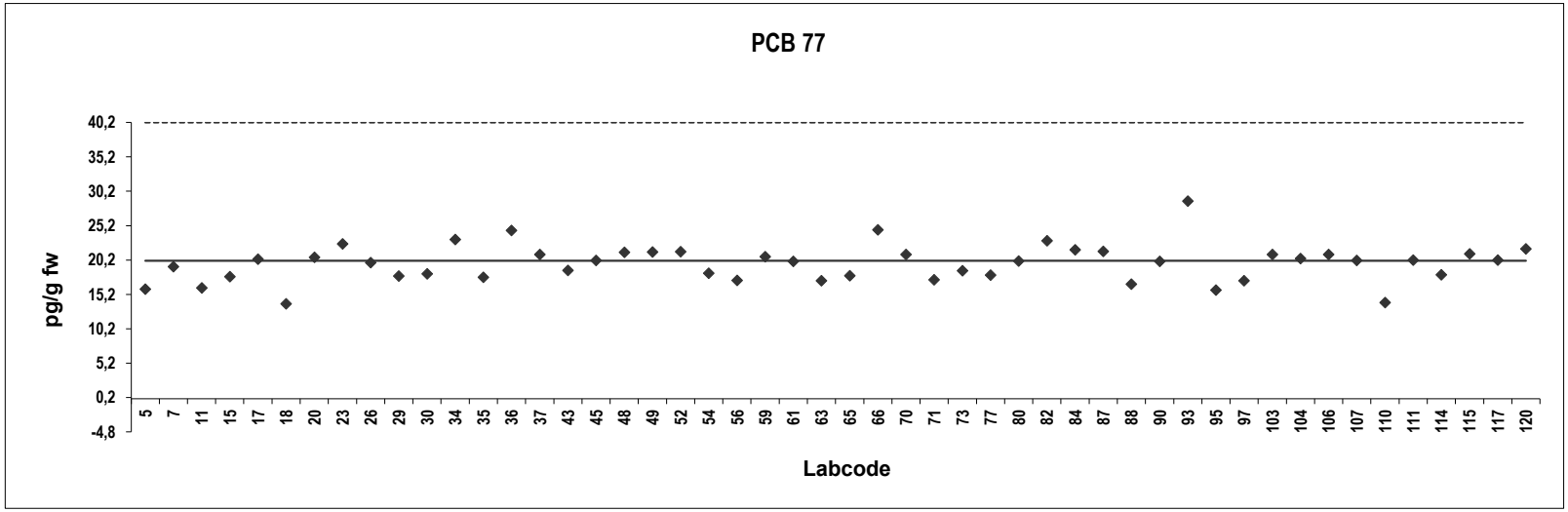
Herring

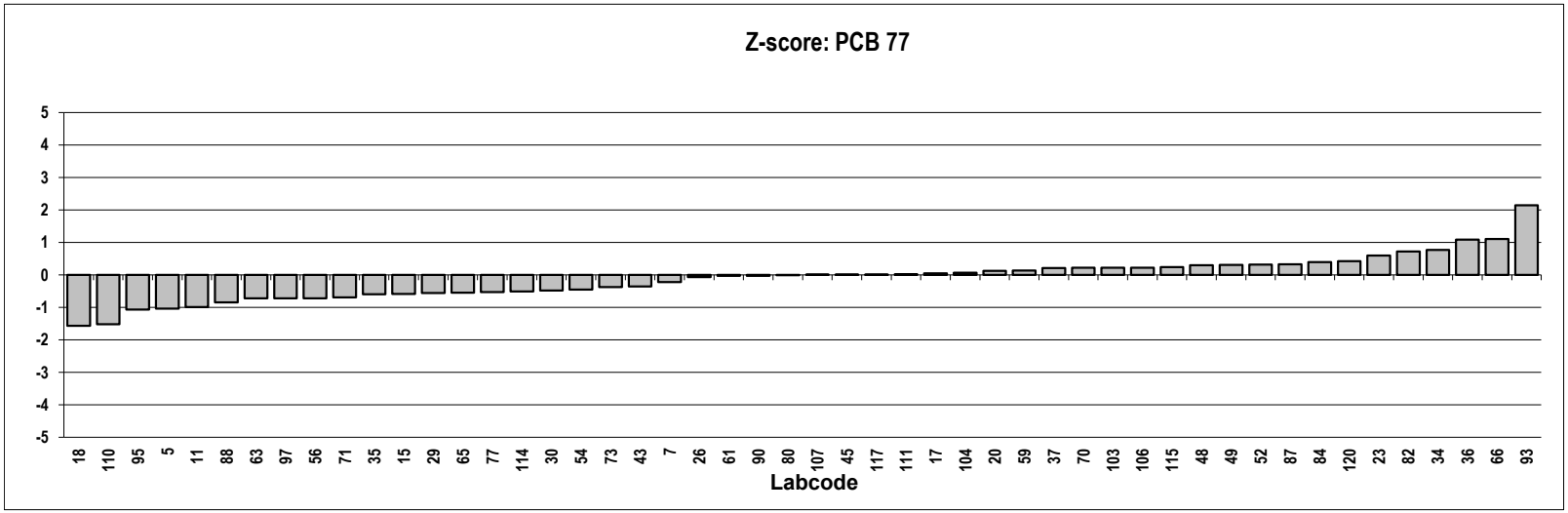
Congener: PCB 77

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	16	-1,0		111	20	0,025	
7	19	-0,21		114	18	-0,51	
11	16	-0,99		115	21	0,25	
15	18	-0,58		117	20	0,017	
17	20	0,050		120	22	0,42	
18	14	-1,6					
20	21	0,13					
23	23	0,60					
26	20	-0,068					
29	18	-0,56					
30	18	-0,47					
34	23	0,77					
35	18	-0,60					
36	25	1,1					
37	21	0,22					
43	19	-0,35					
45	20	0,011					
48	21	0,31					
49	21	0,31					
52	21	0,32					
54	18	-0,45					
56	17	-0,72					
59	21	0,14					
61	20	-0,025					
63	17	-0,72					
65	18	-0,55					
66	25	1,1					
70	21	0,22					
71	17	-0,69					
73	19	-0,37					
77	18	-0,52					
80	20	-0,0092					
82	23	0,72					
84	22	0,40					
87	21	0,33					
88	17	-0,85					
90	20	-0,025					
93	29	2,2					
95	16	-1,1					
97	17	-0,72					
103	21	0,22					
104	20	0,074					
106	21	0,22					
107	20	0,0092					
110	14	-1,5	ND				

Consenus statistics

Consensus median, pg/g	20
Median all values pg/g	20
Consensus mean, pg/g	20
Standard deviation, pg/g	2,7
Relative standard deviation, %	14
No. of values reported	50
No. of values removed	0
No. of reported non-detects	1


PCB 77
pg/g fw
40,2
35,2
30,2
25,2
20,2
15,2
10,2
5,2
0,2
-4,8
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 110 95 5 11 88 63 97 56 71 35 15 29 65 77 114 30 54 73 43 7 26 61 90 80 107 45 117 111 17 104 20 59 37 70 103 106 115 48 49 52 87 84 120 23 82 34 36 66 93
Labcode

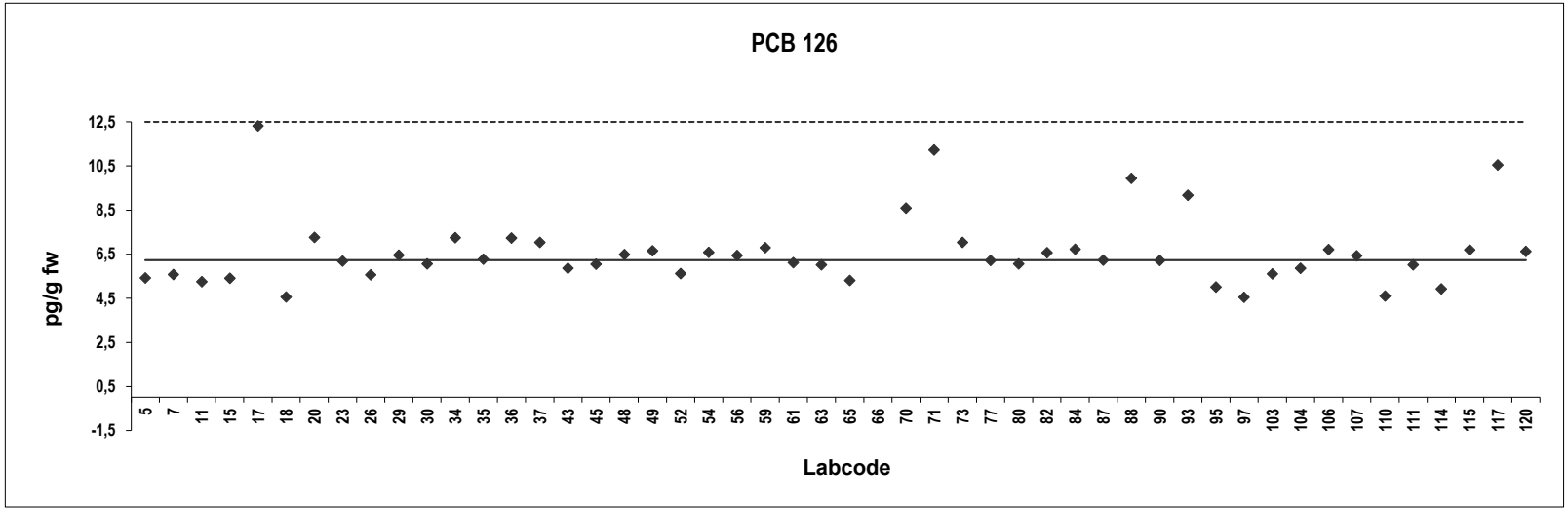
Herring

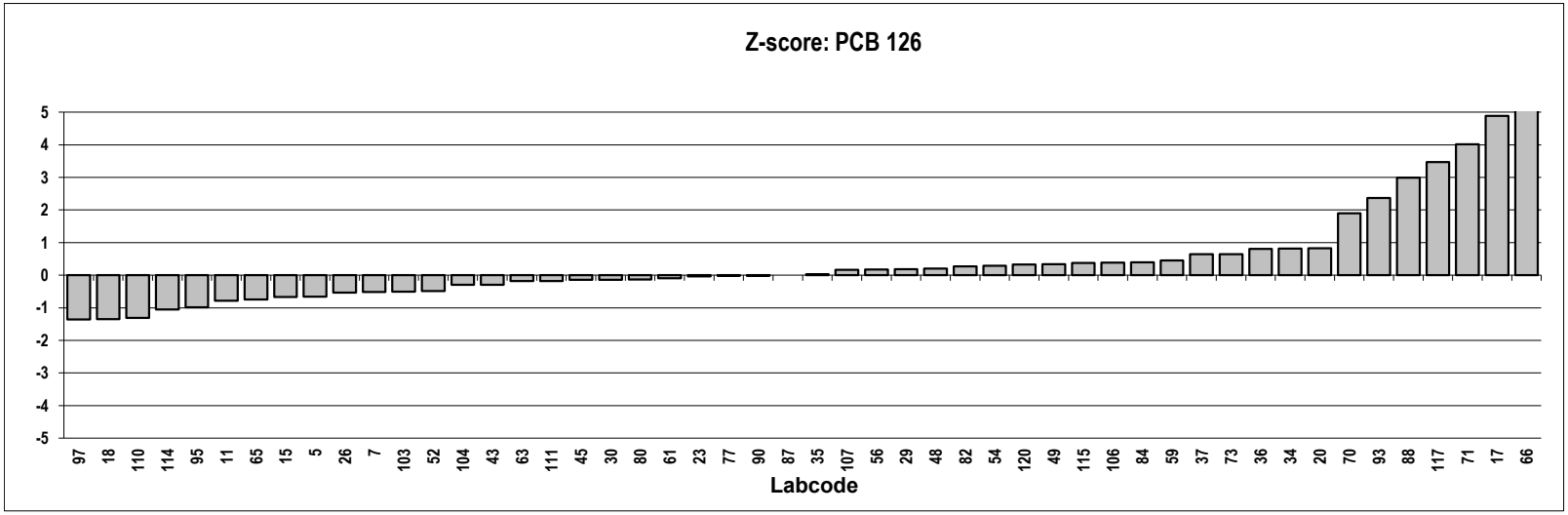
Congener: PCB 126

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	5,4	-0,66		111	6,0	-0,18	
7	5,6	-0,52		114	4,9	-1,1	
11	5,2	-0,78		115	6,7	0,38	
15	5,4	-0,67		117	11	3,5	
17	12	4,9		120	6,6	0,32	
18	4,5	-1,3					
20	7,2	0,82					
23	6,2	-0,036					
26	5,6	-0,54					
29	6,4	0,18					
30	6,0	-0,14					
34	7,2	0,81					
35	6,3	0,034					
36	7,2	0,80					
37	7,0	0,64					
43	5,9	-0,30					
45	6,0	-0,15					
48	6,5	0,20					
49	6,6	0,34					
52	5,6	-0,49					
54	6,6	0,29					
56	6,4	0,17					
59	6,8	0,45					
61	6,1	-0,10					
63	6,0	-0,18					
65	5,3	-0,75					
66	16	7,6	Outlier				
70	8,6	1,9					
71	11	4,0					
73	7,0	0,65					
77	6,2	-0,015					
80	6,1	-0,14					
82	6,6	0,27					
84	6,7	0,39					
87	6,2	0,0					
88	9,9	3,0	ND				
90	6,2	-0,015					
93	9,2	2,4					
95	5,0	-0,98					
97	4,5	-1,4					
103	5,6	-0,51					
104	5,9	-0,30					
106	6,7	0,39					
107	6,4	0,16					
110	4,6	-1,3					

Consenus statistics

Consensus median, pg/g	6,2
Median all values pg/g	6,2
Consensus mean, pg/g	6,6
Standard deviation, pg/g	1,6
Relative standard deviation, %	24
No. of values reported	50
No. of values removed	1
No. of reported non-detects	1


PCB 126
pg/g fw
12,5
10,5
8,5
6,5
4,5
2,5
0,5
-1,5
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 18 110 114 95 11 65 15 5 26 7 103 52 104 43 63 111 45 30 80 61 23 77 90 87 35 107 56 29 48 82 54 120 49 115 106 84 59 37 73 36 34 20 70 93 88 117 71 17 66
Labcode

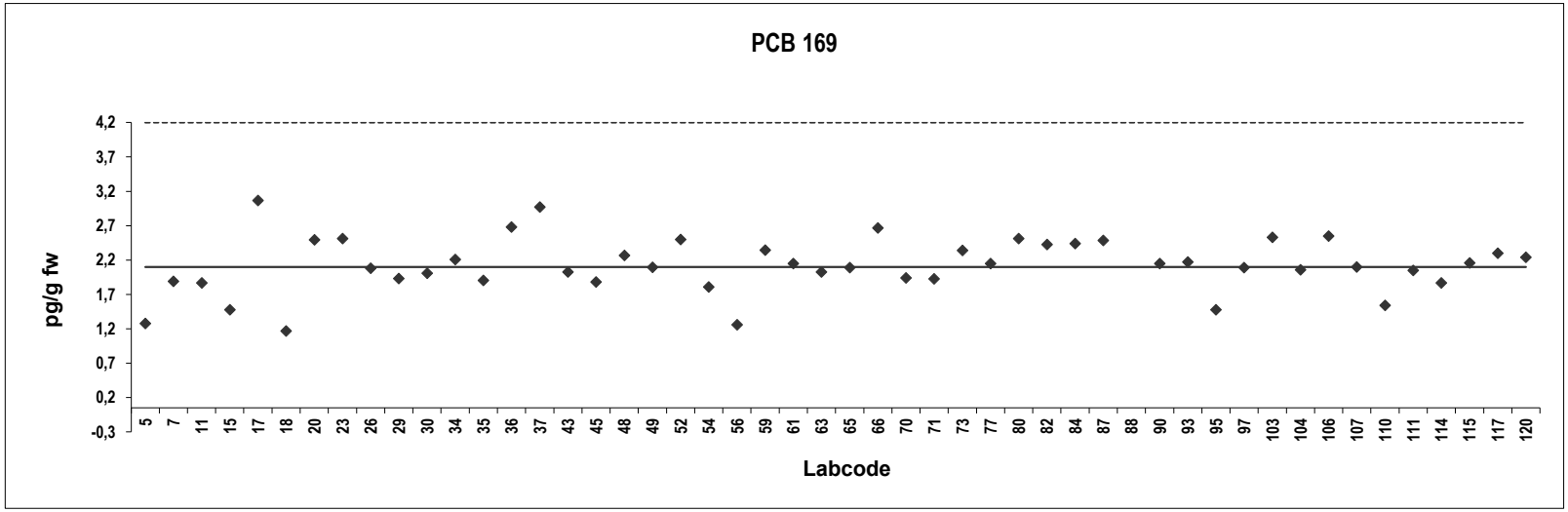
Herring

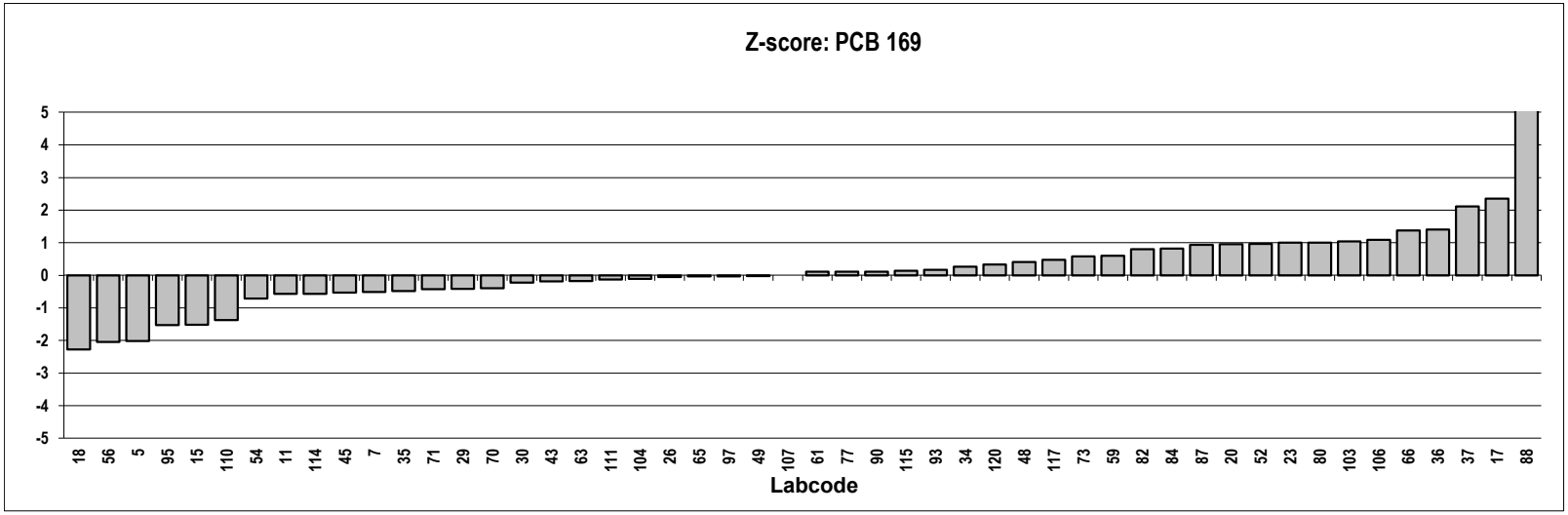
Congener: PCB 169

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	1,2	-2,0		111	2,0	-0,13	
7	1,8	-0,51		114	1,8	-0,57	
11	1,8	-0,57		115	2,1	0,14	
15	1,4	-1,5		117	2,3	0,48	
17	3,0	2,4		120	2,2	0,33	
18	1,1	-2,3					
20	2,4	0,96					
23	2,5	1,0					
26	2,0	-0,053					
29	1,9	-0,41					
30	2,0	-0,23					
34	2,2	0,26					
35	1,9	-0,48					
36	2,6	1,4					
37	2,9	2,1					
43	2,0	-0,18					
45	1,8	-0,53					
48	2,2	0,41					
49	2,0	-0,018					
52	2,5	0,97					
54	1,8	-0,71					
56	1,2	-2,0					
59	2,3	0,60					
61	2,1	0,11					
63	2,0	-0,18					
65	2,0	-0,031					
66	2,6	1,4					
70	1,9	-0,40					
71	1,9	-0,42					
73	2,3	0,58					
77	2,1	0,11					
80	2,5	1,0					
82	2,4	0,80					
84	2,4	0,82					
87	2,4	0,94					
88	9,9	19	Outlier,ND				
90	2,1	0,11					
93	2,1	0,17					
95	1,4	-1,5					
97	2,0	-0,031					
103	2,5	1,0					
104	2,0	-0,10					
106	2,5	1,1					
107	2,1	0,0					
110	1,5	-1,4					

Consenus statistics

Consensus median, pg/g	2,1
Median all values pg/g	2,1
Consensus mean, pg/g	2,1
Standard deviation, pg/g	0,40
Relative standard deviation, %	19
No. of values reported	50
No. of values removed	1
No. of reported non-detects	1


PCB 169
pg/g fw
4,2
3,7
3,2
2,7
2,2
1,7
1,2
0,7
0,2
-0,3
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 56 5 95 15 110 54 11 114 45 7 35 71 29 70 30 43 63 111 104 26 65 97 49 107 61 77 90 115 93 34 120 48 117 73 59 82 84 87 20 52 23 80 103 106 66 36 37 17 88
Labcode

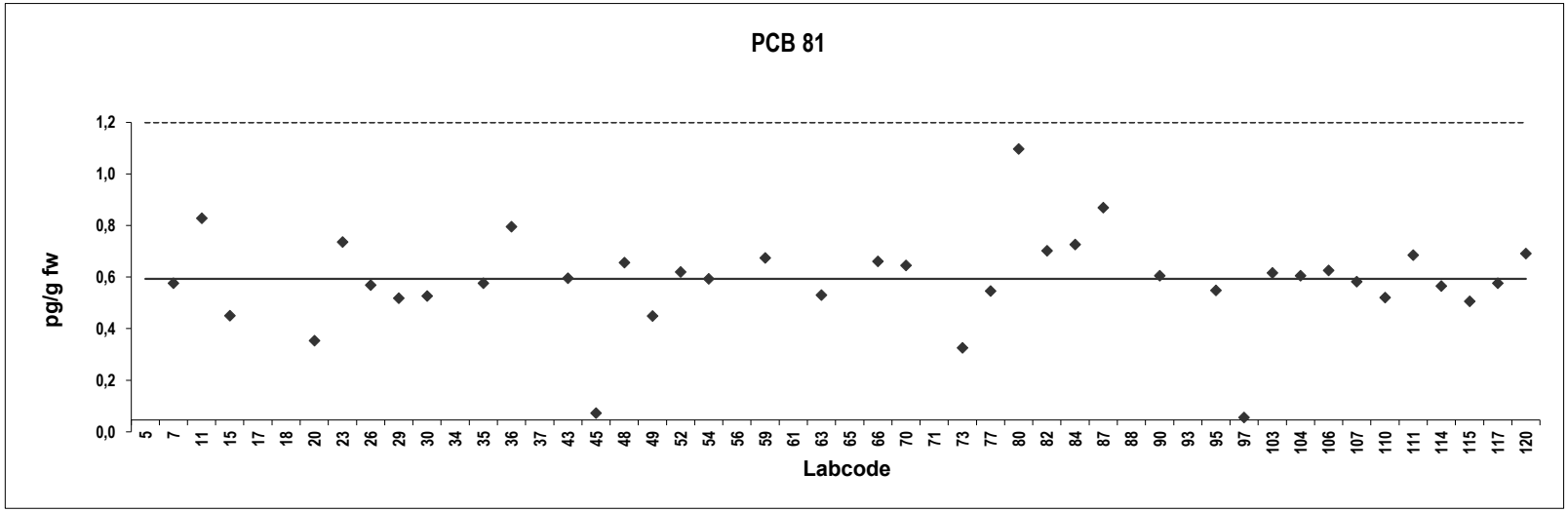
Herring

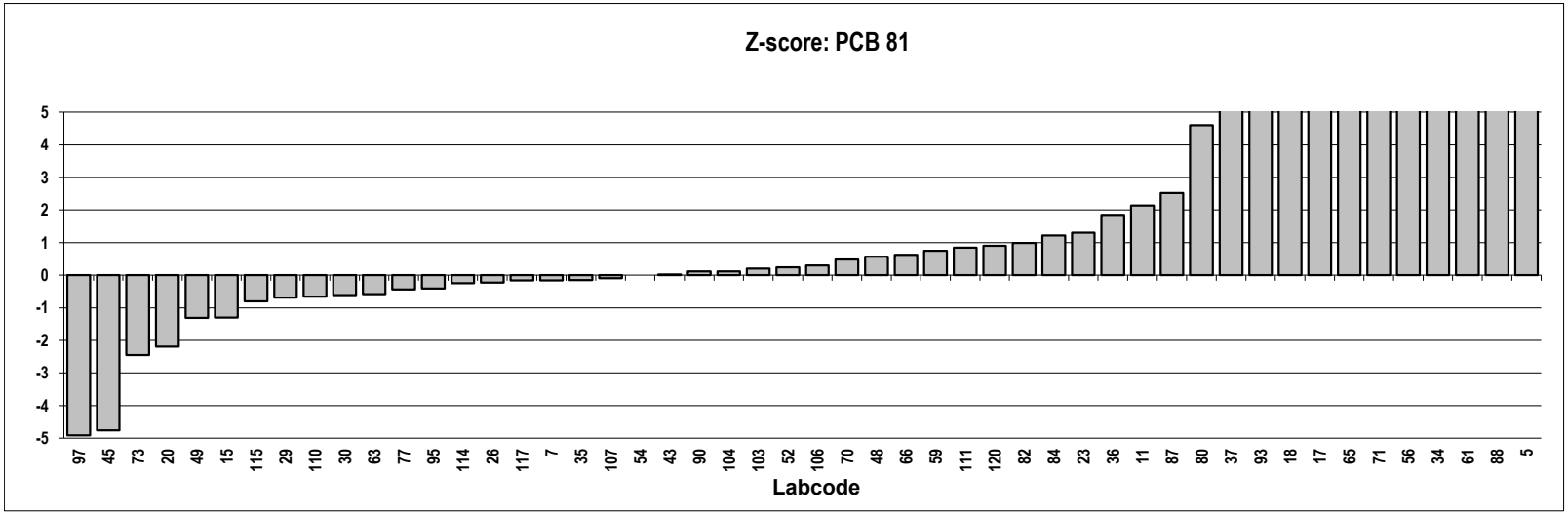
Congener: PCB 81

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	16	141	Outlier	111	0,64	0,84	
7	0,53	-0,16		114	0,52	-0,25	
11	0,78	2,1		115	0,46	-0,80	
15	0,40	-1,3		117	0,53	-0,16	
17	2,0	13	Outlier	120	0,65	0,90	
18	1,8	11	Outlier				
20	0,31	-2,2					
23	0,69	1,3					
26	0,52	-0,22					
29	0,47	-0,69					
30	0,48	-0,61					
34	10	86	Outlier,ND				
35	0,53	-0,15					
36	0,75	1,8					
37	1,2	6,2	Outlier				
43	0,55	0,021					
45	0,027	-4,8	ND				
48	0,61	0,57					
49	0,40	-1,3					
52	0,57	0,24					
54	0,55	0,0					
56	5,0	41	Outlier,ND				
59	0,63	0,74					
61	10	86	Outlier,ND				
63	0,48	-0,58					
65	3,0	22	Outlier				
66	0,62	0,62					
70	0,60	0,48					
71	4,0	32	Outlier				
73	0,28	-2,5					
77	0,50	-0,43					
80	1,1	4,6					
82	0,66	0,99					
84	0,68	1,2					
87	0,82	2,5					
88	11	94	Outlier				
90	0,56	0,11					
93	1,3	6,8	Outlier				
95	0,50	-0,41					
97	0,010	-4,9	ND				
103	0,57	0,21					
104	0,56	0,11					
106	0,58	0,30					
107	0,54	-0,10					
110	0,48	-0,66	ND				

Consenus statistics

Consensus median, pg/g	0,55
Median all values pg/g	0,58
Consensus mean, pg/g	0,54
Standard deviation, pg/g	0,18
Relative standard deviation, %	34
No. of values reported	50
No. of values removed	11
No. of reported non-detects	6


PCB 81
pg/g fw
1,2
1,0
0,8
0,6
0,4
0,2
0,0
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 45 73 20 49 15 115 29 110 30 63 77 95 114 26 117 7 35 107 54 43 90 104 103 52 106 70 48 66 59 111 120 82 84 23 36 11 87 80 37 93 18 17 65 71 56 34 61 88 5
Labcode

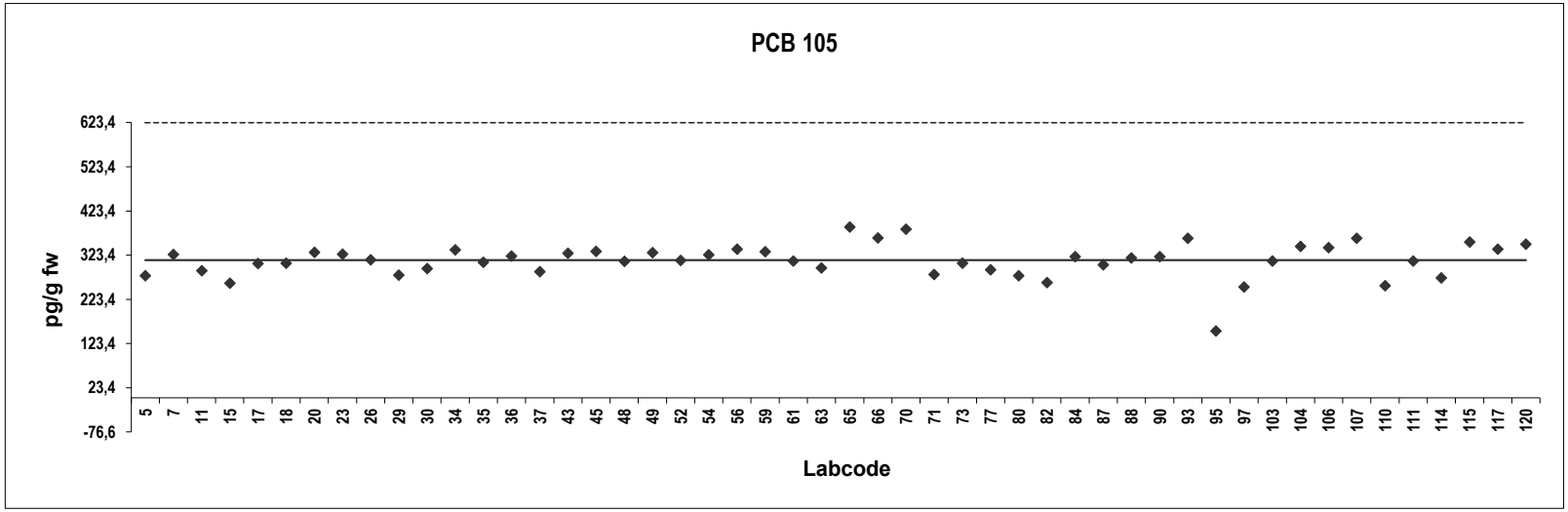
Herring

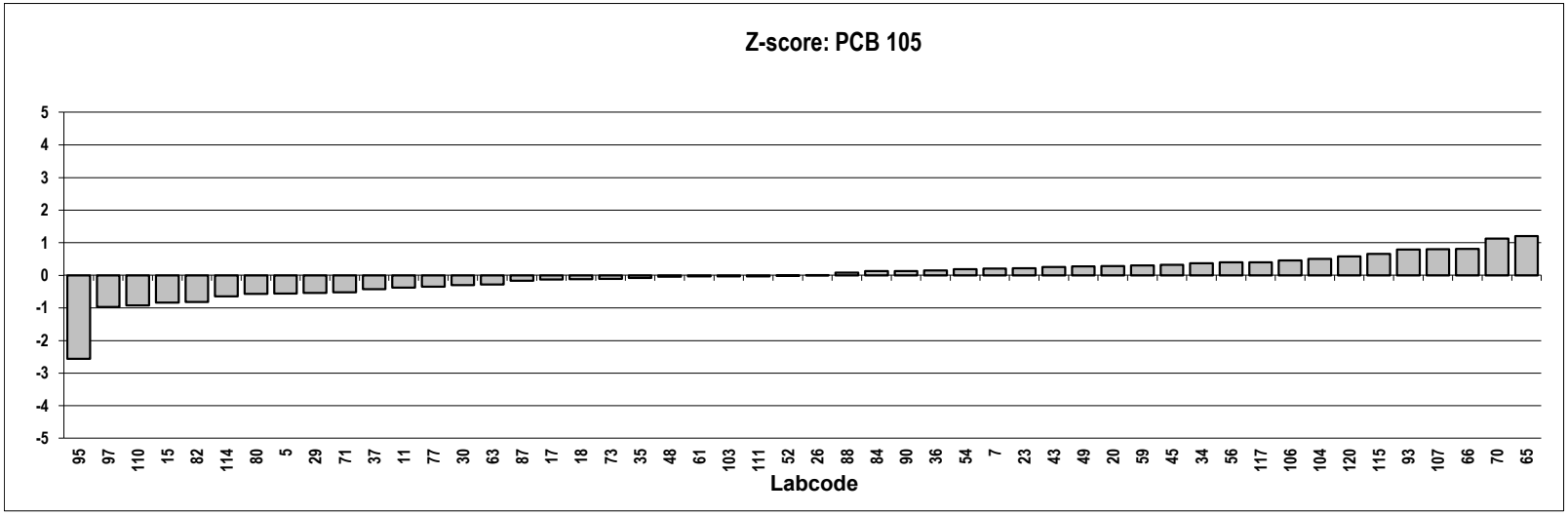
Congener: PCB 105

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	277	-0,56		111	310	-0,027	
7	325	0,21		114	272	-0,64	
11	288	-0,38		115	353	0,66	
15	259	-0,84		117	337	0,40	
17	304	-0,12		120	348	0,58	
18	305	-0,11					
20	329	0,28					
23	325	0,22					
26	312	0,011					
29	278	-0,54					
30	293	-0,30					
34	335	0,37					
35	307	-0,081					
36	321	0,15					
37	286	-0,42					
43	328	0,26					
45	332	0,32					
48	309	-0,043					
49	329	0,27					
52	311	-0,011					
54	324	0,19					
56	337	0,40					
59	331	0,31					
61	310	-0,027					
63	294	-0,28					
65	387	1,2					
66	362	0,81					
70	382	1,1					
71	279	-0,52					
73	305	-0,11					
77	290	-0,35					
80	277	-0,56					
82	261	-0,81					
84	320	0,13					
87	301	-0,16					
88	317	0,085					
90	320	0,13					
93	361	0,80					
95	152	-2,6					
97	251	-0,97					
103	310	-0,027					
104	343	0,50					
106	340	0,45					
107	362	0,80					
110	254	-0,92					

Consenus statistics

Consensus median, pg/g	312
Median all values pg/g	312
Consensus mean, pg/g	311
Standard deviation, pg/g	39
Relative standard deviation, %	12
No. of values reported	50
No. of values removed	0
No. of reported non-detects	0


PCB 105
623,4
523,4
423,4
323,4
223,4
123,4
23,4
-76,6
pg/g fw
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 97 110 15 82 114 80 5 29 71 37 11 77 30 63 87 17 18 73 35 48 61 103 111 52 26 88 84 90 36 54 7 23 43 49 20 59 45 34 56 117 106 104 120 115 93 107 66 70 65
Labcode

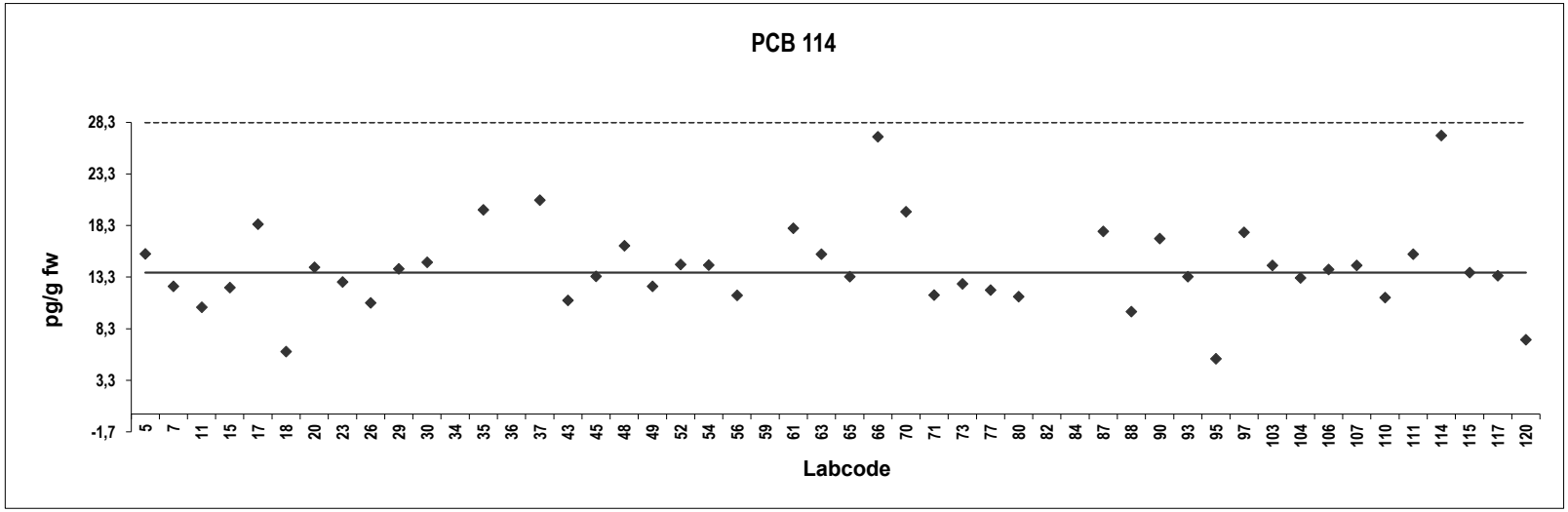
Herring

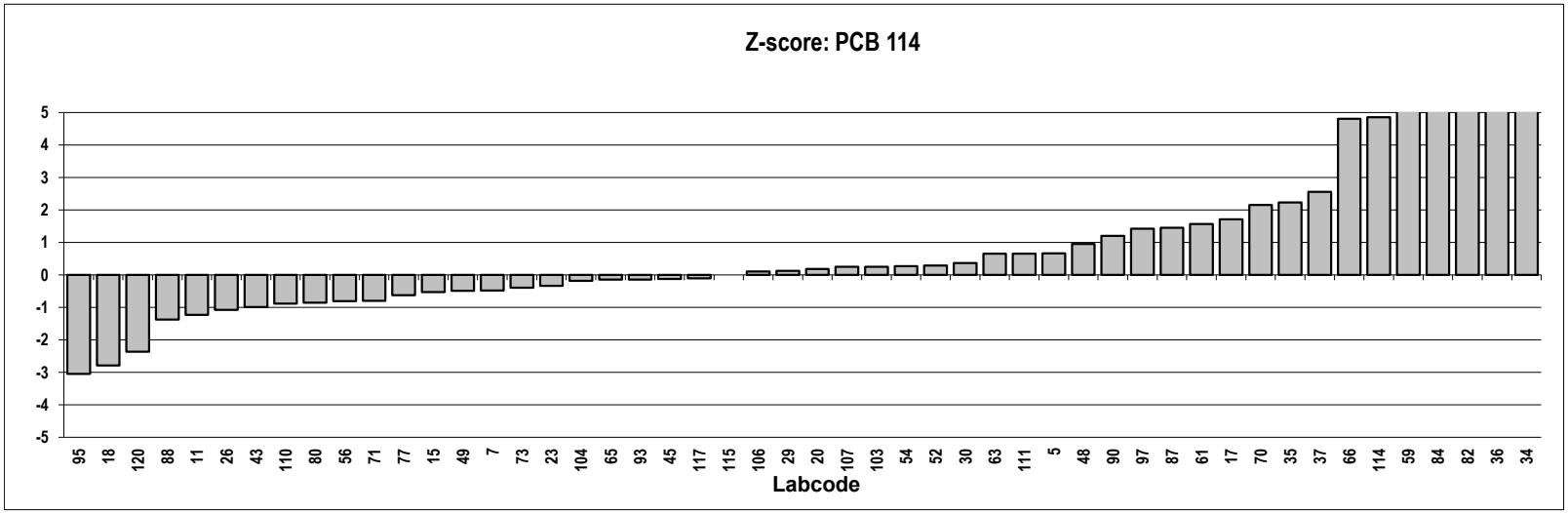
Congener: PCB 114

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	16	0,67		111	16	0,66	
7	12	-0,48		114	27	4,9	
11	10	-1,2		115	14	0,0	
15	12	-0,53		117	13	-0,11	
17	18	1,7		120	7,2	-2,4	
18	6,1	-2,8					
20	14	0,19					
23	13	-0,33					
26	11	-1,1					
29	14	0,13					
30	15	0,36					
34	50	13	Outlier,ND				
35	20	2,2					
36	46	12	Outlier				
37	21	2,6					
43	11	-0,99					
45	13	-0,13					
48	16	0,95					
49	12	-0,49					
52	15	0,29					
54	14	0,27					
56	11	-0,80					
59	29	5,5	Outlier				
61	18	1,6					
63	16	0,66					
65	13	-0,15					
66	27	4,8					
70	20	2,2					
71	12	-0,79					
73	13	-0,40					
77	12	-0,62					
80	11	-0,85					
82	33	7,0	Outlier				
84	29	5,6	Outlier,ND				
87	18	1,5					
88	9,9	-1,4	ND				
90	17	1,2					
93	13	-0,14					
95	5,4	-3,0					
97	18	1,4					
103	14	0,26					
104	13	-0,18					
106	14	0,11					
107	14	0,25					
110	11	-0,88					

Consenus statistics

Consensus median, pg/g	14
Median all values pg/g	14
Consensus mean, pg/g	14
Standard deviation, pg/g	4,3
Relative standard deviation, %	30
No. of values reported	50
No. of values removed	5
No. of reported non-detects	3


PCB 114
pg/g fw
28,3
23,3
18,3
13,3
8,3
3,3
-1,7
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 18 120 88 11 26 43 110 80 56 71 77 15 49 7 73 23 104 65 93 45 117 115 106 29 20 107 103 54 52 30 63 111 5 48 90 97 87 61 17 70 35 37 66 114 59 84 82 36 34
Labcode

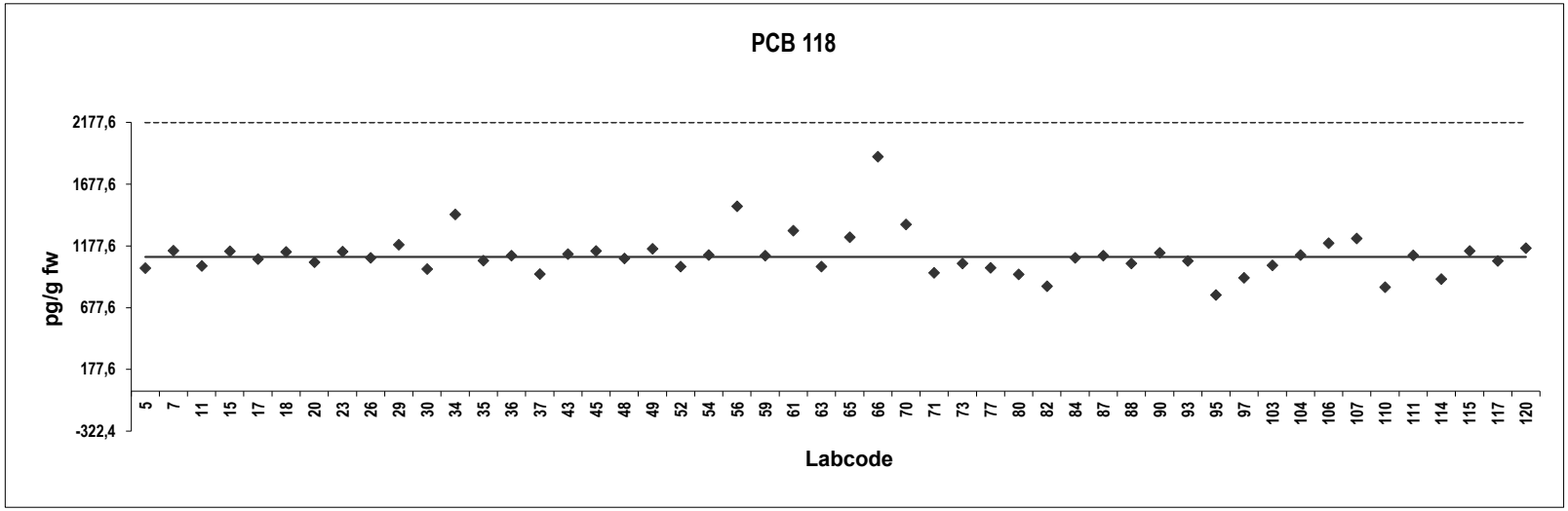
Herring

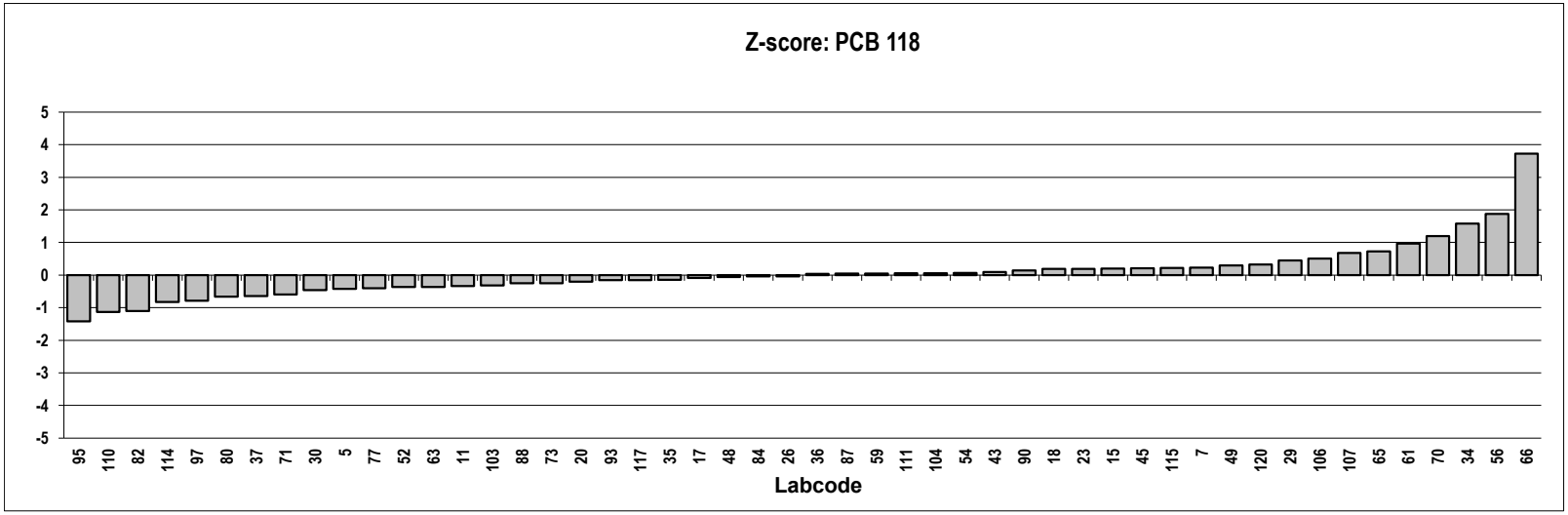
Congener: PCB 118

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	996	-0,43		111	1101	0,056	
7	1139	0,23		114	909	-0,83	
11	1015	-0,34		115	1137	0,22	
15	1133	0,20		117	1056	-0,15	
17	1070	-0,086		120	1160	0,33	
18	1129	0,19					
20	1044	-0,21					
23	1131	0,19					
26	1081	-0,038					
29	1187	0,45					
30	989	-0,46					
34	1433	1,6					
35	1058	-0,14					
36	1097	0,038					
37	949	-0,64					
43	1110	0,10					
45	1135	0,21					
48	1075	-0,063					
49	1154	0,30					
52	1010	-0,36					
54	1103	0,065					
56	1498	1,9					
59	1099	0,048					
61	1300	0,97					
63	1010	-0,36					
65	1248	0,73					
66	1900	3,7					
70	1350	1,2					
71	959	-0,60					
73	1035	-0,25					
77	1000	-0,41					
80	945	-0,66					
82	849	-1,1					
84	1080	-0,041					
87	1098	0,042					
88	1034	-0,25					
90	1120	0,14					
93	1056	-0,15					
95	779	-1,4					
97	918	-0,79					
103	1020	-0,32					
104	1102	0,061					
106	1200	0,51					
107	1237	0,68					
110	843	-1,1					

Consenus statistics

Consensus median, pg/g	1089
Median all values pg/g	1089
Consensus mean, pg/g	1102
Standard deviation, pg/g	177
Relative standard deviation, %	16
No. of values reported	50
No. of values removed	0
No. of reported non-detects	0


PCB 118
2177,6
1677,6
1177,6
677,6
177,6
-322,4
pg/g fw
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
95 110 82 114 97 80 37 71 30 5 77 52 63 11 103 88 73 20 93 117 35 17 48 84 26 36 87 59 111 104 54 43 90 18 23 15 45 115 7 49 120 29 106 107 65 61 70 34 56 66
Labcode

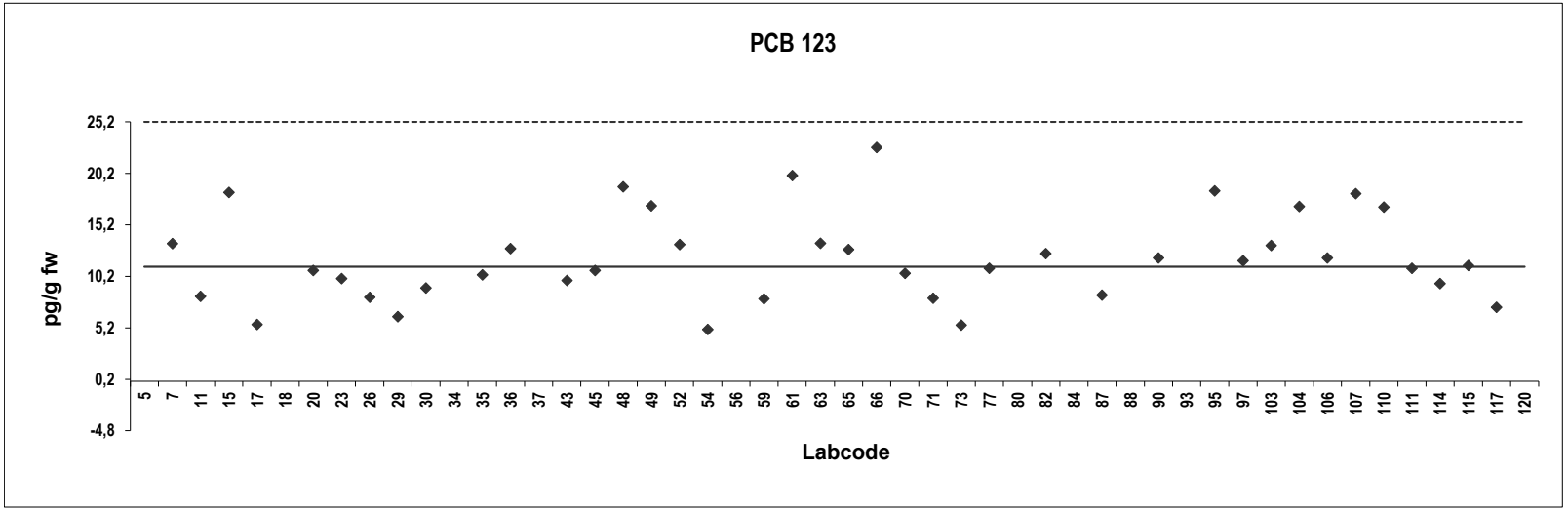
Herring

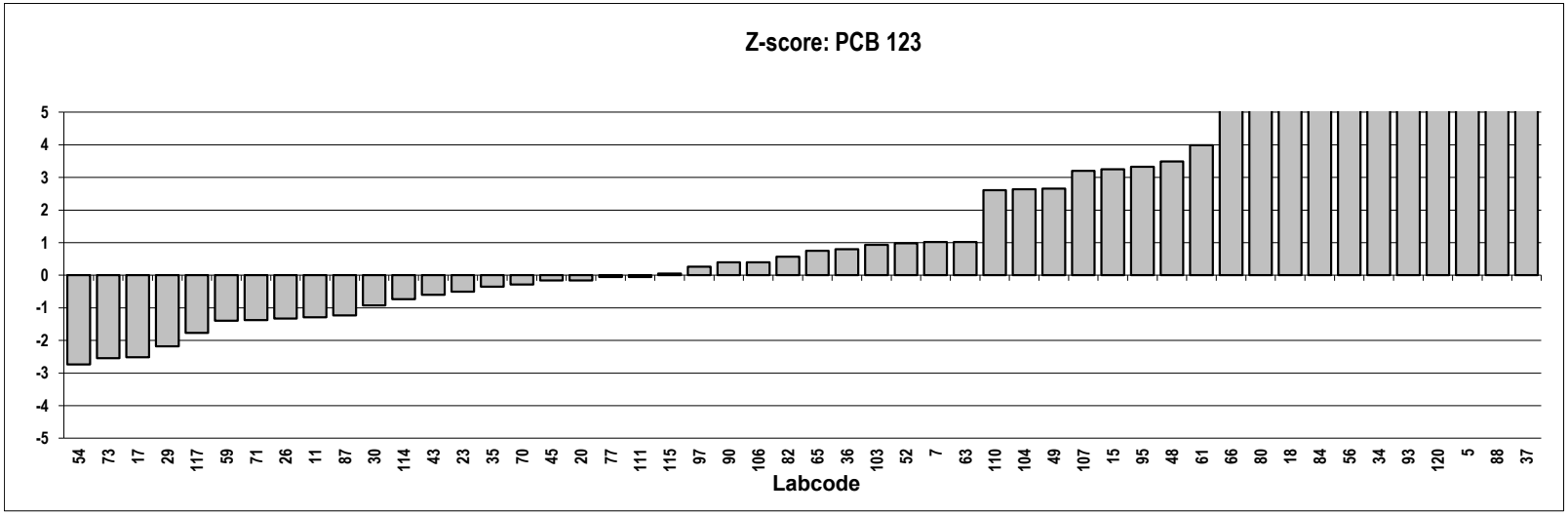
Congener: PCB 123

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	168	70	Outlier	111	11	-0,056	
7	13	1,0		114	9,5	-0,73	
11	8,3	-1,3		115	11	0,056	
15	18	3,3		117	7,2	-1,8	
17	5,5	-2,5		120	73	28	Outlier
18	28	7,8	Outlier				
20	11	-0,16					
23	10	-0,51	ND				
26	8,2	-1,3					
29	6,3	-2,2					
30	9,1	-0,92					
34	50	17	Outlier,ND				
35	10	-0,35					
36	13	0,80					
37	191	81	Outlier				
43	9,8	-0,60					
45	11	-0,16					
48	19	3,5					
49	17	2,7					
52	13	0,98					
54	5,0	-2,7					
56	37	12	Outlier				
59	8,0	-1,4					
61	20	4,0	ND				
63	13	1,0					
65	13	0,75					
66	23	5,2					
70	11	-0,28					
71	8,1	-1,4					
73	5,5	-2,5					
77	11	-0,056					
80	26	6,5	Outlier				
82	12	0,57					
84	33	9,8	Outlier,ND				
87	8,4	-1,2					
88	171	72	Outlier				
90	12	0,39					
93	53	19	Outlier				
95	19	3,3					
97	12	0,26					
103	13	0,93					
104	17	2,6					
106	12	0,39					
107	18	3,2					
110	17	2,6					

Consenus statistics

Consensus median, pg/g	11
Median all values pg/g	13
Consensus mean, pg/g	12
Standard deviation, pg/g	4,3
Relative standard deviation, %	36
No. of values reported	50
No. of values removed	10
No. of reported non-detects	4


PCB 123
pg/g fw
25,2
20,2
15,2
10,2
5,2
0,2
-4,8
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
54 73 17 29 117 59 71 26 11 87 30 114 43 23 35 70 45 20 77 111 115 97 90 106 82 65 36 103 52 7 63 110 104 49 107 15 95 48 61 66 80 18 84 56 34 93 120 5 88 37
Labcode

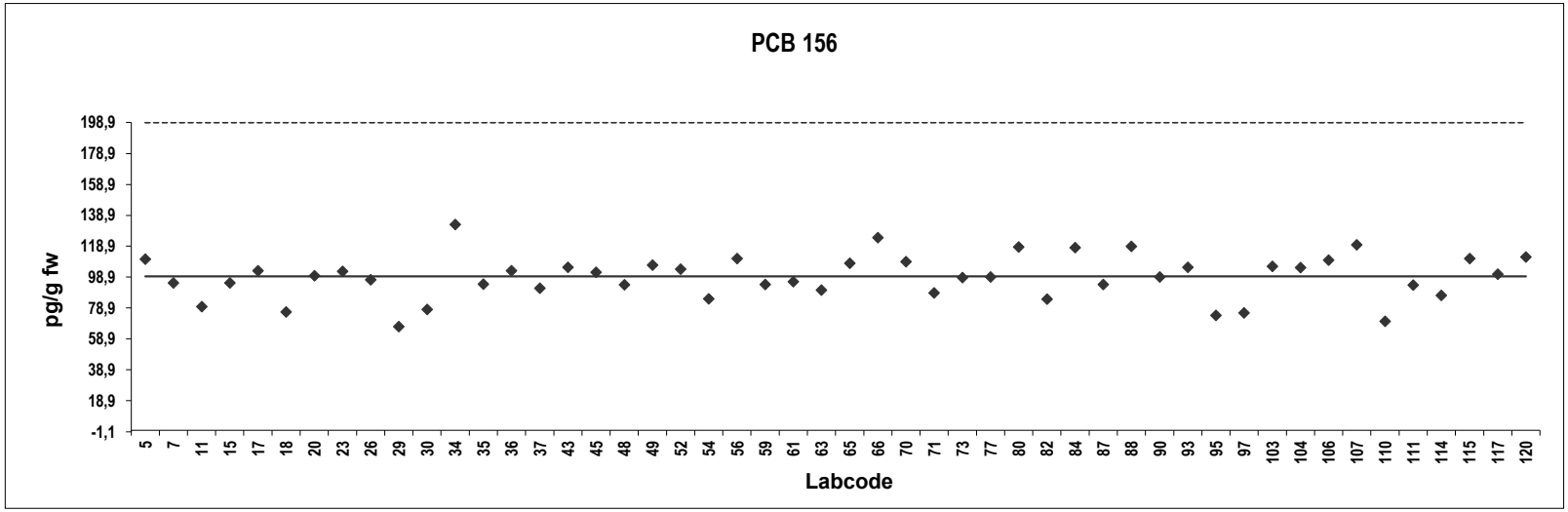
Herring

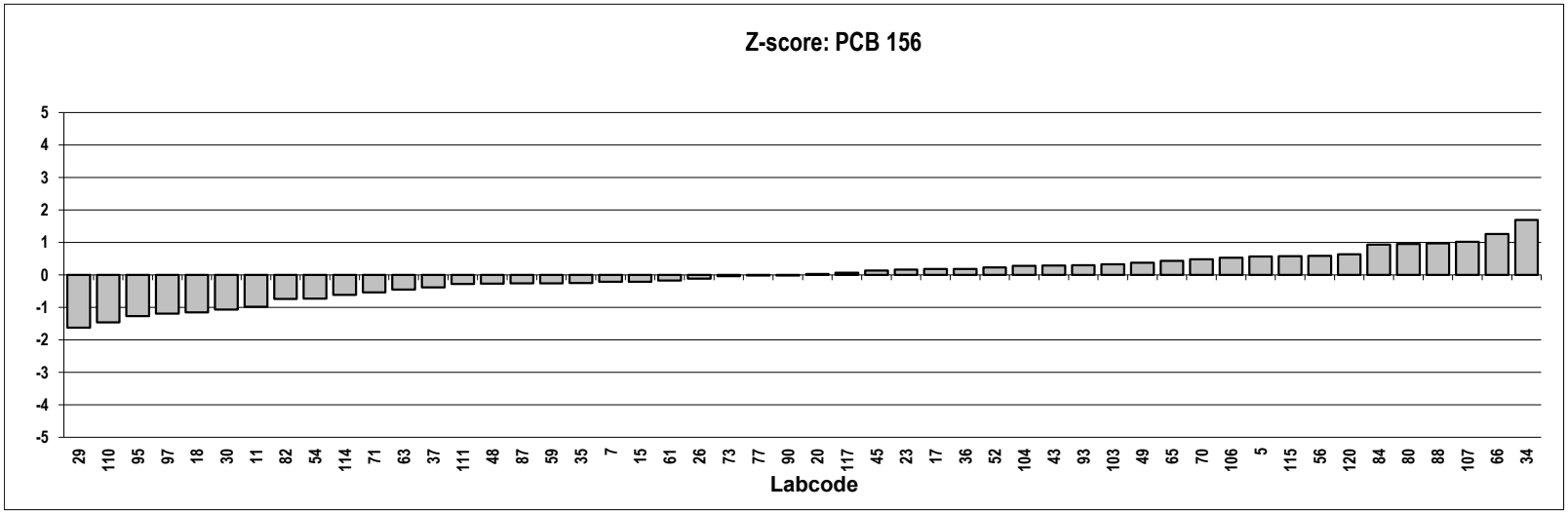
Congener: PCB 156

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	111	0,56		111	94	-0,28	
7	95	-0,21		114	87	-0,62	
11	80	-0,99		115	111	0,58	
15	95	-0,21		117	101	0,067	
17	103	0,18		120	112	0,63	
18	77	-1,2					
20	100	0,023					
23	103	0,16					
26	97	-0,12					
29	67	-1,6					
30	78	-1,1					
34	133	1,7					
35	94	-0,25					
36	103	0,18					
37	92	-0,38					
43	105	0,29					
45	102	0,13					
48	94	-0,27					
49	107	0,37					
52	104	0,23					
54	85	-0,73					
56	111	0,58					
59	94	-0,26					
61	96	-0,17					
63	91	-0,45					
65	108	0,43					
66	125	1,3					
70	109	0,48					
71	89	-0,54					
73	99	-0,037					
77	99	-0,023					
80	118	0,95					
82	85	-0,74					
84	118	0,93					
87	94	-0,27					
88	119	0,97					
90	99	-0,023					
93	105	0,29					
95	74	-1,27					
97	76	-1,19					
103	106	0,33					
104	105	0,28					
106	110	0,53					
107	120	1,0					
110	70	-1,5					

Consenus statistics

Consensus median, pg/g	99
Median all values pg/g	99
Consensus mean, pg/g	99
Standard deviation, pg/g	14
Relative standard deviation, %	14
No. of values reported	50
No. of values removed	0
No. of reported non-detects	0


PCB 156
pg/g fw
198,9
178,9
158,9
138,9
118,9
98,9
78,9
58,9
38,9
18,9
-1,1
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
29 110 95 97 18 30 11 82 54 114 71 63 37 111 48 87 59 35 7 15 61 26 73 77 90 20 117 45 23 17 36 52 104 43 93 103 49 65 70 106 5 115 56 120 84 80 88 107 66 34
Labcode

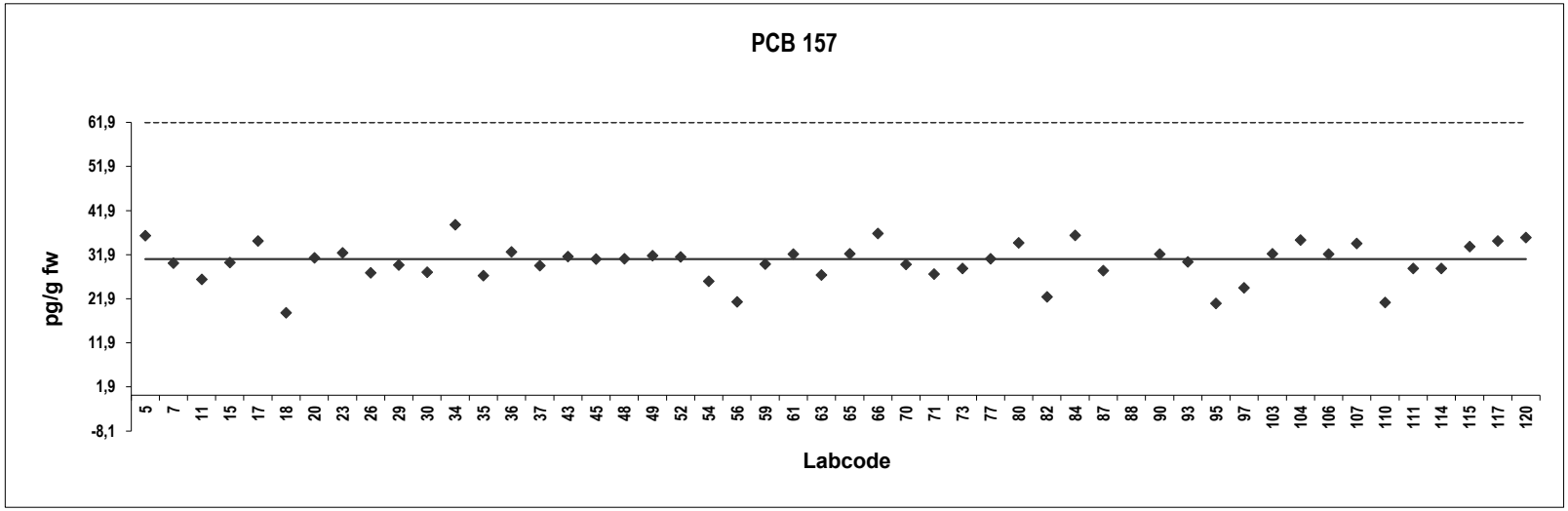
Herring

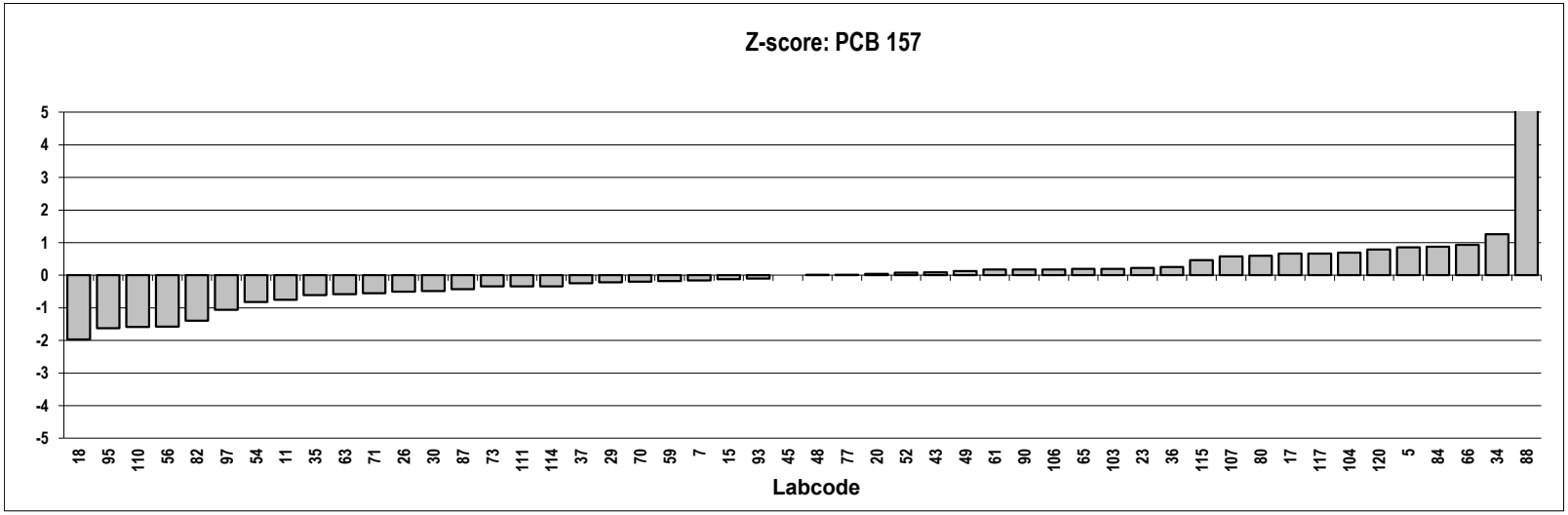
Congener: PCB 157

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	36	0,86		111	29	-0,34	
7	30	-0,15		114	29	-0,34	
11	26	-0,75		115	34	0,46	
15	30	-0,12		117	35	0,67	
17	35	0,66		120	36	0,79	
18	19	-2,0					
20	31	0,042					
23	32	0,23					
26	28	-0,51					
29	30	-0,22					
30	28	-0,49					
34	39	1,3					
35	27	-0,61					
36	33	0,26					
37	29	-0,24					
43	31	0,087					
45	31	0,0					
48	31	0,015					
49	32	0,13					
52	31	0,080					
54	26	-0,81					
56	21	-1,6					
59	30	-0,18					
61	32	0,18					
63	27	-0,58					
65	32	0,19					
66	37	0,94					
70	30	-0,20					
71	28	-0,55					
73	29	-0,34					
77	31	0,015					
80	35	0,60					
82	22	-1,4					
84	36	0,87					
87	28	-0,43					
88	119	14	Outlier				
90	32	0,18					
93	30	-0,10					
95	21	-1,6					
97	24	-1,1					
103	32	0,19					
104	35	0,69					
106	32	0,18					
107	34	0,58					
110	21	-1,6					

Consenus statistics

Consensus median, pg/g	31
Median all values pg/g	31
Consensus mean, pg/g	30
Standard deviation, pg/g	4,4
Relative standard deviation, %	15
No. of values reported	50
No. of values removed	1
No. of reported non-detects	0


PCB 157
pg/g fw
61,9
51,9
41,9
31,9
21,9
11,9
1,9
-8,1
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 95 110 56 82 97 54 11 35 63 71 26 30 87 73 111 114 37 29 70 59 7 15 93 45 48 77 20 52 43 49 61 90 106 65 103 23 36 115 107 80 17 117 104 120 5 84 66 34 88
Labcode

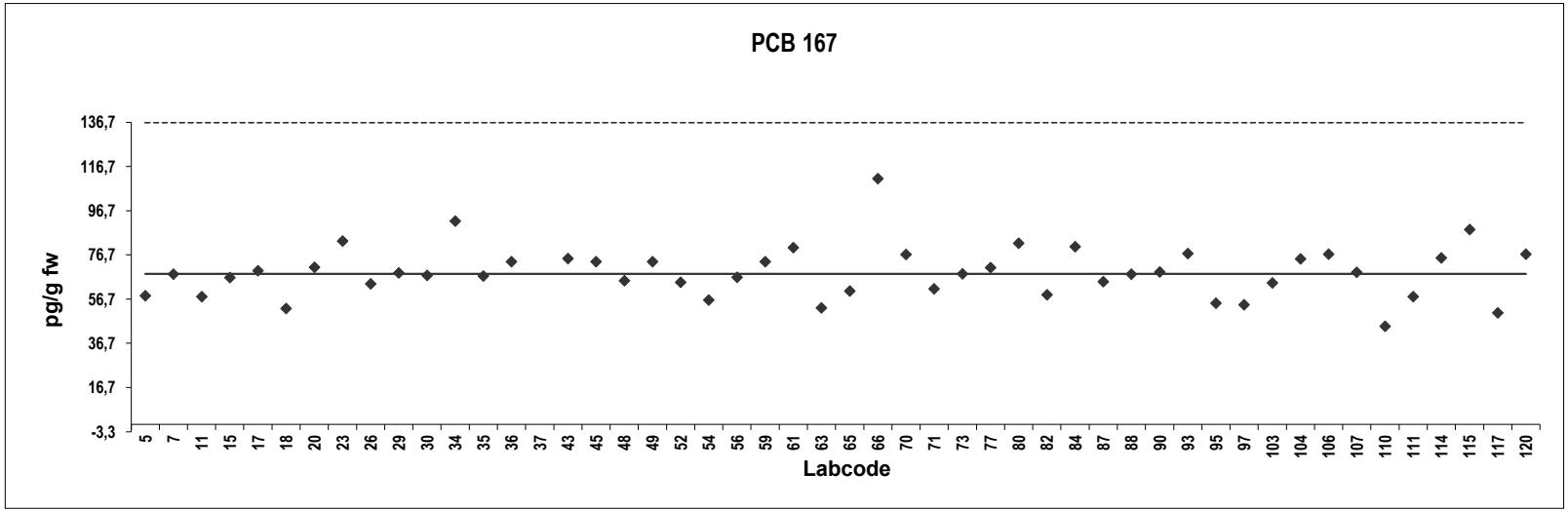
Herring

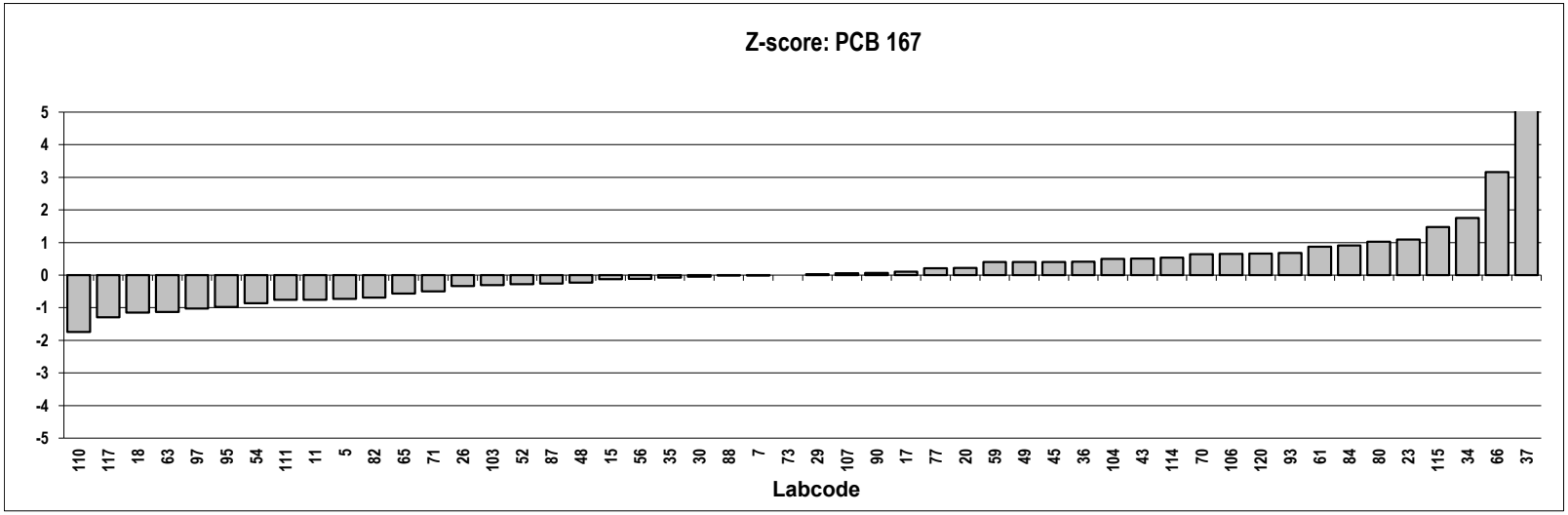
Congener: PCB 167

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	58	-0,72		111	58	-0,76	
7	68	-0,0072		114	75	0,53	
11	58	-0,75		115	88	1,5	
15	66	-0,13		117	51	-1,3	
17	70	0,11		120	77	0,66	
18	52	-1,2					
20	71	0,22					
23	83	1,1					
26	64	-0,33					
29	69	0,028					
30	68	-0,047					
34	92	1,8					
35	67	-0,074					
36	74	0,41					
37	281	16	Outlier				
43	75	0,51					
45	74	0,41					
48	65	-0,23					
49	74	0,40					
52	64	-0,27					
54	56	-0,87					
56	67	-0,12					
59	74	0,40					
61	80	0,87					
63	53	-1,1					
65	60	-0,57					
66	111	3,2					
70	77	0,64					
71	61	-0,49					
73	68	0,0					
77	71	0,21					
80	82	1,0					
82	59	-0,69					
84	81	0,91					
87	65	-0,26					
88	68	-0,010					
90	69	0,063					
93	77	0,68					
95	55	-0,98					
97	54	-1,0					
103	64	-0,30					
104	75	0,50					
106	77	0,65					
107	69	0,054					
110	44	-1,7					

Consenus statistics

Consensus median, pg/g	68
Median all values pg/g	68
Consensus mean, pg/g	69
Standard deviation, pg/g	12
Relative standard deviation, %	17
No. of values reported	50
No. of values removed	1
No. of reported non-detects	0


PCB 167
pg/g fw
136,7
116,7
96,7
76,7
56,7
36,7
16,7
-3,3
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
110 117 18 63 97 95 54 111 11 5 82 65 71 26 103 52 87 48 15 56 35 30 88 7 73 29 107 90 17 77 20 59 49 45 36 104 43 114 70 106 120 93 61 84 80 23 115 34 66 37
Labcode

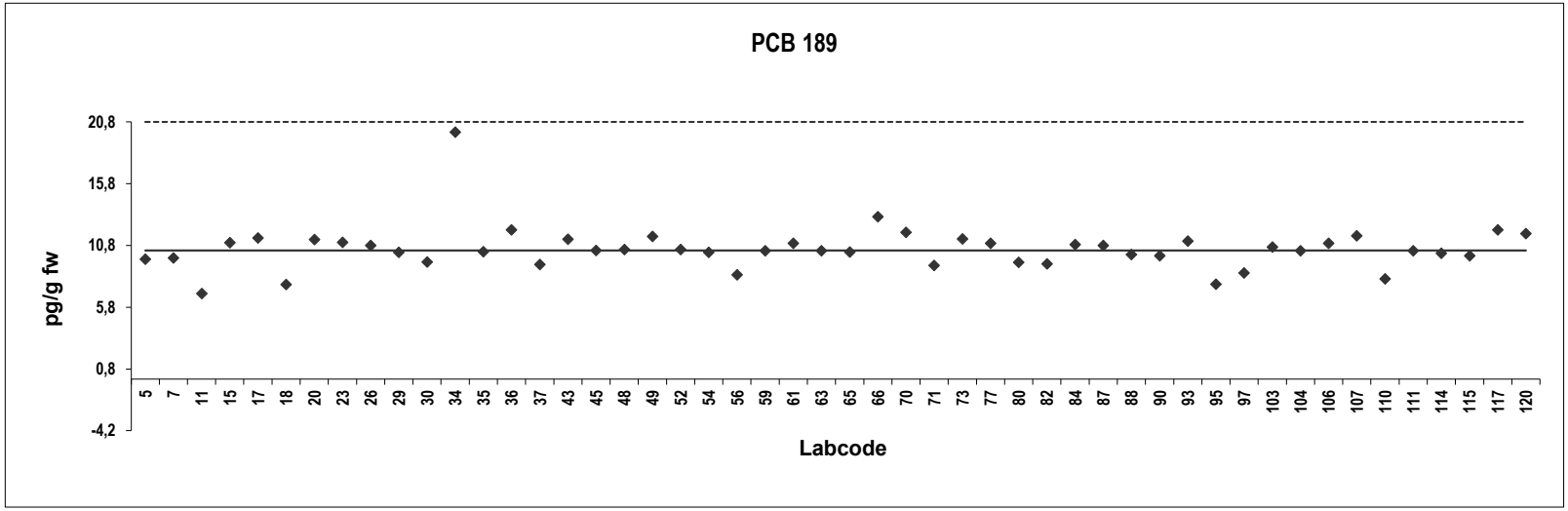
Herring

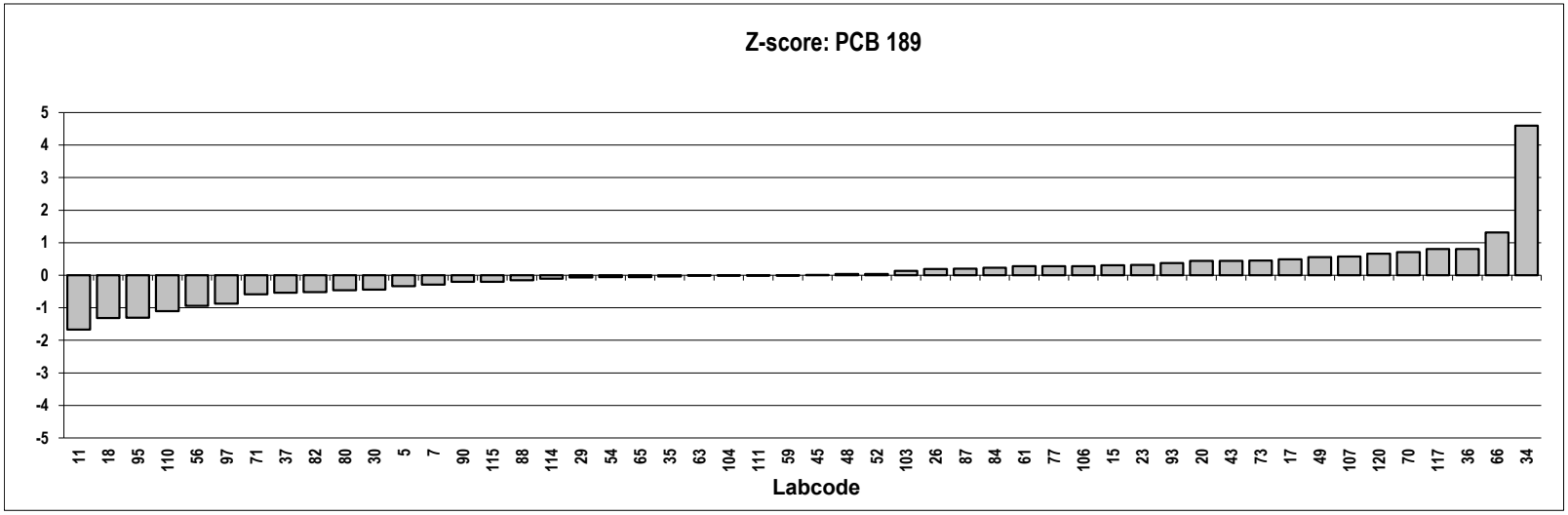
Congener: PCB 189

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
5	9,7	-0,33		111	10	-0,0073	
7	9,8	-0,28		114	10	-0,10	
11	6,9	-1,7		115	10	-0,20	
15	11	0,31		117	12	0,80	
17	11	0,49		120	12	0,66	
18	7,7	-1,3					
20	11	0,44					
23	11	0,32					
26	11	0,20					
29	10	-0,068					
30	9,5	-0,44					
34	20	4,6	ND				
35	10	-0,041					
36	12	0,81					
37	9,3	-0,54					
43	11	0,44					
45	10	0,0052					
48	11	0,041					
49	12	0,55					
52	11	0,041					
54	10	-0,061					
56	8,4	-0,94					
59	10	-0,0052					
61	11	0,28					
63	10	-0,0073					
65	10	-0,055					
66	13	1,3					
70	12	0,71					
71	9,2	-0,58					
73	11	0,45					
77	11	0,28					
80	9,5	-0,46					
82	9,3	-0,52					
84	11	0,23					
87	11	0,20					
88	10	-0,15					
90	10	-0,20					
93	11	0,37					
95	7,7	-1,3					
97	8,6	-0,87					
103	11	0,14					
104	10	-0,0073					
106	11	0,28					
107	12	0,58					
110	8,1	-1,1					

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	10
Consensus mean, pg/g	11
Standard deviation, pg/g	1,8
Relative standard deviation, %	17
No. of values reported	50
No. of values removed	0
No. of reported non-detects	1


PCB 189
pg/g fw
20,8
15,8
10,8
5,8
0,8
-4,2
5 7 11 15 17 18 20 23 26 29 30 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 71 73 77 80 82 84 87 88 90 93 95 97 103 104 106 107 110 111 114 115 117 120
Labcode


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
11 18 95 110 56 97 71 37 82 80 30 5 7 90 115 88 114 29 54 65 35 63 104 111 59 45 48 52 103 26 87 84 61 77 106 15 23 93 20 43 73 17 49 107 120 70 117 36 66 34
Labcode

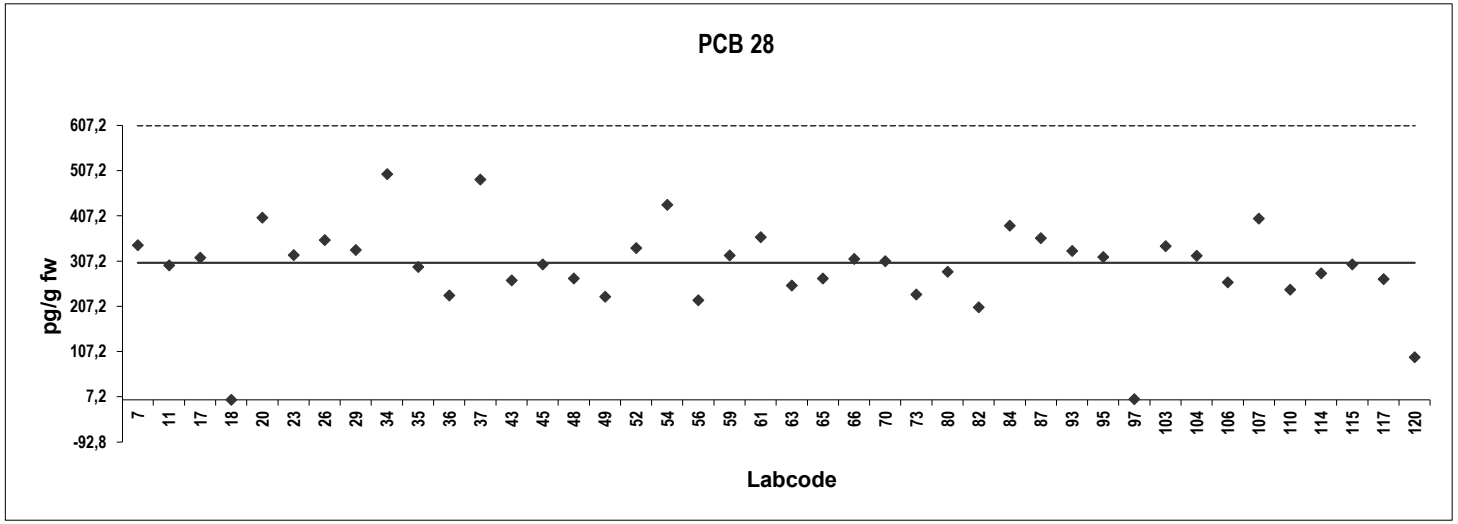
Herring

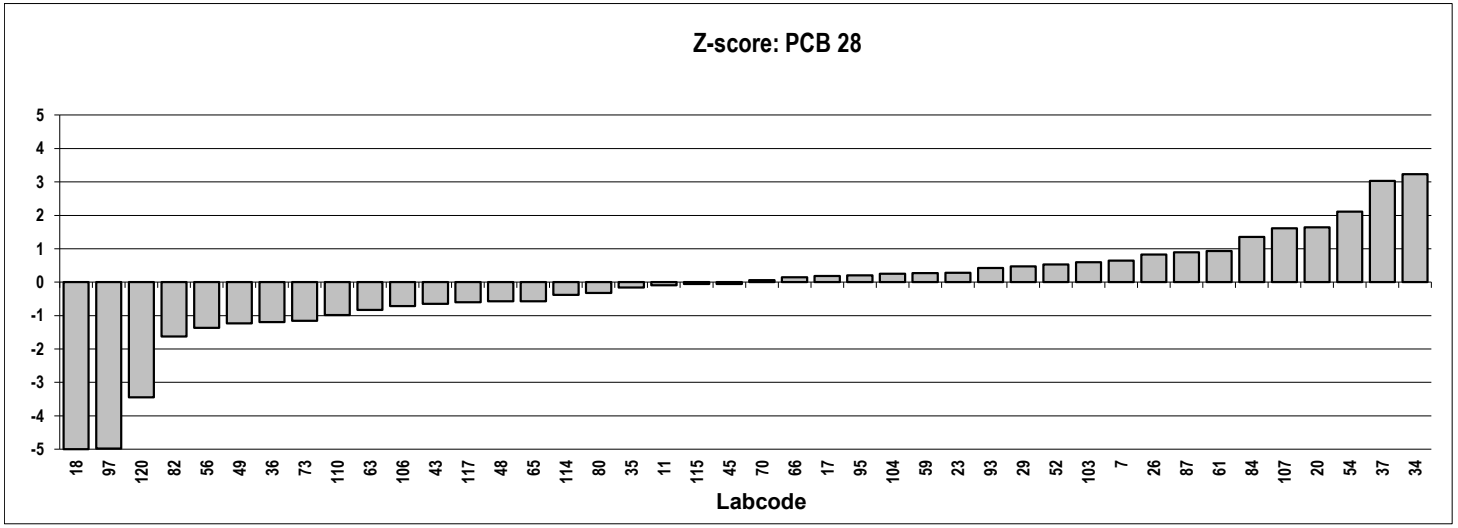
Congener: PCB 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	343	0,64				
11	298	-0,094				
17	315	0,19				
18	0,19	-5,0				
20	403	1,6				
23	320	0,28				
26	354	0,83				
29	332	0,47				
34	500	3,2	ND			
35	294	-0,16				
36	231	-1,2				
37	488	3,0				
43	264	-0,65				
45	300	-0,056				
48	269	-0,57				
49	229	-1,2				
52	336	0,53				
54	432	2,1				
56	220	-1,4				
59	320	0,27				
61	360	0,93				
63	253	-0,83				
65	269	-0,57				
66	312	0,14				
70	307	0,056				
73	233	-1,2				
80	284	-0,32				
82	205	-1,6				
84	386	1,4				
87	358	0,90				
93	330	0,43				
95	316	0,20				
97	1,4	-5,0	ND			
103	340	0,60				
104	319	0,25				
106	260	-0,72				
107	401	1,6				
110	244	-0,98				
114	280	-0,38				
115	300	-0,059				
117	267	-0,60				
120	95	-3,4				

Consenus statistics

Consensus median, pg/g	304
Median all values pg/g	304
Consensus mean, pg/g	294
Standard deviation, pg/g	99
Relative standard deviation, %	34
No. of values reported	42
No. of values removed	0
No. of reported non-detects	2


PCB 28
pg/g fw
607,2
507,2
407,2
307,2
207,2
107,2
7,2
-92,8
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 120 82 56 49 36 73 110 63 106 43 117 48 65 114 80 35 11 115 45 70 66 17 95 104 59 23 93 29 52 103 7 26 87 61 84 107 20 54 37 34
Labcode

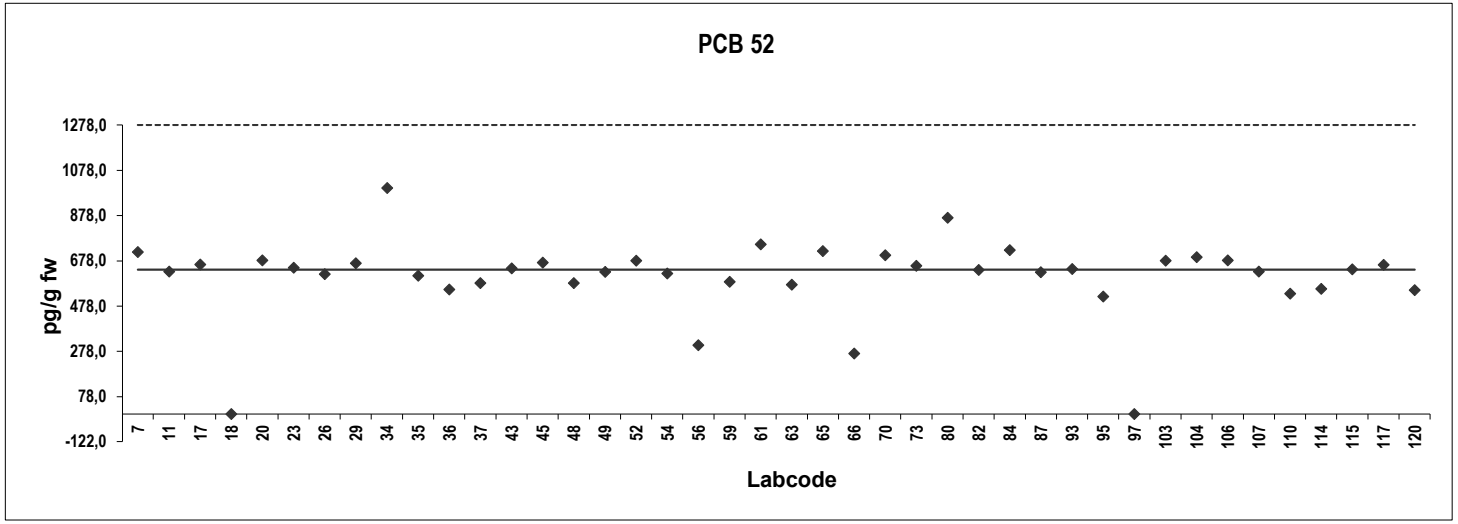
Herring

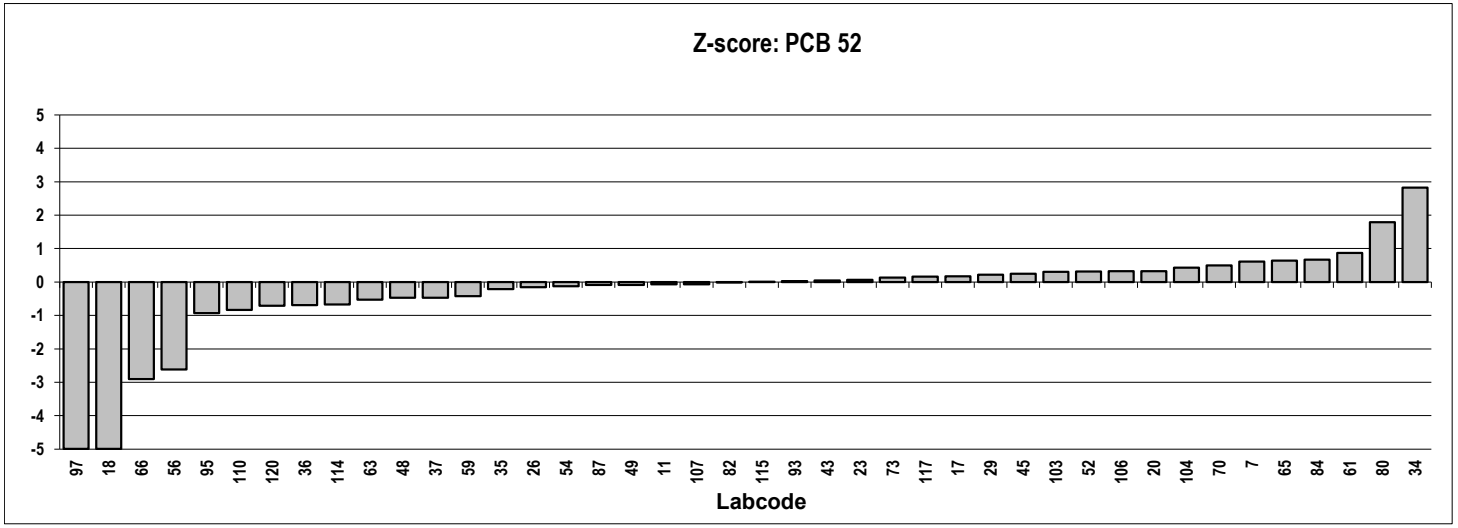
Congener: PCB 52

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	717	0,61				
11	630	-0,069				
17	661	0,17				
18	0,55	-5,0				
20	681	0,32				
23	647	0,062				
26	619	-0,16				
29	667	0,22				
34	1000	2,8	ND			
35	611	-0,22				
36	551	-0,69				
37	579	-0,47				
43	645	0,045				
45	671	0,25				
48	579	-0,47				
49	628	-0,084				
52	679	0,31				
54	622	-0,13				
56	304	-2,6				
59	585	-0,43				
61	750	0,87				
63	572	-0,52				
65	721	0,64				
66	268	-2,9				
70	702	0,49				
73	656	0,14				
80	868	1,8				
82	638	-0,0078				
84	725	0,67				
87	627	-0,092				
93	642	0,025				
95	521	-0,93				
97	0,48	-5,0	ND			
103	678	0,31				
104	694	0,43				
106	680	0,32				
107	631	-0,064				
110	533	-0,83				
114	554	-0,67				
115	640	0,0078				
117	660	0,16				
120	548	-0,71				

Consenus statistics

Consensus median, pg/g	639
Median all values pg/g	639
Consensus mean, pg/g	604
Standard deviation, pg/g	179
Relative standard deviation, %	30
No. of values reported	42
No. of values removed	0
No. of reported non-detects	2


PCB 52
1278,0
1078,0
878,0
678,0
478,0
278,0
78,0
-122,0
pg/g fw
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 18 66 56 95 110 120 36 114 63 48 37 59 35 26 54 87 49 11 107 82 115 93 43 23 73 117 17 29 45 103 52 106 20 104 70 7 65 84 61 80 34
Labcode

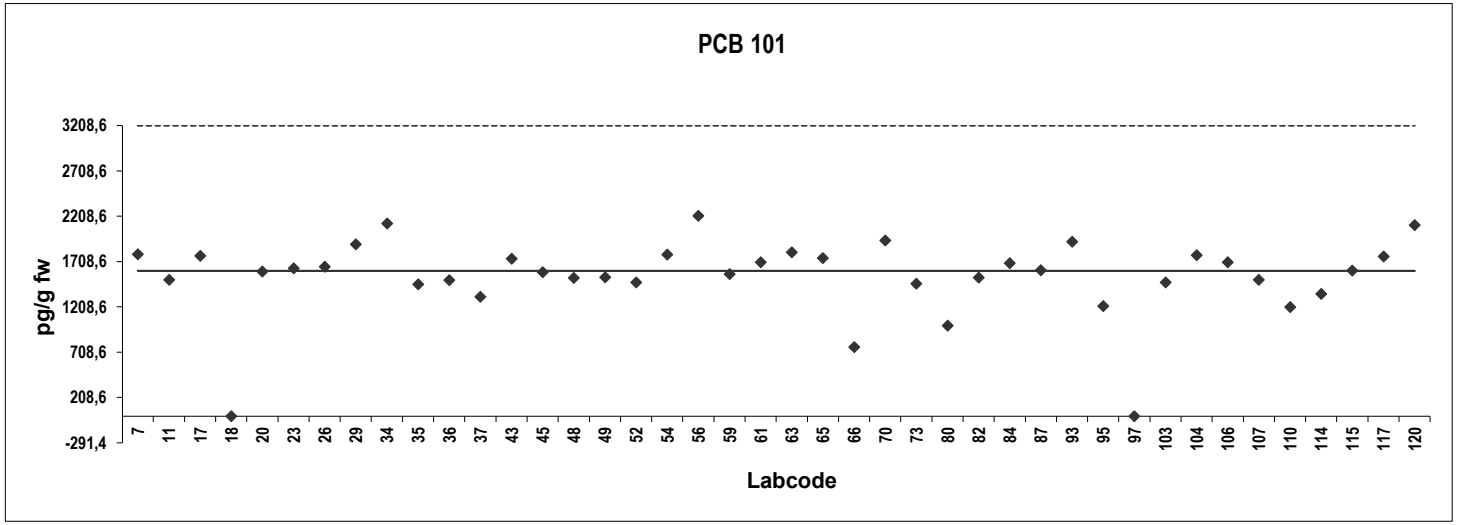
Herring

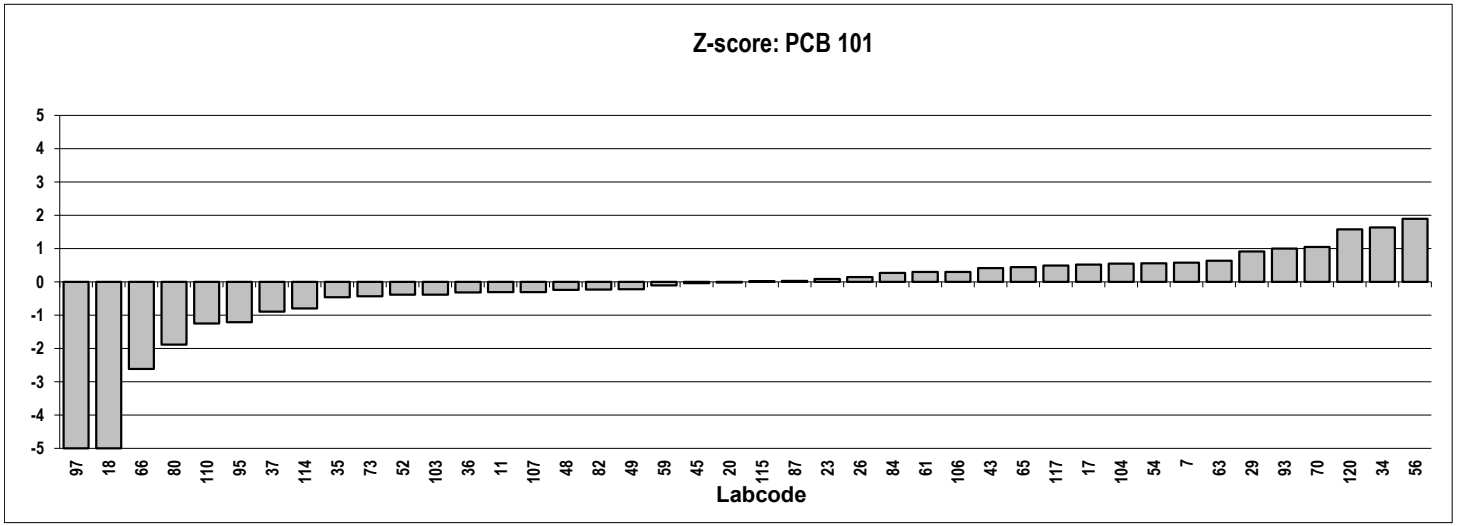
Congener: PCB 101

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	1789	0,58				
11	1505	-0,31				
17	1770	0,52				
18	1,5	-5,0				
20	1599	-0,018				
23	1633	0,089				
26	1650	0,14				
29	1897	0,91				
34	2128	1,6				
35	1456	-0,46				
36	1504	-0,31				
37	1319	-0,89				
43	1739	0,42				
45	1591	-0,041				
48	1527	-0,24				
49	1533	-0,22				
52	1480	-0,39				
54	1785	0,56				
56	2214	1,9				
59	1572	-0,10				
61	1700	0,30				
63	1810	0,64				
65	1746	0,44				
66	765	-2,6				
70	1940	1,0				
73	1466	-0,43				
80	1001	-1,9				
82	1530	-0,23				
84	1690	0,27				
87	1613	0,029				
93	1926	1,0				
95	1216	-1,2				
97	1,3	-5,0				
103	1480	-0,39				
104	1780	0,55				
106	1700	0,30				
107	1505	-0,31				
110	1205	-1,2				
114	1350	-0,79				
115	1610	0,018				
117	1763	0,50				
120	2110	1,6				

Consenus statistics

Consensus median, pg/g	1604
Median all values pg/g	1604
Consensus mean, pg/g	1538
Standard deviation, pg/g	443
Relative standard deviation, %	29
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 101
3208,6
2708,6
2208,6
1708,6
1208,6
708,6
208,6
-291,4
pg/g fw
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 18 66 80 110 95 37 114 35 73 52 103 36 11 107 48 82 49 59 45 20 115 87 23 26 84 61 106 43 65 117 17 104 54 7 63 29 93 70 120 34 56
Labcode

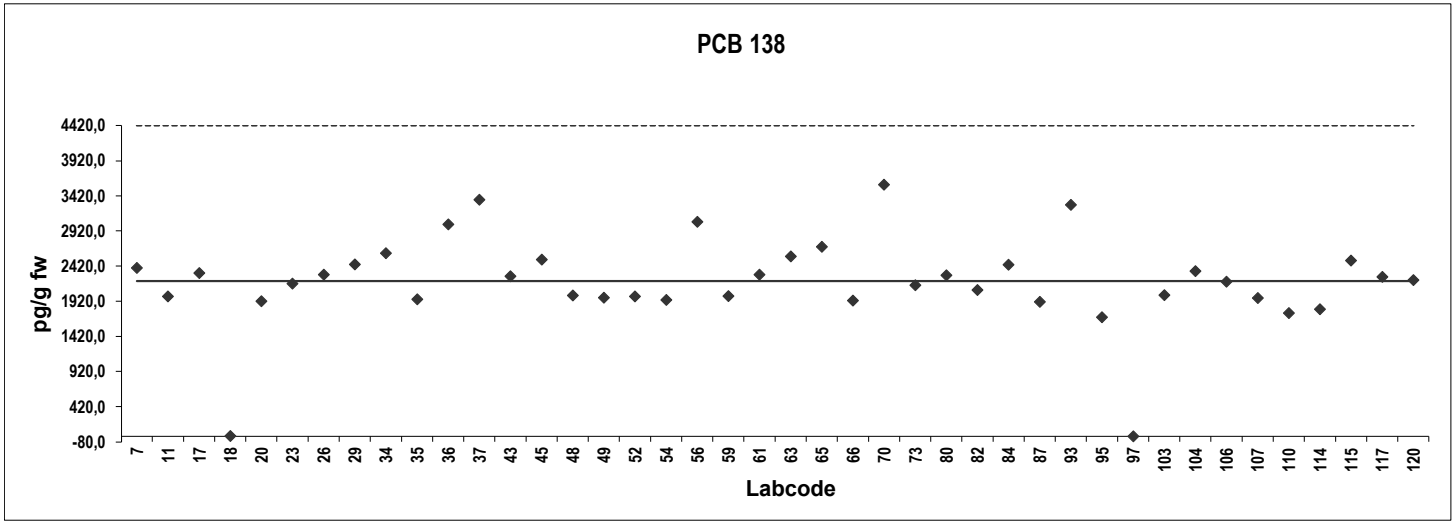
Herring

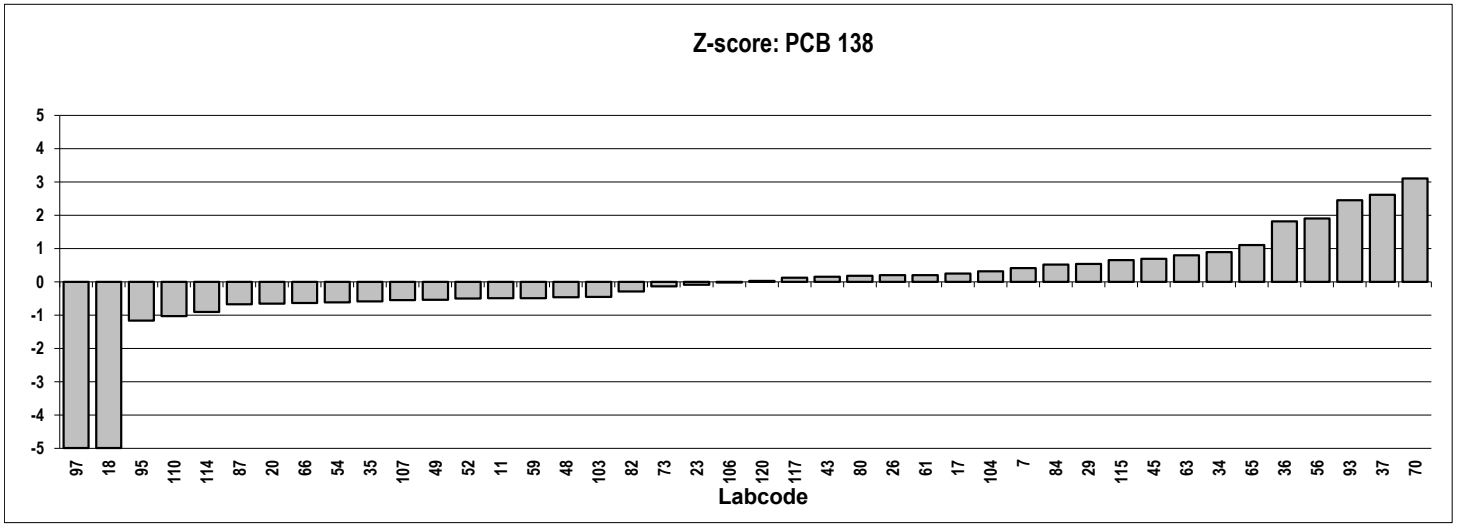
Congener: PCB 138

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	2394	0,42				
11	1991	-0,49				
17	2320	0,25				
18	2,4	-5,0				
20	1921	-0,65				
23	2172	-0,086				
26	2297	0,20				
29	2445	0,53				
34	2606	0,90				
35	1950	-0,59				
36	3013	1,8				
37	3367	2,6				
43	2276	0,15				
45	2513	0,69				
48	2005	-0,46				
49	1972	-0,54				
52	1990	-0,50				
54	1938	-0,61				
56	3050	1,9				
59	1993	-0,49				
61	2300	0,20				
63	2560	0,79				
65	2696	1,1				
66	1930	-0,63				
70	3580	3,1				
73	2149	-0,14				
80	2288	0,18				
82	2080	-0,29				
84	2440	0,52				
87	1912	-0,67				
93	3292	2,4				
95	1695	-1,2				
97	1,3	-5,0				
103	2010	-0,45				
104	2350	0,32				
106	2200	-0,023				
107	1966	-0,55				
110	1754	-1,0				
114	1808	-0,91				
115	2500	0,66				
117	2265	0,13				
120	2220	0,023				

Consenus statistics

Consensus median, pg/g	2210
Median all values pg/g	2210
Consensus mean, pg/g	2196
Standard deviation, pg/g	658
Relative standard deviation, %	30
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 138
pg/g fw
4420,0
3920,0
3420,0
2920,0
2420,0
1920,0
1420,0
920,0
420,0
-80,0
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 18 95 110 114 87 20 66 54 35 107 49 52 11 59 48 103 82 73 23 106 120 117 43 80 26 61 17 104 7 84 29 115 45 63 34 65 36 56 93 37 70
Labcode

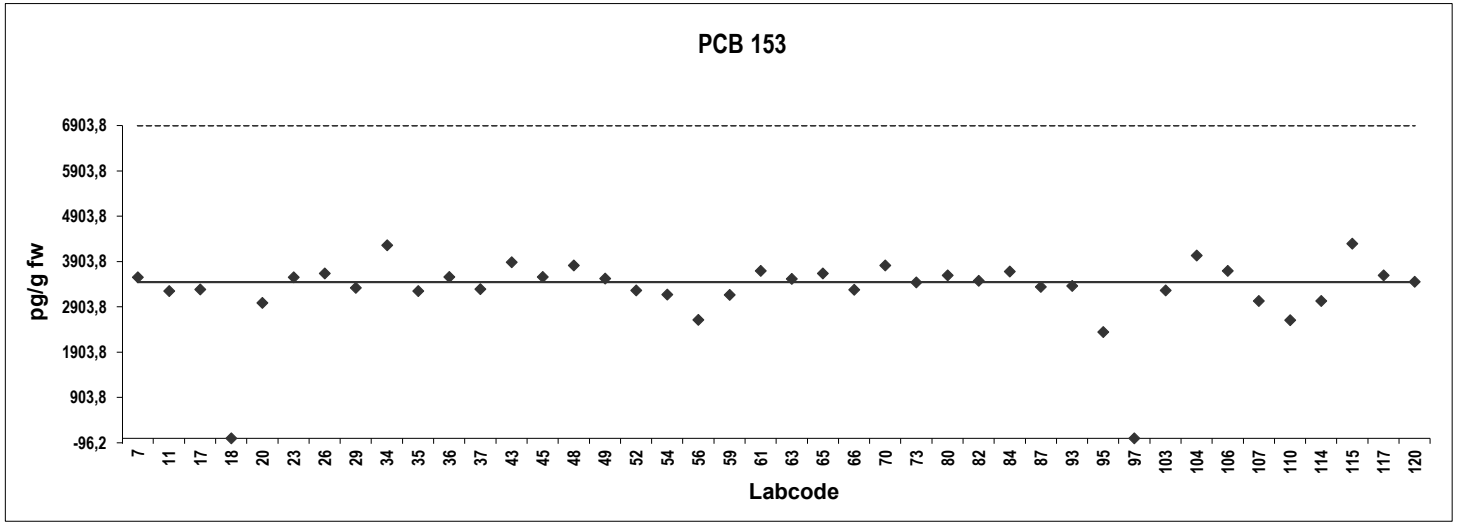
Herring

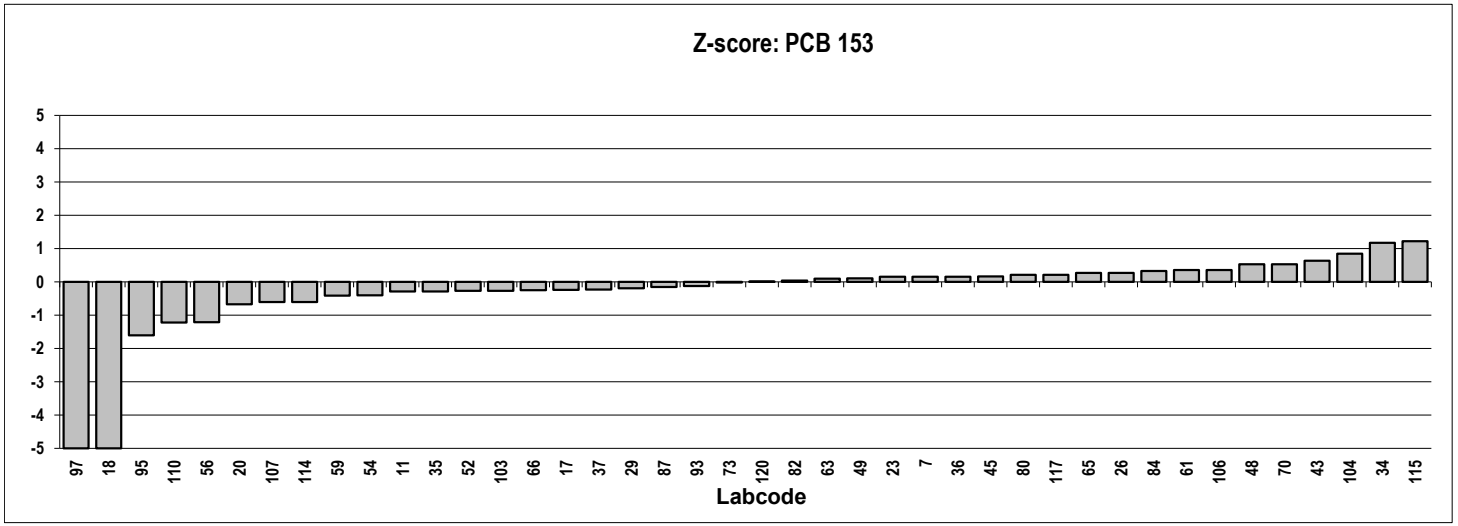
Congener: PCB 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	3558	0,15				
11	3252	-0,29				
17	3290	-0,23				
18	3,2	-5,0				
20	2988	-0,67				
23	3557	0,15				
26	3642	0,28				
29	3324	-0,18				
34	4262	1,2				
35	3253	-0,29				
36	3562	0,16				
37	3293	-0,23				
43	3889	0,63				
45	3564	0,16				
48	3817	0,53				
49	3528	0,11				
52	3270	-0,26				
54	3178	-0,40				
56	2617	-1,2				
59	3166	-0,41				
61	3700	0,36				
63	3520	0,10				
65	3639	0,27				
66	3279	-0,25				
70	3820	0,53				
73	3444	-0,012				
80	3599	0,21				
82	3480	0,041				
84	3680	0,33				
87	3346	-0,15				
93	3366	-0,12				
95	2349	-1,6				
97	2,5	-5,0				
103	3270	-0,26				
104	4040	0,85				
106	3700	0,36				
107	3033	-0,61				
110	2611	-1,2				
114	3034	-0,61				
115	4300	1,2				
117	3599	0,21				
120	3460	0,01				

Consenus statistics

Consensus median, pg/g	3452
Median all values pg/g	3452
Consensus mean, pg/g	3269
Standard deviation, pg/g	834
Relative standard deviation, %	26
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 153
pg/g fw
6903,8
5903,8
4903,8
3903,8
2903,8
1903,8
903,8
-96,2
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
97 18 95 110 56 20 107 114 59 54 11 35 52 103 66 17 37 29 87 93 73 120 82 63 49 23 7 36 45 80 117 65 26 84 61 106 48 70 43 104 34 115
Labcode

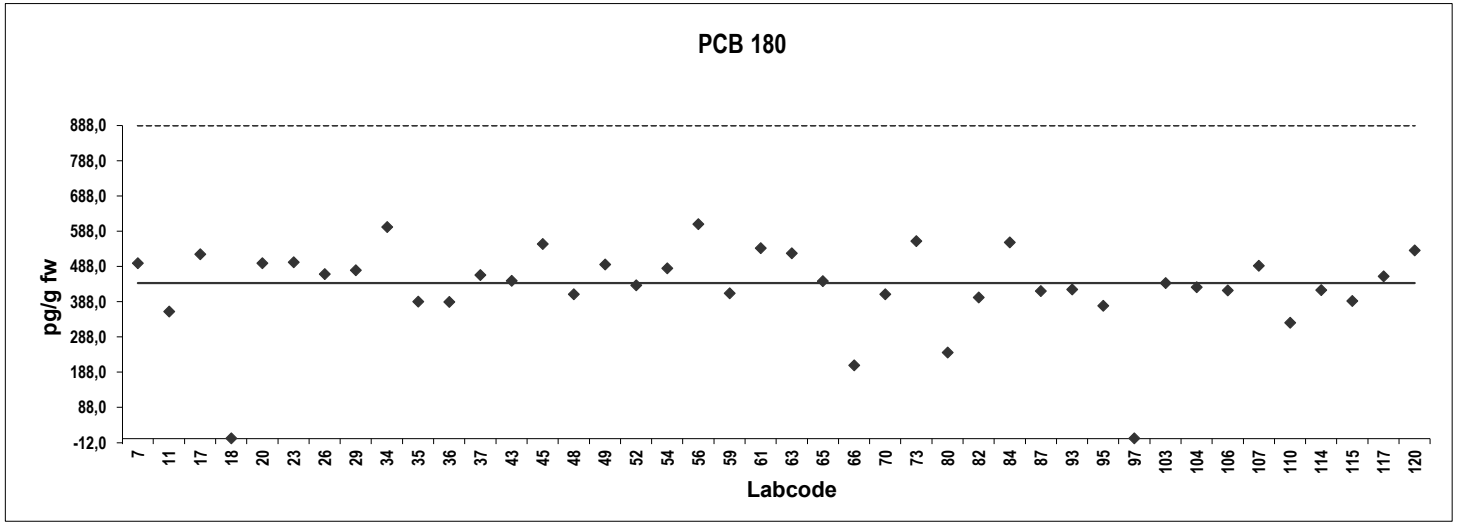
Herring

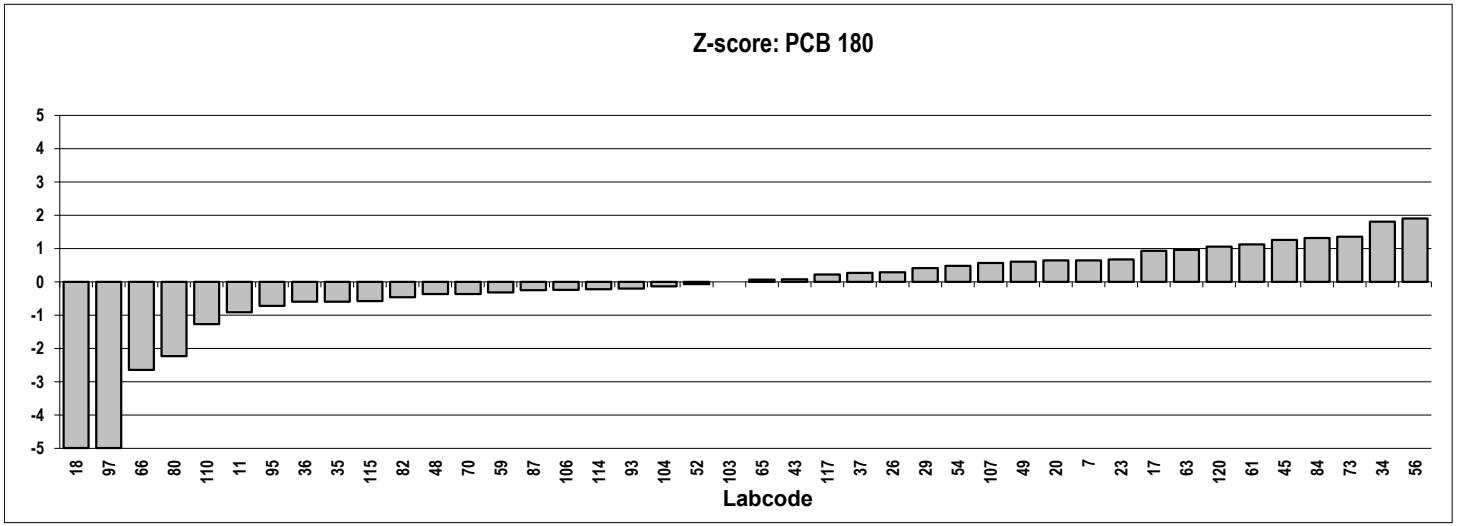
Congener: PCB 180

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	498	0,64				
11	360	-0,91				
17	523	0,93				
18	0,39	-5,0				
20	497	0,64				
23	500	0,67				
26	466	0,29				
29	478	0,42				
34	600	1,8	ND			
35	388	-0,60				
36	388	-0,60				
37	464	0,26				
43	448	0,08				
45	552	1,3				
48	409	-0,36				
49	494	0,60				
52	435	-0,068				
54	483	0,48				
56	609	1,9				
59	413	-0,32				
61	540	1,1				
63	526	0,96				
65	447	0,068				
66	208	-2,6				
70	409	-0,36				
73	561	1,4				
80	244	-2,2				
82	400	-0,46				
84	557	1,3				
87	418	-0,26				
93	423	-0,20				
95	377	-0,73				
97	0,43	-5,0				
103	441	0,0				
104	429	-0,14				
106	420	-0,24				
107	491	0,56				
110	329	-1,3				
114	422	-0,22				
115	390	-0,58				
117	460	0,22				
120	534	1,1				

Consenus statistics

Consensus median, pg/g	441
Median all values pg/g	444
Consensus mean, pg/g	429
Standard deviation, pg/g	127
Relative standard deviation, %	30
No. of values reported	42
No. of values removed	0
No. of reported non-detects	1


PCB 180
pg/g fw
888,0
788,0
688,0
588,0
488,0
388,0
288,0
188,0
88,0
-12,0
7 11 17 18 20 23 26 29 34 35 36 37 43 45 48 49 52 54 56 59 61 63 65 66 70 73 80 82 84 87 93 95 97 103 104 106 107 110 114 115 117 120
Labcode


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 66 80 110 11 95 36 35 115 82 48 70 59 87 106 114 93 104 52 103 65 43 117 37 26 29 54 107 49 20 7 23 17 63 120 61 45 84 73 34 56
Labcode

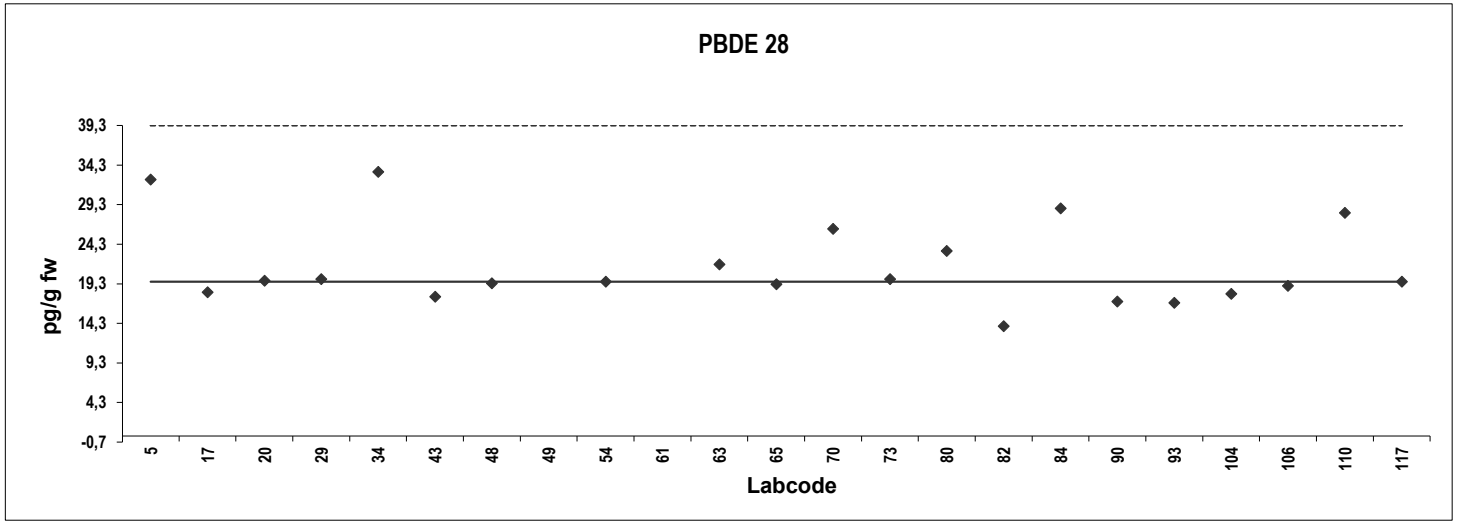
Herring

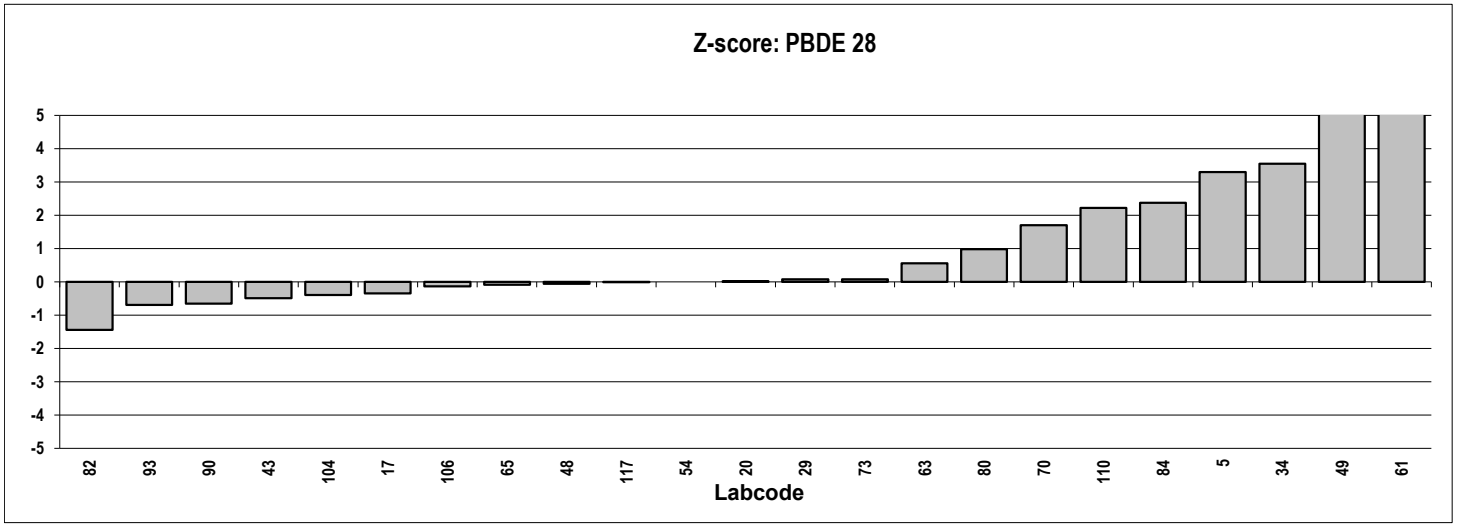
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	32	3,3				
17	18	-0,34				
20	20	0,027				
29	20	0,076				
34	33	3,6				
43	18	-0,49				
48	19	-0,058				
49	40	5,2	Outlier			
54	20	0,0				
61	1000	251	Outlier,ND			
63	22	0,56				
65	19	-0,083				
70	26	1,7				
73	20	0,076				
80	23	0,99				
82	14	-1,4				
84	29	2,4				
90	17	-0,65				
93	17	-0,69				
104	18	-0,39				
106	19	-0,13				
110	28	2,2				
117	20	-0,0064				

Consenus statistics

Consensus median, pg/g	20
Median all values pg/g	20
Consensus mean, pg/g	21
Standard deviation, pg/g	5,3
Relative standard deviation, %	25
No. of values reported	23
No. of values removed	2
No. of reported non-detects	1


PBDE 28
pg/g fw
39,3
34,3
29,3
24,3
19,3
14,3
9,3
4,3
-0,7
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
Labcode


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
82
93
90
43
104
17
106
65
48
117
54
20
29
73
63
80
70
110
84
5
34
49
61
Labcode

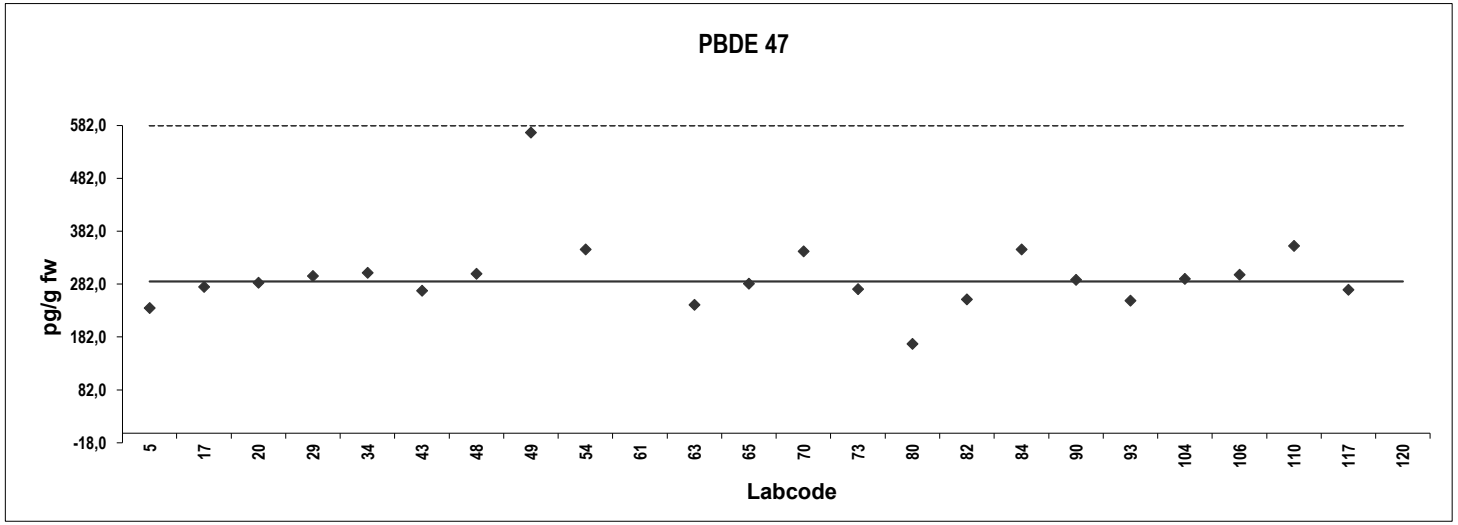
Herring

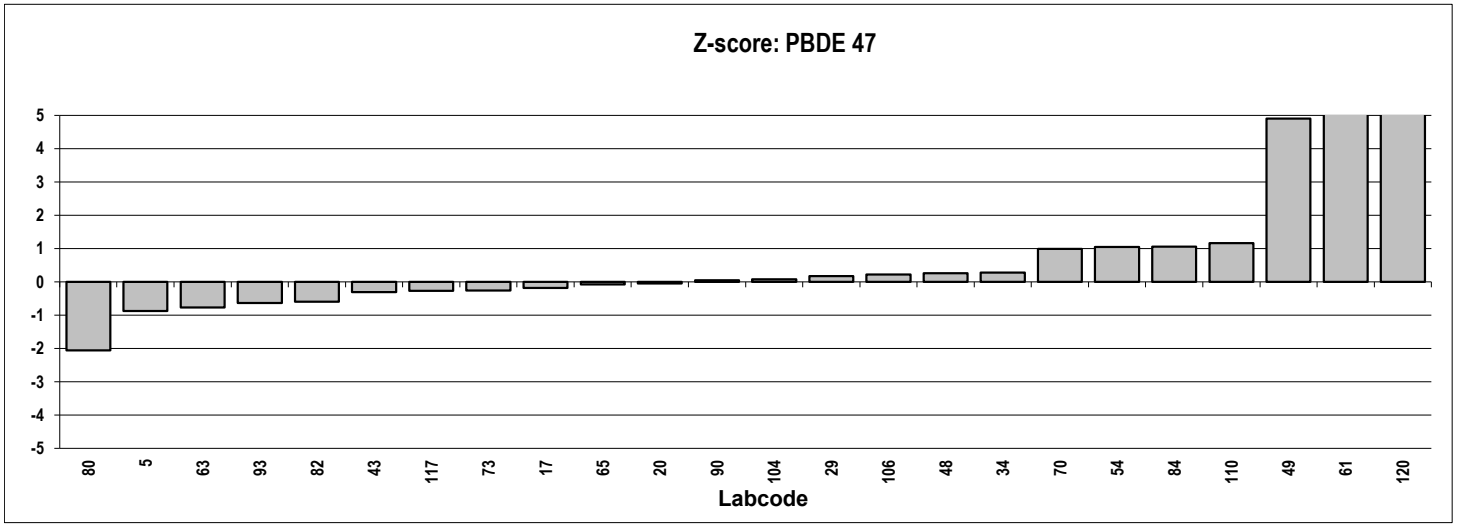
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	237	-0,87				
17	277	-0,18				
20	285	-0,045				
29	298	0,18				
34	304	0,28				
43	270	-0,31				
48	302	0,25				
49	569	4,9				
54	348	1,1				
61	1000	12	Outlier,ND			
63	243	-0,77				
65	283	-0,076				
70	344	0,98				
73	272	-0,26				
80	169	-2,1				
82	253	-0,60				
84	348	1,1				
90	290	0,045				
93	251	-0,63				
104	292	0,080				
106	300	0,22				
110	354	1,2				
117	272	-0,27				
120	30920	533	Outlier			

Consenus statistics

Consensus median, pg/g	287
Median all values pg/g	291
Consensus mean, pg/g	298
Standard deviation, pg/g	74
Relative standard deviation, %	25
No. of values reported	24
No. of values removed	2
No. of reported non-detects	1


PBDE 47
582,0
482,0
382,0
282,0
182,0
82,0
-18,0
pg/g fw
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
120
Labcode


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
5
63
93
82
43
117
73
17
65
20
90
104
29
106
48
34
70
54
84
110
49
61
120
Labcode

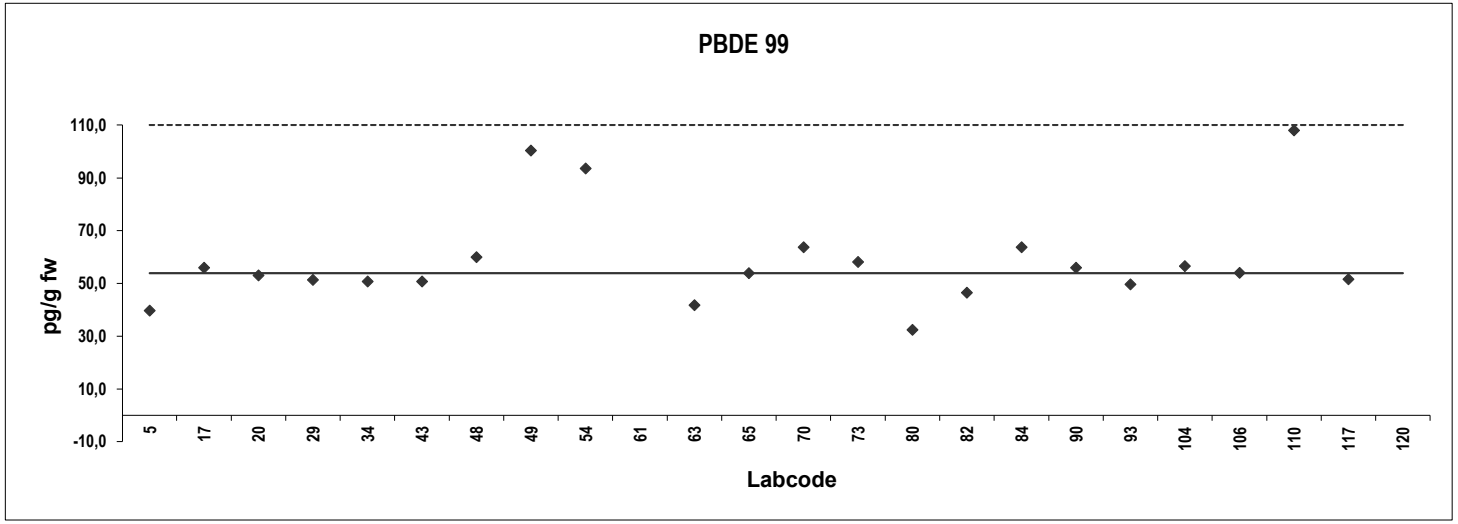
Herring

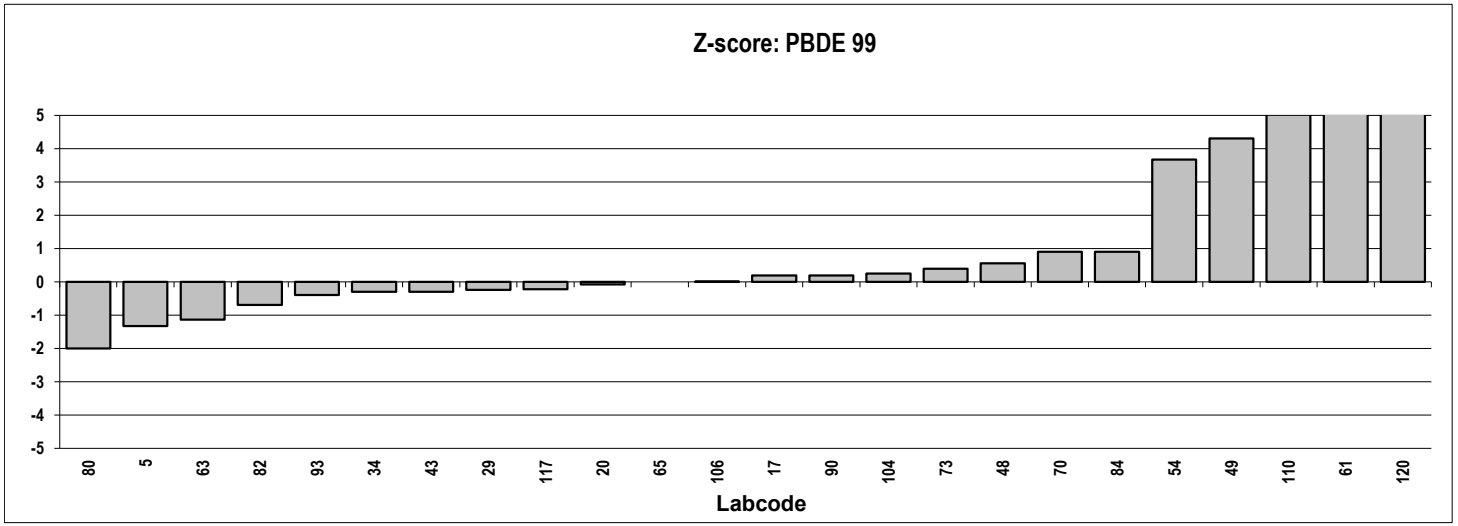
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	40	-1,3				
17	56	0,19				
20	53	-0,077				
29	51	-0,24				
34	51	-0,30				
43	51	-0,29				
48	60	0,57				
49	100	4,3				
54	94	3,7				
61	1000	88	Outlier,ND			
63	42	-1,1				
65	54	0,0				
70	64	0,91				
73	58	0,40				
80	32	-2,0				
82	47	-0,69				
84	64	0,91				
90	56	0,19				
93	50	-0,39				
104	57	0,25				
106	54	0,0093				
110	108	5,0	ND			
117	52	-0,22				
120	6218	572	Outlier			

Consenus statistics

Consensus median, pg/g	54
Median all values pg/g	55
Consensus mean, pg/g	59
Standard deviation, pg/g	19
Relative standard deviation, %	32
No. of values reported	24
No. of values removed	2
No. of reported non-detects	2


PBDE 99
pg/g fw
110,0
90,0
70,0
50,0
30,0
10,0
-10,0
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
120
Labcode


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
5
63
82
93
34
43
29
117
20
65
106
17
90
104
73
48
70
84
54
49
110
61
120
Labcode

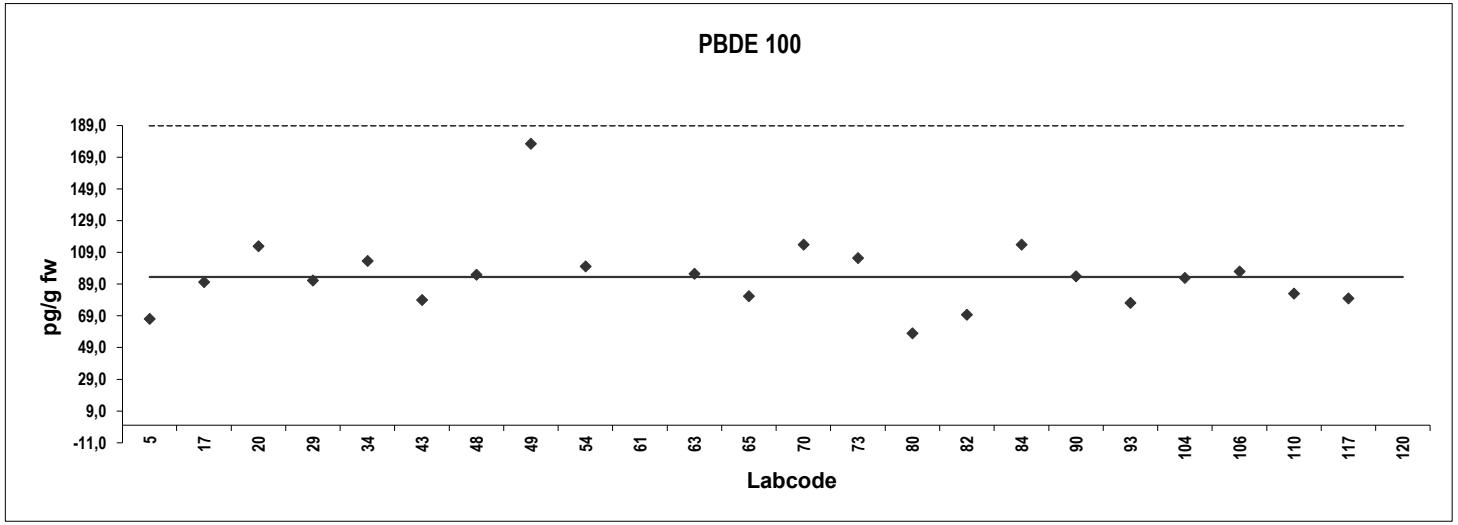
Herring

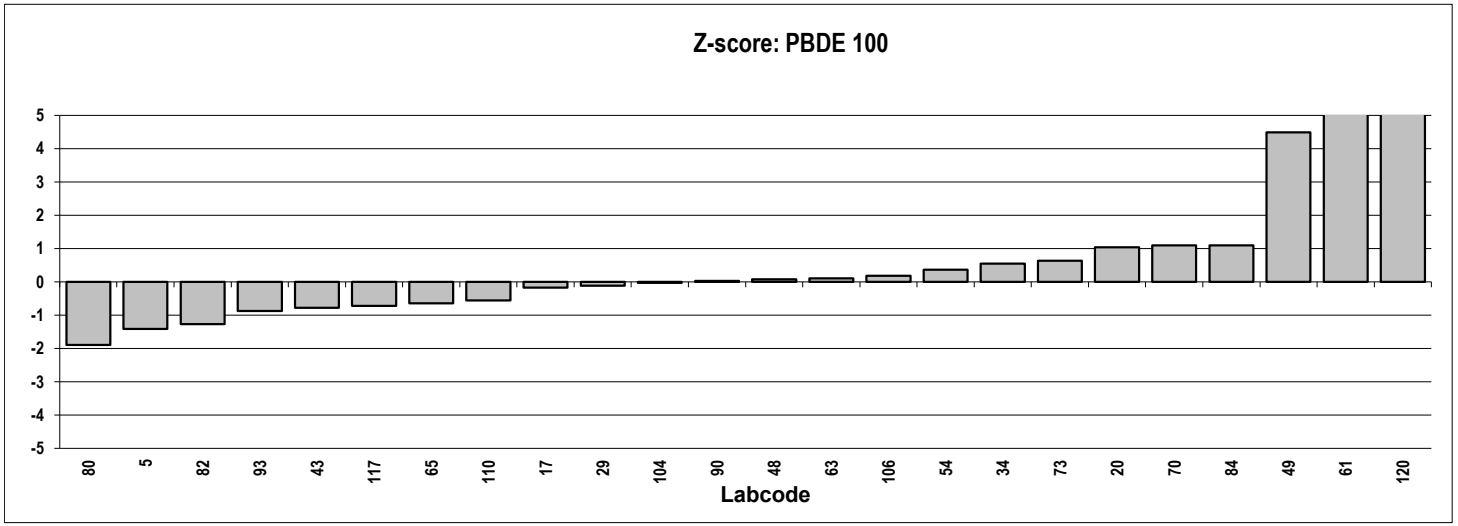
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	67	-1,4				
17	90	-0,17				
20	113	1,0				
29	91	-0,12				
34	104	0,55				
43	79	-0,78				
48	95	0,080				
49	178	4,5				
54	100	0,36				
61	1000	48	Outlier,ND			
63	96	0,11				
65	81	-0,65				
70	114	1,1				
73	105	0,64				
80	58	-1,9				
82	70	-1,3				
84	114	1,1				
90	94	0,027				
93	77	-0,87				
104	93	-0,027				
106	97	0,19				
110	83	-0,56				
117	80	-0,72				
120	11560	613	Outlier			

Consenus statistics

Consensus median, pg/g	94
Median all values pg/g	95
Consensus mean, pg/g	95
Standard deviation, pg/g	24
Relative standard deviation, %	25
No. of values reported	24
No. of values removed	2
No. of reported non-detects	1


PBDE 100
pg/g fw
189,0
169,0
149,0
129,0
109,0
89,0
69,0
49,0
29,0
9,0
-11,0
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
120
Labcode


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
5
82
93
43
117
65
110
17
29
104
90
48
63
106
54
34
73
20
70
84
49
61
120
Labcode

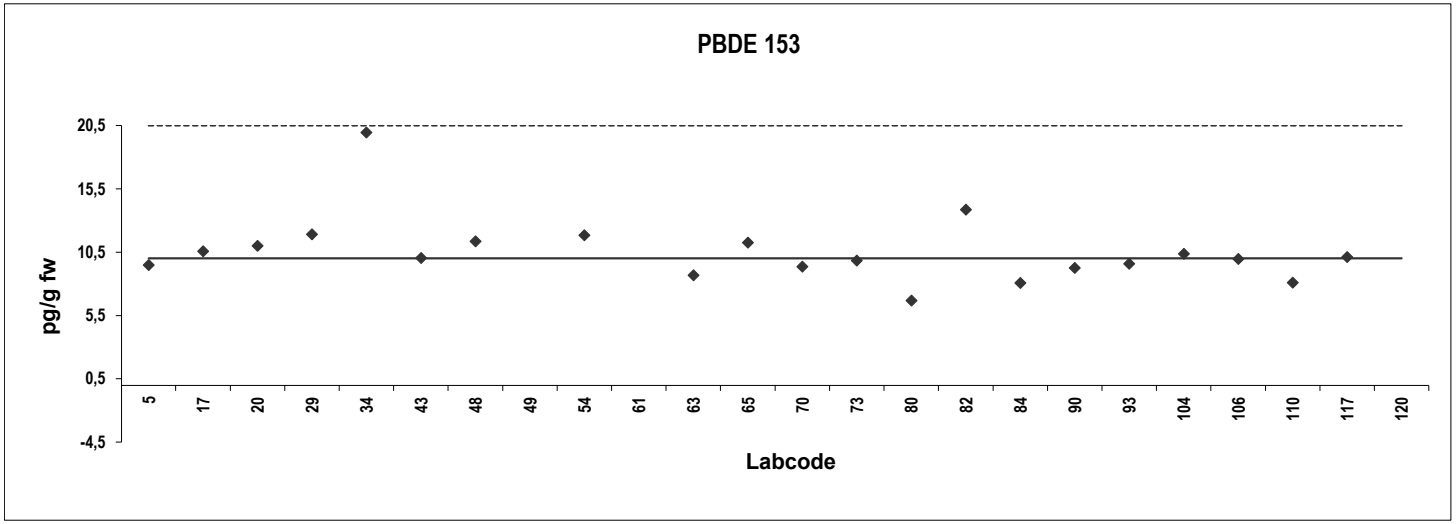
Herring

Congener: PBDE 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	9,5	-0,25				
17	11	0,28				
20	11	0,49				
29	12	0,95				
34	20	5,0	ND			
43	10	0,018				
48	11	0,68				
49	22	5,9	Outlier			
54	12	0,92				
61	1000	493	Outlier,ND			
63	8,7	-0,67				
65	11	0,63				
70	9,4	-0,32				
73	9,9	-0,083				
80	6,7	-1,7				
82	14	1,9				
84	8,1	-0,96				
90	9,3	-0,37				
93	9,6	-0,21				
104	10	0,18				
106	10	-0,018				
110	8,1	-0,95				
117	10	0,052				
120	1375	680	Outlier			

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	10
Consensus mean, pg/g	11
Standard deviation, pg/g	2,7
Relative standard deviation, %	25
No. of values reported	24
No. of values removed	3
No. of reported non-detects	2


PBDE 153
pg/g fw
20,5
15,5
10,5
5,5
0,5
-4,5
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
120
Labcode


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
84
110
63
90
70
5
93
73
106
43
117
104
17
20
65
48
54
29
82
34
49
61
120
Labcode

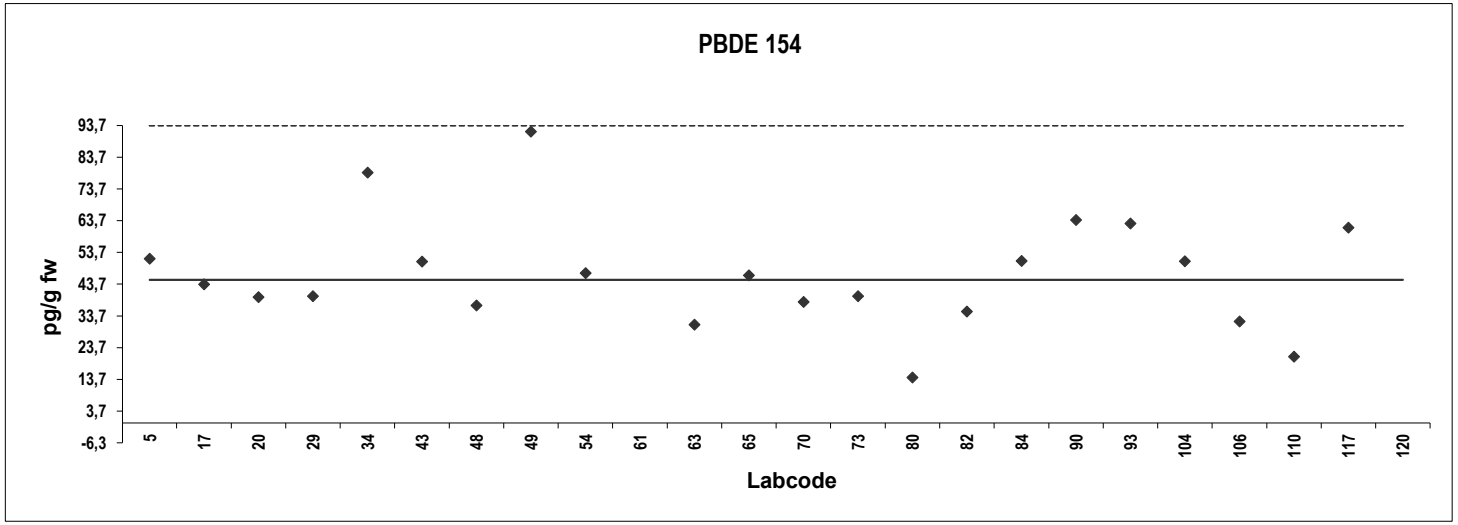
Herring

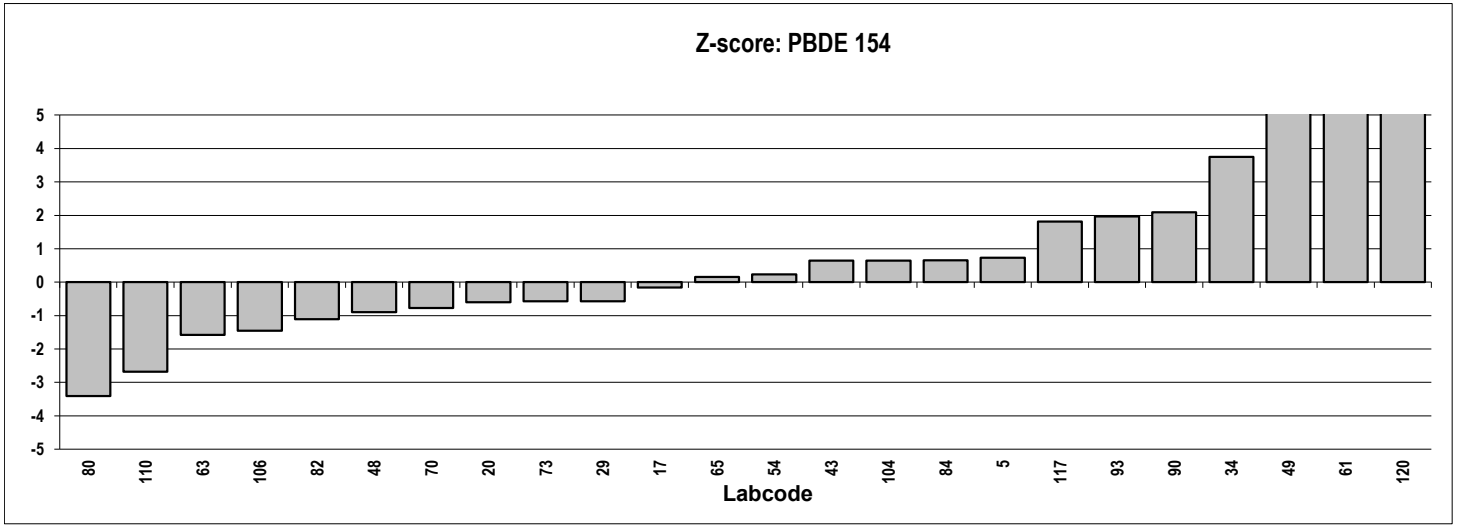
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	52	0,74				
17	44	-0,16				
20	40	-0,60				
29	40	-0,57				
34	79	3,7				
43	51	0,64				
48	37	-0,90				
49	92	5,2				
54	47	0,23				
61	1000	106	Outlier,ND			
63	31	-1,6				
65	47	0,16				
70	38	-0,78				
73	40	-0,57				
80	14	-3,4				
82	35	-1,1				
84	51	0,65				
90	64	2,1				
93	63	2,0				
104	51	0,64				
106	32	-1,5				
110	21	-2,7				
117	62	1,8				
120	6419	707	Outlier			

Consenus statistics

Consensus median, pg/g	45
Median all values pg/g	47
Consensus mean, pg/g	47
Standard deviation, pg/g	18
Relative standard deviation, %	38
No. of values reported	24
No. of values removed	2
No. of reported non-detects	1


PBDE 154
pg/g fw
93,7
83,7
73,7
63,7
53,7
43,7
33,7
23,7
13,7
3,7
-6,3
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
120
Labcode


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
110
63
106
82
48
70
20
73
29
17
65
54
43
104
84
5
117
93
90
34
49
61
120
Labcode

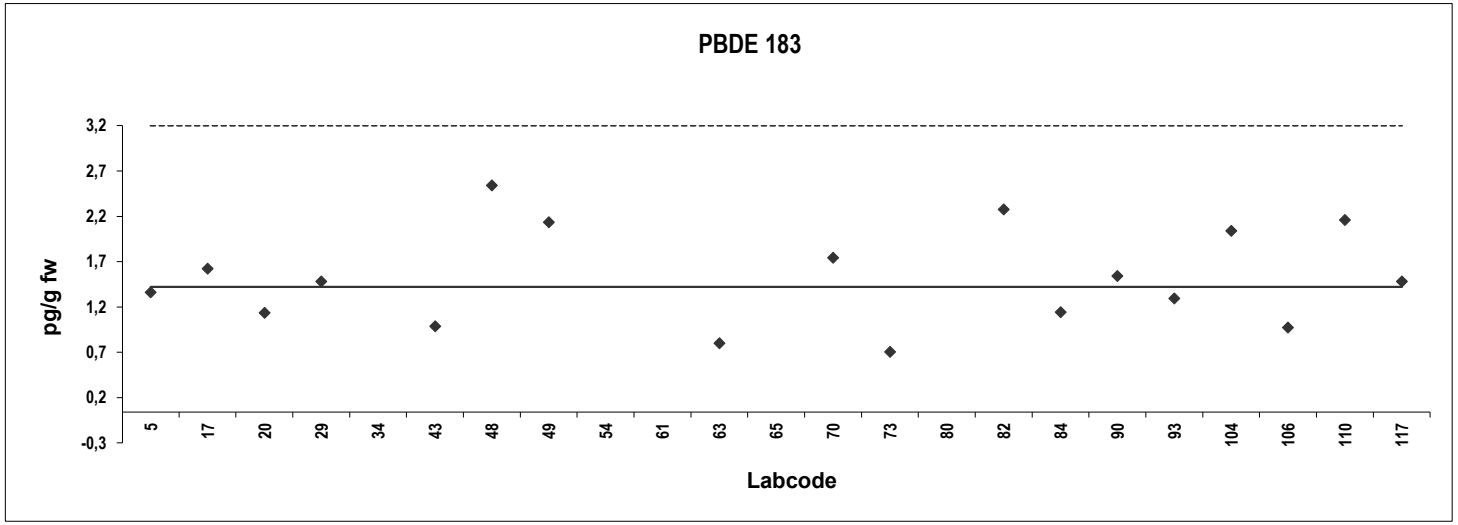
Herring

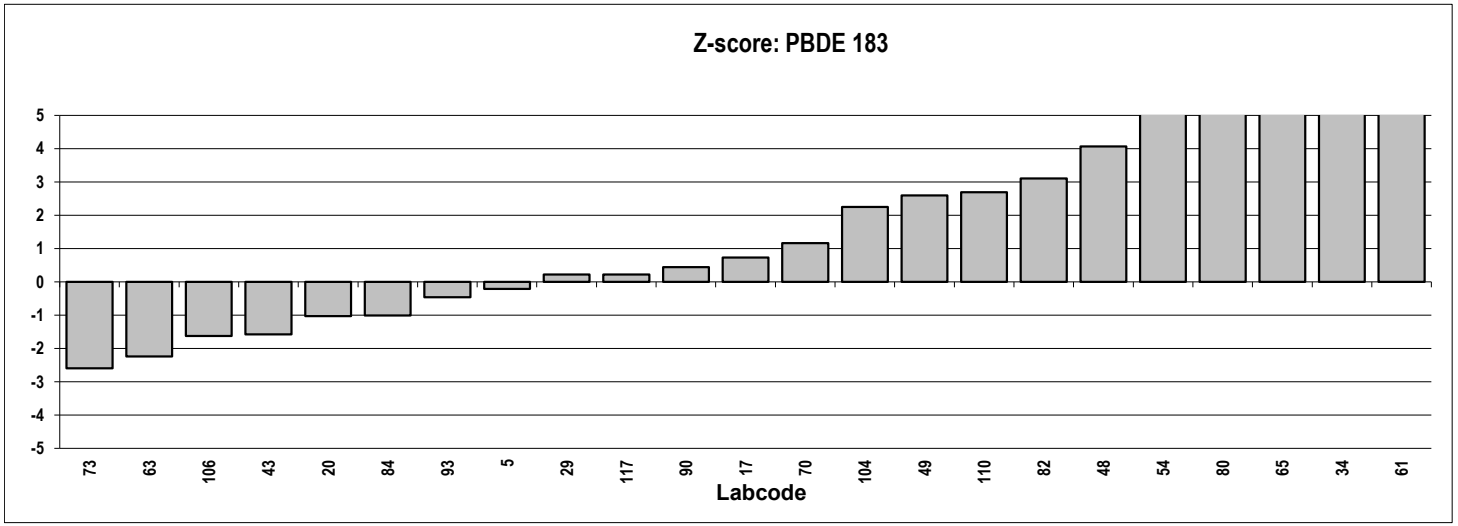
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	1,3	-0,22				
17	1,6	0,73				
20	1,1	-1,0				
29	1,4	0,22				
34	30	104	Outlier,ND			
43	0,94	-1,6				
48	2,5	4,1	ND			
49	2,1	2,6				
54	3,6	8,0	Outlier			
61	1000	3620	Outlier,ND			
63	0,76	-2,2				
65	9,9	31	Outlier,ND			
70	1,7	1,2				
73	0,66	-2,6				
80	3,9	9,0	Outlier			
82	2,2	3,1	ND			
84	1,1	-1,0				
90	1,5	0,44				
93	1,3	-0,46				
104	2,0	2,3				
106	0,93	-1,6				
110	2,1	2,7				
117	1,4	0,22				

Consenus statistics

Consensus median, pg/g	1,4
Median all values pg/g	1,6
Consensus mean, pg/g	1,5
Standard deviation, pg/g	0,54
Relative standard deviation, %	36
No. of values reported	23
No. of values removed	5
No. of reported non-detects	5


PBDE 183
pg/g fw
3,2
2,7
2,2
1,7
1,2
0,7
0,2
-0,3
5
17
20
29
34
43
48
49
54
61
63
65
70
73
80
82
84
90
93
104
106
110
117
Labcode


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
73
63
106
43
20
84
93
5
29
117
90
17
70
104
49
110
82
48
54
80
65
34
61
Labcode

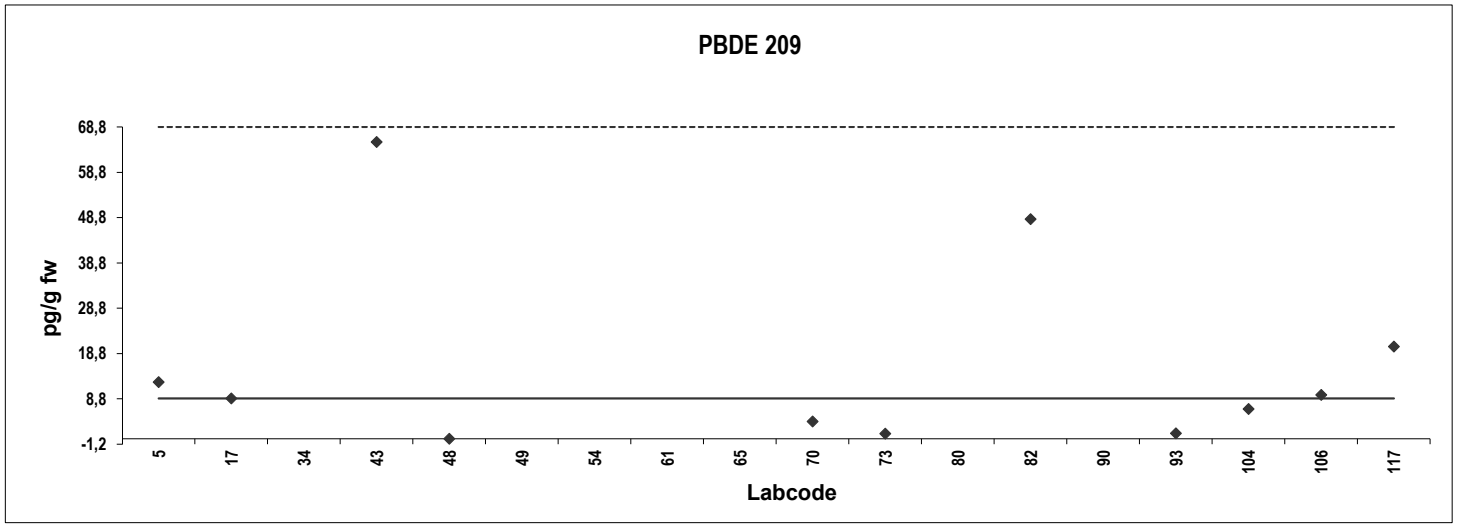
Herring

Congener: PBDE 209

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
5	13	2,0				
17	8,9	0,0				
34	1000	557	Outlier,ND			
43	65	32	ND			
48	0,0070	-5,0				
49	346	189	Outlier			
54	626	347	Outlier			
61	50000	28116	Outlier,ND			
65	199	107	Outlier,ND			
70	3,8	-2,9	ND			
73	1,1	-4,4				
80	180	96	Outlier			
82	48	22	ND			
90	300	164	Outlier,ND			
93	1,2	-4,3	ND			
104	6,6	-1,3				
106	9,7	0,46				
117	20	6,4				

Consenus statistics

Consensus median, pg/g	8,9
Median all values pg/g	34
Consensus mean, pg/g	16
Standard deviation, pg/g	21
Relative standard deviation, %	132
No. of values reported	18
No. of values removed	7
No. of reported non-detects	8


PBDE 209
pg/g fw
68,8
58,8
48,8
38,8
28,8
18,8
8,8
-1,2
5
17
34
43
48
49
54
61
65
70
73
80
82
90
93
104
106
117
Labcode


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
48
73
93
70
104
17
106
5
117
82
43
80
65
90
49
54
34
61
Labcode

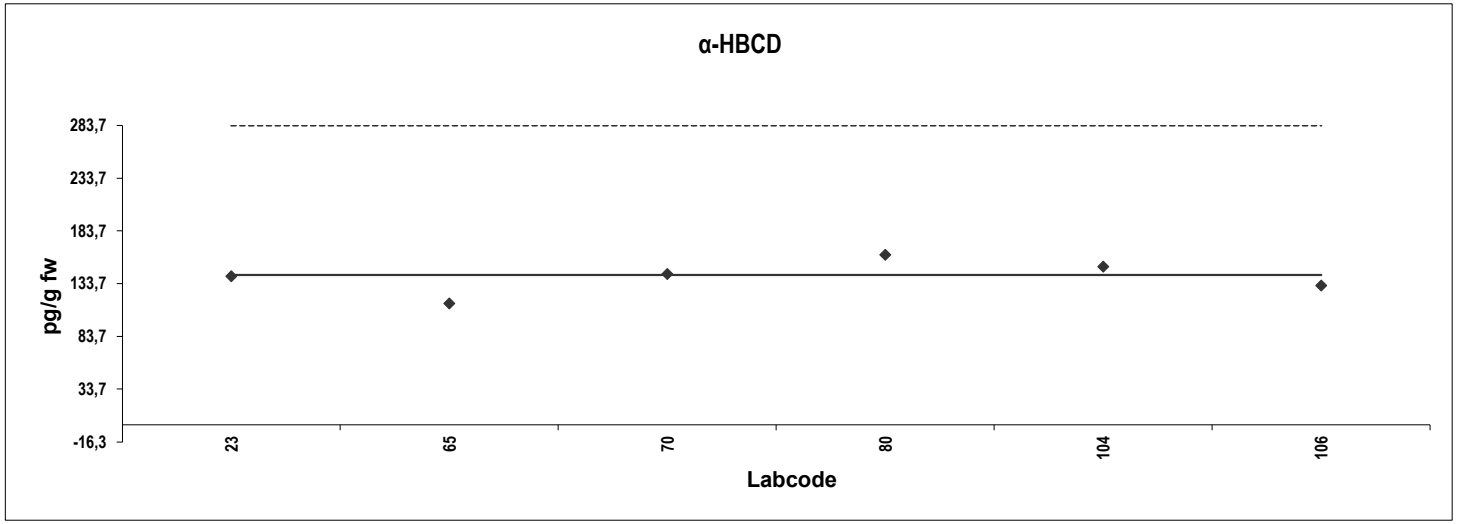
Herring

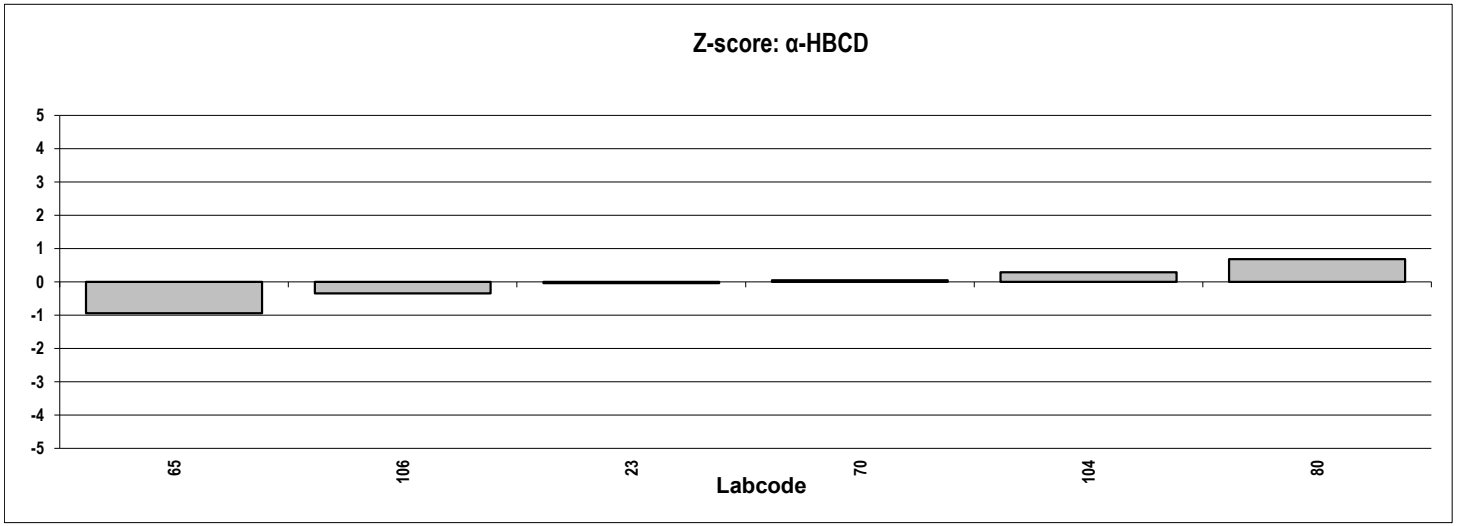
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	141	-0,041				
65	115	-0,95				
70	143	0,041				
80	161	0,68				
104	150	0,29				
106	132	-0,35				

Consenus statistics

Consensus median, pg/g	142
Median all values pg/g	142
Consensus mean, pg/g	140
Standard deviation, pg/g	16
Relative standard deviation, %	11
No. of values reported	6
No. of values removed	0
No. of reported non-detects	0


α-HBCD
283,7
233,7
183,7
133,7
83,7
33,7
-16,3
pg/g fw
23
65
70
80
104
106
Labcode


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
65
106
23
70
104
80
Labcode

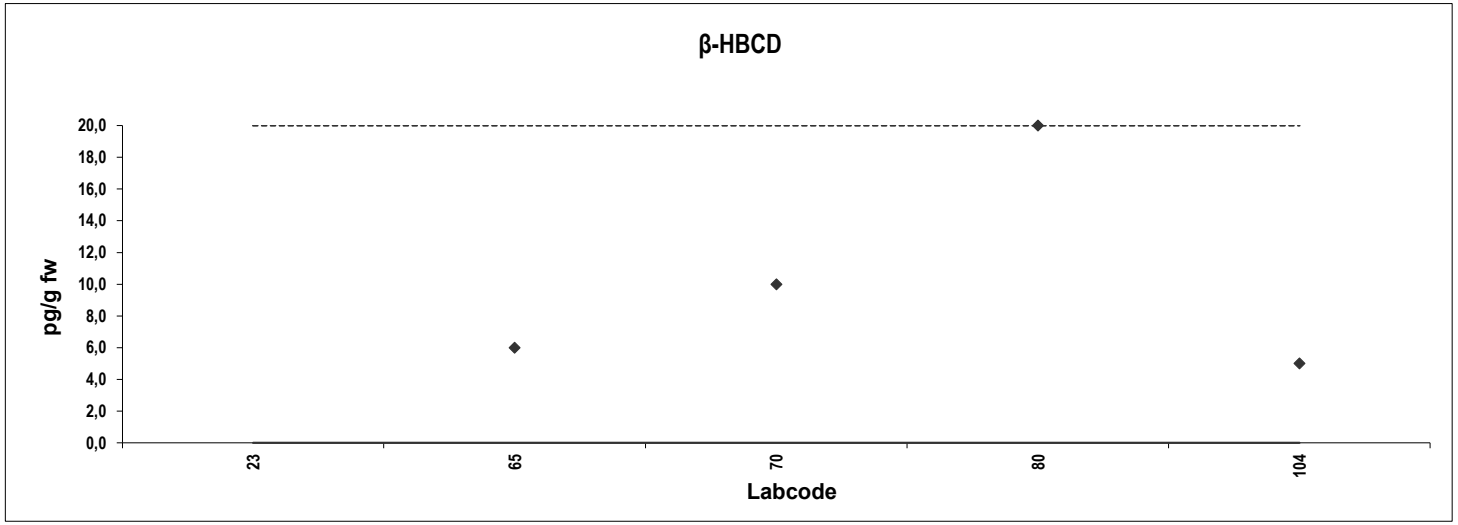
Herring

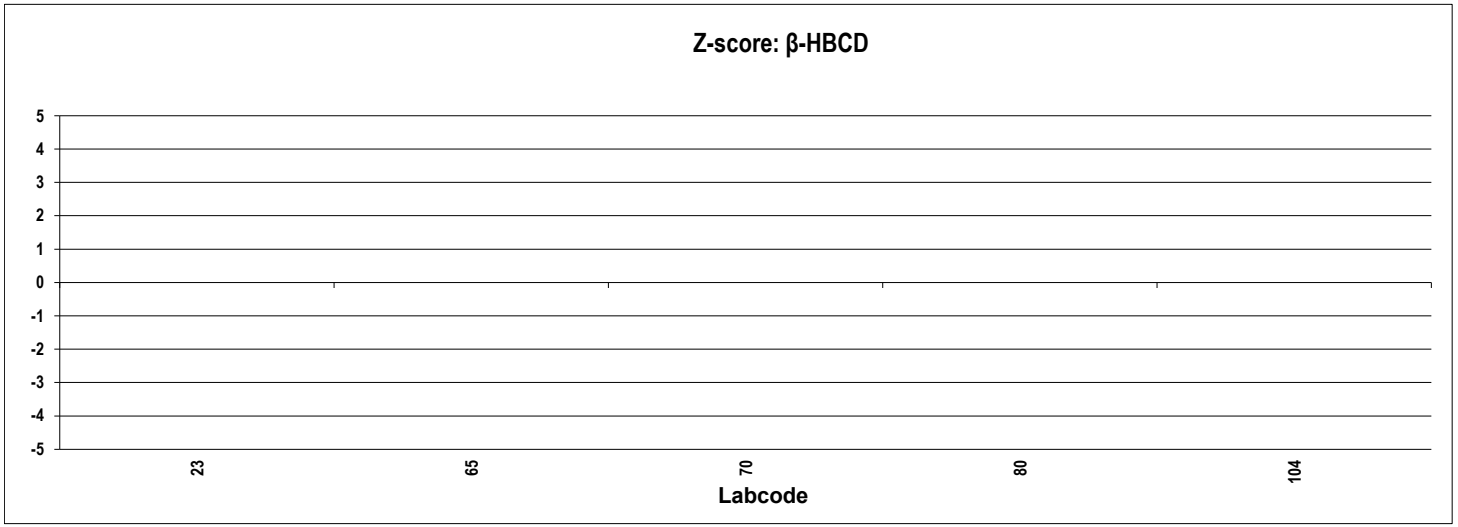
Congener: β-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	30	**	Outlier,ND			
65	6,0	**	ND			
70	10	**	ND			
80	20	**	ND			
104	5,0	**	ND			

Consenus statistics

Consensus median, pg/g	**
Median all values pg/g	10
Consensus mean, pg/g	10
Standard deviation, pg/g	6,8
Relative standard deviation, %	67
No. of values reported	5
No. of values removed	1
No. of reported non-detects	5


β-HBCD
pg/g fw
20,0
18,0
16,0
14,0
12,0
10,0
8,0
6,0
4,0
2,0
0,0
23
65
70
80
104
Labcode


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
23
65
70
80
104
Labcode

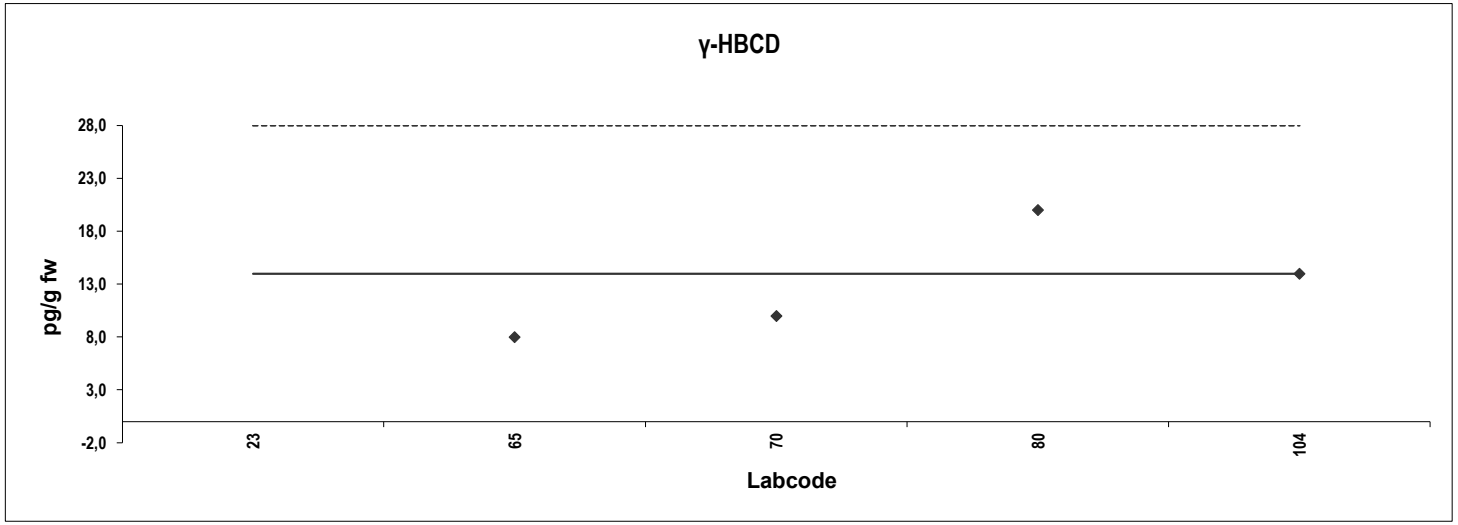
Herring

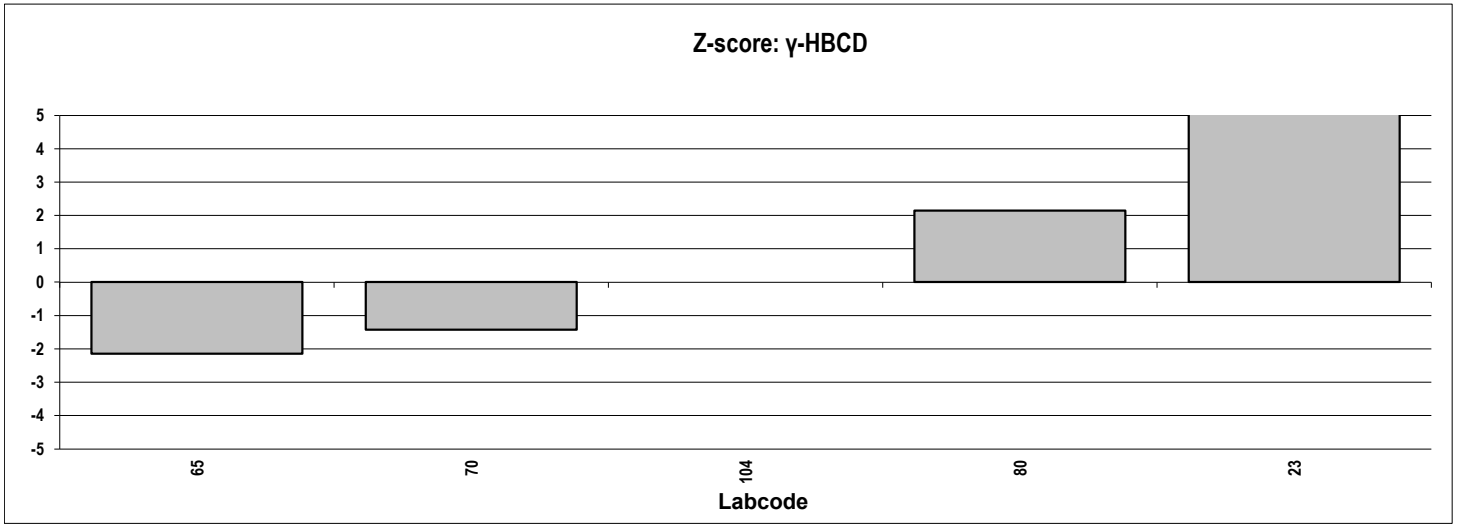
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	30	5,7	Outlier,ND			
65	8,0	-2,1	ND			
70	10	-1,4	ND			
80	20	2,1	ND			
104	14	0,0				

Consenus statistics

Consensus median, pg/g	14
Median all values pg/g	14
Consensus mean, pg/g	13
Standard deviation, pg/g	5,3
Relative standard deviation, %	41
No. of values reported	5
No. of values removed	1
No. of reported non-detects	4


γ-HBCD
28,0
23,0
18,0
13,0
8,0
3,0
-2,0
pg/g fw
23
65
70
80
104
Labcode


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
65
70
104
80
23
Labcode

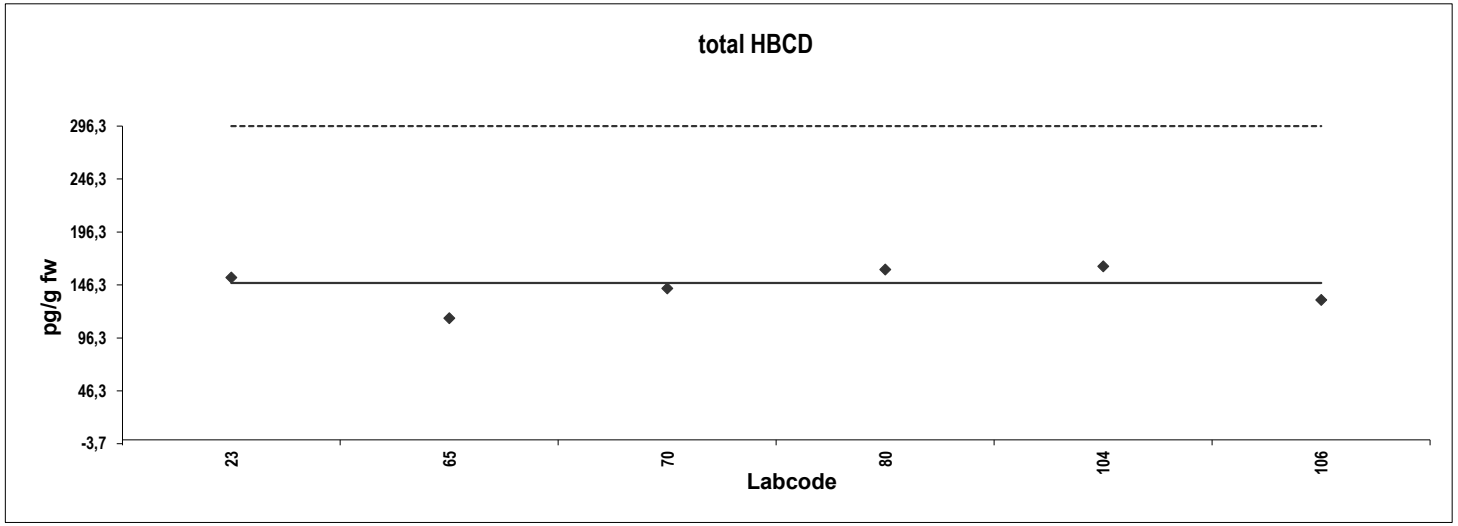
Herring

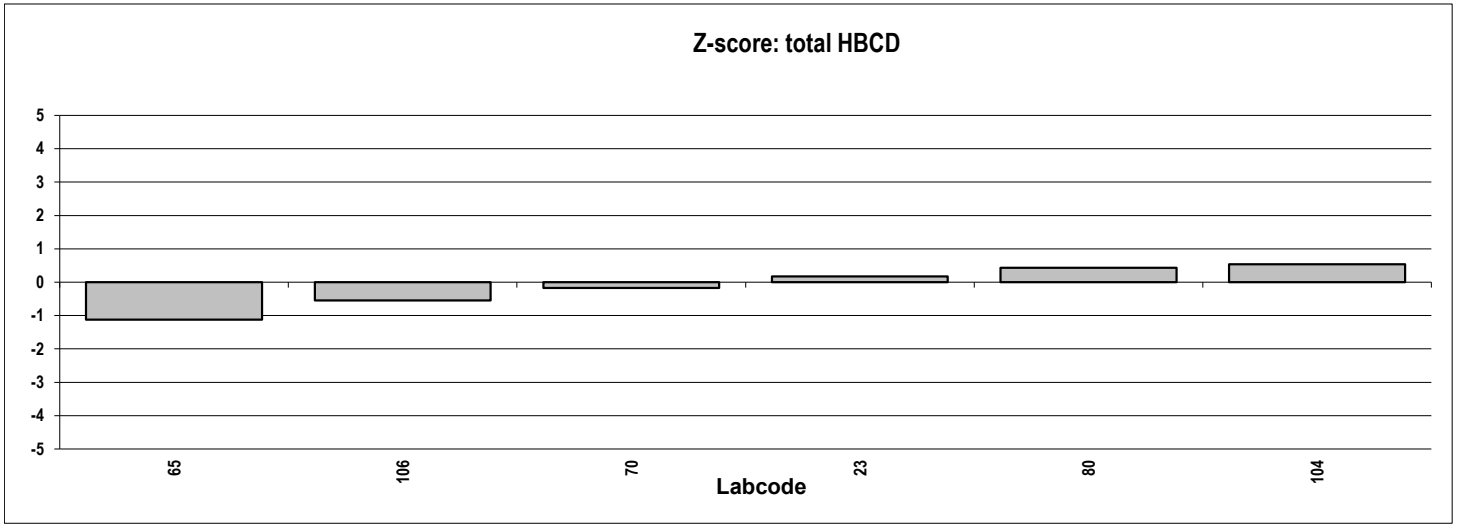
Congener: total HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	153	0,17				
65	115	-1,1				
70	143	-0,17				
80	161	0,43				
104	164	0,54				
106	132	-0,54				

Consenus statistics

Consensus median, pg/g	148
Median all values pg/g	148
Consensus mean, pg/g	145
Standard deviation, pg/g	19
Relative standard deviation, %	13
No. of values reported	6
No. of values removed	0
No. of reported non-detects	0


total HBCD
296,3
246,3
196,3
146,3
96,3
46,3
-3,7
pg/g fw
23
65
70
80
104
106
Labcode


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
65
106
70
23
80
104
Labcode

Appendix 4:

Presentation of results for
Fish oil 2023

Appendix 4: Presentation of results: Fish oil 2023

Statistic calculations for PCDDs, PCDFs and dioxin-like PCBs

For each congener, the outliers were removed, and the consensus calculated according to the following procedure:

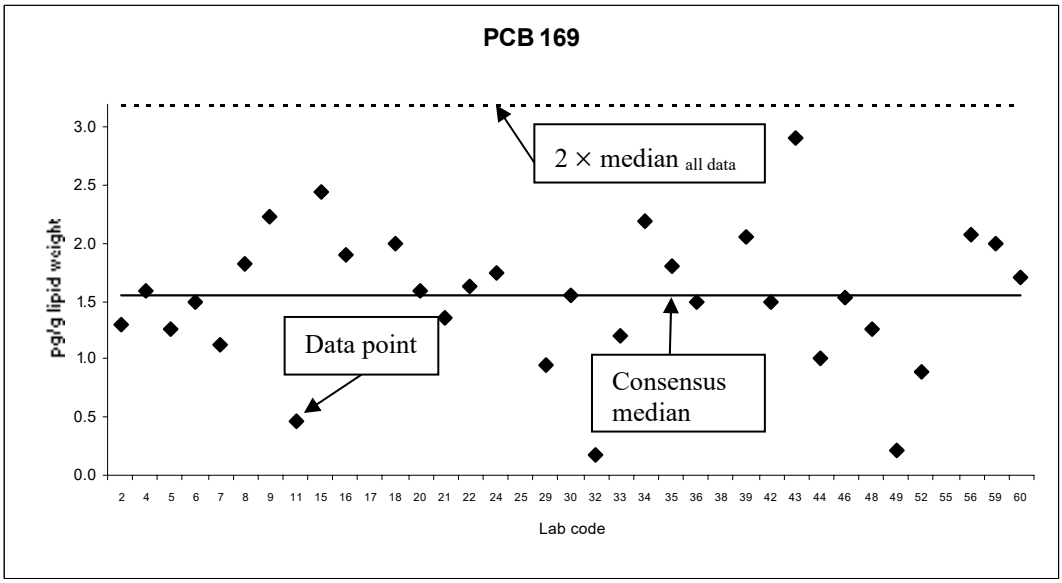
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.

Statistic calculations for indicator PCBs, PBDEs and HBCD

For each congener, the outliers were removed and the consensus calculated according to the following procedure:

1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners (NDs).
2. Values exceeding 2 × this median were defined as outliers and removed from the data set. The NDs were also removed.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.
4. For comparison, median, mean and standard deviation were also calculated without removing NDs.

The diagram shows the reported data up to approximately the limit for outliers (2 × the first median).



Z-Scores of individual congeners

Z-scores of each congener were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

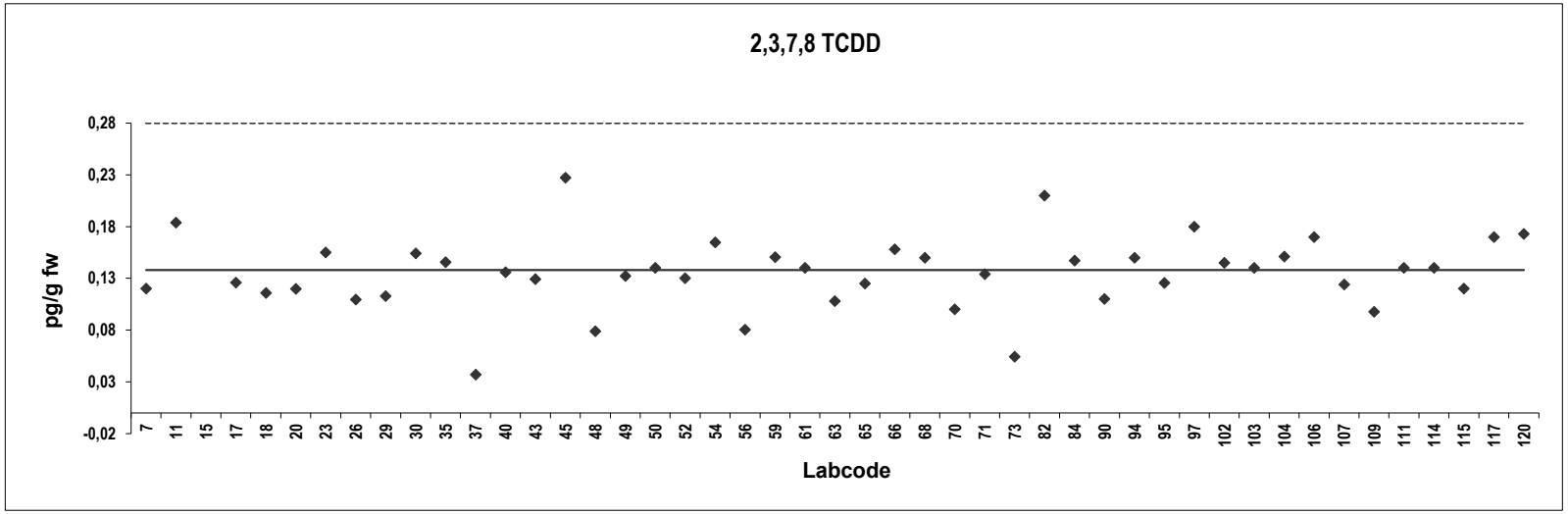
Fish oil

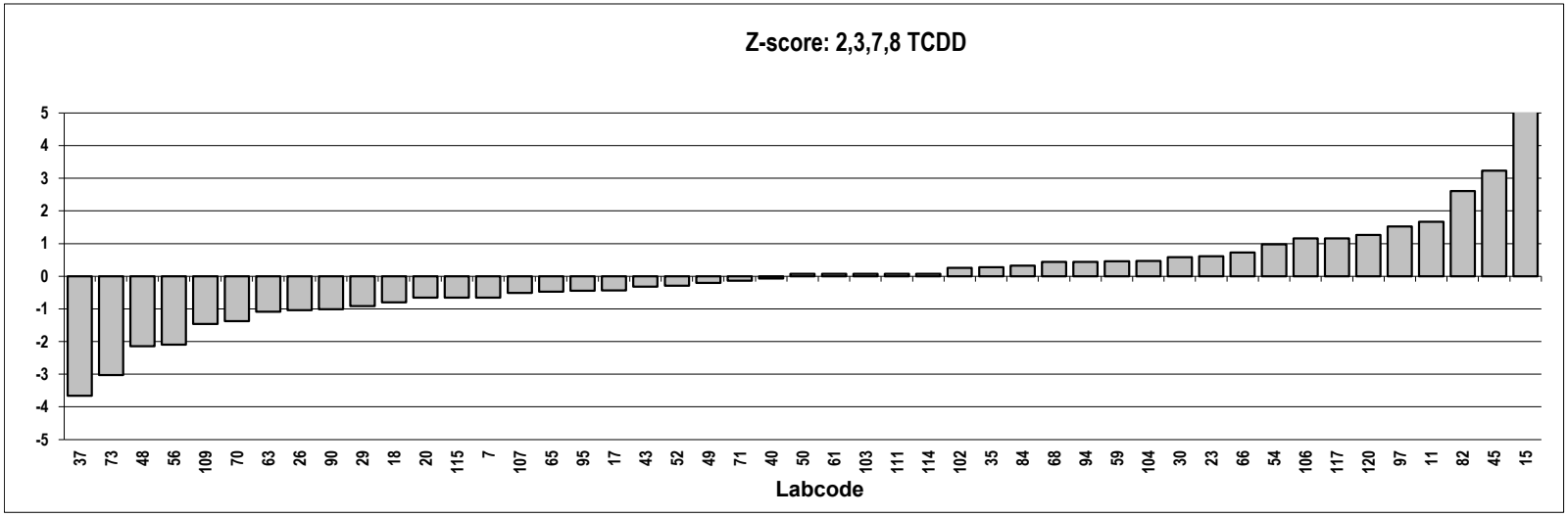
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,12	-0,65		117	0,17	1,2	
11	0,18	1,7		120	0,17	1,3	
15	0,28	5,2	Outlier				
17	0,13	-0,43					
18	0,12	-0,80					
20	0,12	-0,65					
23	0,16	0,62					
26	0,11	-1,0					
29	0,11	-0,92					
30	0,15	0,58					
35	0,15	0,28					
37	0,037	-3,7	ND				
40	0,14	-0,072					
43	0,13	-0,32					
45	0,23	3,2					
48	0,079	-2,1					
49	0,13	-0,21					
50	0,14	0,072					
52	0,13	-0,29					
54	0,16	0,97					
56	0,080	-2,1					
59	0,15	0,45					
61	0,14	0,072					
63	0,11	-1,1					
65	0,13	-0,47					
66	0,16	0,73					
68	0,15	0,43					
70	0,10	-1,4					
71	0,13	-0,14					
73	0,054	-3,0					
82	0,21	2,6					
84	0,15	0,33					
90	0,11	-1,0					
94	0,15	0,43					
95	0,13	-0,45	ND				
97	0,18	1,5					
102	0,15	0,25					
103	0,14	0,072					
104	0,15	0,47					
106	0,17	1,2					
107	0,12	-0,51	ND				
109	0,098	-1,5					
111	0,14	0,072					
114	0,14	0,072					
115	0,12	-0,65					

Consenus statistics

Consensus median, pg/g	0,14
Median all values pg/g	0,14
Consensus mean, pg/g	0,14
Standard deviation, pg/g	0,035
Relative standard deviation, %	26
No. of values reported	47
No. of values removed	1
No. of reported non-detects	3


2,3,7,8 TCDD
pg/g fw
0,28
0,23
0,18
0,13
0,08
0,03
-0,02
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
37 73 48 56 109 70 63 26 90 29 18 20 115 7 107 65 95 17 43 52 49 71 40 50 61 103 111 114 102 35 84 68 94 59 104 30 23 66 54 106 117 120 97 11 82 45 15
Labcode

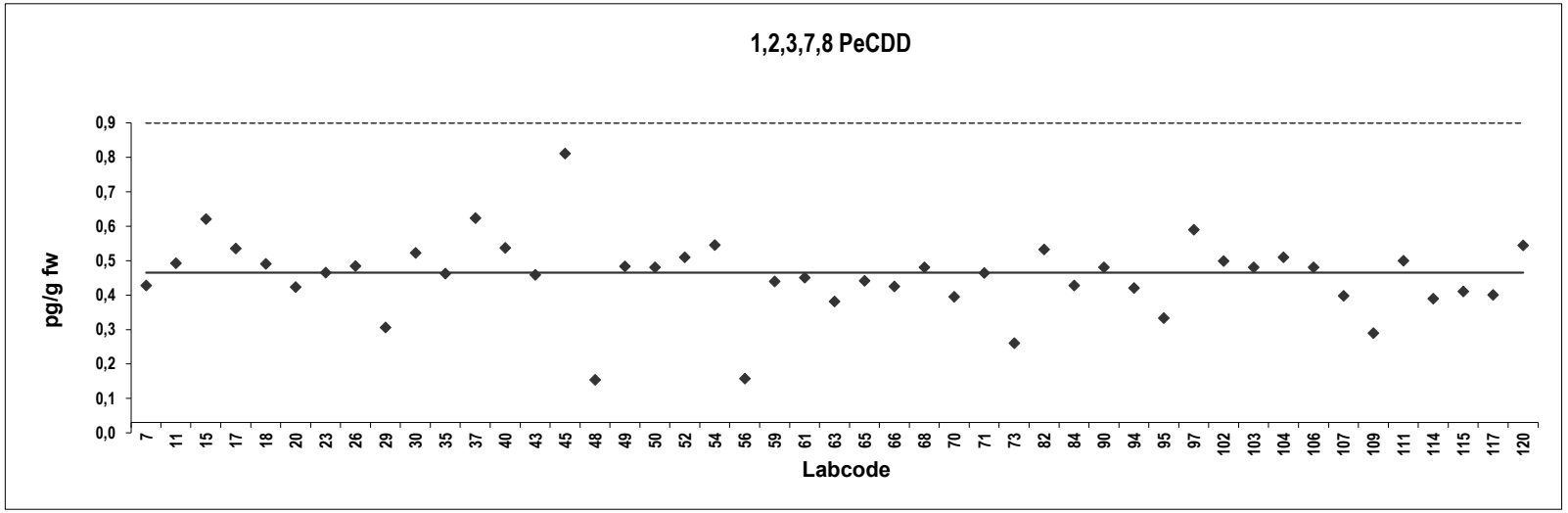
Fish oil

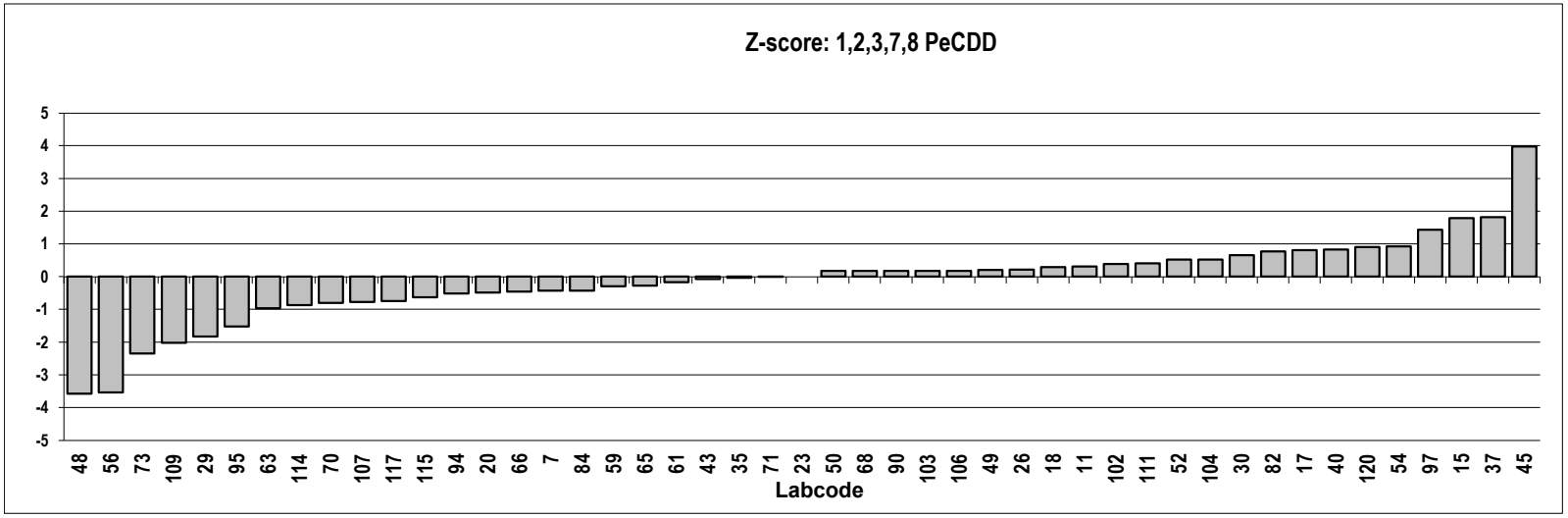
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,40	-0,43		117	0,37	-0,75	
11	0,46	0,31		120	0,51	0,91	
15	0,59	1,8					
17	0,51	0,80					
18	0,46	0,29					
20	0,39	-0,49					
23	0,44	0,0					
26	0,45	0,21					
29	0,28	-1,8					
30	0,49	0,66					
35	0,43	-0,036					
37	0,59	1,8					
40	0,51	0,83					
43	0,43	-0,072					
45	0,78	4,0					
48	0,12	-3,6					
49	0,45	0,21					
50	0,45	0,17					
52	0,48	0,52					
54	0,52	0,92					
56	0,13	-3,5					
59	0,41	-0,30					
61	0,42	-0,17					
63	0,35	-0,97					
65	0,41	-0,28					
66	0,40	-0,46					
68	0,45	0,17					
70	0,37	-0,80					
71	0,43	-0,0078					
73	0,23	-2,4					
82	0,50	0,77					
84	0,40	-0,43					
90	0,45	0,17					
94	0,39	-0,52					
95	0,30	-1,5	ND				
97	0,56	1,4					
102	0,47	0,39					
103	0,45	0,17					
104	0,48	0,52					
106	0,45	0,17					
107	0,37	-0,77					
109	0,26	-2,0					
111	0,47	0,40					
114	0,36	-0,87					
115	0,38	-0,63					

Consenus statistics

Consensus median, pg/g	0,44
Median all values pg/g	0,44
Consensus mean, pg/g	0,43
Standard deviation, pg/g	0,11
Relative standard deviation, %	26
No. of values reported	47
No. of values removed	0
No. of reported non-detects	1


1,2,3,7,8 PeCDD
pg/g fw
0,9
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
48 56 73 109 29 95 63 114 70 107 117 115 94 20 66 7 84 59 65 61 43 35 71 23 50 68 90 103 106 49 26 18 11 102 111 52 104 30 82 17 40 120 54 97 15 37 45
Labcode

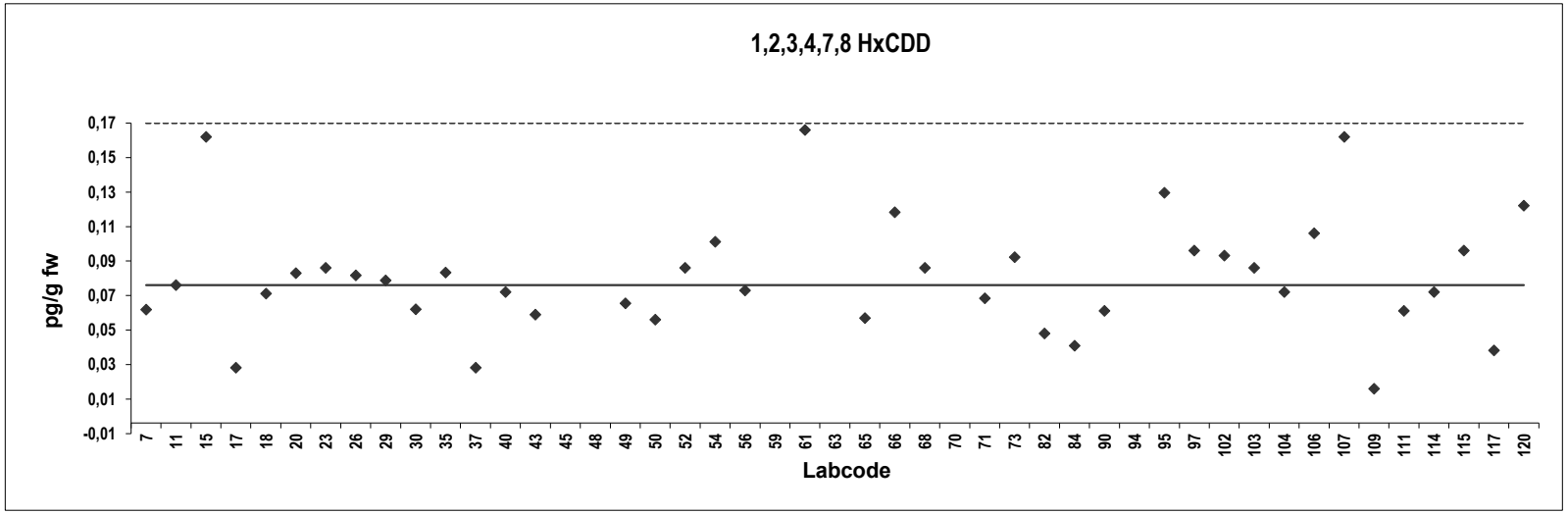
Fish oil

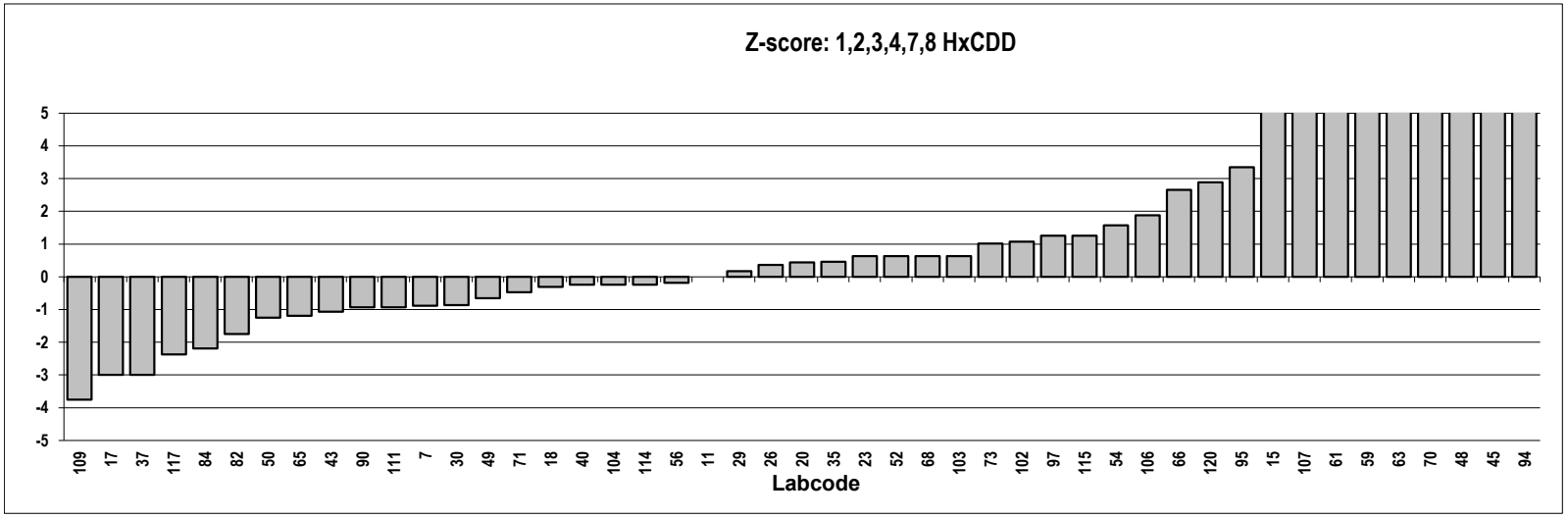
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,066	-0,88		117	0,042	-2,4	
11	0,080	0,0		120	0,13	2,9	
15	0,17	5,4					
17	0,032	-3,0					
18	0,075	-0,31					
20	0,087	0,44					
23	0,090	0,63					
26	0,086	0,36					
29	0,083	0,17					
30	0,066	-0,87					
35	0,087	0,46					
37	0,032	-3,0	ND				
40	0,076	-0,24					
43	0,063	-1,1					
45	0,31	14	Outlier				
48	0,24	10	Outlier				
49	0,069	-0,65					
50	0,060	-1,2					
52	0,090	0,63					
54	0,11	1,6					
56	0,077	-0,19					
59	0,17	5,9	Outlier,ND				
61	0,17	5,6	ND				
63	0,18	6,0	Outlier				
65	0,061	-1,2					
66	0,12	2,7					
68	0,090	0,63					
70	0,20	7,5	Outlier,ND				
71	0,072	-0,47					
73	0,096	1,0					
82	0,052	-1,7	ND				
84	0,045	-2,2					
90	0,065	-0,9					
94	0,84	48	Outlier				
95	0,13	3,4	ND				
97	0,10	1,3					
102	0,097	1,1					
103	0,090	0,63					
104	0,076	-0,24					
106	0,11	1,9					
107	0,17	5,4	ND				
109	0,020	-3,8					
111	0,065	-0,93					
114	0,076	-0,24					
115	0,10	1,3	ND				

Consenus statistics

Consensus median, pg/g	0,080
Median all values pg/g	0,087
Consensus mean, pg/g	0,084
Standard deviation, pg/g	0,034
Relative standard deviation, %	40
No. of values reported	47
No. of values removed	6
No. of reported non-detects	8


1,2,3,4,7,8 HxCDD
pg/g fw
0,17
0,15
0,13
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

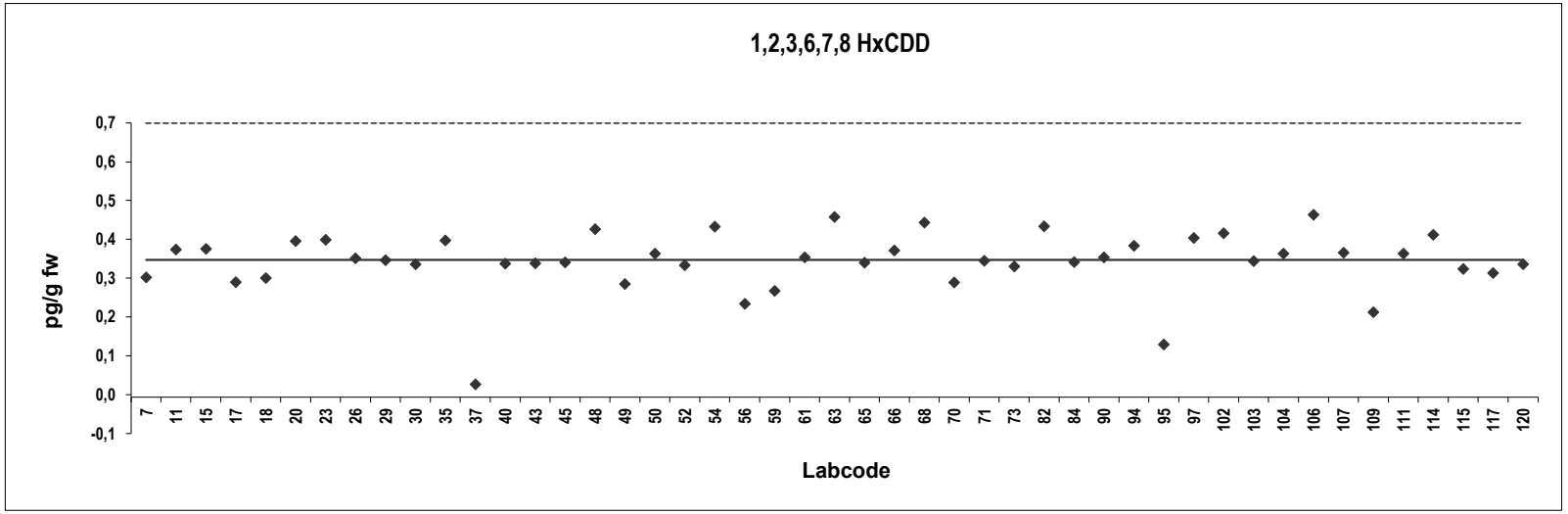

Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
109 17 37 117 84 82 50 65 43 90 111 7 30 49 71 18 40 104 114 56 11 29 26 20 35 23 52 68 103 73 102 97 115 54 106 66 120 95 15 107 61 59 63 70 48 45 94
Labcode

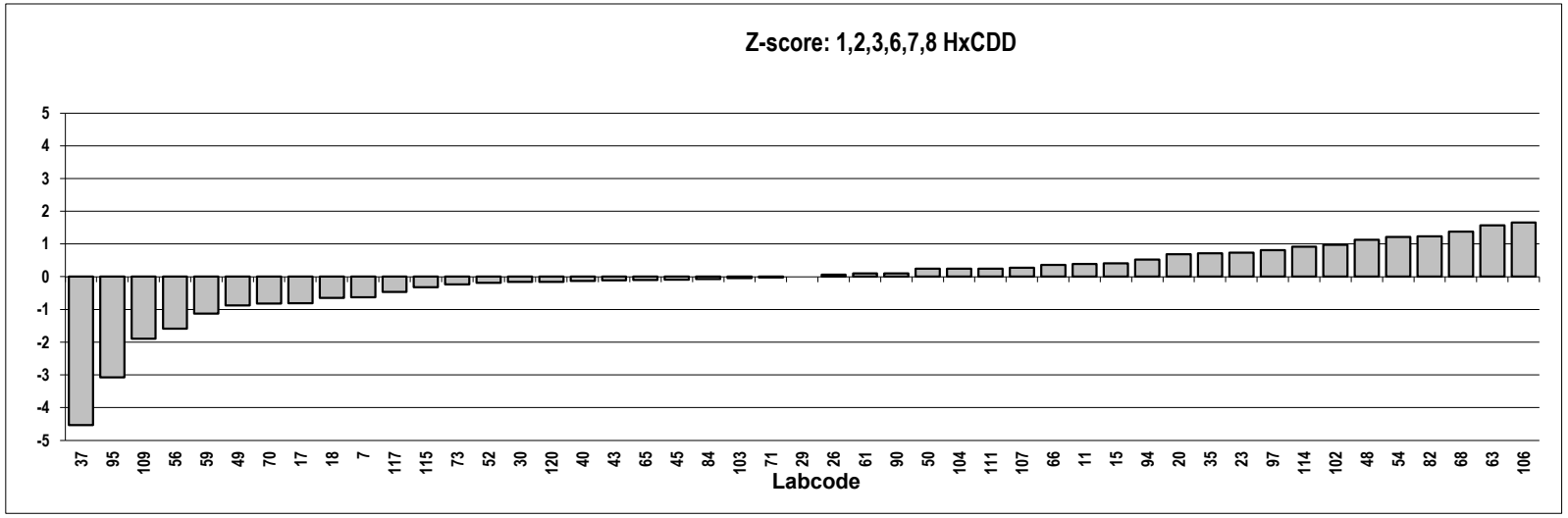
Fish oil

Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,31	-0,63		117	0,32	-0,47	
11	0,38	0,39		120	0,34	-0,16	
15	0,38	0,41					
17	0,30	-0,81					
18	0,31	-0,65					
20	0,40	0,69					
23	0,41	0,73					
26	0,36	0,058					
29	0,35	0,0					
30	0,34	-0,16					
35	0,40	0,71					
37	0,033	-4,5	ND				
40	0,34	-0,13					
43	0,34	-0,12					
45	0,35	-0,089					
48	0,43	1,1					
49	0,29	-0,88					
50	0,37	0,24					
52	0,34	-0,19					
54	0,44	1,2					
56	0,24	-1,6					
59	0,27	-1,1					
61	0,36	0,10					
63	0,46	1,6					
65	0,35	-0,10					
66	0,38	0,35					
68	0,45	1,4					
70	0,30	-0,82					
71	0,35	-0,028					
73	0,34	-0,24					
82	0,44	1,2					
84	0,35	-0,072					
90	0,36	0,10					
94	0,39	0,52					
95	0,14	-3,1	ND				
97	0,41	0,81					
102	0,42	0,98					
103	0,35	0,0					
104	0,37	0,24					
106	0,47	1,7					
107	0,37	0,27					
109	0,22	-1,9					
111	0,37	0,24					
114	0,42	0,92					
115	0,33	-0,33					

Consenus statistics	
Consensus median, pg/g	0,35
Median all values pg/g	0,35
Consensus mean, pg/g	0,35
Standard deviation, pg/g	0,079
Relative standard deviation, %	22
No. of values reported	47
No. of values removed	0
No. of reported non-detects	2


1,2,3,6,7,8 HxCDD
pg/g fw
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

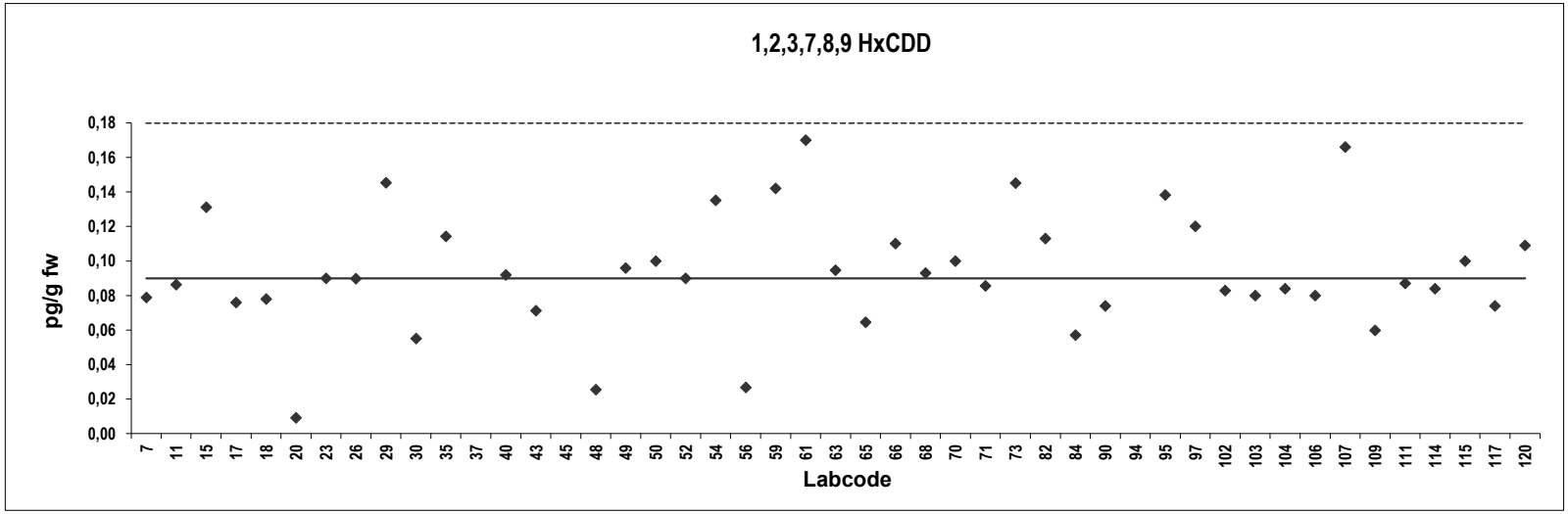

Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
37 95 109 56 59 49 70 17 18 7 117 115 73 52 30 120 40 43 65 45 84 103 71 29 26 61 90 50 104 111 107 66 11 15 94 20 35 23 97 114 102 48 54 82 68 63 106
Labcode

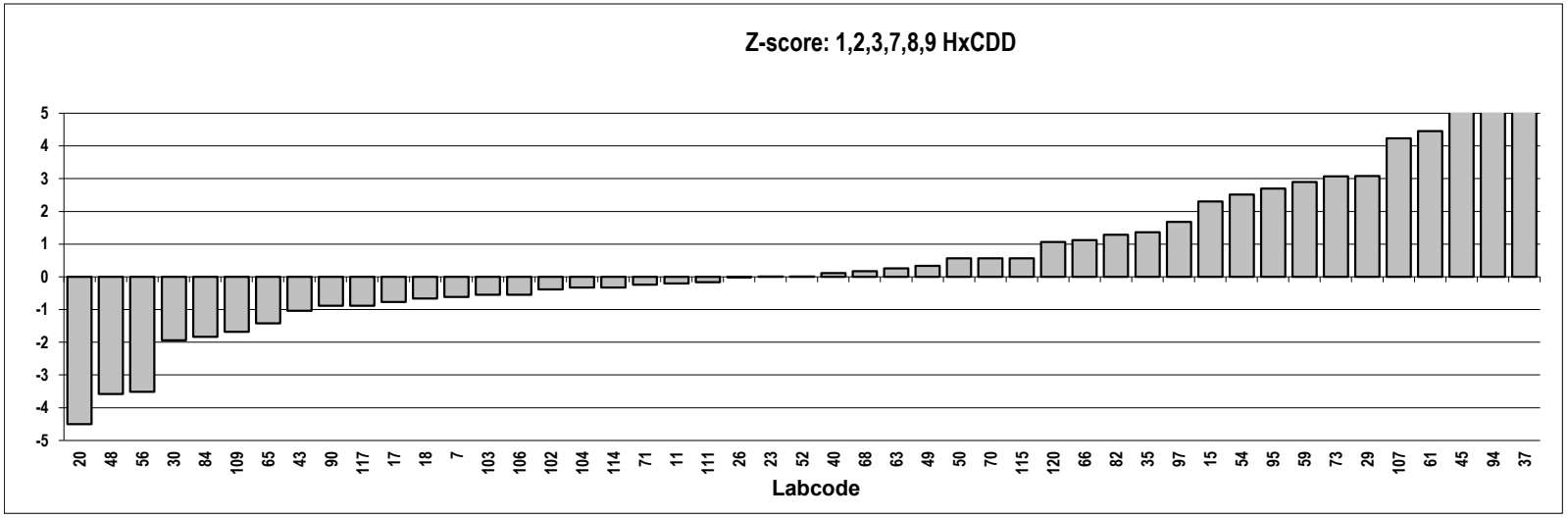
Fish oil

Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,079	-0,62		117	0,074	-0,88	
11	0,086	-0,20		120	0,11	1,1	
15	0,13	2,3					
17	0,076	-0,77					
18	0,078	-0,66					
20	0,0090	-4,5	ND				
23	0,090	0,0056					
26	0,090	-0,0056					
29	0,15	3,1					
30	0,055	-1,9					
35	0,11	1,4					
37	2,3	121	Outlier				
40	0,092	0,12					
43	0,071	-1,0					
45	0,21	6,7	Outlier				
48	0,026	-3,6	ND				
49	0,096	0,33					
50	0,10	0,56					
52	0,090	0,0056					
54	0,14	2,5					
56	0,027	-3,5					
59	0,14	2,9	ND				
61	0,17	4,5	ND				
63	0,095	0,26					
65	0,064	-1,4					
66	0,11	1,1					
68	0,093	0,17					
70	0,10	0,56					
71	0,086	-0,24					
73	0,15	3,1					
82	0,11	1,3					
84	0,057	-1,8					
90	0,074	-0,88					
94	0,53	24	Outlier,ND				
95	0,14	2,7	ND				
97	0,12	1,7					
102	0,083	-0,39					
103	0,080	-0,55					
104	0,084	-0,33					
106	0,080	-0,55					
107	0,17	4,2	ND				
109	0,060	-1,68					
111	0,087	-0,16					
114	0,084	-0,33					
115	0,10	0,56	ND				

Consenus statistics	
Consensus median, pg/g	0,090
Median all values pg/g	0,090
Consensus mean, pg/g	0,093
Standard deviation, pg/g	0,034
Relative standard deviation, %	37
No. of values reported	47
No. of values removed	3
No. of reported non-detects	8


1,2,3,7,8,9 HxCDD
pg/g fw
0,18
0,16
0,14
0,12
0,10
0,08
0,06
0,04
0,02
0,00
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

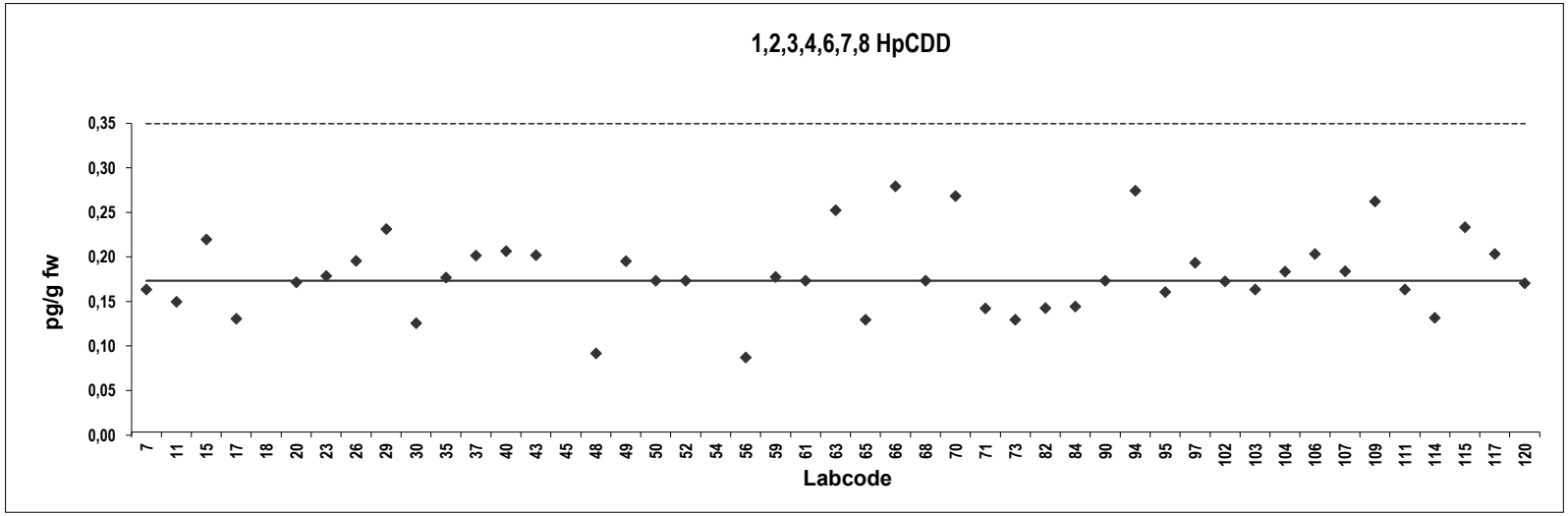

Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
20 48 56 30 84 109 65 43 90 117 17 18 7 103 106 102 104 114 71 11 111 26 23 52 40 68 63 49 50 70 115 120 66 82 35 97 15 54 95 59 73 29 107 61 45 94 37
Labcode

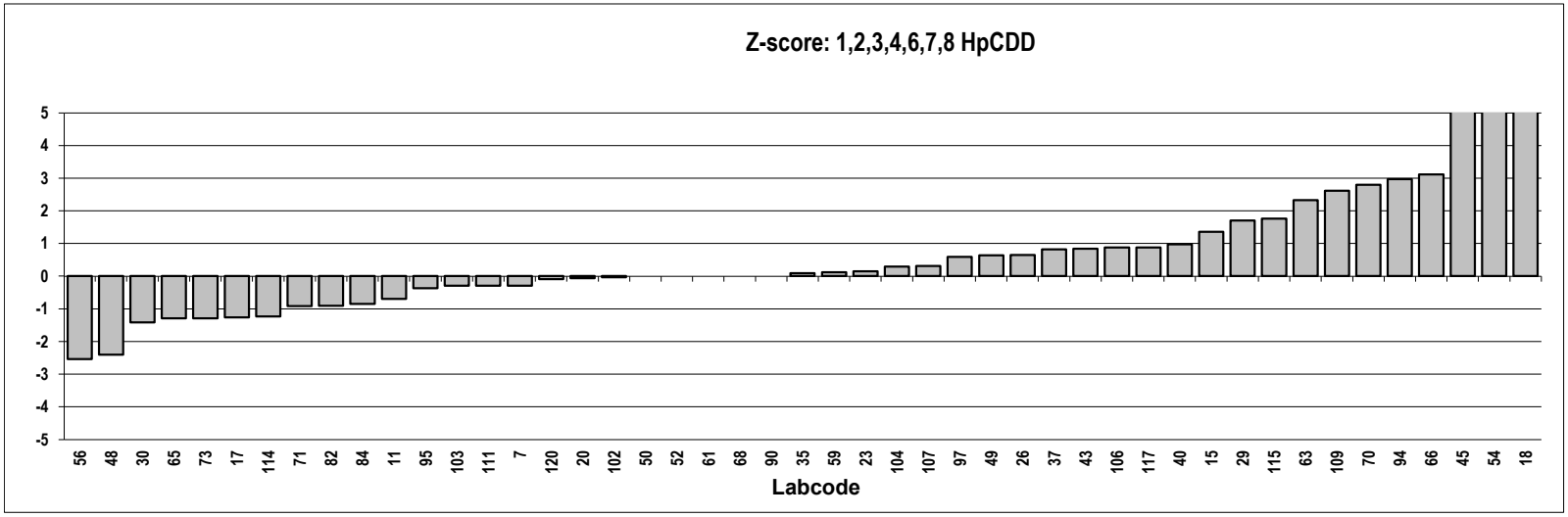
Fish oil

Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,16	-0,29		117	0,20	0,88	
11	0,15	-0,70		120	0,17	-0,088	
15	0,22	1,4					
17	0,13	-1,3					
18	0,93	22	Outlier				
20	0,17	-0,062					
23	0,18	0,15					
26	0,19	0,65					
29	0,23	1,7					
30	0,12	-1,4					
35	0,17	0,094					
37	0,20	0,82	ND				
40	0,20	0,97					
43	0,20	0,84	ND				
45	0,35	5,2	Outlier				
48	0,088	-2,4					
49	0,19	0,64					
50	0,17	0,0					
52	0,17	0,0					
54	0,77	18	Outlier				
56	0,084	-2,5					
59	0,17	0,12	ND				
61	0,17	0,0	ND				
63	0,25	2,3					
65	0,13	-1,3					
66	0,28	3,1					
68	0,17	0,0					
70	0,27	2,8					
71	0,14	-0,92					
73	0,13	-1,3					
82	0,14	-0,91					
84	0,14	-0,85					
90	0,17	0,0					
94	0,27	3,0	ND				
95	0,16	-0,37	ND				
97	0,19	0,59					
102	0,17	-0,029					
103	0,16	-0,29					
104	0,18	0,29					
106	0,20	0,88					
107	0,18	0,31					
109	0,26	2,6					
111	0,16	-0,29					
114	0,13	-1,2					
115	0,23	1,8					

Consenus statistics	
Consensus median, pg/g	0,17
Median all values pg/g	0,17
Consensus mean, pg/g	0,18
Standard deviation, pg/g	0,044
Relative standard deviation, %	25
No. of values reported	47
No. of values removed	3
No. of reported non-detects	6


1,2,3,4,6,7,8 HpCDD
pg/g fw
0,35
0,30
0,25
0,20
0,15
0,10
0,05
0,00
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 48 30 65 73 17 114 71 82 84 11 95 103 111 7 120 20 102 50 52 61 68 90 35 59 23 104 107 97 49 26 37 43 106 117 40 15 29 115 63 109 70 94 66 45 54 18
Labcode

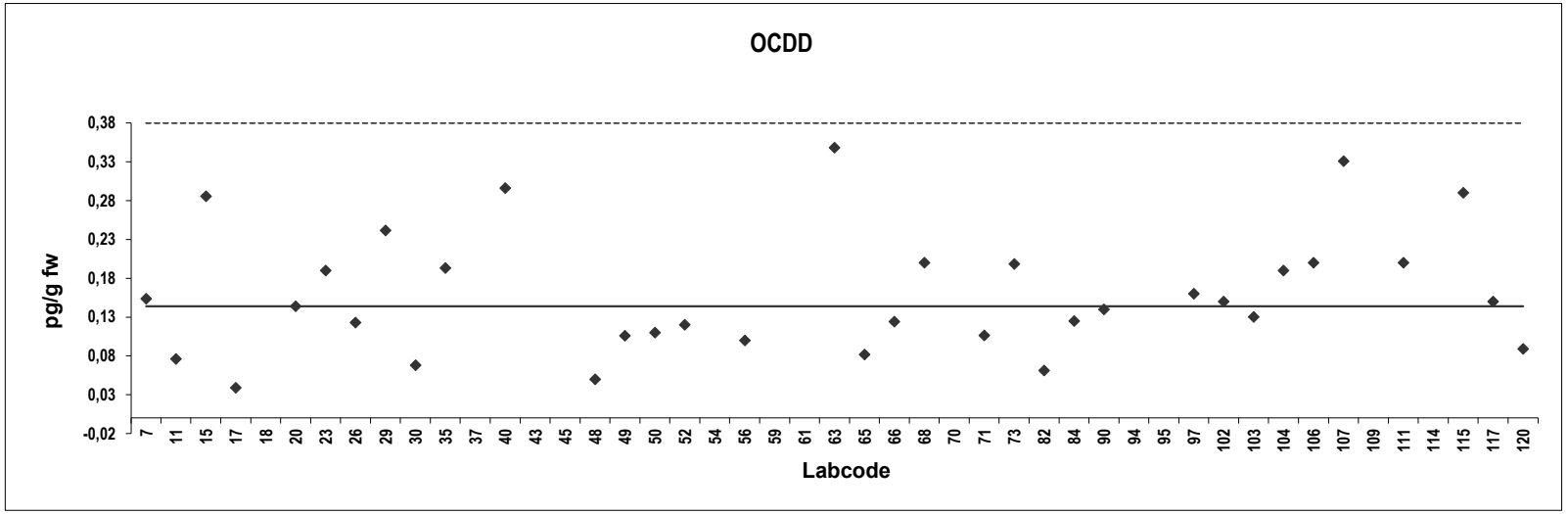
Fish oil

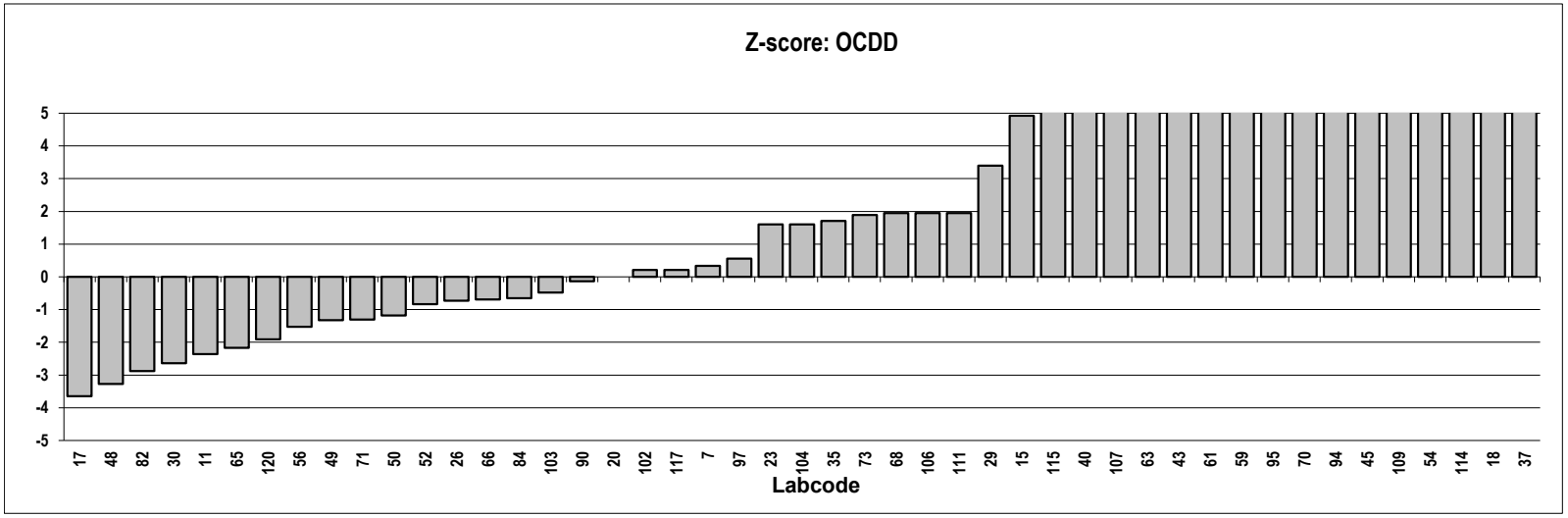
Congener: OCDD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,15	0,34		117	0,15	0,21	
11	0,076	-2,4		120	0,089	-1,9	
15	0,29	4,9					
17	0,039	-3,6					
18	2,1	70	Outlier				
20	0,14	0,0	ND				
23	0,19	1,6					
26	0,12	-0,73					
29	0,24	3,4					
30	0,068	-2,6					
35	0,19	1,7					
37	2,6	85	Outlier				
40	0,30	5,3					
43	0,40	8,8	Outlier,ND				
45	0,84	24	Outlier				
48	0,050	-3,3					
49	0,11	-1,3					
50	0,11	-1,2					
52	0,12	-0,83					
54	1,7	55	Outlier				
56	0,10	-1,5	ND				
59	0,44	10	Outlier,ND				
61	0,42	9,6	Outlier,ND				
63	0,35	7,1					
65	0,082	-2,2					
66	0,12	-0,69					
68	0,20	1,9					
70	0,52	13	Outlier				
71	0,11	-1,3					
73	0,20	1,9					
82	0,061	-2,9	ND				
84	0,13	-0,66					
90	0,14	-0,14					
94	0,75	21	Outlier,ND				
95	0,49	12	Outlier,ND				
97	0,16	0,56					
102	0,15	0,21	ND				
103	0,13	-0,48					
104	0,19	1,6					
106	0,20	1,9					
107	0,33	6,5	ND				
109	1,5	45	Outlier				
111	0,20	1,9	ND				
114	2,0	64	Outlier,ND				
115	0,29	5,1					

Consenus statistics

Consensus median, pg/g	0,14
Median all values pg/g	0,19
Consensus mean, pg/g	0,16
Standard deviation, pg/g	0,079
Relative standard deviation, %	50
No. of values reported	47
No. of values removed	12
No. of reported non-detects	12


OCDD
pg/g fw
0,38
0,33
0,28
0,23
0,18
0,13
0,08
0,03
-0,02
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
17 48 82 30 11 65 120 56 49 71 50 52 26 66 84 103 90 20 102 117 7 97 23 104 35 73 68 106 111 29 15 115 40 107 63 43 61 59 95 70 94 45 109 54 114 18 37
Labcode

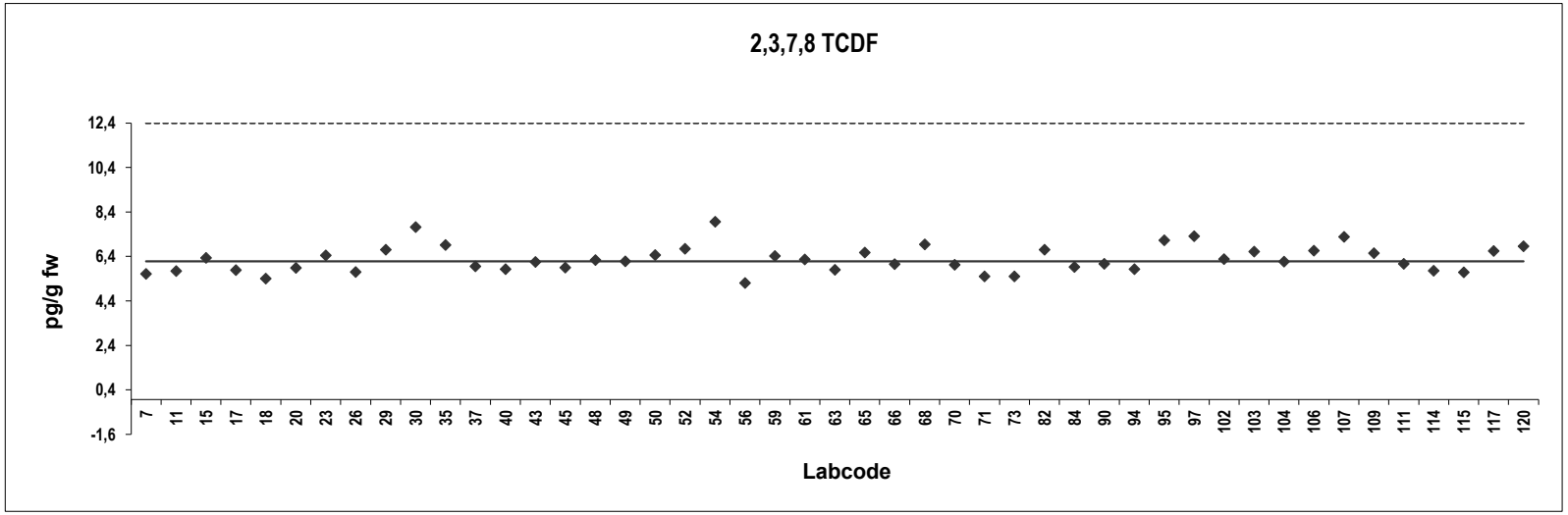
Fish oil

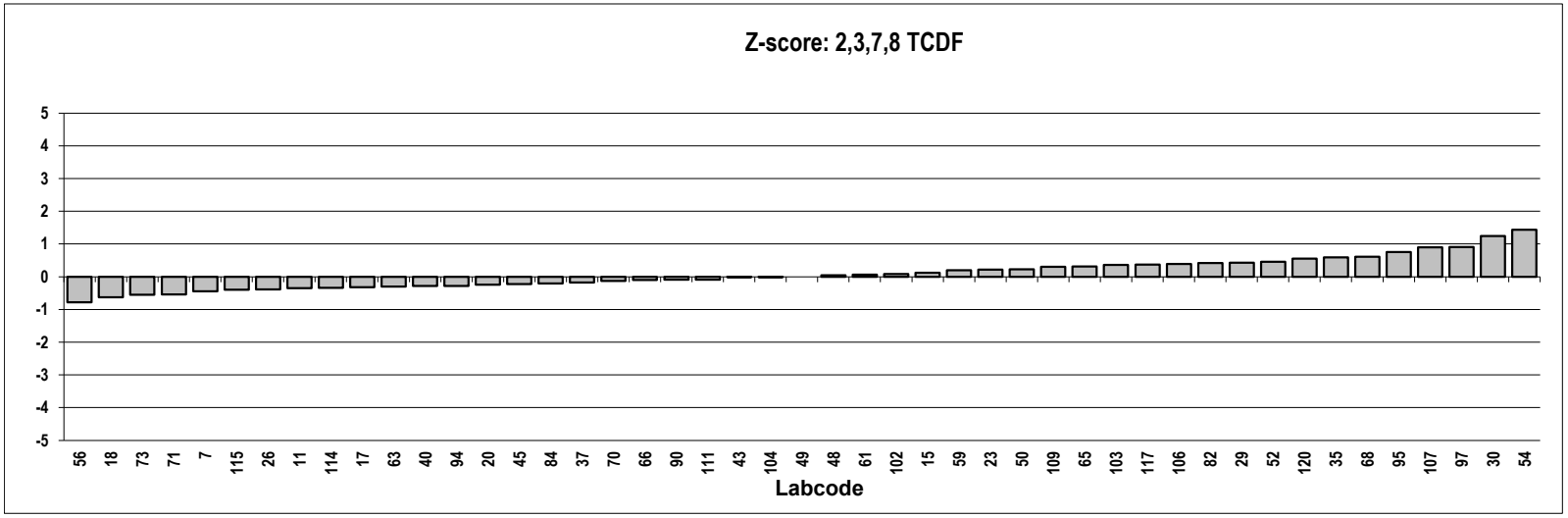
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	5,7	-0,45		117	6,7	0,37	
11	5,8	-0,35		120	6,9	0,55	
15	6,4	0,12					
17	5,8	-0,32					
18	5,4	-0,62					
20	5,9	-0,24					
23	6,5	0,22					
26	5,7	-0,39					
29	6,7	0,42					
30	7,8	1,2					
35	7,0	0,59					
37	6,0	-0,18					
40	5,9	-0,28					
43	6,2	-0,017					
45	5,9	-0,23					
48	6,3	0,043					
49	6,2	0,0					
50	6,5	0,23					
52	6,8	0,46					
54	8,0	1,4					
56	5,2	-0,79					
59	6,5	0,20					
61	6,3	0,067					
63	5,8	-0,30					
65	6,6	0,32					
66	6,1	-0,10					
68	7,0	0,61					
70	6,1	-0,13					
71	5,5	-0,54					
73	5,5	-0,55					
82	6,7	0,42					
84	6,0	-0,21					
90	6,1	-0,094					
94	5,9	-0,28					
95	7,2	0,76					
97	7,4	0,91					
102	6,3	0,083					
103	6,7	0,36					
104	6,2	-0,014					
106	6,7	0,39					
107	7,3	0,89					
109	6,6	0,30					
111	6,1	-0,094					
114	5,8	-0,34					
115	5,7	-0,40					

Consenus statistics

Consensus median, pg/g	6,2
Median all values pg/g	6,2
Consensus mean, pg/g	6,3
Standard deviation, pg/g	0,60
Relative standard deviation, %	10
No. of values reported	47
No. of values removed	0
No. of reported non-detects	0


2,3,7,8 TCDF
pg/g fw
12,4
10,4
8,4
6,4
4,4
2,4
0,4
-1,6
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 18 73 71 7 115 26 11 114 17 63 40 94 20 45 84 37 70 66 90 111 43 104 49 48 61 102 15 59 23 50 109 65 103 117 106 82 29 52 120 35 68 95 107 97 30 54
Labcode

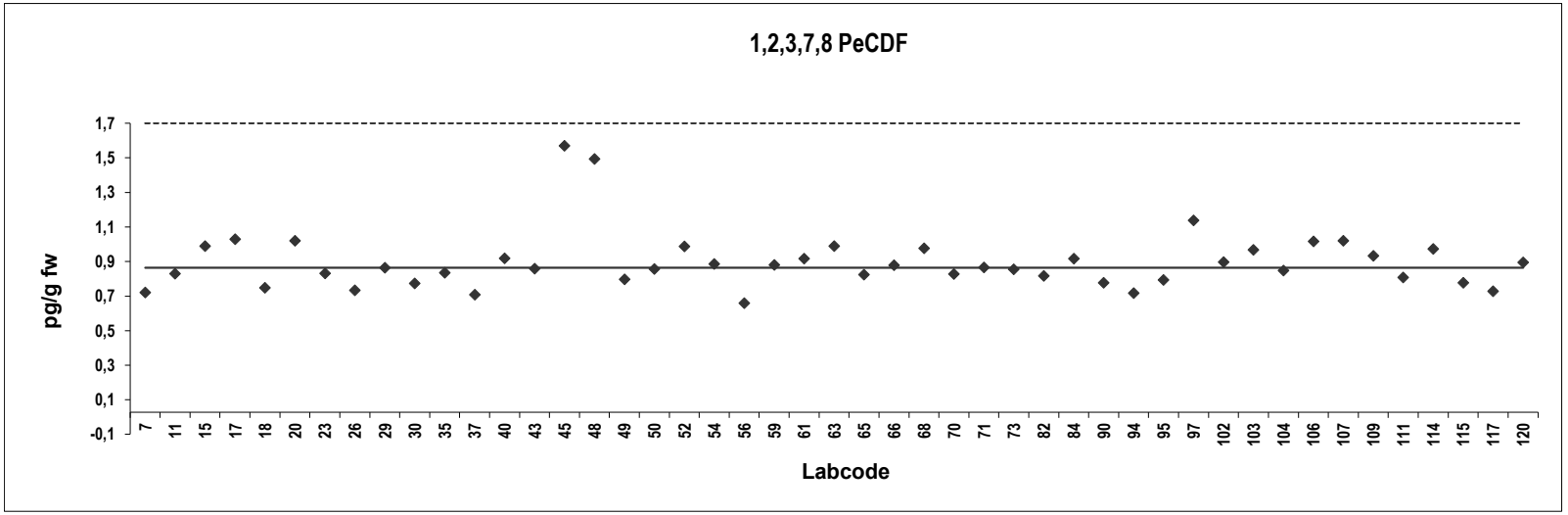
Fish oil

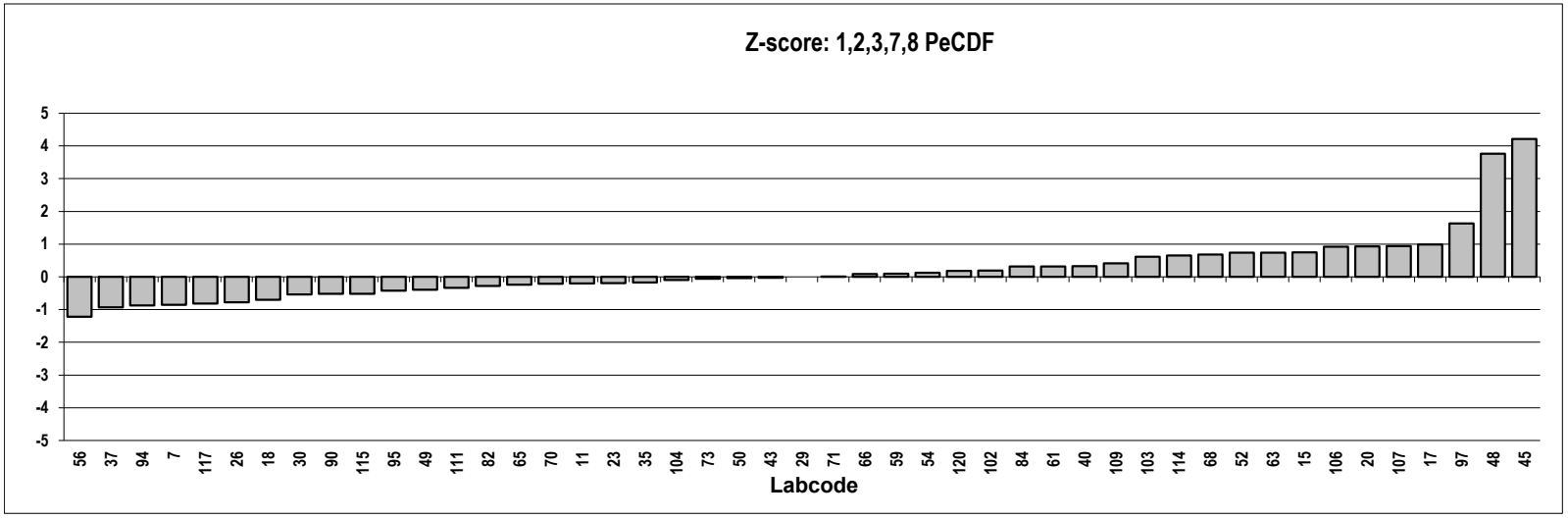
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,69	-0,86		117	0,70	-0,82	
11	0,80	-0,20		120	0,87	0,18	
15	0,96	0,74					
17	1,0	1,0					
18	0,72	-0,70					
20	0,99	0,93					
23	0,81	-0,19					
26	0,71	-0,77					
29	0,84	0,0					
30	0,75	-0,54					
35	0,81	-0,17					
37	0,68	-0,93					
40	0,89	0,33					
43	0,83	-0,029					
45	1,5	4,2					
48	1,5	3,8					
49	0,77	-0,39					
50	0,83	-0,039					
52	0,96	0,74					
54	0,86	0,13					
56	0,63	-1,2					
59	0,85	0,10					
61	0,89	0,32					
63	0,96	0,74					
65	0,80	-0,24					
66	0,85	0,085					
68	0,95	0,68					
70	0,80	-0,21					
71	0,84	0,0074					
73	0,83	-0,053					
82	0,79	-0,28					
84	0,89	0,31					
90	0,75	-0,52					
94	0,69	-0,88					
95	0,77	-0,42					
97	1,1	1,6					
102	0,87	0,19					
103	0,94	0,62					
104	0,82	-0,10					
106	0,99	0,92					
107	0,99	0,94					
109	0,91	0,41					
111	0,78	-0,34					
114	0,95	0,65					
115	0,75	-0,52					

Consenus statistics

Consensus median, pg/g	0,84
Median all values pg/g	0,84
Consensus mean, pg/g	0,87
Standard deviation, pg/g	0,17
Relative standard deviation, %	19
No. of values reported	47
No. of values removed	0
No. of reported non-detects	0


1,2,3,7,8 PeCDF
pg/g fw
1,7
1,5
1,3
1,1
0,9
0,7
0,5
0,3
0,1
-0,1
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
56 37 94 7 117 26 18 30 90 115 95 49 111 82 65 70 11 23 35 104 73 50 43 29 71 66 59 54 120 102 84 61 40 109 103 114 68 52 63 15 106 20 107 17 97 48 45
Labcode

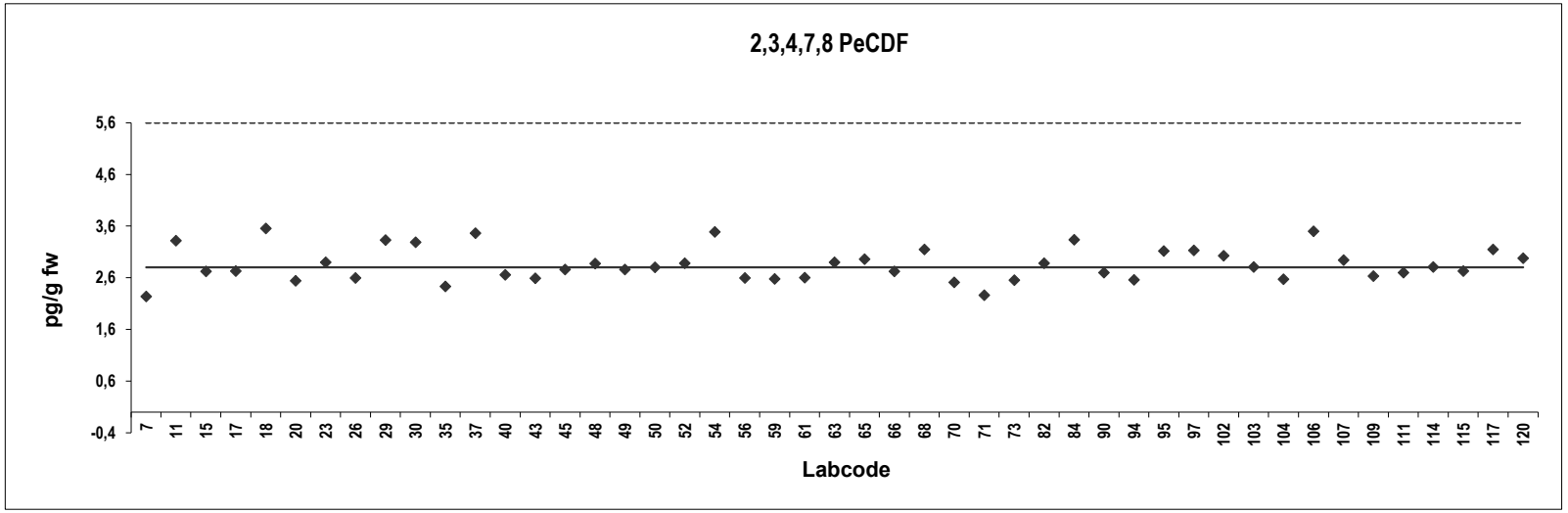
Fish oil

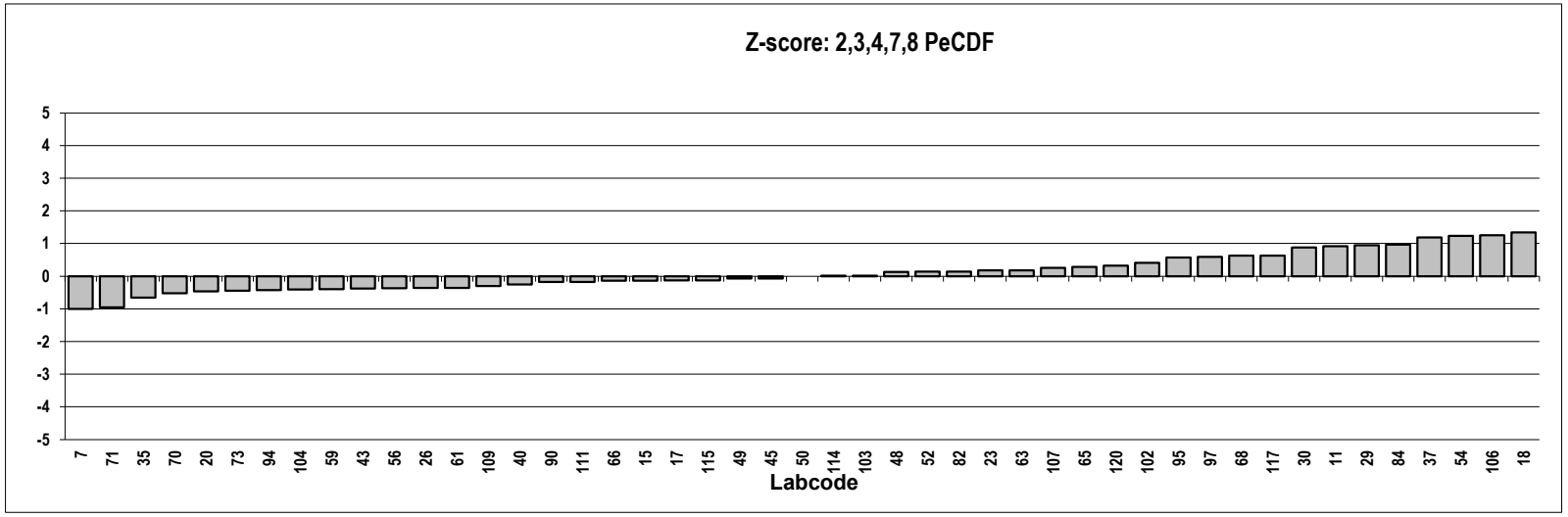
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	2,2	-1,0		117	3,2	0,63	
11	3,3	0,92		120	3,0	0,32	
15	2,7	-0,13					
17	2,7	-0,13					
18	3,6	1,3					
20	2,5	-0,47					
23	2,9	0,18					
26	2,6	-0,36					
29	3,3	0,95					
30	3,3	0,88					
35	2,4	-0,65					
37	3,5	1,2					
40	2,7	-0,25					
43	2,6	-0,38					
45	2,8	-0,066					
48	2,9	0,14					
49	2,8	-0,075					
50	2,8	0,0					
52	2,9	0,14					
54	3,5	1,2					
56	2,6	-0,37					
59	2,6	-0,40					
61	2,6	-0,36					
63	2,9	0,18					
65	3,0	0,29					
66	2,7	-0,14					
68	3,2	0,63					
70	2,5	-0,52					
71	2,3	-0,96					
73	2,6	-0,44					
82	2,9	0,14					
84	3,3	0,96					
90	2,7	-0,18					
94	2,6	-0,43					
95	3,1	0,57					
97	3,1	0,59					
102	3,0	0,41					
103	2,8	0,018					
104	2,6	-0,41					
106	3,5	1,3					
107	2,9	0,26					
109	2,6	-0,30					
111	2,7	-0,18					
114	2,8	0,014					
115	2,7	-0,13					

Consenus statistics

Consensus median, pg/g	2,8
Median all values pg/g	2,8
Consensus mean, pg/g	2,9
Standard deviation, pg/g	0,33
Relative standard deviation, %	11
No. of values reported	47
No. of values removed	0
No. of reported non-detects	0


2,3,4,7,8 PeCDF
pg/g fw
5,6
4,6
3,6
2,6
1,6
0,6
-0,4
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
7 71 35 70 20 73 94 104 59 43 56 26 61 109 40 90 111 66 15 17 115 49 45 50 114 103 48 52 82 23 63 107 65 120 102 95 97 68 117 30 11 29 84 37 54 106 18
Labcode

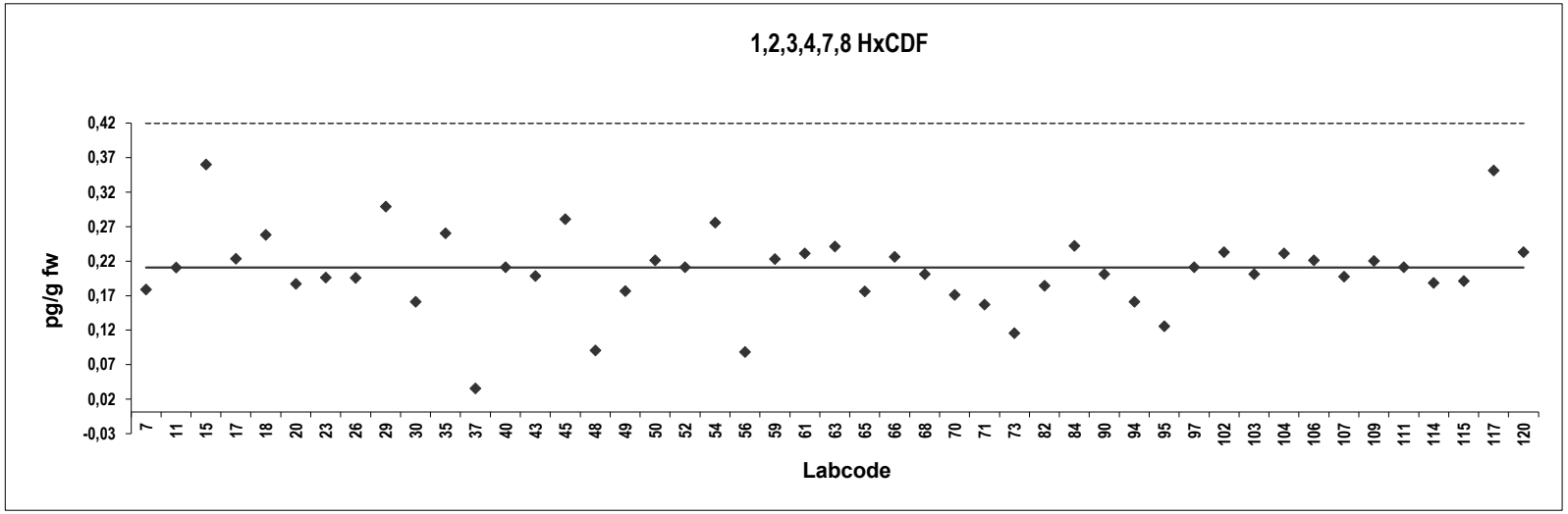
Fish oil

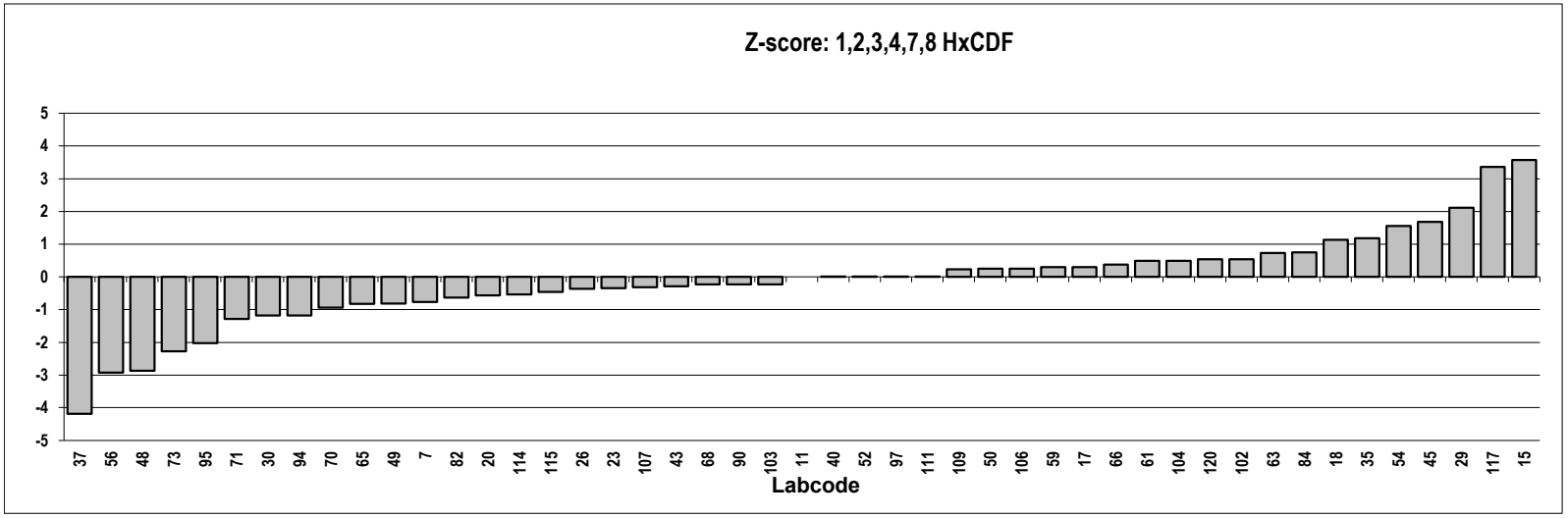
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,18	-0,76		117	0,35	3,4	
11	0,21	0,0		120	0,23	0,54	
15	0,36	3,6					
17	0,22	0,30					
18	0,26	1,1					
20	0,19	-0,56					
23	0,20	-0,34					
26	0,19	-0,36					
29	0,30	2,1					
30	0,16	-1,2					
35	0,26	1,2					
37	0,034	-4,2	ND				
40	0,21	0,014					
43	0,20	-0,29					
45	0,28	1,7					
48	0,089	-2,9					
49	0,18	-0,82					
50	0,22	0,25					
52	0,21	0,014					
54	0,27	1,6					
56	0,087	-2,9					
59	0,22	0,30					
61	0,23	0,49					
63	0,24	0,73					
65	0,18	-0,82					
66	0,23	0,37					
68	0,20	-0,22					
70	0,17	-0,94					
71	0,16	-1,3					
73	0,11	-2,3					
82	0,18	-0,63					
84	0,24	0,75					
90	0,20	-0,22					
94	0,16	-1,2					
95	0,12	-2,0	ND				
97	0,21	0,014					
102	0,23	0,54					
103	0,20	-0,22					
104	0,23	0,49					
106	0,22	0,25					
107	0,20	-0,32					
109	0,22	0,23					
111	0,21	0,014					
114	0,19	-0,53					
115	0,19	-0,46					

Consenus statistics

Consensus median, pg/g	0,21
Median all values pg/g	0,21
Consensus mean, pg/g	0,20
Standard deviation, pg/g	0,059
Relative standard deviation, %	29
No. of values reported	47
No. of values removed	0
No. of reported non-detects	2


1,2,3,4,7,8 HxCDF
pg/g fw
0,42
0,37
0,32
0,27
0,22
0,17
0,12
0,07
0,02
-0,03
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

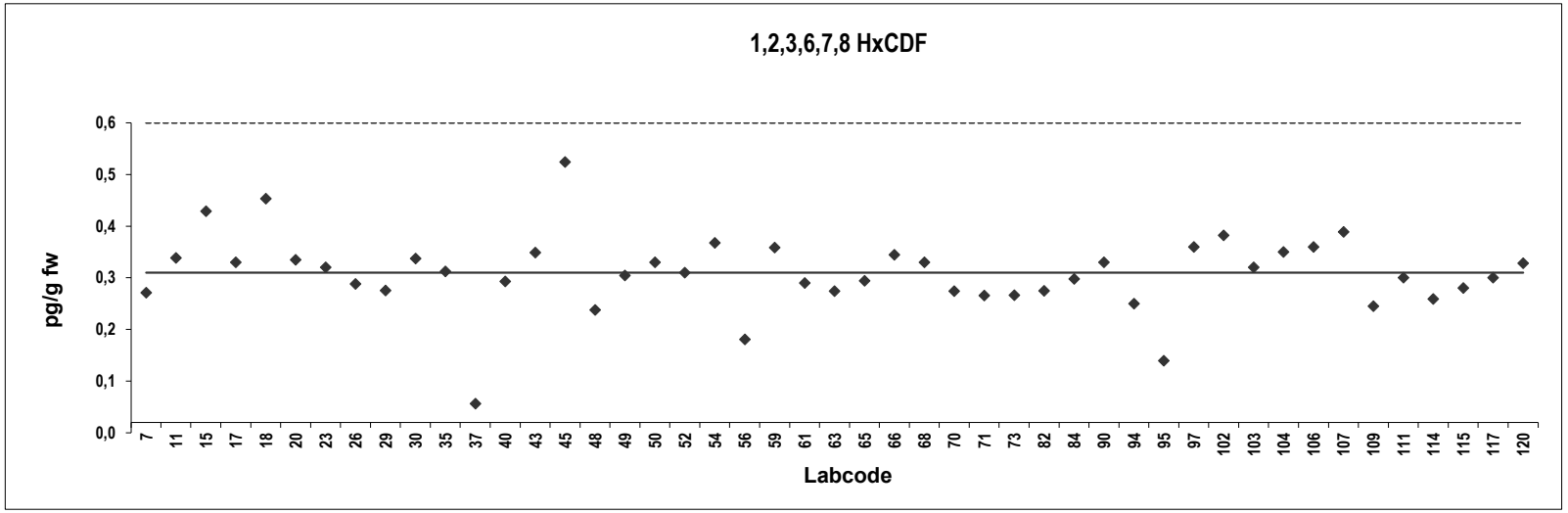

Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
37 56 48 73 95 71 30 94 70 65 49 7 82 20 114 115 26 23 107 43 68 90 103 11 40 52 97 111 109 50 106 59 17 66 61 104 120 102 63 84 18 35 54 45 29 117 15
Labcode

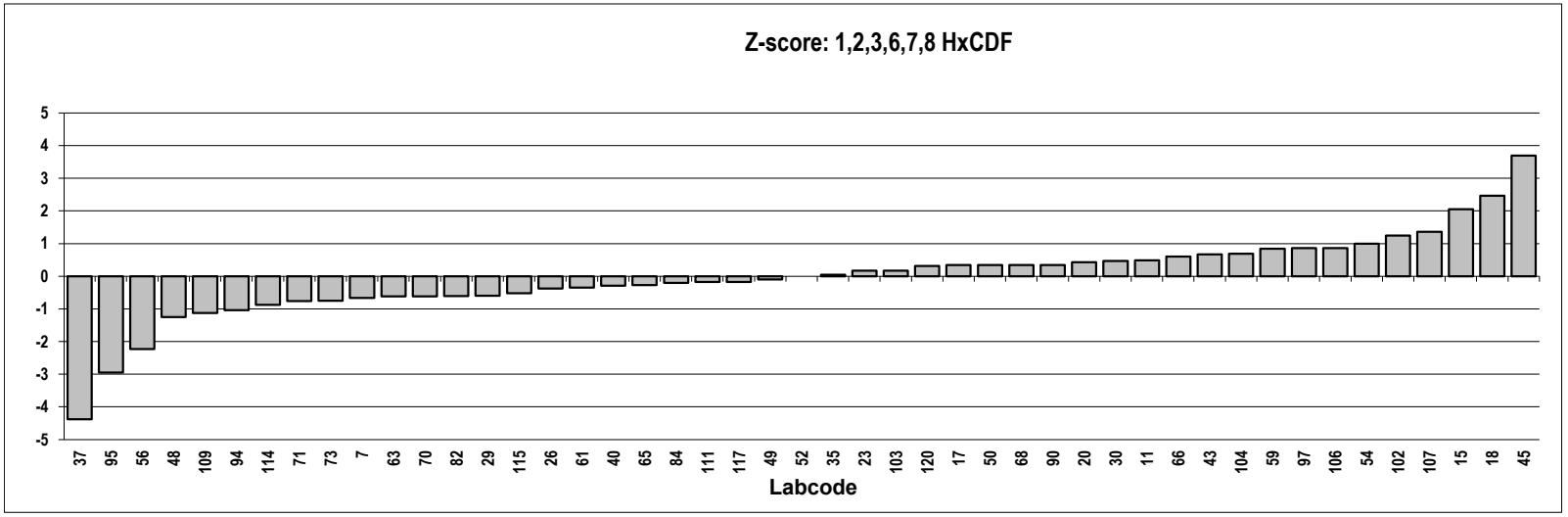
Fish oil

Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,25	-0,67		117	0,28	-0,17	
11	0,32	0,49		120	0,31	0,31	
15	0,41	2,1					
17	0,31	0,34					
18	0,43	2,5					
20	0,31	0,43					
23	0,30	0,17					
26	0,27	-0,38					
29	0,26	-0,60					
30	0,32	0,47					
35	0,29	0,045					
37	0,036	-4,4	ND				
40	0,27	-0,29					
43	0,33	0,67					
45	0,50	3,7					
48	0,22	-1,2					
49	0,28	-0,10					
50	0,31	0,34					
52	0,29	0,0					
54	0,35	1,0					
56	0,16	-2,2					
59	0,34	0,84					
61	0,27	-0,34					
63	0,25	-0,62					
65	0,27	-0,28					
66	0,32	0,60					
68	0,31	0,34					
70	0,25	-0,62					
71	0,25	-0,76					
73	0,25	-0,76					
82	0,26	-0,60					
84	0,28	-0,21					
90	0,31	0,34					
94	0,23	-1,0					
95	0,12	-2,9	ND				
97	0,34	0,86					
102	0,36	1,2					
103	0,30	0,17					
104	0,33	0,69					
106	0,34	0,86					
107	0,37	1,4					
109	0,22	-1,1					
111	0,28	-0,17					
114	0,24	-0,88					
115	0,26	-0,52					

Consenus statistics	
Consensus median, pg/g	0,29
Median all values pg/g	0,29
Consensus mean, pg/g	0,29
Standard deviation, pg/g	0,074
Relative standard deviation, %	26
No. of values reported	47
No. of values removed	0
No. of reported non-detects	2


1,2,3,6,7,8 HxCDF
pg/g fw
0,0
0,1
0,2
0,3
0,4
0,5
0,6
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
37 95 56 48 109 94 114 71 73 7 63 70 82 29 115 26 61 40 65 84 111 117 49 52 35 23 103 120 17 50 68 90 20 30 11 66 43 104 59 97 106 54 102 107 15 18 45
Labcode

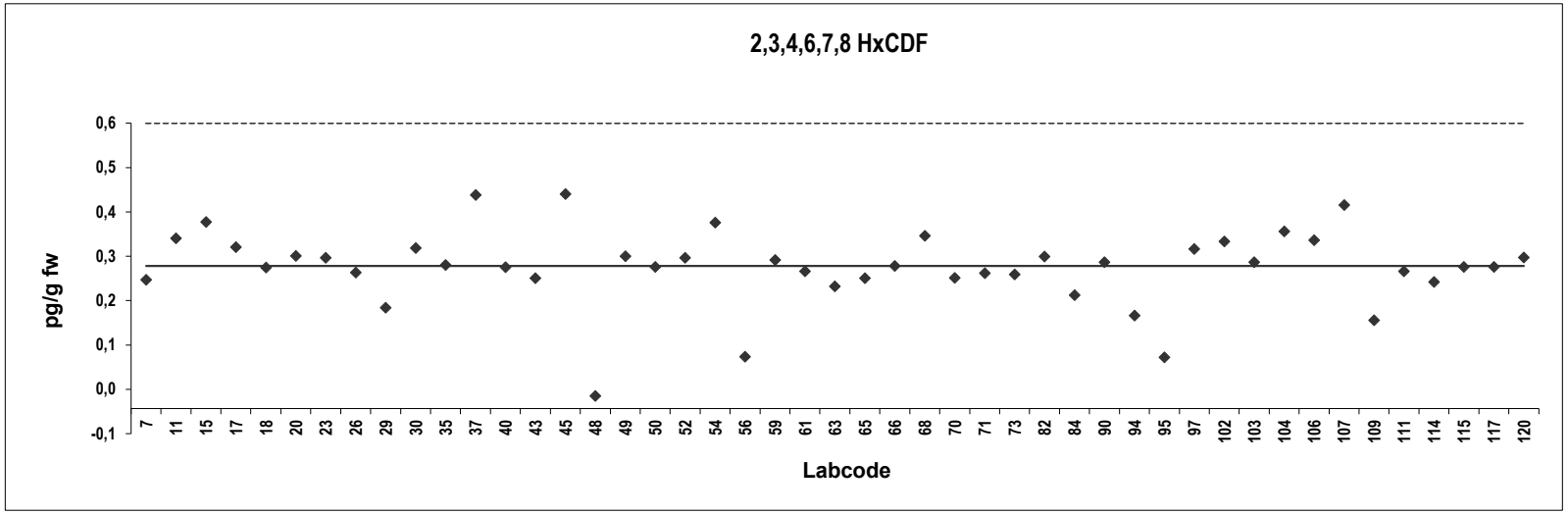
Fish oil

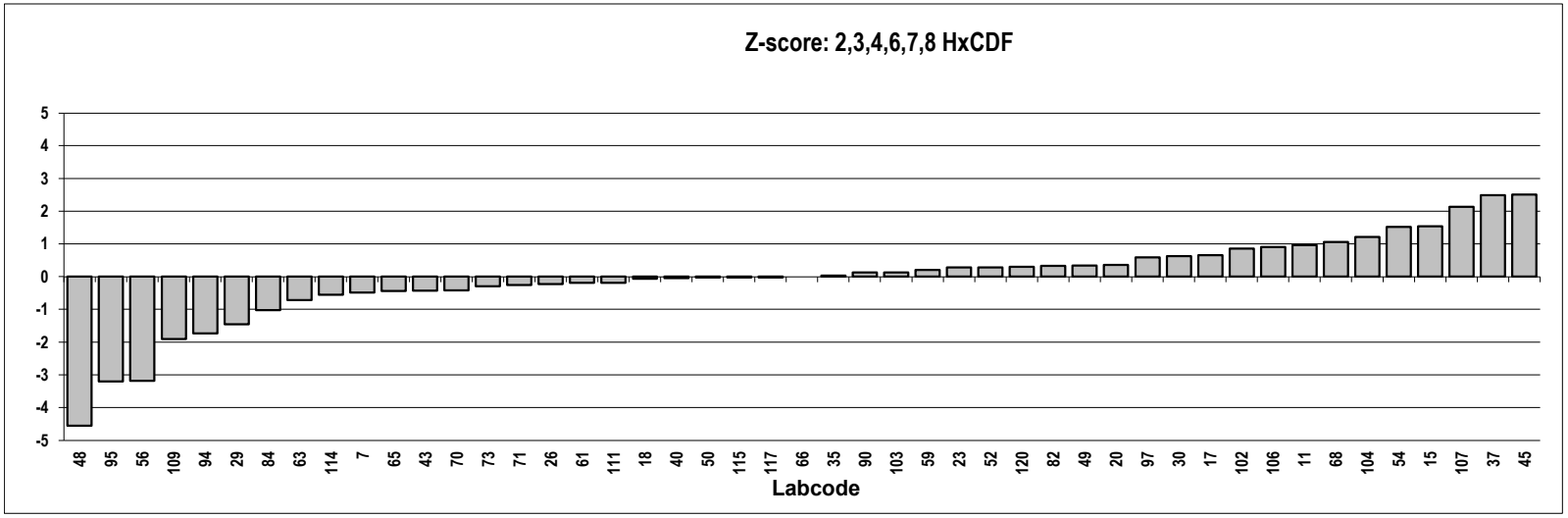
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,29	-0,49		117	0,32	-0,030	
11	0,38	0,96		120	0,34	0,30	
15	0,42	1,5					
17	0,36	0,65					
18	0,32	-0,062					
20	0,34	0,35					
23	0,34	0,28					
26	0,31	-0,23					
29	0,23	-1,5					
30	0,36	0,62					
35	0,32	0,032					
37	0,48	2,5					
40	0,32	-0,046					
43	0,29	-0,43					
45	0,48	2,5					
48	0,028	-4,6	ND				
49	0,34	0,34					
50	0,32	-0,030					
52	0,34	0,28					
54	0,42	1,5					
56	0,12	-3,2					
59	0,34	0,21					
61	0,31	-0,19					
63	0,28	-0,71					
65	0,29	-0,43					
66	0,32	0,0					
68	0,39	1,1					
70	0,30	-0,42					
71	0,31	-0,26					
73	0,30	-0,29					
82	0,34	0,33					
84	0,26	-1,0					
90	0,33	0,12					
94	0,21	-1,7					
95	0,12	-3,2	ND				
97	0,36	0,59					
102	0,38	0,85					
103	0,33	0,12					
104	0,40	1,2					
106	0,38	0,90					
107	0,46	2,1					
109	0,20	-1,9					
111	0,31	-0,19					
114	0,29	-0,56					
115	0,32	-0,03					

Consenus statistics

Consensus median, pg/g	0,32
Median all values pg/g	0,32
Consensus mean, pg/g	0,32
Standard deviation, pg/g	0,086
Relative standard deviation, %	27
No. of values reported	47
No. of values removed	0
No. of reported non-detects	2


2,3,4,6,7,8 HxCDF
pg/g fw
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
48 95 56 109 94 29 84 63 114 7 65 43 70 73 71 26 61 111 18 40 50 115 117 66 35 90 103 59 23 52 120 82 49 20 97 30 17 102 106 11 68 104 54 15 107 37 45
Labcode

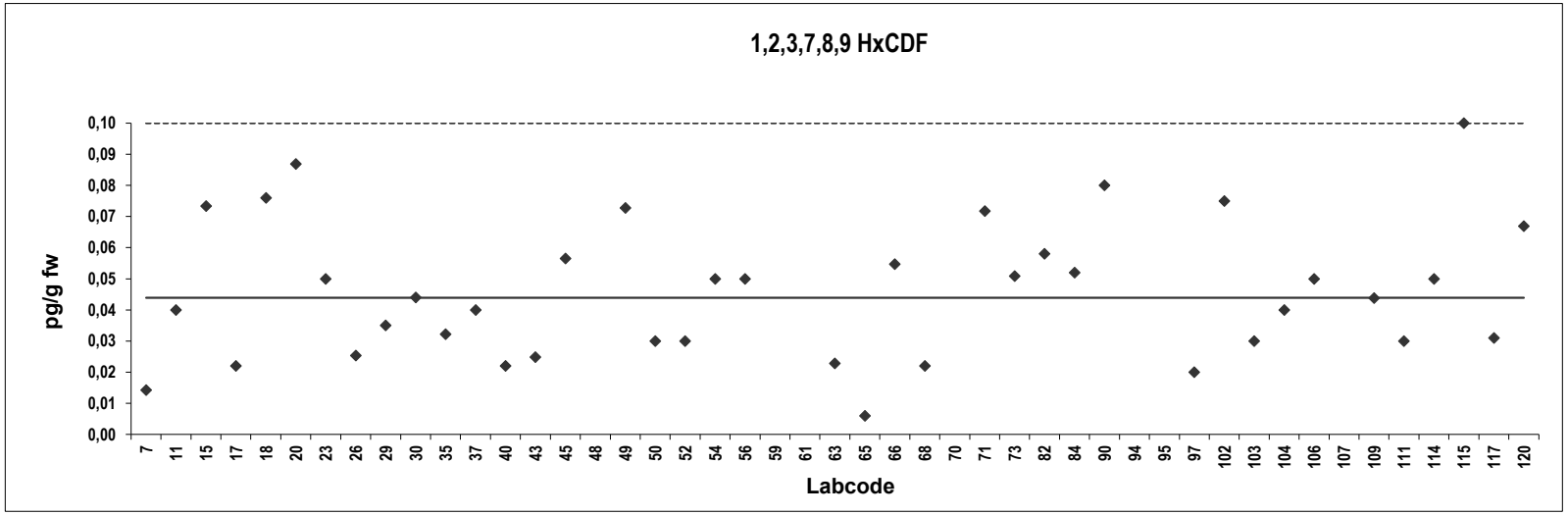
Fish oil

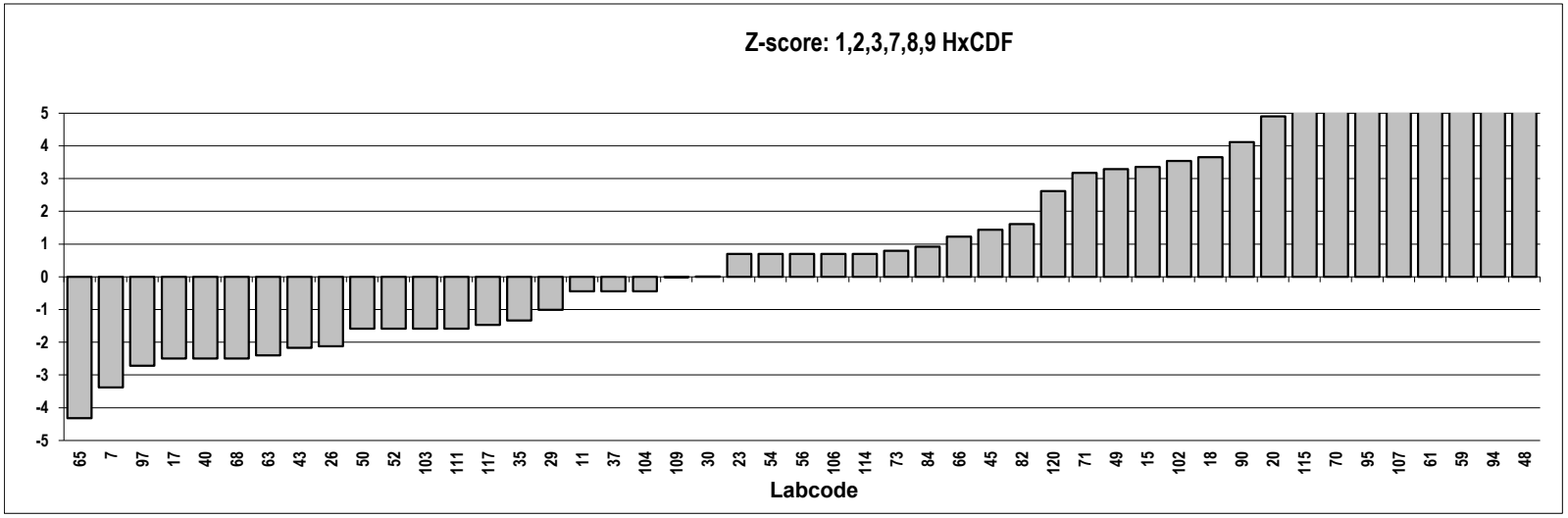
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,014	-3,4		117	0,031	-1,5	
11	0,040	-0,44	ND	120	0,067	2,6	
15	0,073	3,4					
17	0,022	-2,5					
18	0,076	3,7	ND				
20	0,087	4,9					
23	0,050	0,70	ND				
26	0,025	-2,1	ND				
29	0,035	-1,0					
30	0,044	0,012	ND				
35	0,032	-1,3					
37	0,040	-0,44	ND				
40	0,022	-2,5	ND				
43	0,025	-2,2	ND				
45	0,056	1,4					
48	0,43	44	Outlier				
49	0,073	3,3					
50	0,030	-1,6	ND				
52	0,030	-1,6	ND				
54	0,050	0,70	ND				
56	0,050	0,70	ND				
59	0,17	15	Outlier,ND				
61	0,17	14	Outlier,ND				
63	0,023	-2,4					
65	0,0060	-4,3					
66	0,055	1,2					
68	0,022	-2,5	ND				
70	0,11	7,5	Outlier,ND				
71	0,072	3,2					
73	0,051	0,80					
82	0,058	1,6	ND				
84	0,052	0,92	ND				
90	0,080	4,1	ND				
94	0,26	24	Outlier,ND				
95	0,14	11	Outlier,ND				
97	0,020	-2,7	ND				
102	0,075	3,5	ND				
103	0,030	-1,6	ND				
104	0,040	-0,44	ND				
106	0,050	0,70	ND				
107	0,17	14	Outlier,ND				
109	0,044	-0,012					
111	0,030	-1,6	ND				
114	0,050	0,70	ND				
115	0,10	6,4	ND				

Consenus statistics

Consensus median, pg/g	0,044
Median all values pg/g	0,050
Consensus mean, pg/g	0,046
Standard deviation, pg/g	0,022
Relative standard deviation, %	48
No. of values reported	47
No. of values removed	7
No. of reported non-detects	30


1,2,3,7,8,9 HxCDF
pg/g fw
0,10
0,09
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
65 7 97 17 40 68 63 43 26 50 52 103 111 117 35 29 11 37 104 109 30 23 54 56 106 114 73 84 66 45 82 120 71 49 15 102 18 90 20 115 70 95 107 61 59 94 48
Labcode

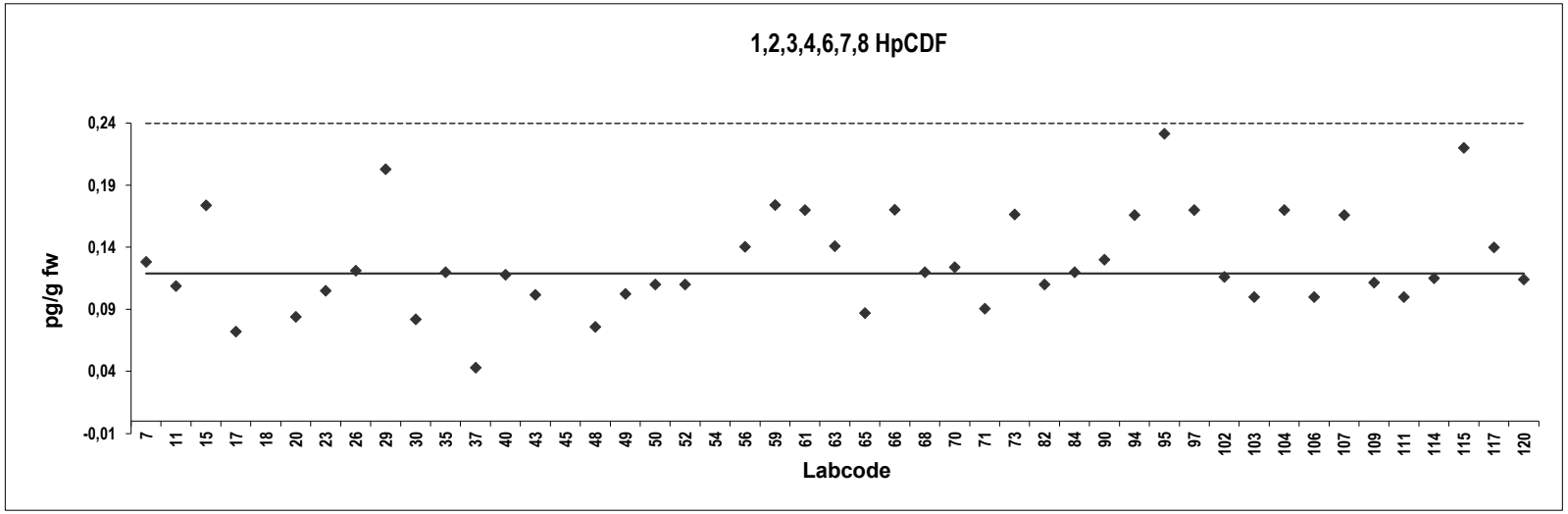
Fish oil

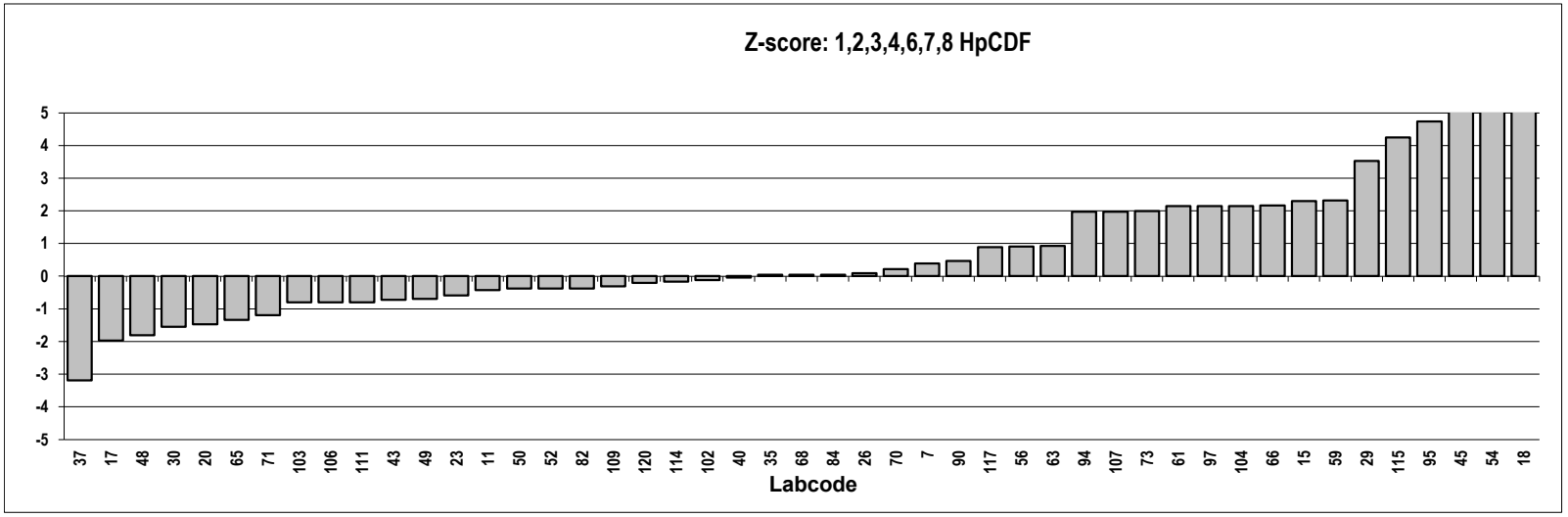
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,13	0,39		117	0,14	0,88	
11	0,11	-0,43		120	0,11	-0,21	
15	0,17	2,3					
17	0,072	-2,0					
18	0,65	22	Outlier				
20	0,084	-1,5					
23	0,11	-0,59					
26	0,12	0,088					
29	0,20	3,5					
30	0,082	-1,6					
35	0,12	0,042					
37	0,043	-3,2	ND				
40	0,12	-0,042					
43	0,10	-0,72					
45	0,26	6,1	Outlier				
48	0,076	-1,8					
49	0,10	-0,69					
50	0,11	-0,38					
52	0,11	-0,38					
54	0,34	9,4	Outlier				
56	0,14	0,90					
59	0,17	2,3	ND				
61	0,17	2,1	ND				
63	0,14	0,92					
65	0,087	-1,3					
66	0,17	2,2					
68	0,12	0,042					
70	0,12	0,21					
71	0,090	-1,2					
73	0,17	2,0					
82	0,11	-0,38					
84	0,12	0,042					
90	0,13	0,46					
94	0,17	2,0	ND				
95	0,23	4,7					
97	0,17	2,1					
102	0,12	-0,13					
103	0,10	-0,80					
104	0,17	2,1					
106	0,10	-0,80	ND				
107	0,17	2,0	ND				
109	0,11	-0,32					
111	0,10	-0,80					
114	0,12	-0,17					
115	0,22	4,2					

Consenus statistics

Consensus median, pg/g	0,12
Median all values pg/g	0,12
Consensus mean, pg/g	0,13
Standard deviation, pg/g	0,040
Relative standard deviation, %	31
No. of values reported	47
No. of values removed	3
No. of reported non-detects	6


1,2,3,4,6,7,8 HpCDF
pg/g fw
0,24
0,19
0,14
0,09
0,04
-0,01
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
37 17 48 30 20 65 71 103 106 111 43 49 23 11 50 52 82 109 120 114 102 40 35 68 84 26 70 7 90 117 56 63 94 107 73 61 97 104 66 15 59 29 115 95 45 54 18
Labcode

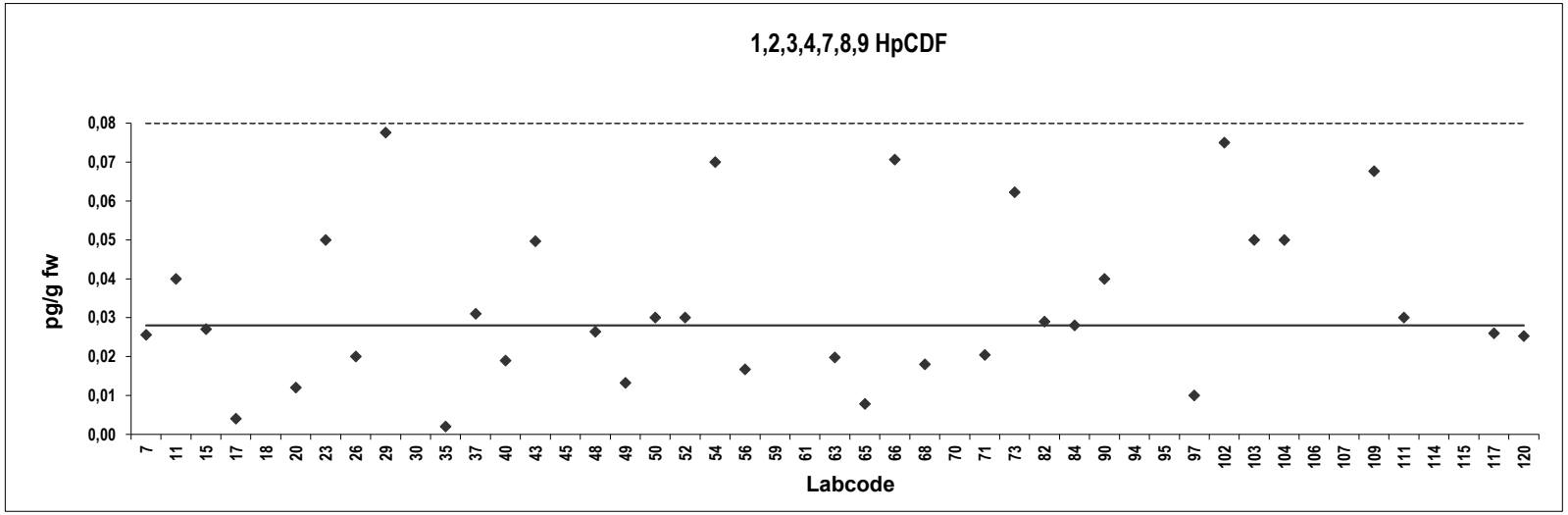
Fish oil

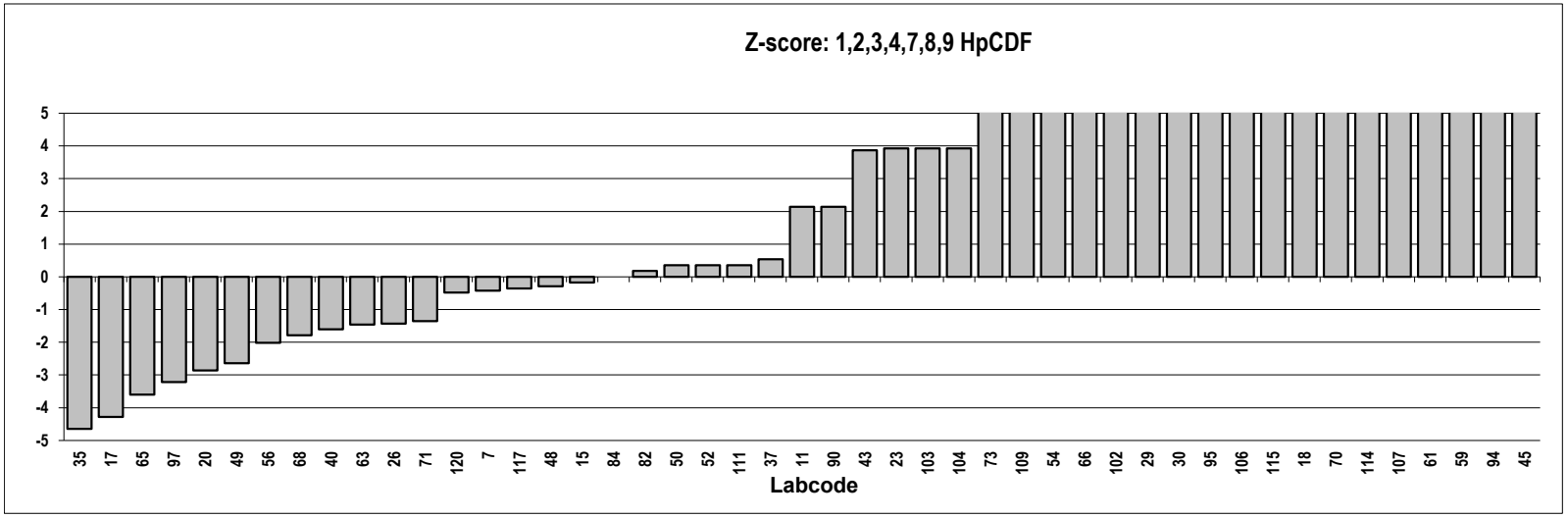
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,026	-0,43		117	0,026	-0,36	
11	0,040	2,1	ND	120	0,025	-0,48	ND
15	0,027	-0,18					
17	0,0040	-4,3	ND				
18	0,10	13	Outlier,ND				
20	0,012	-2,9	ND				
23	0,050	3,9	ND				
26	0,020	-1,4	ND				
29	0,078	8,9					
30	0,089	11	Outlier,ND				
35	0,0020	-4,6					
37	0,031	0,54	ND				
40	0,019	-1,6	ND				
43	0,050	3,9	ND				
45	0,26	41	Outlier				
48	0,026	-0,29	ND				
49	0,013	-2,6					
50	0,030	0,36	ND				
52	0,030	0,36	ND				
54	0,070	7,5	ND				
56	0,017	-2,0					
59	0,17	26	Outlier,ND				
61	0,17	25	Outlier,ND				
63	0,020	-1,5					
65	0,0079	-3,6					
66	0,071	7,6					
68	0,018	-1,8					
70	0,13	18	Outlier,ND				
71	0,020	-1,4					
73	0,062	6,1					
82	0,029	0,18	ND				
84	0,028	0,0	ND				
90	0,040	2,1	ND				
94	0,25	39	Outlier,ND				
95	0,093	12	Outlier,ND				
97	0,010	-3,2	ND				
102	0,075	8,4	ND				
103	0,050	3,9	ND				
104	0,050	3,9					
106	0,10	13	Outlier,ND				
107	0,17	25	Outlier,ND				
109	0,068	7,1					
111	0,030	0,36	ND				
114	0,15	22	Outlier,ND				
115	0,10	13	Outlier,ND				

Consenus statistics

Consensus median, pg/g	0,028
Median all values pg/g	0,040
Consensus mean, pg/g	0,034
Standard deviation, pg/g	0,021
Relative standard deviation, %	63
No. of values reported	47
No. of values removed	12
No. of reported non-detects	31


1,2,3,4,7,8,9 HpCDF
pg/g fw
0,08
0,07
0,06
0,05
0,04
0,03
0,02
0,01
0,00
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
35 17 65 97 20 49 56 68 40 63 26 71 120 7 117 48 15 84 82 50 52 111 37 11 90 43 23 103 104 73 109 54 66 102 29 30 95 106 115 18 70 114 107 61 59 94 45
Labcode

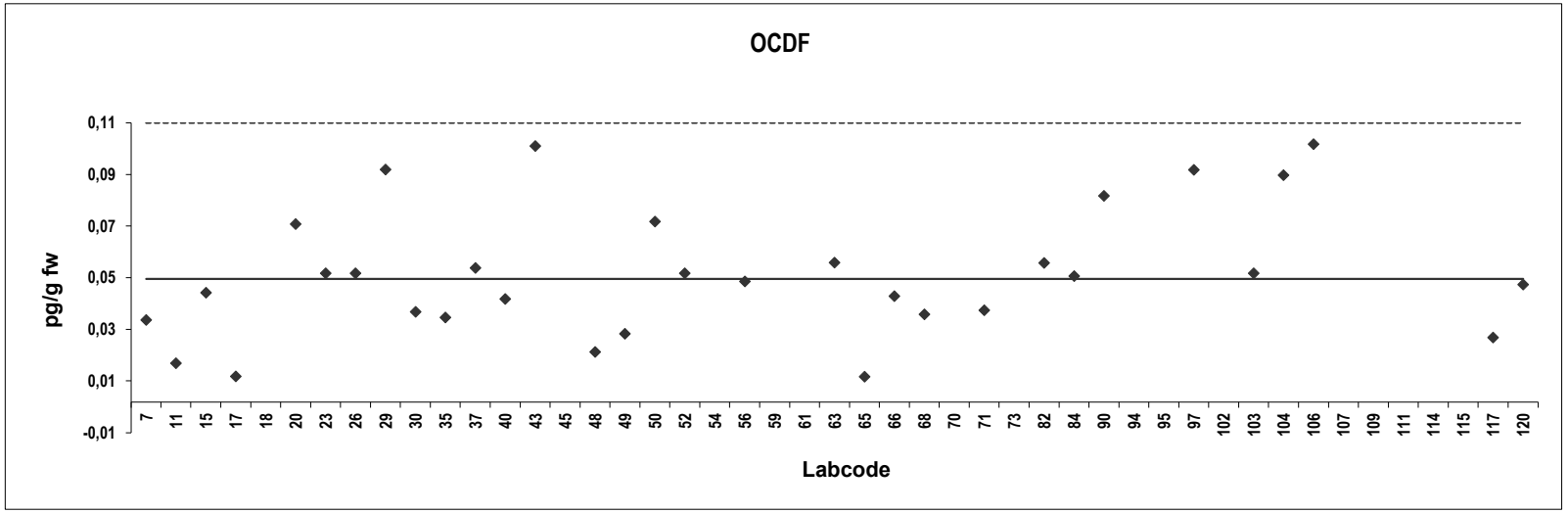
Fish oil

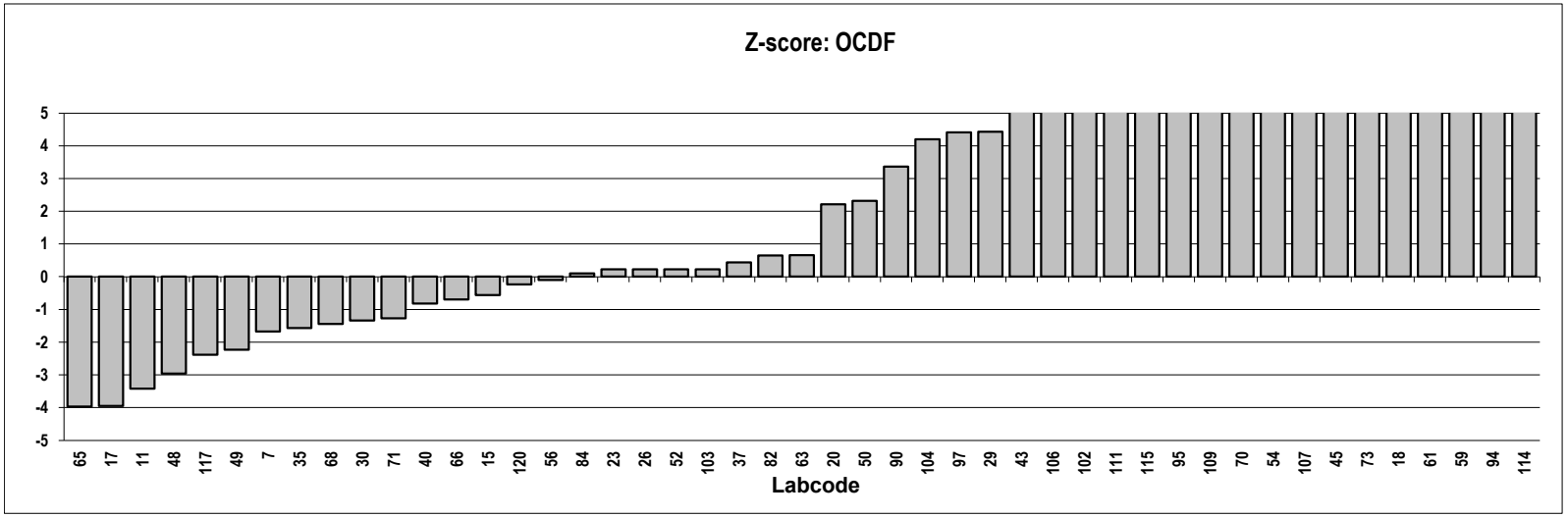
Congener: OCDF

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	0,032	-1,7		117	0,025	-2,4	
11	0,015	-3,4		120	0,046	-0,23	ND
15	0,042	-0,56					
17	0,010	-4,0	ND				
18	0,41	38	Outlier				
20	0,069	2,2	ND				
23	0,050	0,23	ND				
26	0,050	0,23	ND				
29	0,090	4,4					
30	0,035	-1,3	ND				
35	0,033	-1,6					
37	0,052	0,44	ND				
40	0,040	-0,82	ND				
43	0,099	5,4	ND				
45	0,35	32	Outlier				
48	0,020	-3,0	ND				
49	0,026	-2,2					
50	0,070	2,3	ND				
52	0,050	0,23	ND				
54	0,30	26	Outlier				
56	0,047	-0,10					
59	0,44	41	Outlier,ND				
61	0,42	39	Outlier,ND				
63	0,054	0,66					
65	0,0099	-4,0					
66	0,041	-0,70					
68	0,034	-1,4					
70	0,28	24	Outlier,ND				
71	0,036	-1,3					
73	0,39	36	Outlier				
82	0,054	0,65	ND				
84	0,049	0,10	ND				
90	0,080	3,4	ND				
94	0,67	65	Outlier,ND				
95	0,21	17	Outlier,ND				
97	0,090	4,4					
102	0,15	11	Outlier,ND				
103	0,050	0,23	ND				
104	0,088	4,2					
106	0,10	5,5	ND				
107	0,33	30	Outlier,ND				
109	0,26	22	Outlier				
111	0,20	16	Outlier,ND				
114	2,0	204	Outlier,ND				
115	0,20	16	Outlier,ND				

Consenus statistics

Consensus median, pg/g	0,048
Median all values pg/g	0,054
Consensus mean, pg/g	0,050
Standard deviation, pg/g	0,025
Relative standard deviation, %	50
No. of values reported	47
No. of values removed	15
No. of reported non-detects	27


OCDF
pg/g fw
0,11
0,09
0,07
0,05
0,03
0,01
-0,01
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
65 17 11 48 117 49 7 35 68 30 71 40 66 15 120 56 84 23 26 52 103 37 82 63 20 50 90 104 97 29 43 106 102 111 115 95 109 70 54 107 45 73 18 61 59 94 114
Labcode

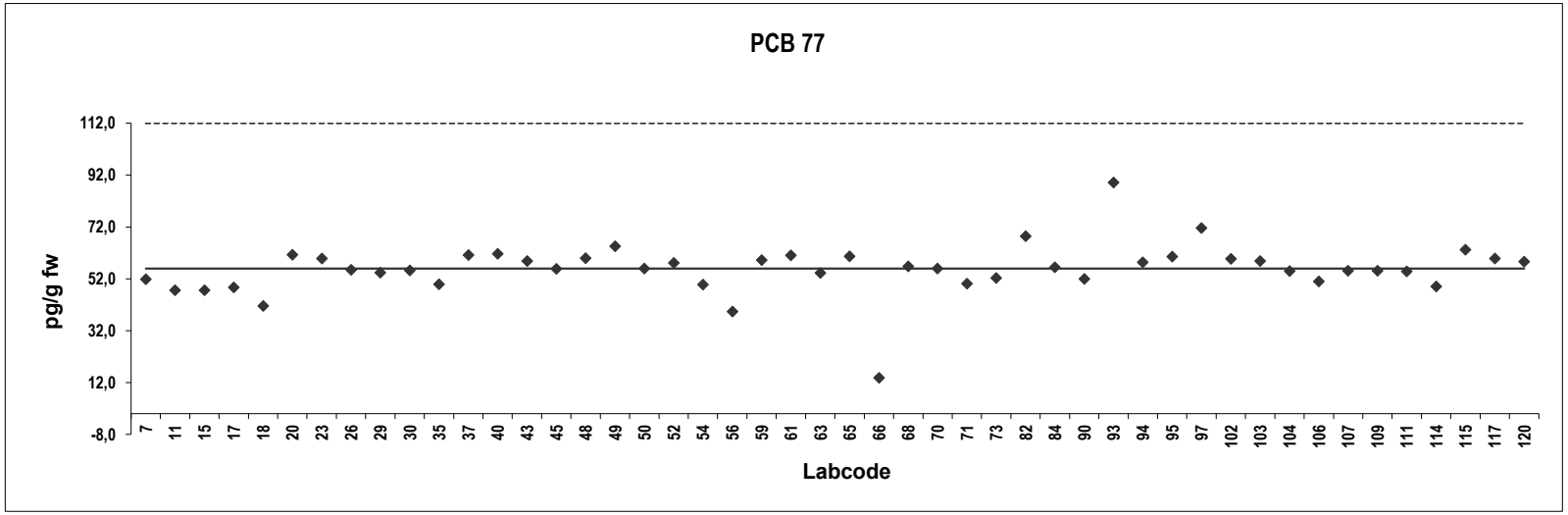
Fish oil

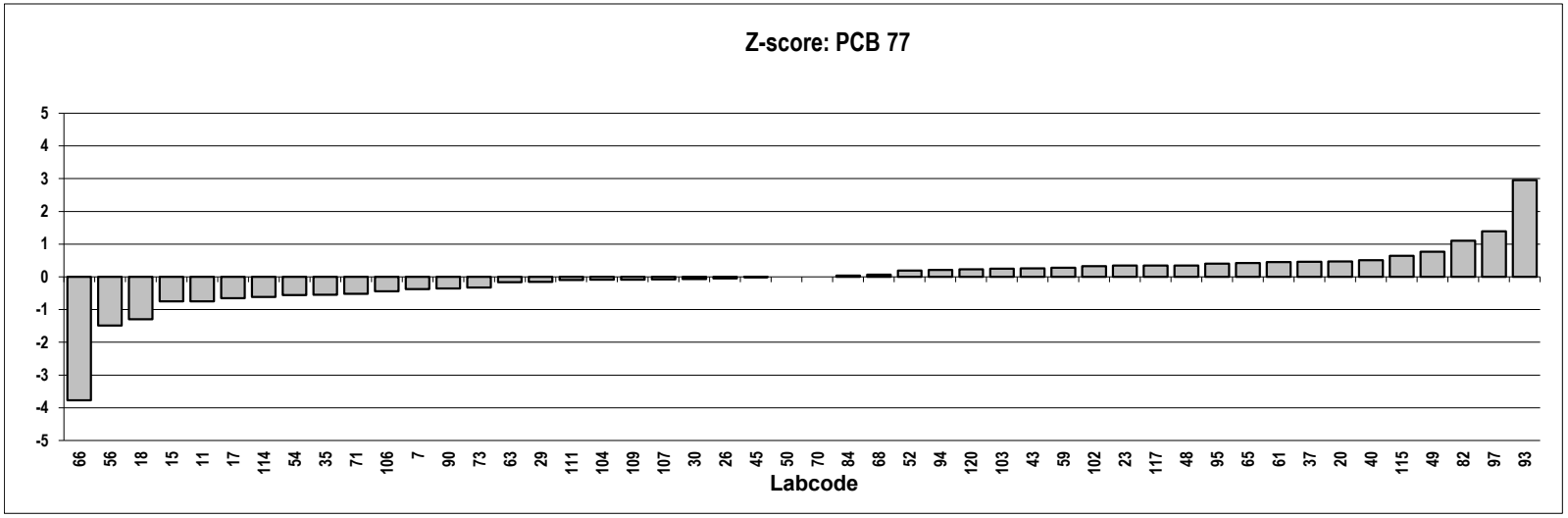
Congener: PCB 77

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	52	-0,37		115	63	0,64	
11	48	-0,75		117	60	0,34	
15	48	-0,75		120	59	0,23	
17	49	-0,65					
18	41	-1,3					
20	61	0,47					
23	60	0,34					
26	55	-0,047					
29	54	-0,15					
30	55	-0,071					
35	50	-0,55					
37	61	0,46					
40	62	0,51					
43	59	0,26					
45	56	-0,014					
48	60	0,35					
49	65	0,77					
50	56	0,0					
52	58	0,19					
54	50	-0,55					
56	39	-1,5					
59	59	0,28					
61	61	0,45					
63	54	-0,16					
65	61	0,42					
66	14	-3,8					
68	57	0,071					
70	56	0,0					
71	50	-0,52					
73	52	-0,33					
82	68	1,1					
84	56	0,036					
90	52	-0,36					
93	89	3,0					
94	58	0,21					
95	61	0,40					
97	72	1,4					
102	60	0,33					
103	59	0,25					
104	55	-0,089					
106	51	-0,45					
107	55	-0,078					
109	55	-0,082					
111	55	-0,10					
114	49	-0,62					

Consenus statistics

Consensus median, pg/g	56
Median all values pg/g	56
Consensus mean, pg/g	56
Standard deviation, pg/g	9,9
Relative standard deviation, %	18
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 77
112,0
92,0
72,0
52,0
32,0
12,0
-8,0
pg/g fw
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 56 18 15 11 17 114 54 35 71 106 7 90 73 63 29 111 104 109 107 30 26 45 50 70 84 68 52 94 120 103 43 59 102 23 117 48 95 65 61 37 20 40 115 49 82 97 93
Labcode

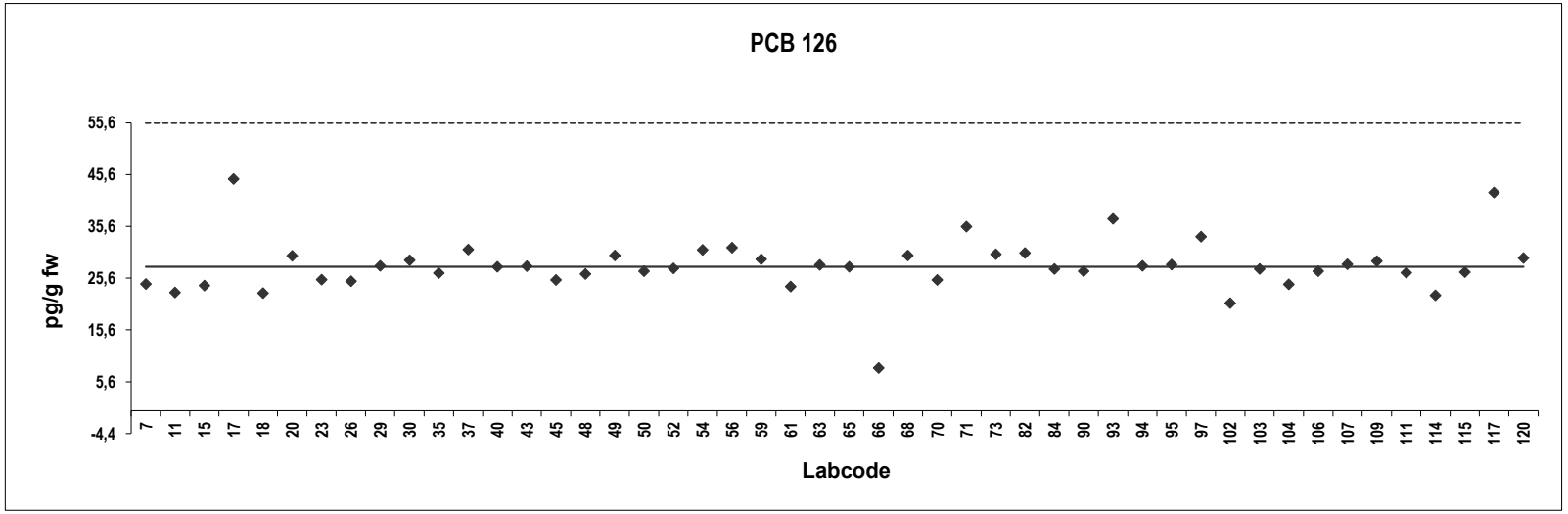
Fish oil

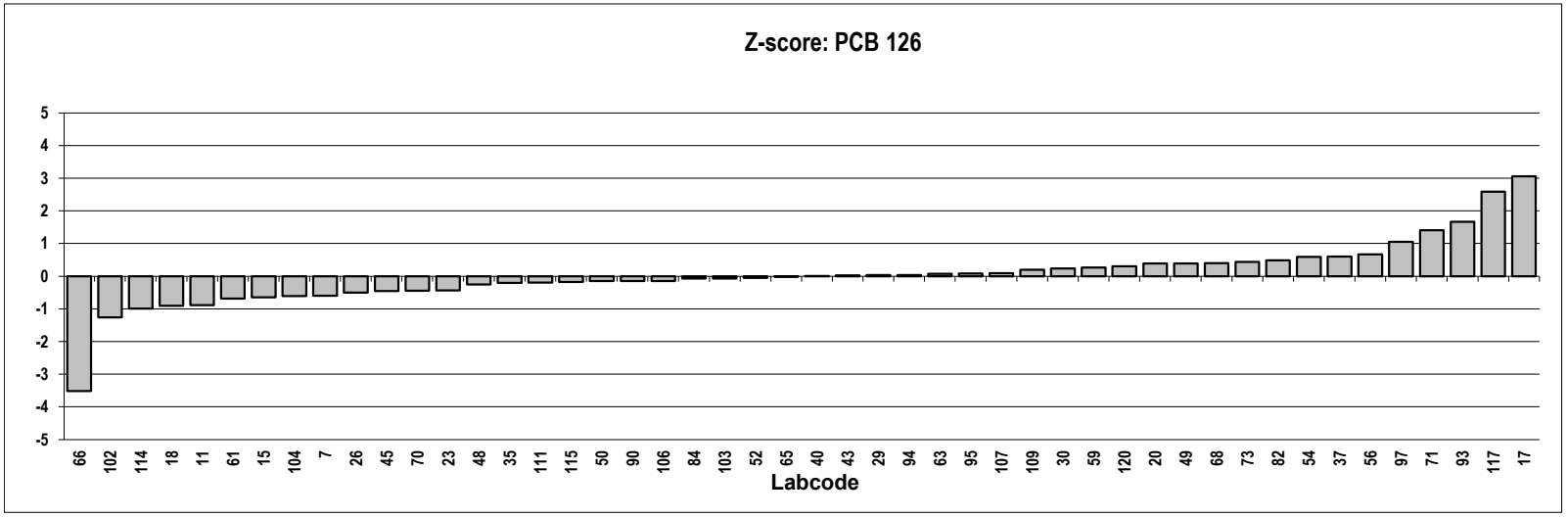
Congener: PCB 126

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	24	-0,59		115	27	-0,18	
11	23	-0,88		117	42	2,6	
15	24	-0,65		120	30	0,31	
17	45	3,1					
18	23	-0,91					
20	30	0,39					
23	25	-0,44					
26	25	-0,50					
29	28	0,033					
30	29	0,23					
35	27	-0,21					
37	31	0,60					
40	28	0,00054					
43	28	0,026					
45	25	-0,45					
48	26	-0,25					
49	30	0,39					
50	27	-0,14					
52	28	-0,054					
54	31	0,59					
56	32	0,67					
59	29	0,27					
61	24	-0,68					
63	28	0,071					
65	28	-0,00054					
66	8,2	-3,5					
68	30	0,40					
70	25	-0,45					
71	36	1,4					
73	30	0,43					
82	31	0,49					
84	27	-0,072					
90	27	-0,14					
93	37	1,67					
94	28	0,035					
95	28	0,084					
97	34	1,0					
102	21	-1,26					
103	27	-0,072					
104	24	-0,61					
106	27	-0,14					
107	28	0,090					
109	29	0,19					
111	27	-0,20					
114	22	-0,99					

Consenus statistics

Consensus median, pg/g	28
Median all values pg/g	28
Consensus mean, pg/g	28
Standard deviation, pg/g	5,3
Relative standard deviation, %	19
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 126
pg/g fw
55,6
45,6
35,6
25,6
15,6
5,6
-4,4
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 102 114 18 11 61 15 104 7 26 45 70 23 48 35 111 115 50 90 106 84 103 52 65 40 43 29 94 63 95 107 109 30 59 120 20 49 68 73 82 54 37 56 97 71 93 117 17
Labcode

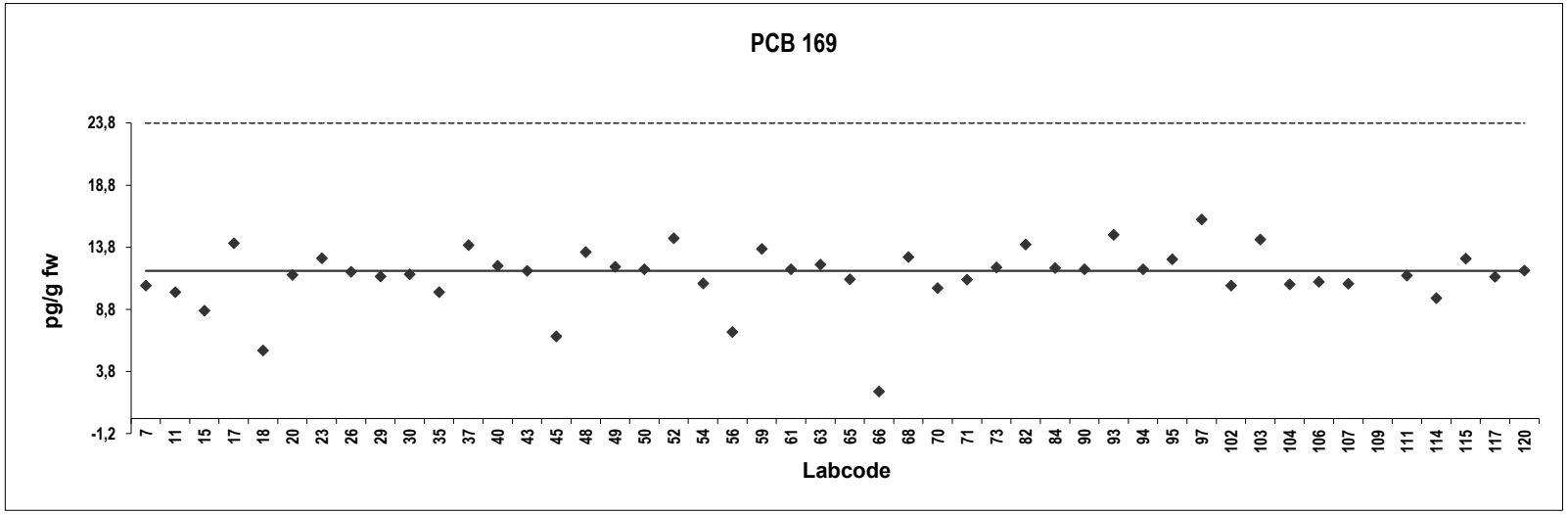
Fish oil

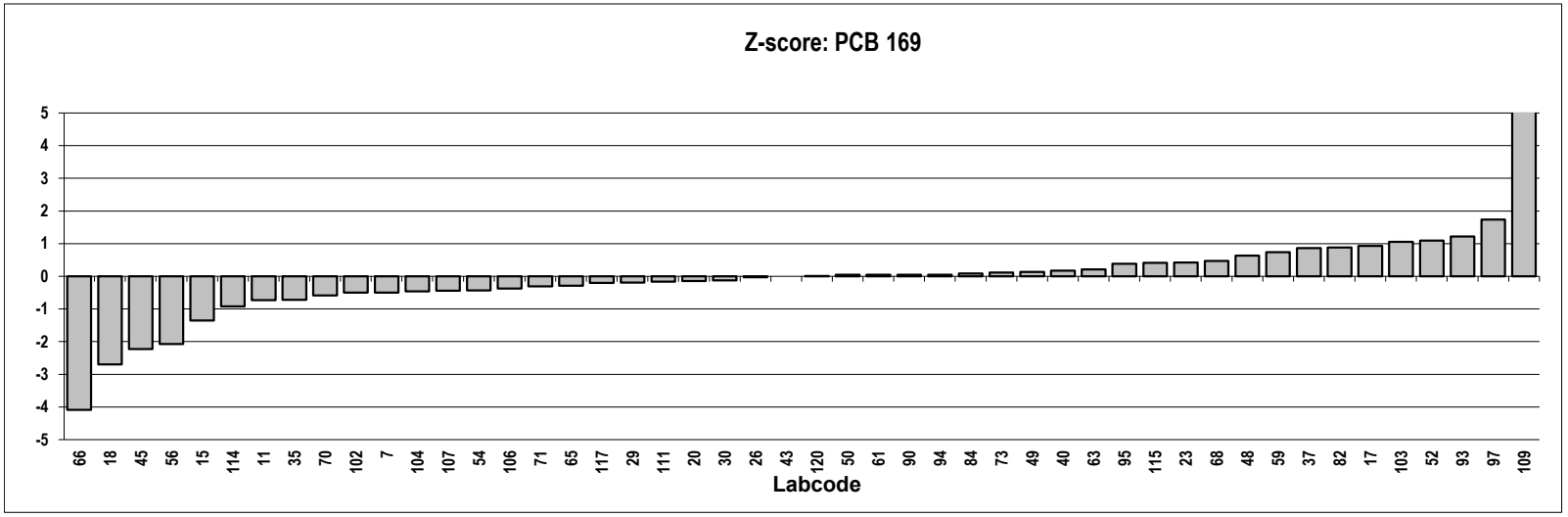
Congener: PCB 169

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	11	-0,50		115	13	0,42	
11	10	-0,73		117	11	-0,20	
15	8,7	-1,4		120	12	0,0041	
17	14	0,93					
18	5,5	-2,7					
20	12	-0,14					
23	13	0,43					
26	12	-0,032					
29	11	-0,19					
30	12	-0,12					
35	10	-0,72					
37	14	0,87					
40	12	0,17					
43	12	0,0					
45	6,6	-2,2					
48	13	0,63					
49	12	0,14					
50	12	0,046					
52	15	1,1					
54	11	-0,43					
56	7,0	-2,1					
59	14	0,74					
61	12	0,046					
63	12	0,21					
65	11	-0,29					
66	2,2	-4,1					
68	13	0,47					
70	11	-0,58					
71	11	-0,30					
73	12	0,11					
82	14	0,89					
84	12	0,088					
90	12	0,046					
93	15	1,2					
94	12	0,046					
95	13	0,39					
97	16	1,7					
102	11	-0,50					
103	14	1,1					
104	11	-0,46					
106	11	-0,37					
107	11	-0,44					
109	38	11	Outlier				
111	12	-0,16					
114	9,7	-0,92					

Consenus statistics

Consensus median, pg/g	12
Median all values pg/g	12
Consensus mean, pg/g	11
Standard deviation, pg/g	2,4
Relative standard deviation, %	21
No. of values reported	48
No. of values removed	1
No. of reported non-detects	0


PCB 169
pg/g fw
23,8
18,8
13,8
8,8
3,8
-1,2
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

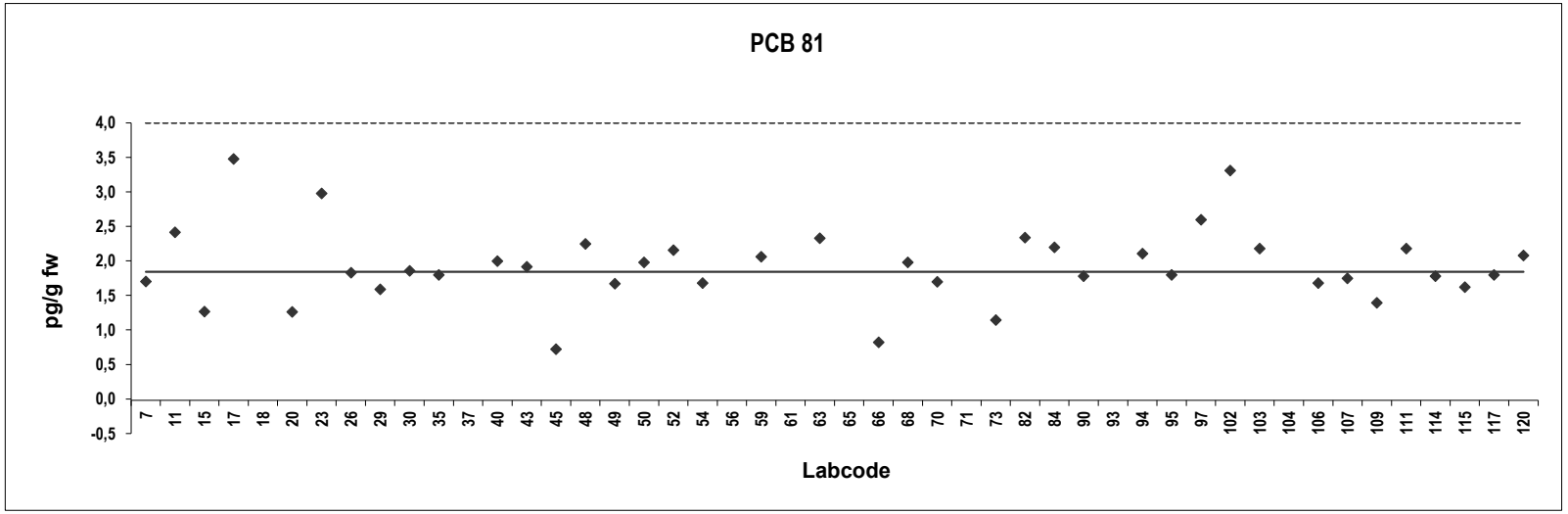

Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 18 45 56 15 114 11 35 70 102 7 104 107 54 106 71 65 117 29 111 20 30 26 43 120 50 61 90 94 84 73 49 40 63 95 115 23 68 48 59 37 82 17 103 52 93 97 109
Labcode

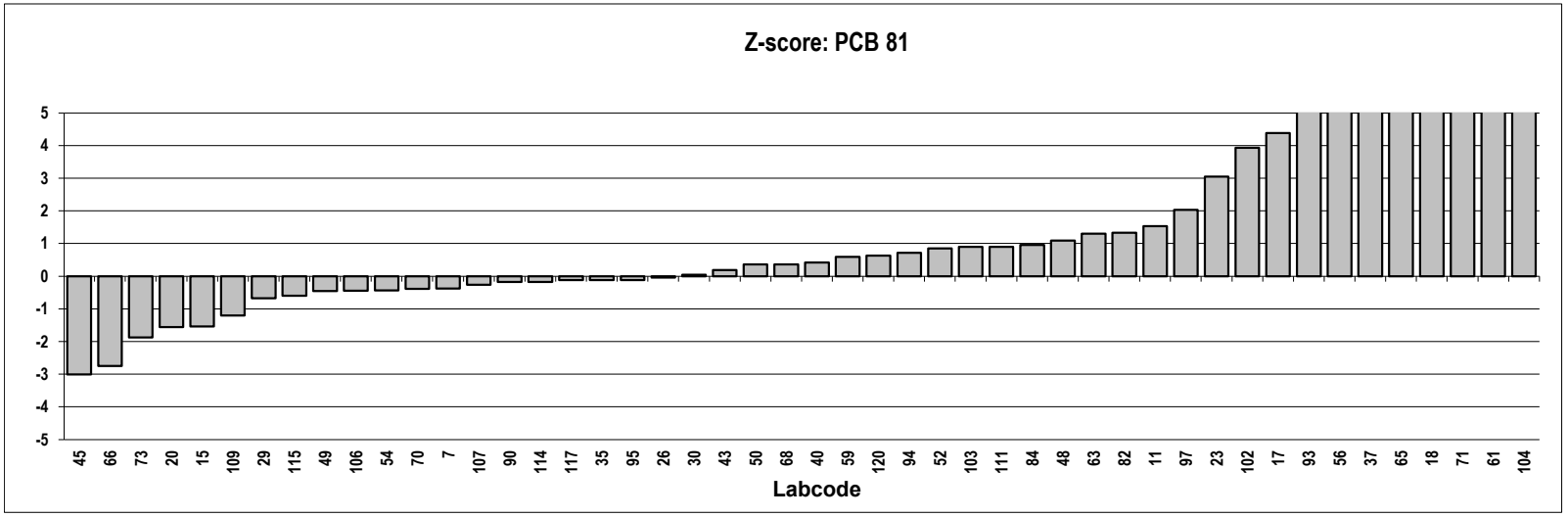
Fish oil

Congener: PCB 81

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	1,7	-0,38		115	1,6	-0,60	
11	2,4	1,5		117	1,8	-0,12	
15	1,3	-1,5		120	2,1	0,63	
17	3,5	4,4					
18	17	41	Outlier				
20	1,3	-1,6					
23	3,0	3,0					
26	1,8	-0,042					
29	1,6	-0,68					
30	1,9	0,042					
35	1,8	-0,12					
37	5,2	9,0	Outlier				
40	2,0	0,42					
43	1,9	0,19					
45	0,74	-3,0	ND				
48	2,3	1,1					
49	1,7	-0,46					
50	2,0	0,36					
52	2,2	0,85					
54	1,7	-0,44					
56	5,0	8,4	Outlier,ND				
59	2,1	0,59					
61	50	129	Outlier,ND				
63	2,4	1,3					
65	16	38	Outlier				
66	0,84	-2,7					
68	2,0	0,36					
70	1,7	-0,39					
71	20	49	Outlier				
73	1,2	-1,9					
82	2,4	1,3					
84	2,2	0,95					
90	1,8	-0,17					
93	4,6	7,2	Outlier				
94	2,1	0,71					
95	1,8	-0,12					
97	2,6	2,0					
102	3,3	3,9	ND				
103	2,2	0,90					
104	55	143	Outlier				
106	1,7	-0,44					
107	1,8	-0,26					
109	1,4	-1,2					
111	2,2	0,90					
114	1,8	-0,17					

Consenus statistics	
Consensus median, pg/g	1,9
Median all values pg/g	2,0
Consensus mean, pg/g	2,0
Standard deviation, pg/g	0,55
Relative standard deviation, %	28
No. of values reported	48
No. of values removed	8
No. of reported non-detects	4


PCB 81
pg/g fw
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
-0,5
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 66 73 20 15 109 29 115 49 106 54 70 7 107 90 114 117 35 95 26 30 43 50 68 40 59 120 94 52 103 111 84 48 63 82 11 97 23 102 17 93 56 37 65 18 71 61 104
Labcode

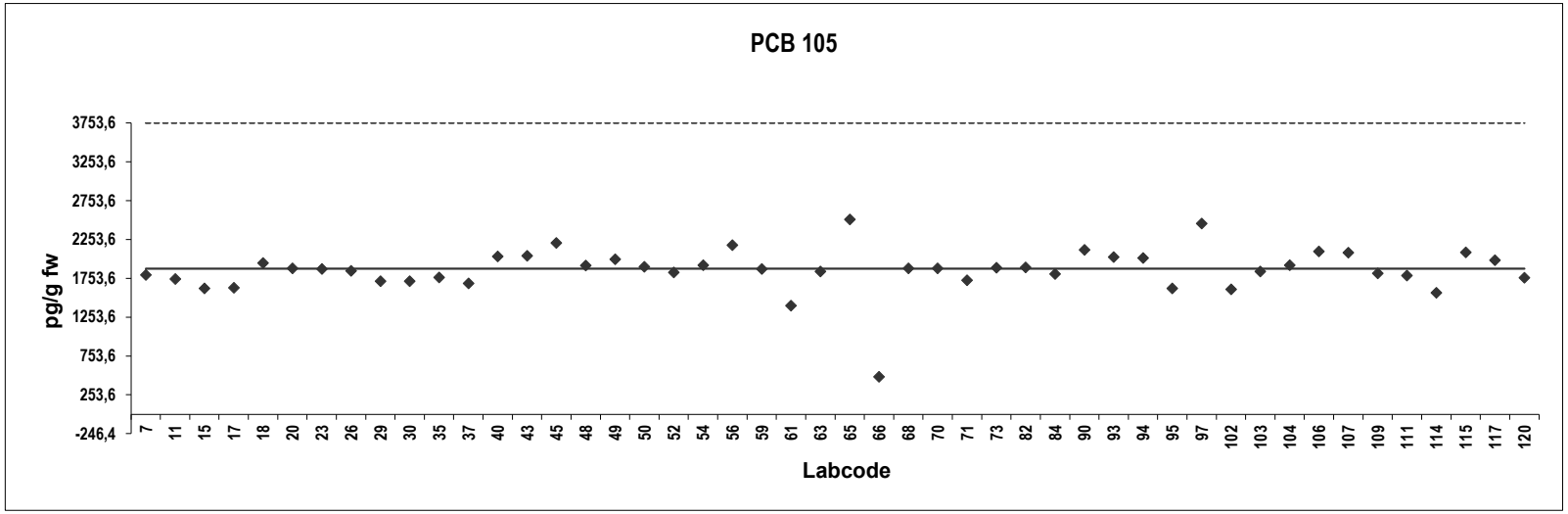
Fish oil

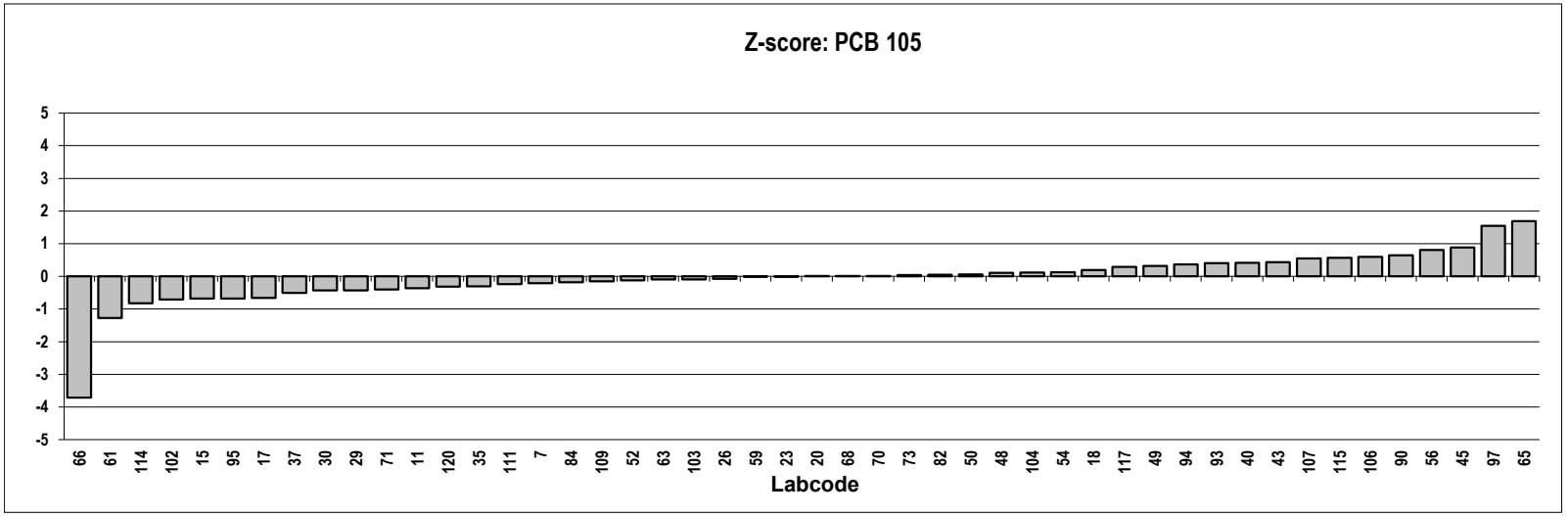
Congener: PCB 105

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	1797	-0,21		115	2089	0,56	
11	1742	-0,36		117	1985	0,29	
15	1622	-0,68		120	1760	-0,31	
17	1630	-0,66					
18	1949	0,19					
20	1879	0,0064					
23	1874	-0,0064					
26	1850	-0,072					
29	1715	-0,43					
30	1715	-0,43					
35	1763	-0,30					
37	1688	-0,50					
40	2033	0,42					
43	2041	0,44					
45	2209	0,89					
48	1916	0,10					
49	1998	0,32					
50	1900	0,062					
52	1830	-0,12					
54	1922	0,12					
56	2180	0,81					
59	1874	-0,0074					
61	1400	-1,3					
63	1840	-0,10					
65	2511	1,7					
66	484	-3,7					
68	1880	0,0086					
70	1880	0,0086					
71	1728	-0,40					
73	1890	0,036					
82	1894	0,046					
84	1810	-0,18					
90	2120	0,65					
93	2028	0,40					
94	2015	0,37					
95	1623	-0,68					
97	2458	1,5					
102	1610	-0,71					
103	1840	-0,10					
104	1920	0,12					
106	2100	0,59					
107	2084	0,55					
109	1818	-0,16					
111	1787	-0,24					
114	1567	-0,83					

Consenus statistics

Consensus median, pg/g	1877
Median all values pg/g	1877
Consensus mean, pg/g	1859
Standard deviation, pg/g	290
Relative standard deviation, %	16
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 105
pg/g fw
3753,6
3253,6
2753,6
2253,6
1753,6
1253,6
753,6
253,6
-246,4
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 61 114 102 15 95 17 37 30 29 71 11 120 35 111 7 84 109 52 63 103 26 59 23 20 68 70 73 82 50 48 104 54 18 117 49 94 93 40 43 107 115 106 90 56 45 97 65
Labcode

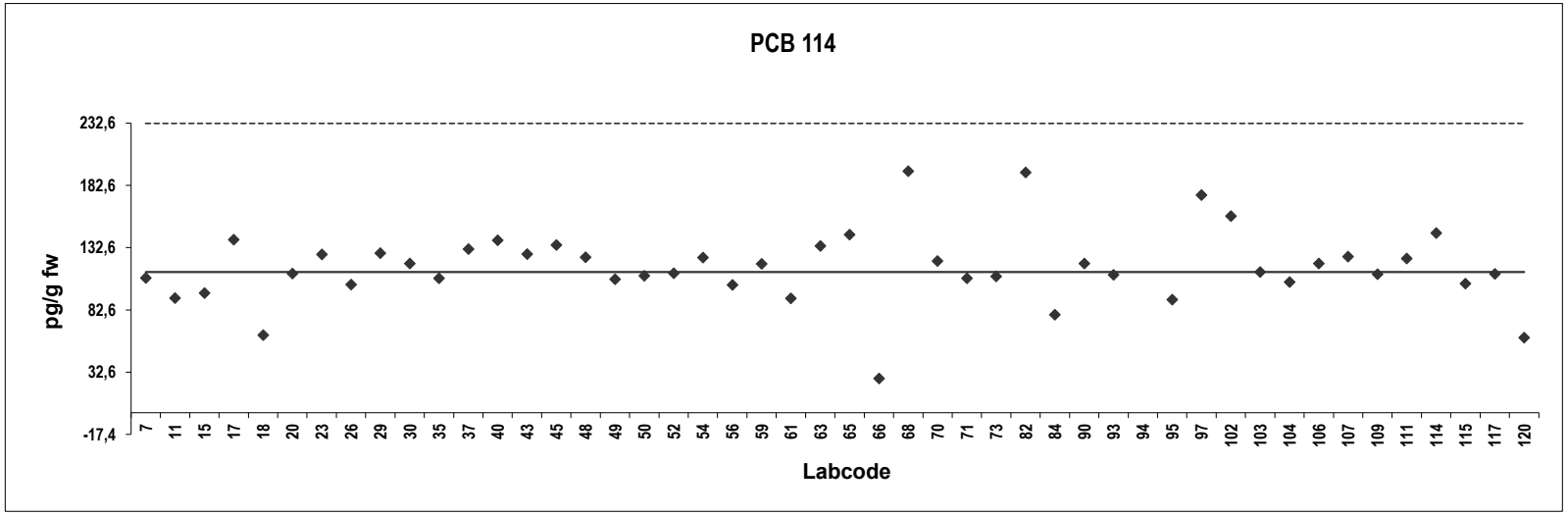
Fish oil

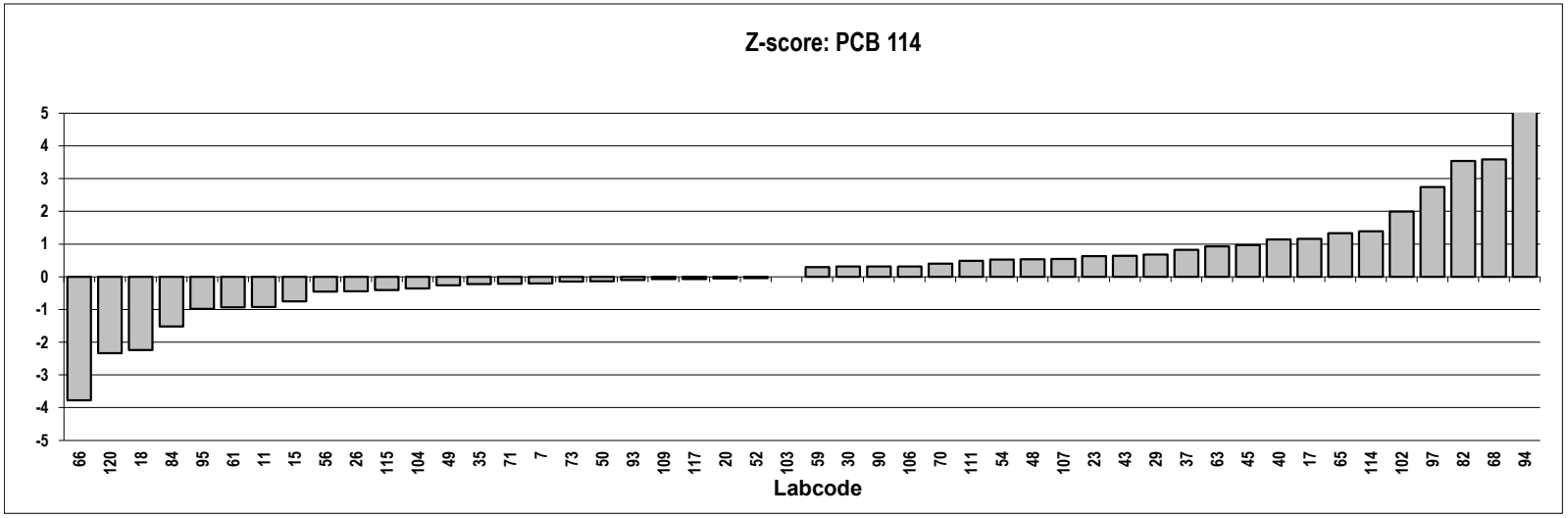
Congener: PCB 114

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	108	-0,21		115	104	-0,41	
11	92	-0,92		117	112	-0,066	
15	96	-0,75		120	60	-2,3	
17	139	1,2					
18	62	-2,2					
20	112	-0,049					
23	127	0,63					
26	103	-0,44					
29	128	0,68					
30	120	0,31					
35	108	-0,22					
37	132	0,82					
40	139	1,1					
43	127	0,64					
45	135	0,96					
48	125	0,53					
49	107	-0,26					
50	110	-0,13					
52	112	-0,044					
54	125	0,52					
56	103	-0,45					
59	120	0,29					
61	92	-0,93					
63	134	0,93					
65	143	1,3					
66	28	-3,8					
68	194	3,6					
70	122	0,40					
71	108	-0,22					
73	110	-0,15					
82	193	3,5					
84	79	-1,5					
90	120	0,31					
93	111	-0,10					
94	237	5,5	Outlier				
95	91	-0,98					
97	175	2,7					
102	158	2,0					
103	113	0,0					
104	105	-0,35					
106	120	0,31					
107	125	0,55					
109	111	-0,074					
111	124	0,49					
114	144	1,4					

Consenus statistics

Consensus median, pg/g	113
Median all values pg/g	116
Consensus mean, pg/g	117
Standard deviation, pg/g	29
Relative standard deviation, %	25
No. of values reported	48
No. of values removed	1
No. of reported non-detects	0


PCB 114
232,6
182,6
132,6
82,6
32,6
-17,4
pg/g fw
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 120 18 84 95 61 11 15 56 26 115 104 49 35 71 7 73 50 93 109 117 20 52 103 59 30 90 106 70 111 54 48 107 23 43 29 37 63 45 40 17 65 114 102 97 82 68 94
Labcode

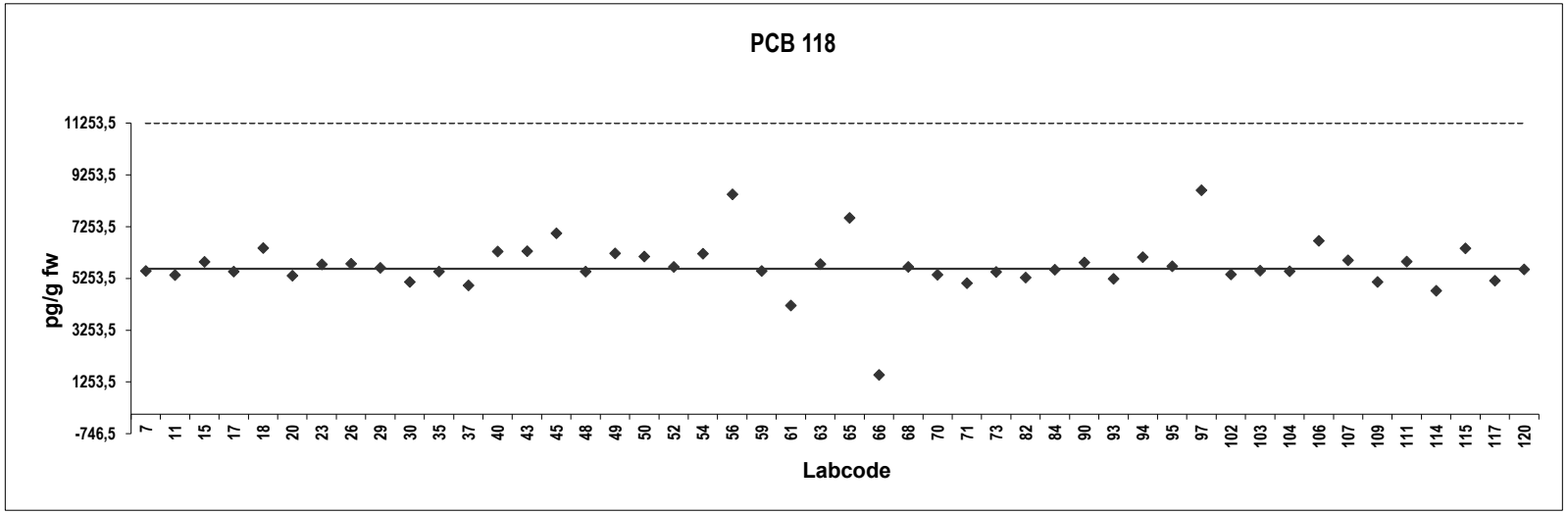
Fish oil

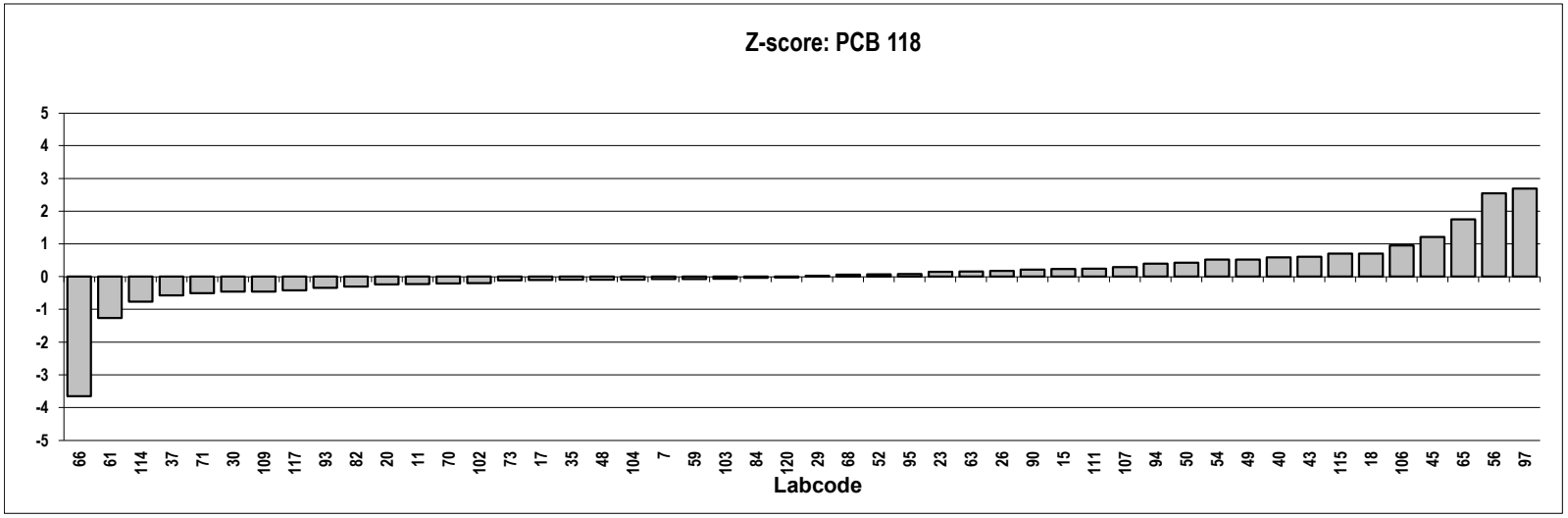
Congener: PCB 118

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	5539	-0,078		115	6417	0,70	
11	5375	-0,22		117	5159	-0,42	
15	5889	0,23		120	5600	-0,024	
17	5510	-0,10					
18	6418	0,70					
20	5355	-0,24					
23	5792	0,15					
26	5820	0,17					
29	5654	0,024					
30	5107	-0,46					
35	5518	-0,097					
37	4984	-0,57					
40	6288	0,59					
43	6306	0,60					
45	6991	1,2					
48	5519	-0,096					
49	6214	0,52					
50	6100	0,42					
52	5700	0,065					
54	6208	0,52					
56	8497	2,6					
59	5542	-0,075					
61	4200	-1,3					
63	5800	0,15					
65	7593	1,7					
66	1519	-3,7					
68	5690	0,056					
70	5390	-0,21					
71	5058	-0,51					
73	5504	-0,11					
82	5285	-0,30					
84	5586	-0,036					
90	5870	0,22					
93	5236	-0,35					
94	6075	0,40					
95	5719	0,082					
97	8657	2,7					
102	5400	-0,20					
103	5550	-0,068					
104	5520	-0,095					
106	6700	0,95					
107	5951	0,29					
109	5111	-0,46					
111	5897	0,24					
114	4770	-0,76					

Consenus statistics

Consensus median, pg/g	5627
Median all values pg/g	5627
Consensus mean, pg/g	5741
Standard deviation, pg/g	1022
Relative standard deviation, %	18
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 118
11253,5
9253,5
7253,5
5253,5
3253,5
1253,5
-746,5
pg/g fw
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode

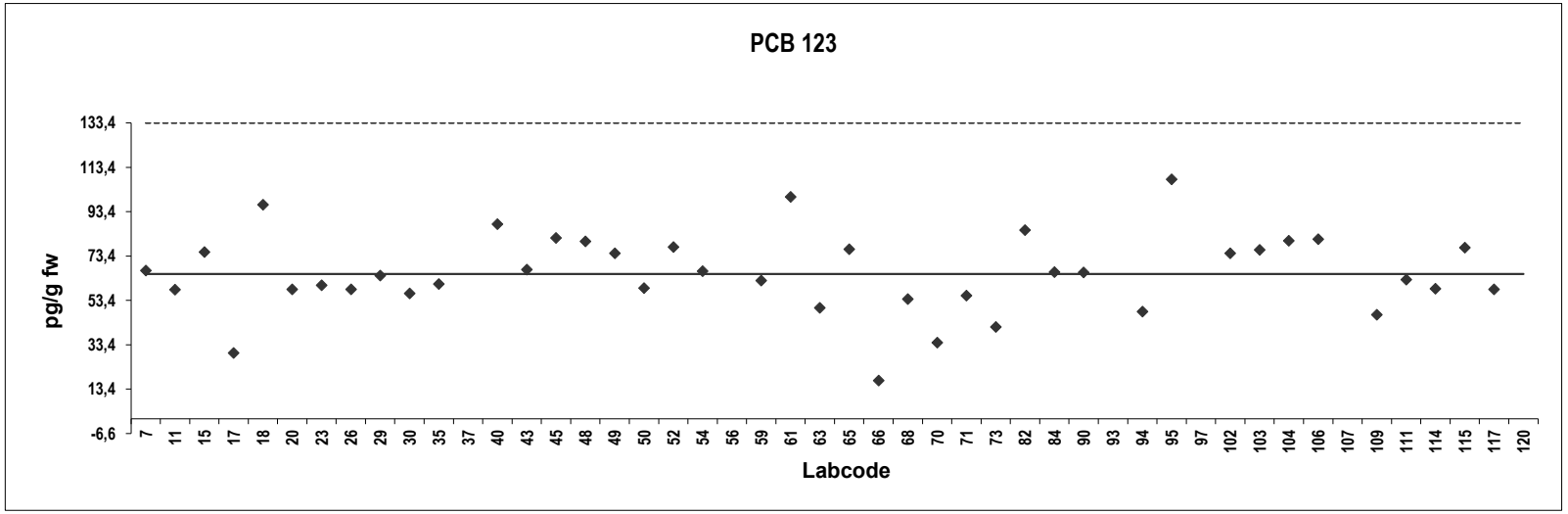

Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 61 114 37 71 30 109 117 93 82 20 11 70 102 73 17 35 48 104 7 59 103 84 120 29 68 52 95 23 63 26 90 15 111 107 94 50 54 49 40 43 115 18 106 45 65 56 97
Labcode

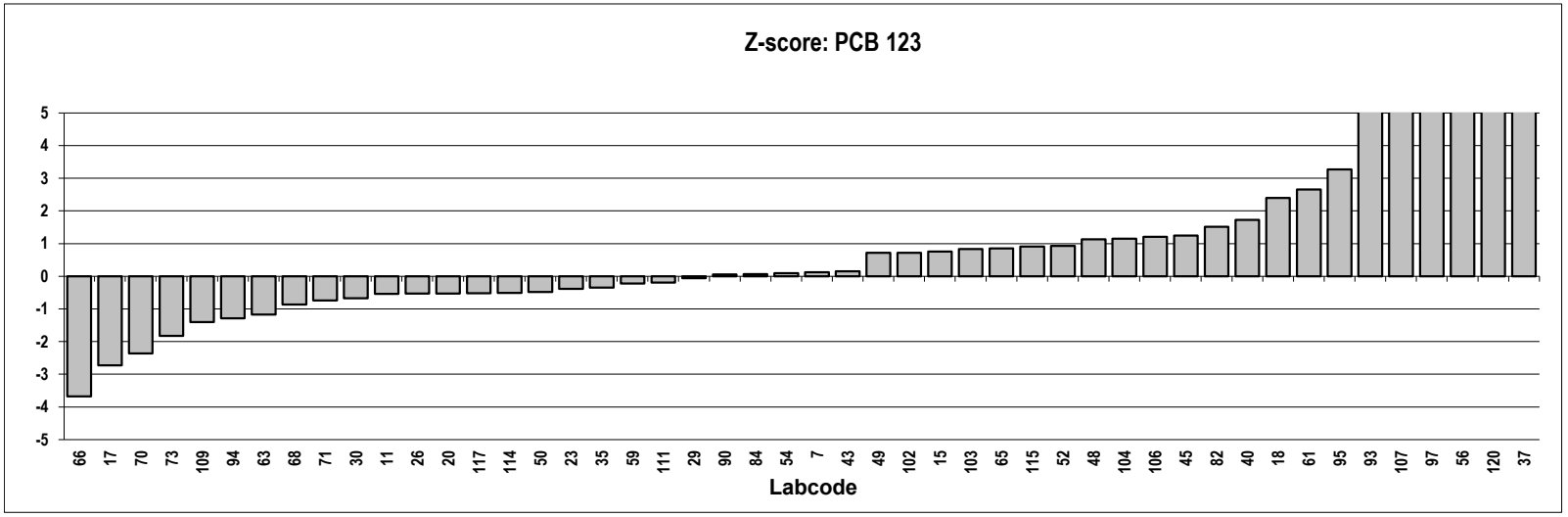
Fish oil

Congener: PCB 123

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	67	0,12		115	77	0,91	
11	58	-0,54		117	58	-0,52	
15	75	0,76		120	612	42	Outlier
17	30	-2,7					
18	97	2,4					
20	58	-0,53					
23	60	-0,39					
26	58	-0,53					
29	65	-0,056					
30	57	-0,67					
35	61	-0,35					
37	798	56	Outlier				
40	88	1,7					
43	67	0,15					
45	81	1,2					
48	80	1,1					
49	75	0,71					
50	59	-0,48					
52	77	0,93					
54	67	0,10					
56	175	8,4	Outlier				
59	62	-0,22					
61	100	2,7	ND				
63	50	-1,2					
65	76	0,85					
66	17	-3,7					
68	54	-0,86					
70	34	-2,4					
71	56	-0,74					
73	41	-1,8					
82	85	1,5					
84	66	0,064	ND				
90	66	0,056					
93	134	5,2	Outlier				
94	48	-1,3					
95	108	3,3					
97	156	6,9	Outlier				
102	75	0,71					
103	76	0,84					
104	80	1,2					
106	81	1,2					
107	143	5,9	Outlier				
109	47	-1,4					
111	63	-0,19					
114	59	-0,51					

Consenus statistics	
Consensus median, pg/g	65
Median all values pg/g	67
Consensus mean, pg/g	66
Standard deviation, pg/g	18
Relative standard deviation, %	27
No. of values reported	48
No. of values removed	6
No. of reported non-detects	2


PCB 123
pg/g fw
133,4
113,4
93,4
73,4
53,4
33,4
13,4
-6,6
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 17 70 73 109 94 63 68 71 30 11 26 20 117 114 50 23 35 59 111 29 90 84 54 7 43 49 102 15 103 65 115 52 48 104 106 45 82 40 18 61 95 93 107 97 56 120 37
Labcode

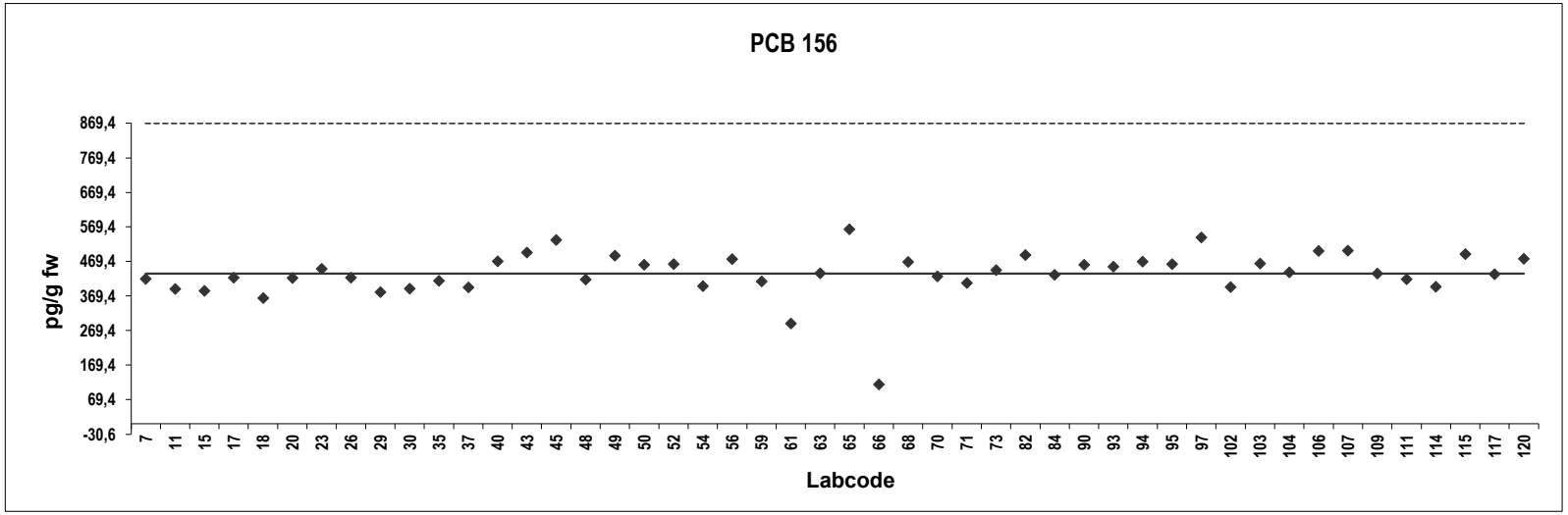
Fish oil

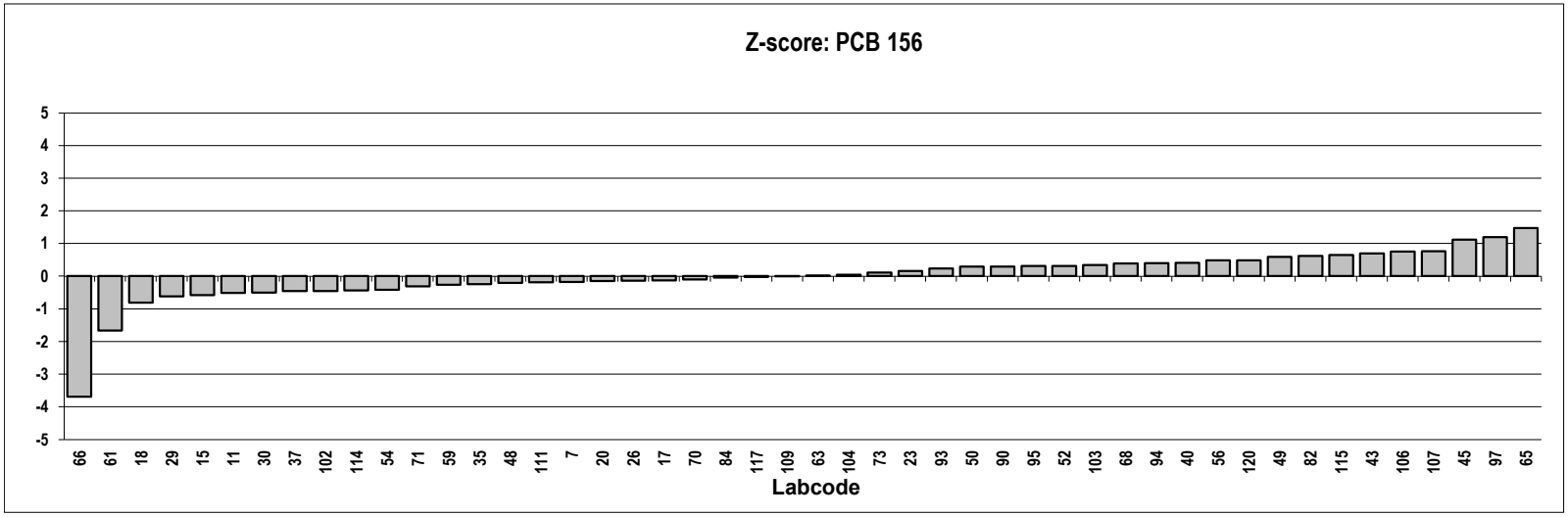
Congener: PCB 156

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	419	-0,18		115	491	0,65	
11	390	-0,51		117	433	-0,022	
15	384	-0,58		120	477	0,49	
17	423	-0,13					
18	364	-0,82					
20	422	-0,15					
23	448	0,15					
26	422	-0,14					
29	381	-0,62					
30	391	-0,50					
35	414	-0,24					
37	395	-0,46					
40	470	0,40					
43	495	0,69					
45	532	1,1					
48	417	-0,20					
49	486	0,59					
50	460	0,29					
52	462	0,31					
54	398	-0,42					
56	476	0,48					
59	412	-0,27					
61	290	-1,7					
63	435	0,0032					
65	563	1,5					
66	113	-3,7					
68	468	0,38					
70	426	-0,10					
71	408	-0,31					
73	444	0,11					
82	488	0,61					
84	431	-0,043					
90	460	0,29					
93	455	0,23					
94	469	0,39					
95	462	0,31					
97	539	1,2					
102	395	-0,46					
103	464	0,34					
104	438	0,038					
106	500	0,75					
107	501	0,76					
109	434	-0,0032					
111	418	-0,19					
114	396	-0,44					

Consenus statistics

Consensus median, pg/g	435
Median all values pg/g	435
Consensus mean, pg/g	435
Standard deviation, pg/g	68
Relative standard deviation, %	16
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 156
pg/g fw
869,4
769,4
669,4
569,4
469,4
369,4
269,4
169,4
69,4
-30,6
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 61 18 29 15 11 30 37 102 114 54 71 59 35 48 111 7 20 26 17 70 84 117 109 63 104 73 23 93 50 90 95 52 103 68 94 40 56 120 49 82 115 43 106 107 45 97 65
Labcode

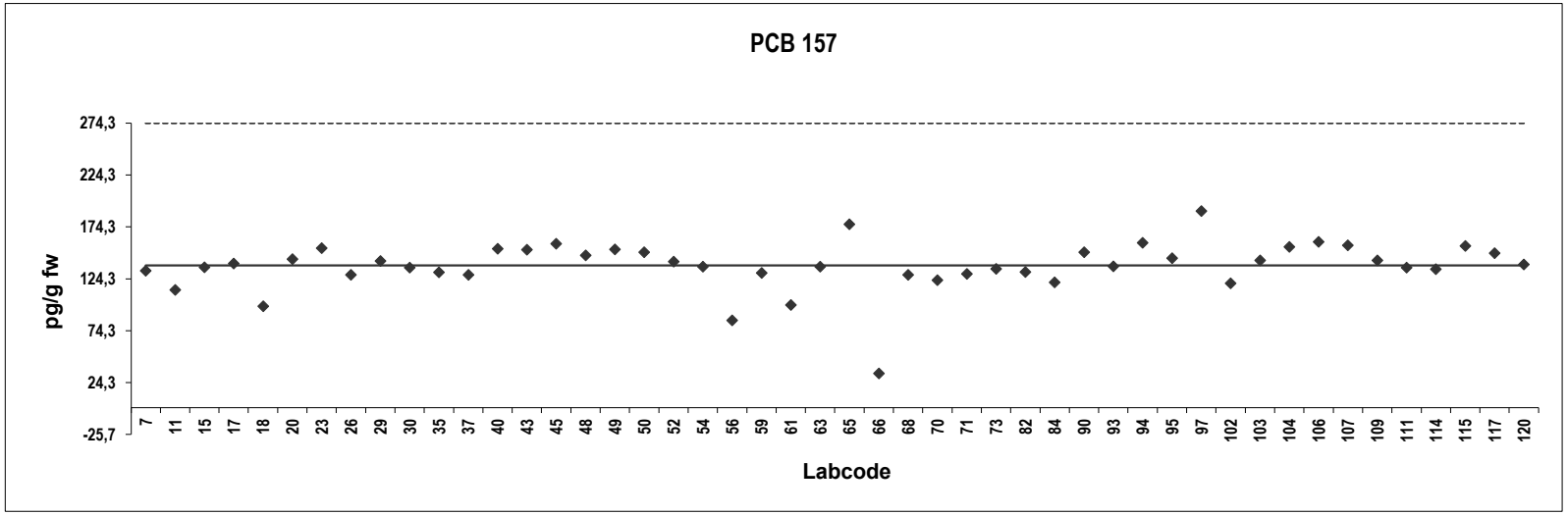
Fish oil

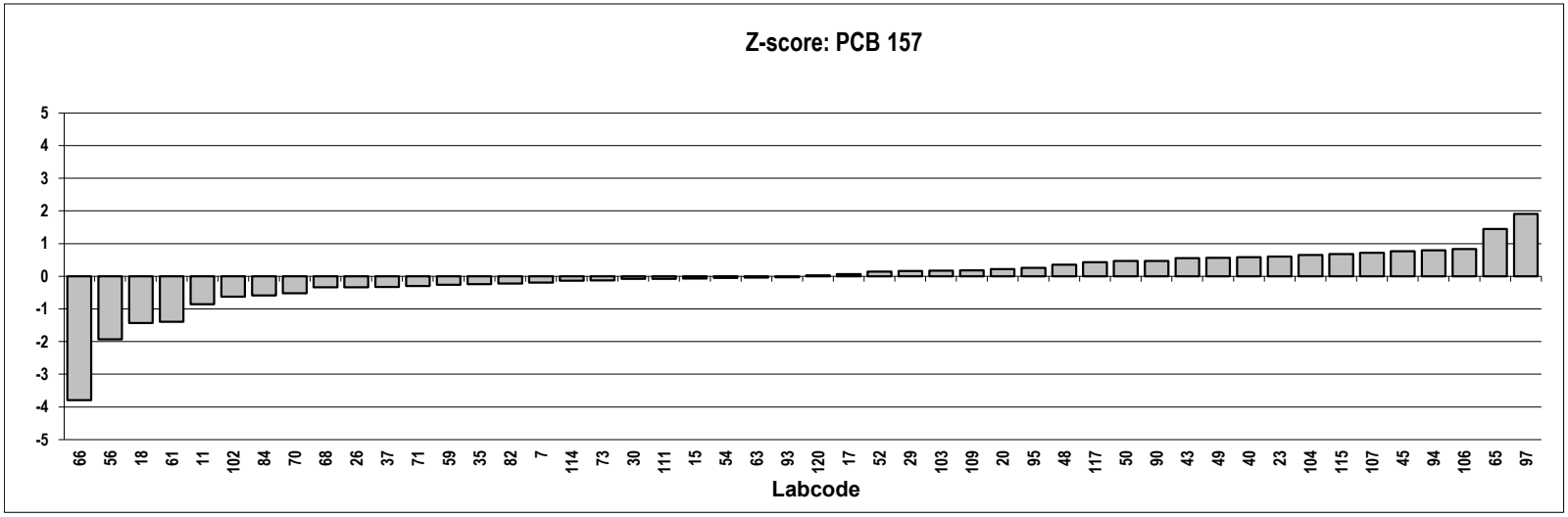
Congener: PCB 157

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	132	-0,19		115	156	0,68	
11	114	-0,86		117	149	0,43	
15	135	-0,069		120	138	0,031	
17	139	0,067					
18	98	-1,4					
20	143	0,22					
23	154	0,61					
26	128	-0,33					
29	142	0,16					
30	135	-0,079					
35	131	-0,24					
37	128	-0,32					
40	153	0,58					
43	152	0,56					
45	158	0,77					
48	147	0,36					
49	153	0,56					
50	150	0,47					
52	141	0,14					
54	136	-0,046					
56	84	-1,9					
59	130	-0,26					
61	99	-1,4					
63	136	-0,042					
65	177	1,5					
66	33	-3,8					
68	128	-0,33					
70	123	-0,52					
71	129	-0,30					
73	134	-0,12					
82	131	-0,22					
84	121	-0,59					
90	150	0,47					
93	136	-0,031					
94	159	0,80					
95	144	0,26					
97	190	1,9					
102	120	-0,63					
103	142	0,18					
104	155	0,65					
106	160	0,83					
107	157	0,71					
109	142	0,18					
111	135	-0,079					
114	134	-0,13					

Consenus statistics

Consensus median, pg/g	137
Median all values pg/g	137
Consensus mean, pg/g	137
Standard deviation, pg/g	24
Relative standard deviation, %	18
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 157
pg/g fw
274,3
224,3
174,3
124,3
74,3
24,3
-25,7
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 56 18 61 11 102 84 70 68 26 37 71 59 35 82 7 114 73 30 111 15 54 63 93 120 17 52 29 103 109 20 95 48 117 50 90 43 49 40 23 104 115 107 45 94 106 65 97
Labcode

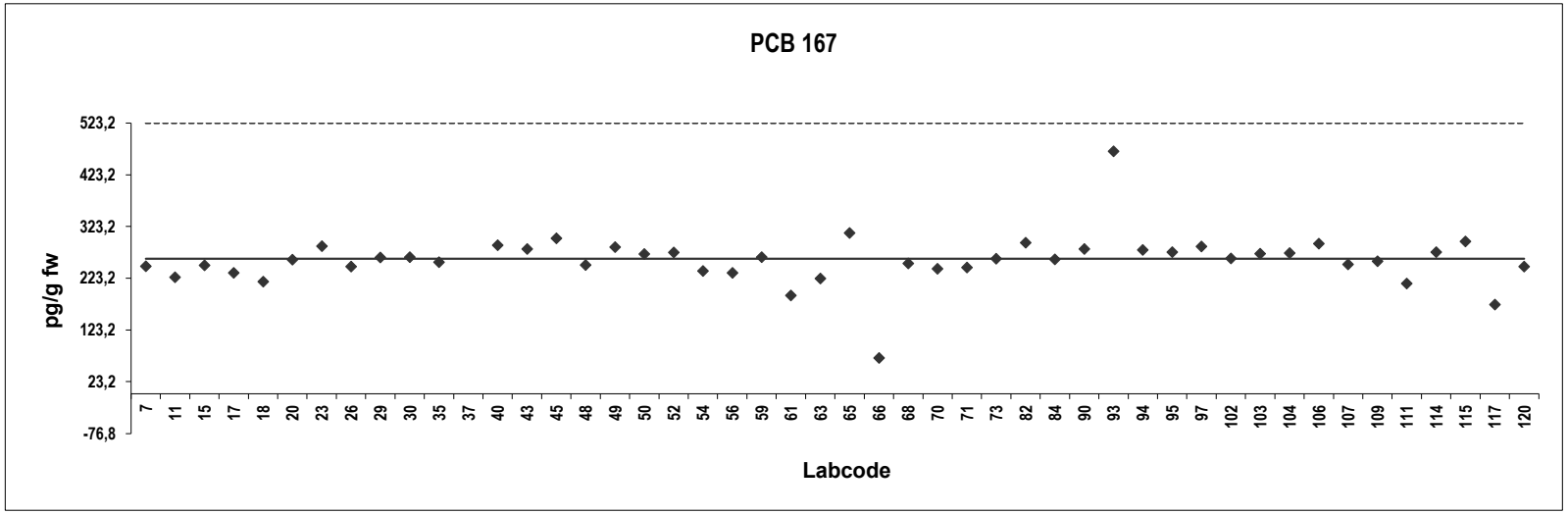
Fish oil

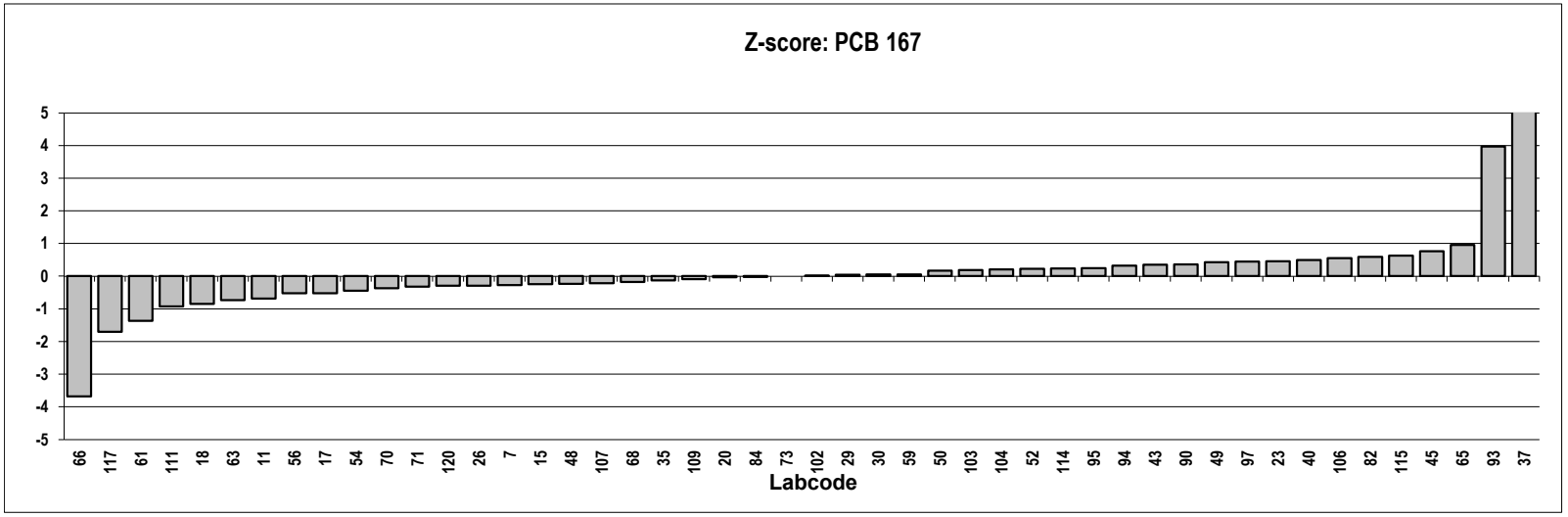
Congener: PCB 167

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	247	-0,28		115	294	0,63	
11	225	-0,69		117	172	-1,7	
15	249	-0,24		120	246	-0,29	
17	234	-0,52					
18	217	-0,85					
20	259	-0,038					
23	285	0,46					
26	246	-0,29					
29	264	0,044					
30	264	0,053					
35	254	-0,13					
37	1166	17	Outlier				
40	287	0,50					
43	280	0,35					
45	301	0,76					
48	249	-0,23					
49	284	0,43					
50	270	0,17					
52	273	0,23					
54	238	-0,45					
56	234	-0,53					
59	264	0,055					
61	190	-1,4					
63	223	-0,73					
65	311	0,95					
66	69	-3,7					
68	252	-0,18					
70	242	-0,37					
71	244	-0,32					
73	261	0,0					
82	292	0,59					
84	260	-0,024					
90	280	0,36					
93	469	4,0					
94	278	0,32					
95	274	0,25					
97	285	0,45					
102	262	0,015					
103	271	0,19					
104	272	0,21					
106	290	0,55					
107	250	-0,21					
109	256	-0,095					
111	213	-0,92					
114	274	0,24					

Consenus statistics

Consensus median, pg/g	261
Median all values pg/g	262
Consensus mean, pg/g	259
Standard deviation, pg/g	50
Relative standard deviation, %	19
No. of values reported	48
No. of values removed	1
No. of reported non-detects	0


PCB 167
523,2
423,2
323,2
223,2
123,2
23,2
-76,8
pg/g fw
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 117 61 111 18 63 11 56 17 54 70 71 120 26 7 15 48 107 68 35 109 20 84 73 102 29 30 59 50 103 104 52 114 95 94 43 90 49 97 23 40 106 82 115 45 65 93 37
Labcode

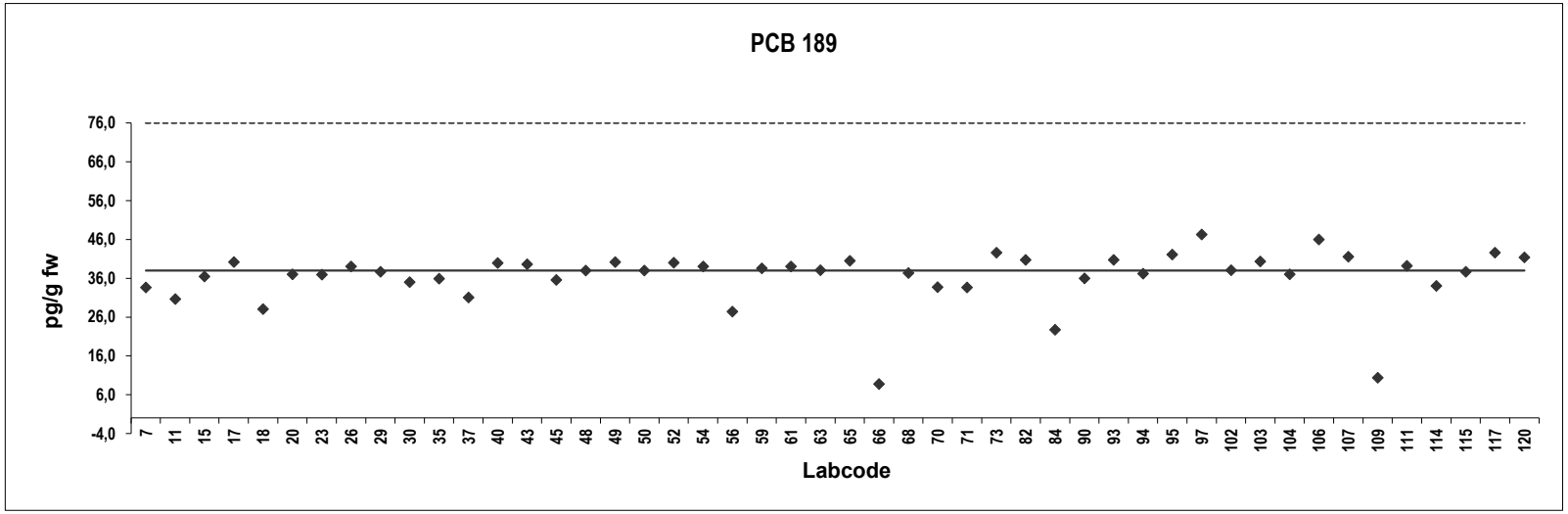
Fish oil

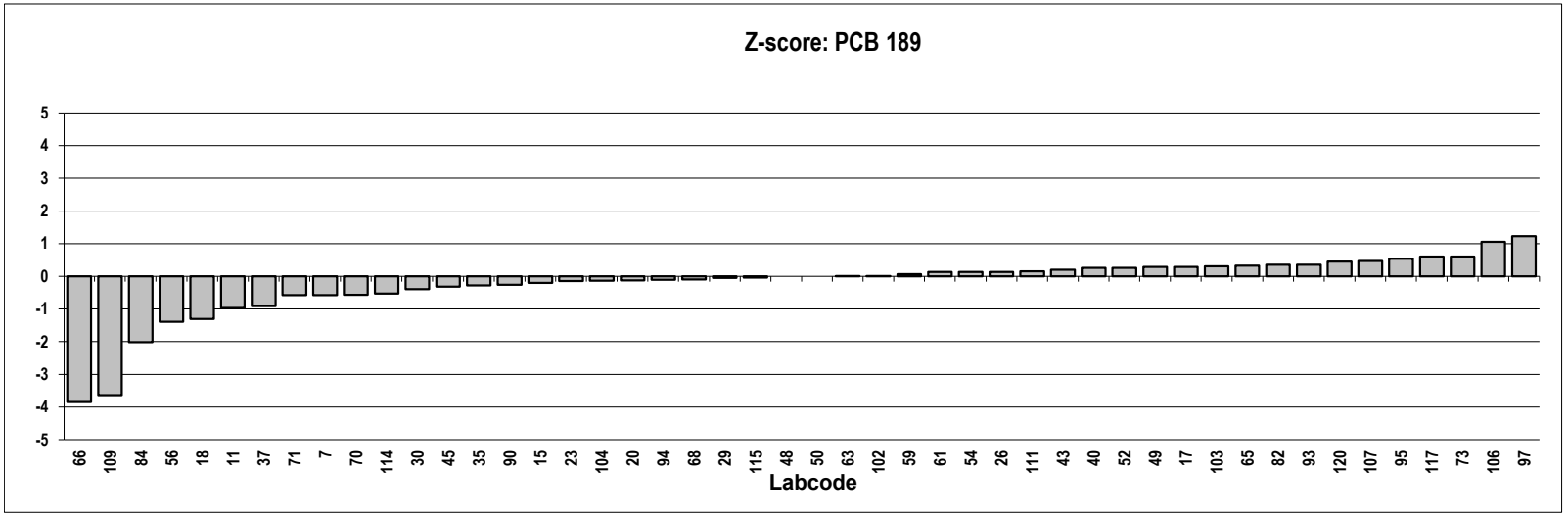
Congener: PCB 189

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Z-score	Notes
7	34	-0,58		115	38	-0,041	
11	31	-0,97		117	43	0,60	
15	36	-0,20		120	41	0,45	
17	40	0,29					
18	28	-1,3					
20	37	-0,13					
23	37	-0,15					
26	39	0,14					
29	38	-0,046					
30	35	-0,39					
35	36	-0,28					
37	31	-0,91					
40	40	0,26					
43	40	0,21					
45	36	-0,32					
48	38	0,0					
49	40	0,28					
50	38	0,0					
52	40	0,26					
54	39	0,14					
56	27	-1,4					
59	39	0,068					
61	39	0,13					
63	38	0,013					
65	41	0,33					
66	8,8	-3,8					
68	37	-0,092					
70	34	-0,57					
71	34	-0,58					
73	43	0,60					
82	41	0,36					
84	23	-2,0					
90	36	-0,26					
93	41	0,36					
94	37	-0,11					
95	42	0,54					
97	47	1,2					
102	38	0,013					
103	40	0,30					
104	37	-0,13					
106	46	1,1					
107	42	0,47					
109	10	-3,6					
111	39	0,16					
114	34	-0,53					

Consenus statistics

Consensus median, pg/g	38
Median all values pg/g	38
Consensus mean, pg/g	36
Standard deviation, pg/g	7,2
Relative standard deviation, %	20
No. of values reported	48
No. of values removed	0
No. of reported non-detects	0


PCB 189
pg/g fw
76,0
66,0
56,0
46,0
36,0
26,0
16,0
6,0
-4,0
7 11 15 17 18 20 23 26 29 30 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 71 73 82 84 90 93 94 95 97 102 103 104 106 107 109 111 114 115 117 120
Labcode


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
66 109 84 56 18 11 37 71 7 70 114 30 45 35 90 15 23 104 20 94 68 29 115 48 50 63 102 59 61 54 26 111 43 40 52 49 17 103 65 82 93 120 107 95 117 73 106 97
Labcode

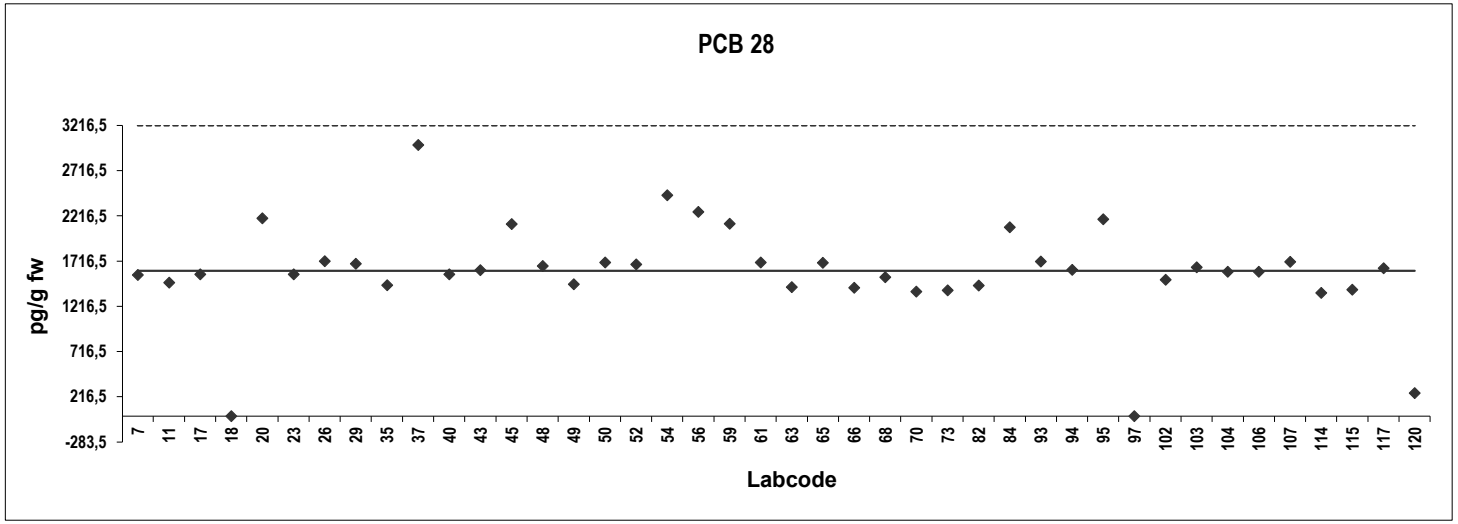
Fish oil

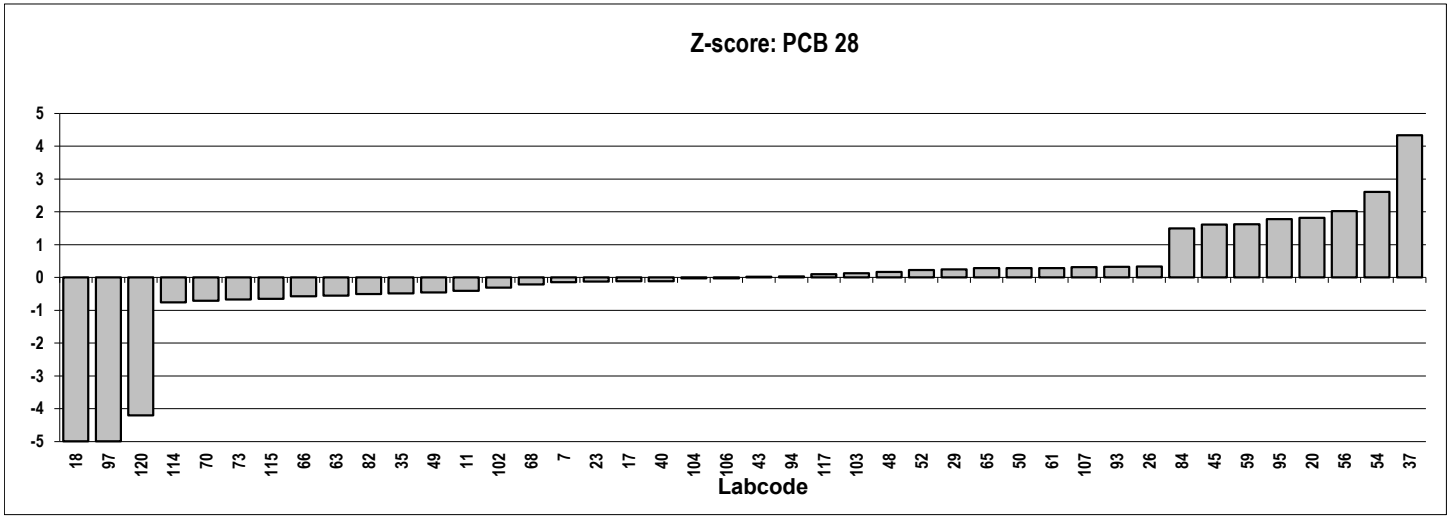
Congener: PCB 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	1563	-0,14				
11	1479	-0,40				
17	1570	-0,12				
18	1,1	-5,0				
20	2192	1,8				
23	1570	-0,12				
26	1715	0,33				
29	1688	0,25				
35	1452	-0,49				
37	3003	4,3				
40	1572	-0,11				
43	1617	0,026				
45	2126	1,6				
48	1661	0,16				
49	1463	-0,45				
50	1700	0,29				
52	1680	0,22				
54	2447	2,6				
56	2260	2,0				
59	2129	1,6				
61	1700	0,29				
63	1430	-0,55				
65	1699	0,28				
66	1423	-0,58				
68	1540	-0,21				
70	1380	-0,71				
73	1394	-0,67				
82	1447	-0,50				
84	2090	1,5				
93	1712	0,32				
94	1619	0,033				
95	2179	1,8				
97	1,6	-5,0				
102	1510	-0,31				
103	1650	0,13				
104	1600	-0,026				
106	1600	-0,026				
107	1708	0,31				
114	1365	-0,76				
115	1400	-0,65				
117	1639	0,10				
120	257	-4,2				

Consenus statistics

Consensus median, pg/g	1608
Median all values pg/g	1608
Consensus mean, pg/g	1601
Standard deviation, pg/g	540
Relative standard deviation, %	34
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 28
pg/g fw
3216,5
2716,5
2216,5
1716,5
1216,5
716,5
216,5
-283,5
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 120 114 70 73 115 66 63 82 35 49 11 102 68 7 23 17 40 104 106 43 94 117 103 48 52 29 65 50 61 107 93 26 84 45 59 95 20 56 54 37
Labcode

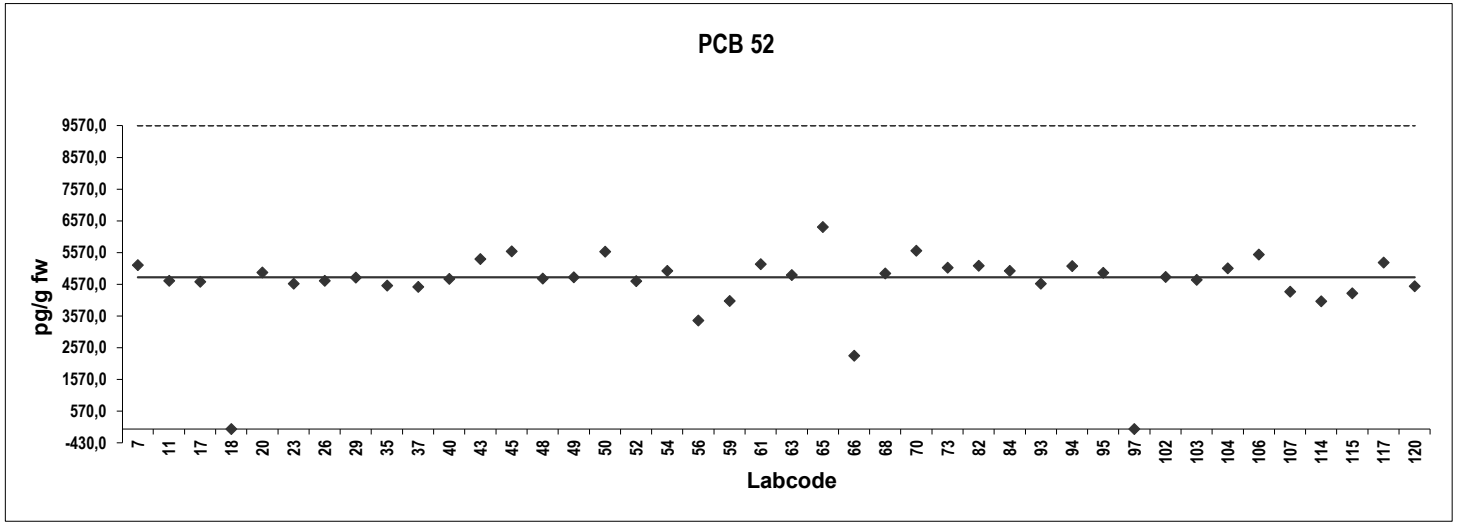
Fish oil

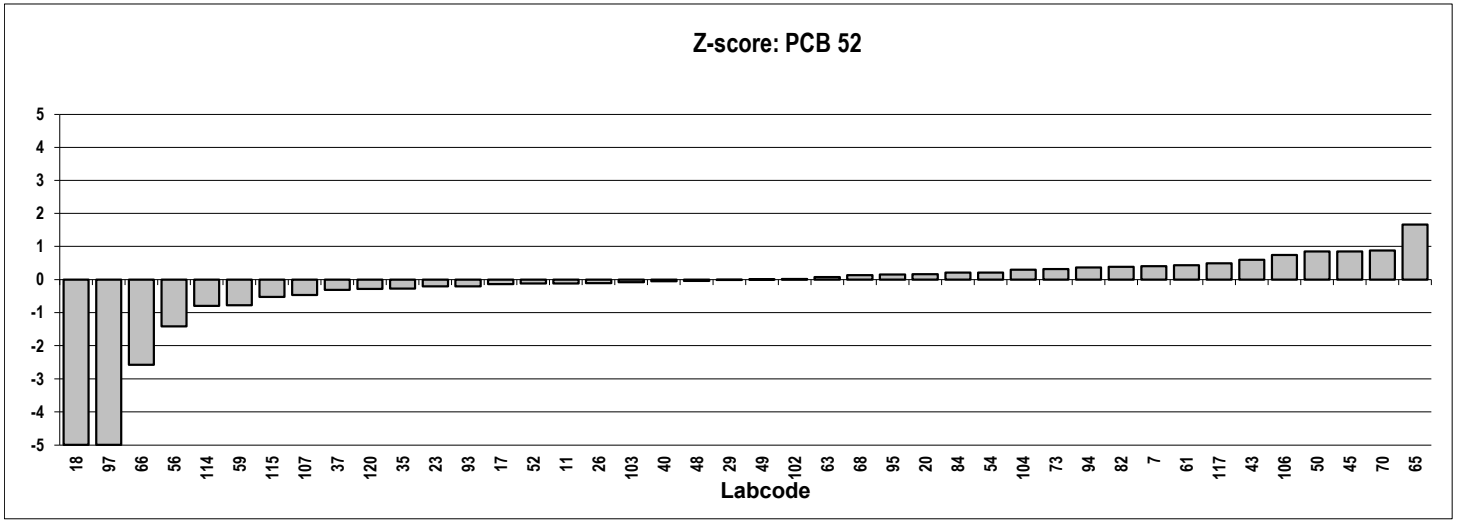
Congener: PCB 52

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	5169	0,40				
11	4673	-0,12				
17	4650	-0,14				
18	4,7	-5,0				
20	4944	0,17				
23	4584	-0,21				
26	4681	-0,11				
29	4782	-0,0033				
35	4525	-0,27				
37	4482	-0,32				
40	4735	-0,052				
43	5361	0,60				
45	5601	0,85				
48	4748	-0,039				
49	4788	0,0033				
50	5600	0,85				
52	4670	-0,12				
54	4990	0,21				
56	3428	-1,4				
59	4040	-0,78				
61	5200	0,43				
63	4860	0,078				
65	6372	1,7				
66	2315	-2,6				
68	4910	0,13				
70	5630	0,88				
73	5091	0,32				
82	5154	0,39				
84	4990	0,21				
93	4588	-0,21				
94	5137	0,37				
95	4929	0,15				
97	5,9	-5,0				
102	4800	0,016				
103	4710	-0,078				
104	5070	0,30				
106	5500	0,75				
107	4338	-0,47				
114	4026	-0,79				
115	4280	-0,53				
117	5256	0,49				
120	4510	-0,29				

Consenus statistics

Consensus median, pg/g	4785
Median all values pg/g	4785
Consensus mean, pg/g	4575
Standard deviation, pg/g	1212
Relative standard deviation, %	27
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 52
pg/g fw
9570,0
8570,0
7570,0
6570,0
5570,0
4570,0
3570,0
2570,0
1570,0
570,0
-430,0
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 66 56 114 59 115 107 37 120 35 23 93 17 52 11 26 103 40 48 29 49 102 63 68 95 20 84 54 104 73 94 82 7 61 117 43 106 50 45 70 65
Labcode

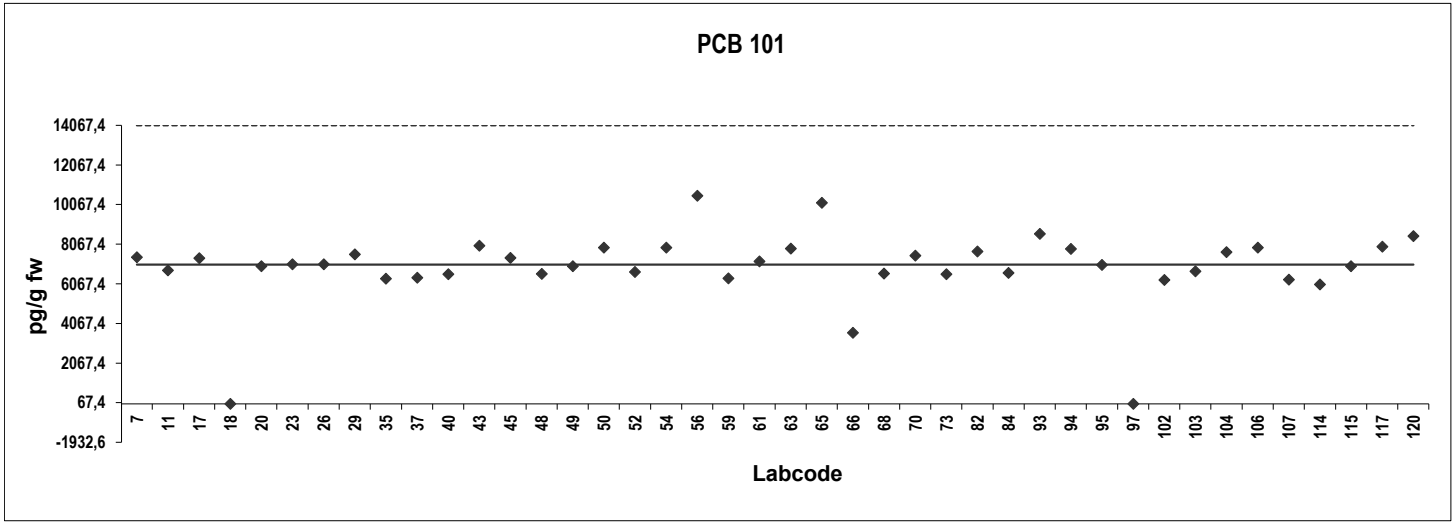
Fish oil

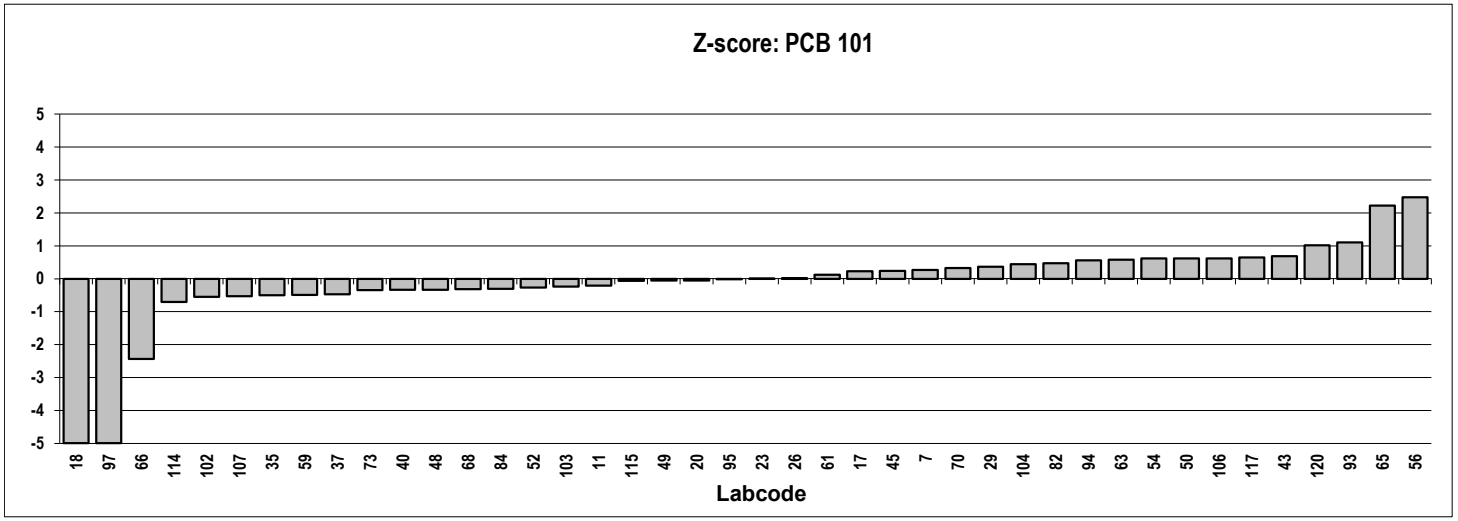
Congener: PCB 101

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	7415	0,27				
11	6740	-0,21				
17	7360	0,23				
18	7,0	-5,0				
20	6963	-0,050				
23	7048	0,010				
26	7052	0,013				
29	7550	0,37				
35	6331	-0,50				
37	6369	-0,47				
40	6558	-0,34				
43	7996	0,68				
45	7376	0,24				
48	6562	-0,34				
49	6958	-0,054				
50	7900	0,62				
52	6660	-0,27				
54	7898	0,61				
56	10516	2,5				
59	6339	-0,49				
61	7200	0,12				
63	7850	0,58				
65	10164	2,2				
66	3603	-2,4				
68	6590	-0,32				
70	7490	0,32				
73	6556	-0,34				
82	7704	0,48				
84	6610	-0,30				
93	8583	1,1				
94	7823	0,56				
95	7019	-0,010				
97	8,7	-5,0				
102	6260	-0,55				
103	6700	-0,24				
104	7660	0,45				
106	7900	0,62				
107	6286	-0,53				
114	6044	-0,70				
115	6950	-0,060				
117	7950	0,65				
120	8470	1,0				

Consenus statistics

Consensus median, pg/g	7034
Median all values pg/g	7034
Consensus mean, pg/g	6881
Standard deviation, pg/g	1899
Relative standard deviation, %	28
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 101
14067,4
12067,4
10067,4
8067,4
6067,4
4067,4
2067,4
67,4
-1932,6
pg/g fw
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 66 114 102 107 35 59 37 73 40 48 68 84 52 103 11 115 49 20 95 23 26 61 17 45 7 70 29 104 82 94 63 54 50 106 117 43 120 93 65 56
Labcode

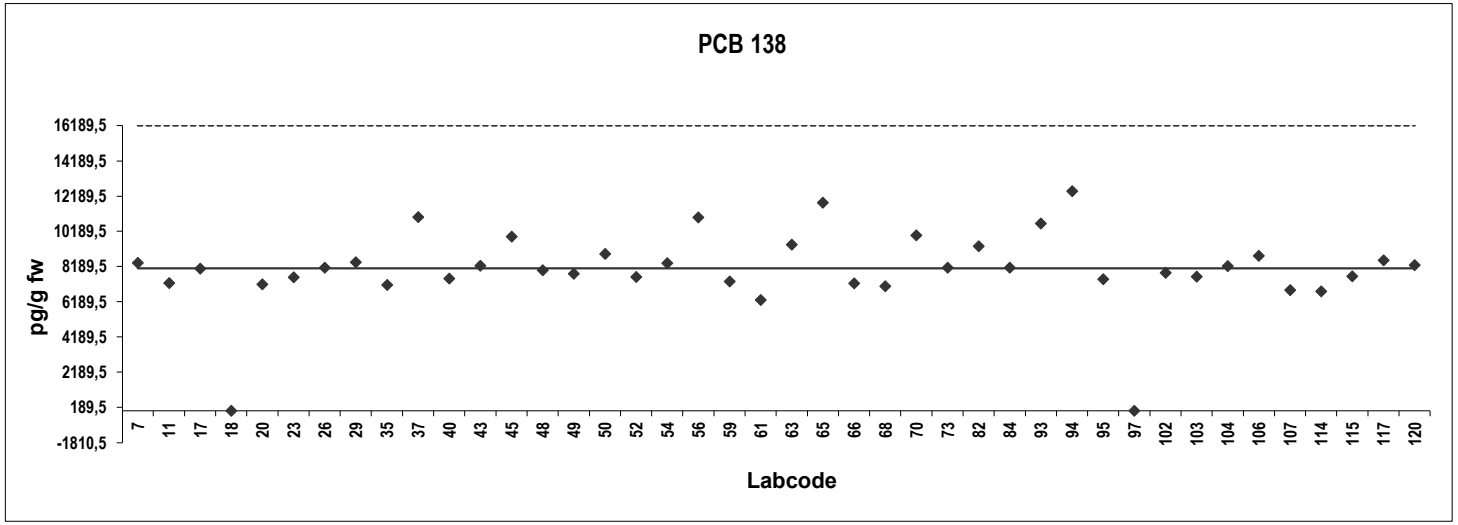
Fish oil

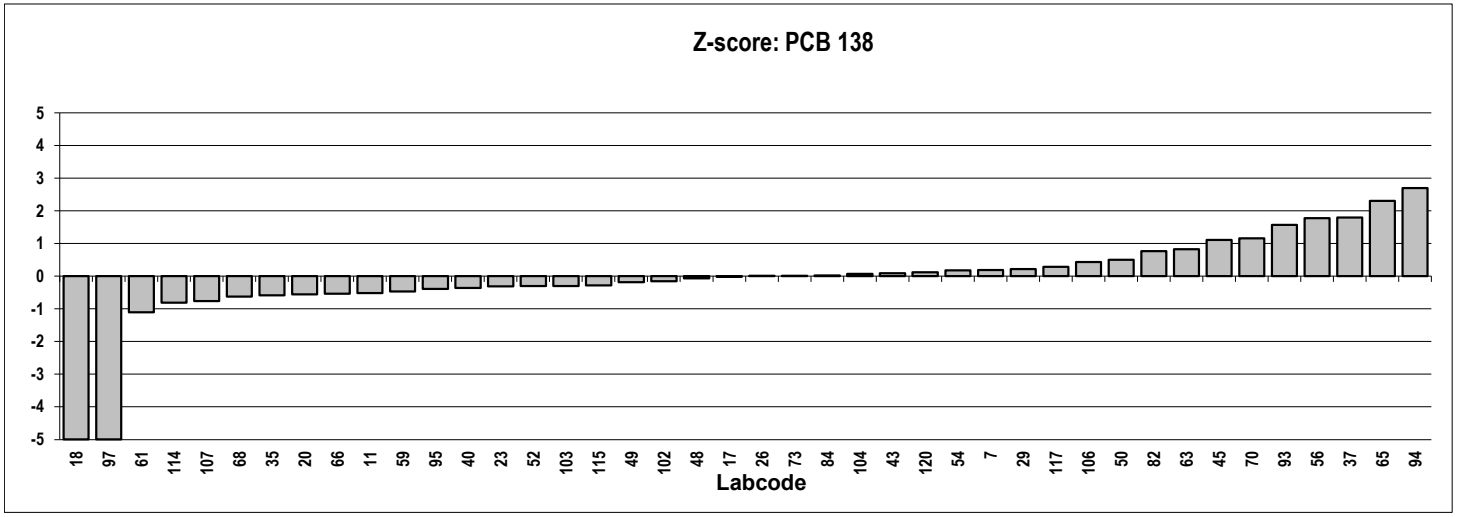
Congener: PCB 138

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	8393	0,18				
11	7262	-0,51				
17	8070	-0,015				
18	8,5	-5,0				
20	7191	-0,56				
23	7586	-0,31				
26	8120	0,015				
29	8440	0,21				
35	7141	-0,59				
37	10998	1,8				
40	7510	-0,36				
43	8234	0,086				
45	9894	1,1				
48	7983	-0,069				
49	7790	-0,19				
50	8900	0,50				
52	7600	-0,31				
54	8390	0,18				
56	10970	1,8				
59	7343	-0,46				
61	6300	-1,1				
63	9430	0,82				
65	11821	2,3				
66	7231	-0,53				
68	7080	-0,63				
70	9970	1,2				
73	8120	0,016				
82	9336	0,77				
84	8130	0,022				
93	10639	1,6				
94	12465	2,7				
95	7466	-0,39				
97	10,0	-5,0				
102	7840	-0,16				
103	7610	-0,30				
104	8210	0,071				
106	8800	0,44				
107	6857	-0,76				
114	6787	-0,81				
115	7640	-0,28				
117	8553	0,28				
120	8280	0,11				

Consenus statistics

Consensus median, pg/g	8095
Median all values pg/g	8095
Consensus mean, pg/g	8009
Standard deviation, pg/g	2271
Relative standard deviation, %	28
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 138
16189,5
14189,5
12189,5
10189,5
8189,5
6189,5
4189,5
2189,5
189,5
-1810,5
pg/g fw
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 61 114 107 68 35 20 66 11 59 95 40 23 52 103 115 49 102 48 17 26 73 84 104 43 120 54 7 29 117 106 50 82 63 45 70 93 56 37 65 94
Labcode

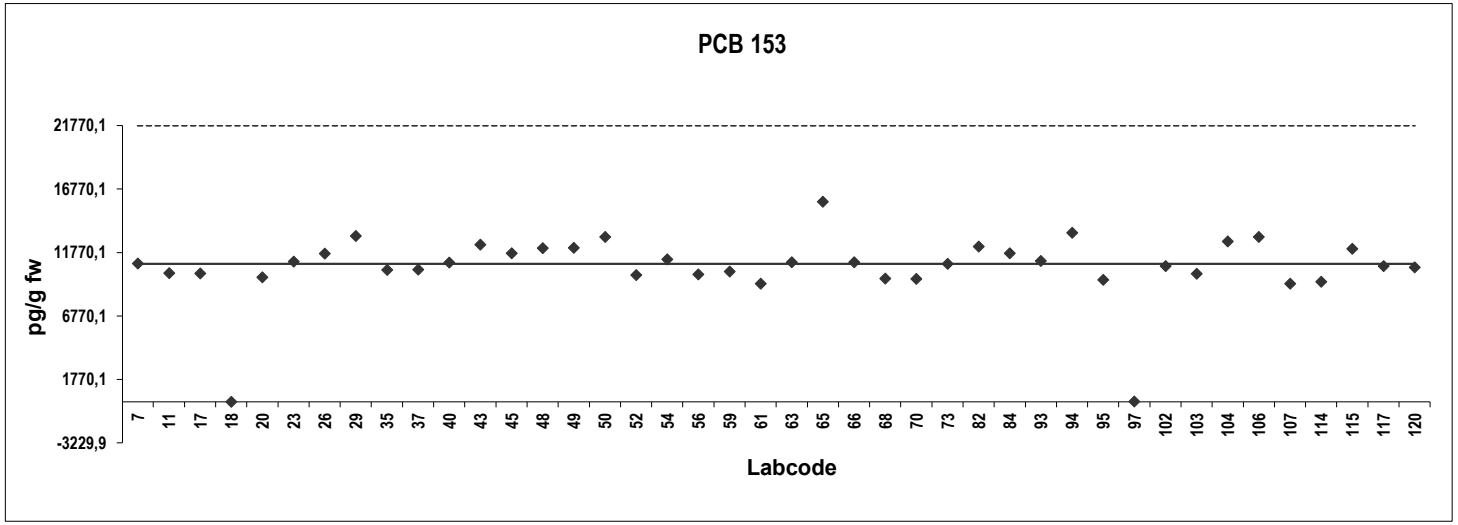
Fish oil

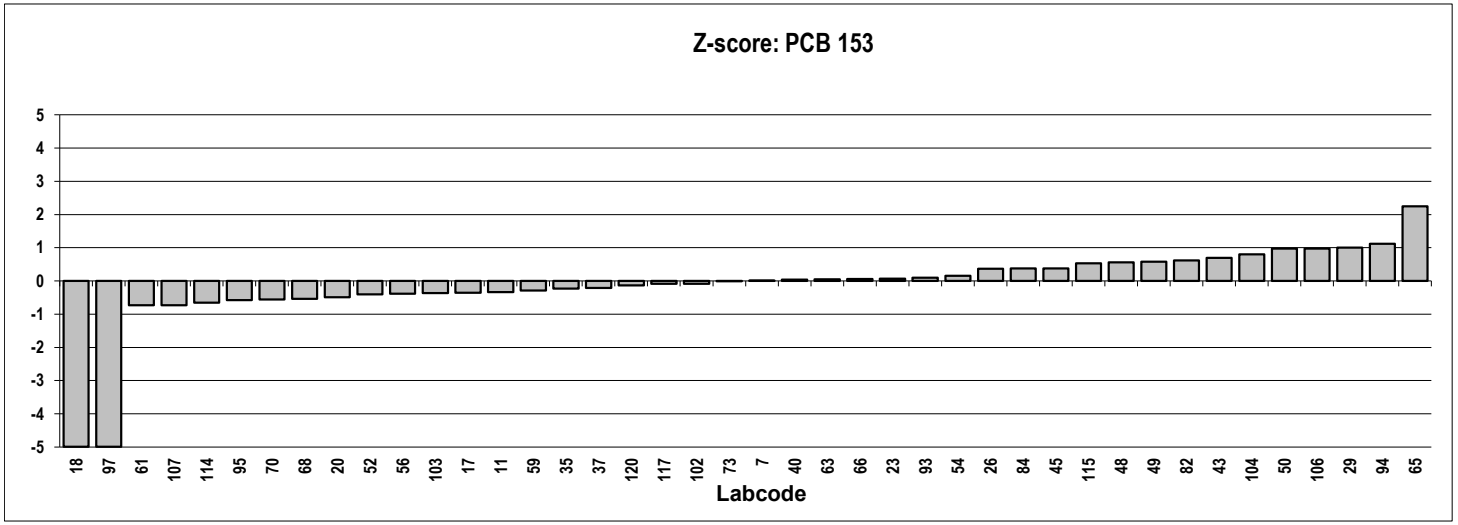
Congener: PCB 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	10895	0,0047				
11	10147	-0,34				
17	10120	-0,35				
18	10	-5,0				
20	9820	-0,49				
23	11044	0,073				
26	11688	0,37				
29	13077	1,0				
35	10394	-0,23				
37	10420	-0,21				
40	10968	0,038				
43	12390	0,69				
45	11707	0,38				
48	12115	0,56				
49	12148	0,58				
50	13000	0,97				
52	10000	-0,41				
54	11222	0,15				
56	10045	-0,39				
59	10257	-0,29				
61	9300	-0,73				
63	11000	0,053				
65	15774	2,2				
66	11012	0,058				
68	9720	-0,54				
70	9680	-0,55				
73	10875	-0,0047				
82	12228	0,62				
84	11700	0,37				
93	11090	0,094				
94	13329	1,1				
95	9621	-0,58				
97	15	-5,0				
102	10700	-0,085				
103	10100	-0,36				
104	12630	0,80				
106	13000	0,97				
107	9302	-0,73				
114	9471	-0,65				
115	12050	0,54				
117	10689	-0,090				
120	10600	-0,13				

Consenus statistics

Consensus median, pg/g	10885
Median all values pg/g	10885
Consensus mean, pg/g	10604
Standard deviation, pg/g	2738
Relative standard deviation, %	26
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 153
21770,1
16770,1
11770,1
6770,1
1770,1
-3229,9
pg/g fw
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 61 107 114 95 70 68 20 52 56 103 17 11 59 35 37 120 117 102 73 7 40 63 66 23 93 54 26 84 45 115 48 49 82 43 104 50 106 29 94 65
Labcode

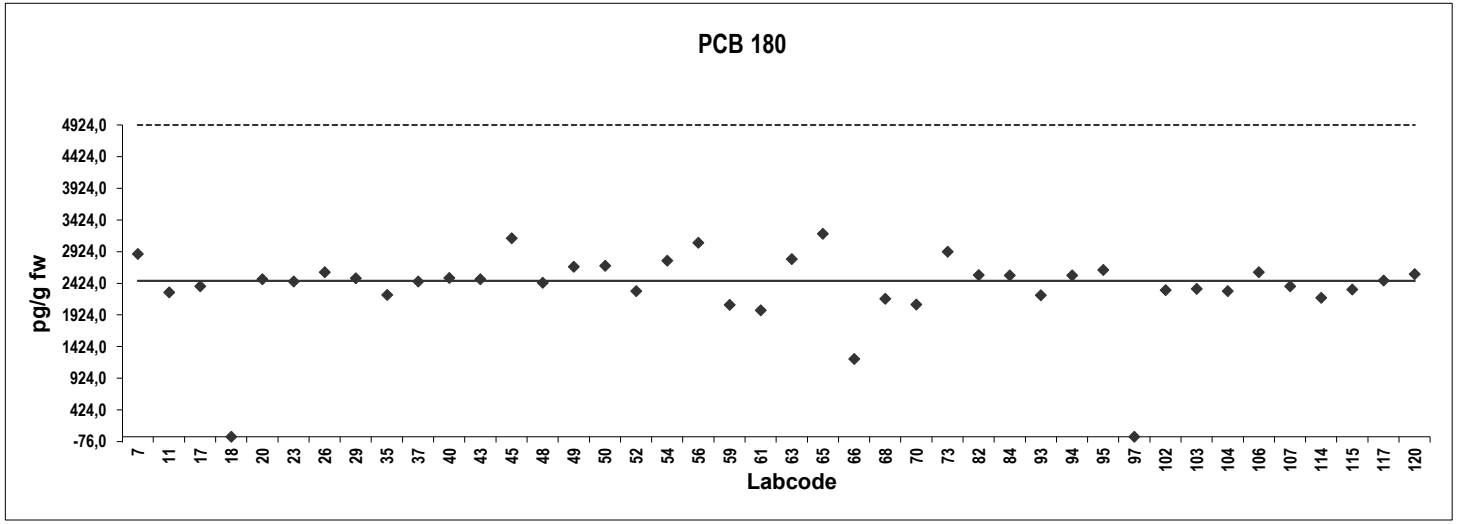
Fish oil

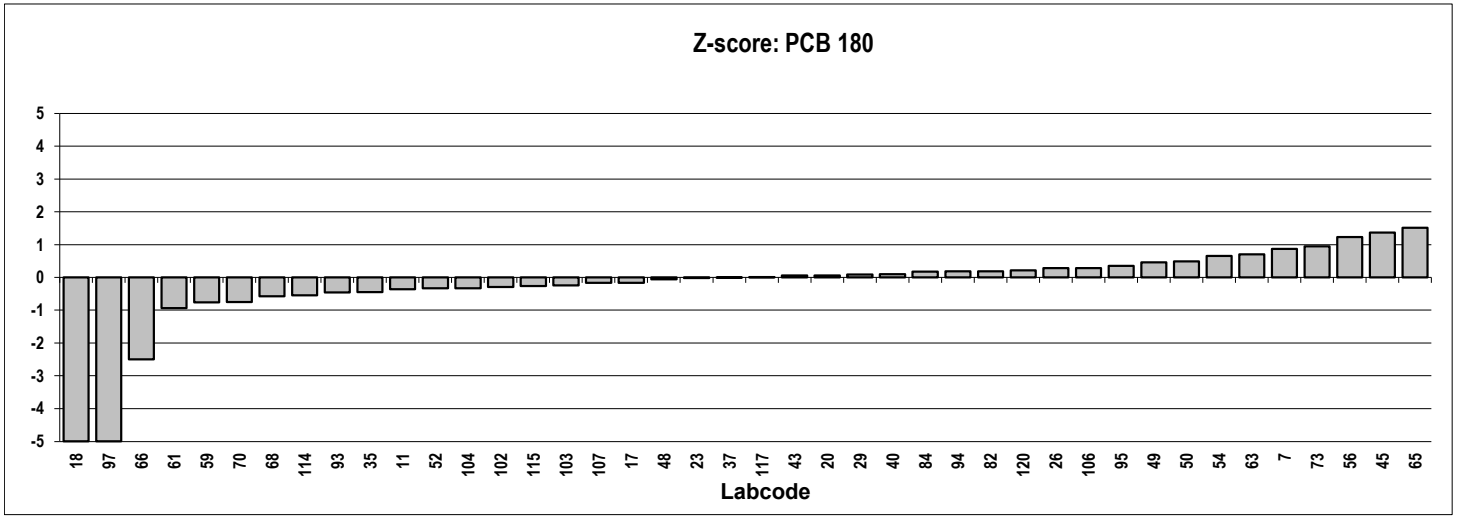
Congener: PCB 180

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
7	2888	0,86				
11	2282	-0,37				
17	2380	-0,17				
18	2,2	-5,0				
20	2490	0,058				
23	2455	-0,015				
26	2599	0,28				
29	2504	0,084				
35	2243	-0,45				
37	2456	-0,012				
40	2508	0,094				
43	2489	0,054				
45	3134	1,4				
48	2435	-0,055				
49	2686	0,46				
50	2700	0,48				
52	2300	-0,33				
54	2783	0,65				
56	3065	1,2				
59	2087	-0,76				
61	2000	-0,94				
63	2810	0,71				
65	3208	1,5				
66	1232	-2,5				
68	2180	-0,57				
70	2090	-0,76				
73	2926	0,94				
82	2553	0,18				
84	2550	0,18				
93	2235	-0,46				
94	2552	0,18				
95	2636	0,35				
97	2,7	-5,0				
102	2320	-0,29				
103	2340	-0,25				
104	2300	-0,33				
106	2600	0,28				
107	2380	-0,17				
114	2194	-0,54				
115	2330	-0,27				
117	2468	0,012				
120	2570	0,22				

Consenus statistics

Consensus median, pg/g	2462
Median all values pg/g	2462
Consensus mean, pg/g	2356
Standard deviation, pg/g	630
Relative standard deviation, %	27
No. of values reported	42
No. of values removed	0
No. of reported non-detects	0


PCB 180
pg/g fw
4924,0
4424,0
3924,0
3424,0
2924,0
2424,0
1924,0
1424,0
924,0
424,0
-76,0
7 11 17 18 20 23 26 29 35 37 40 43 45 48 49 50 52 54 56 59 61 63 65 66 68 70 73 82 84 93 94 95 97 102 103 104 106 107 114 115 117 120
Labcode


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
18 97 66 61 59 70 68 114 93 35 11 52 104 102 115 103 107 17 48 23 37 117 43 20 29 40 84 94 82 120 26 106 95 49 50 54 63 7 73 56 45 65
Labcode

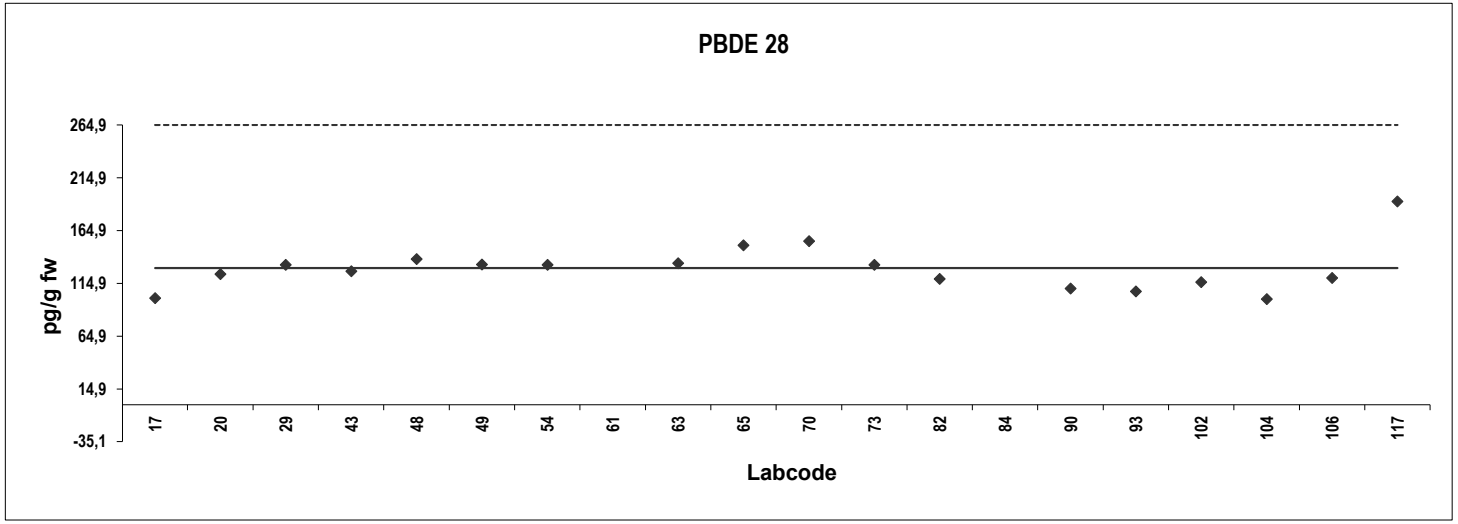
Fish oil

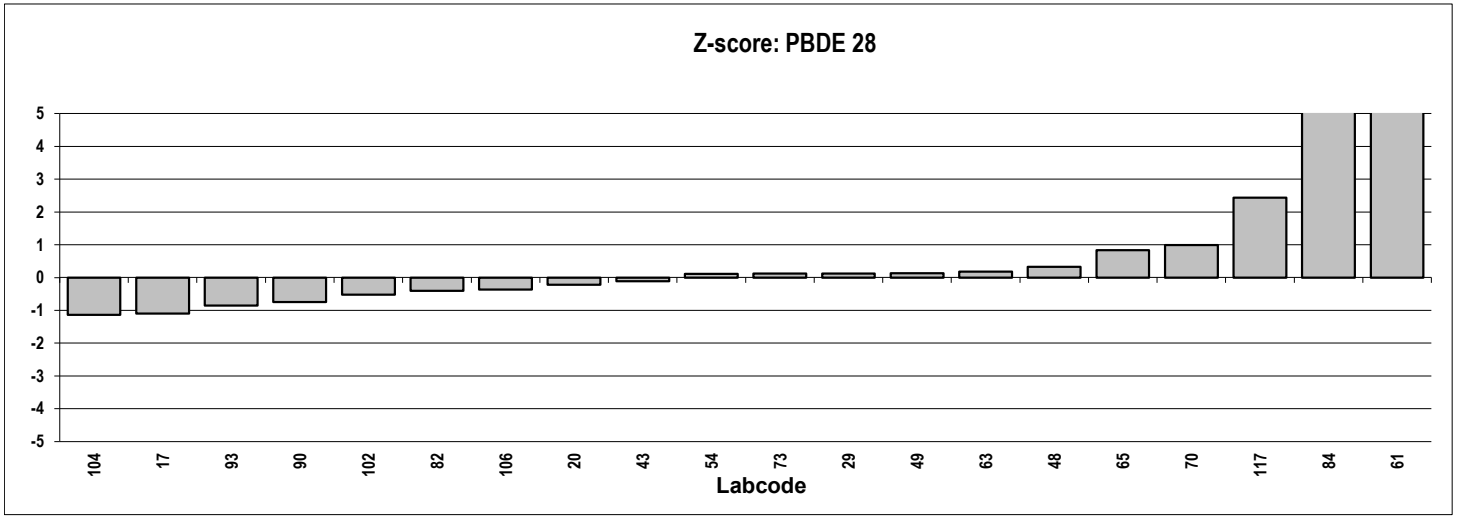
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	101	-1,1				
20	124	-0,22				
29	133	0,12				
43	127	-0,11				
48	138	0,33				
49	133	0,13				
54	132	0,11				
61	1000	34	Outlier,ND			
63	134	0,18				
65	151	0,83				
70	155	0,99				
73	133	0,12				
82	119	-0,40				
84	382	9,8	Outlier			
90	110	-0,75				
93	107	-0,85				
102	116	-0,52				
104	100	-1,1				
106	120	-0,36				
117	193	2,4				

Consenus statistics

Consensus median, pg/g	129
Median all values pg/g	132
Consensus mean, pg/g	129
Standard deviation, pg/g	22
Relative standard deviation, %	17
No. of values reported	20
No. of values removed	2
No. of reported non-detects	1


PBDE 28
264,9
214,9
164,9
114,9
64,9
14,9
-35,1
pg/g fw
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
Labcode


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
104
17
93
90
102
82
106
20
43
54
73
29
49
63
48
65
70
117
84
61
Labcode

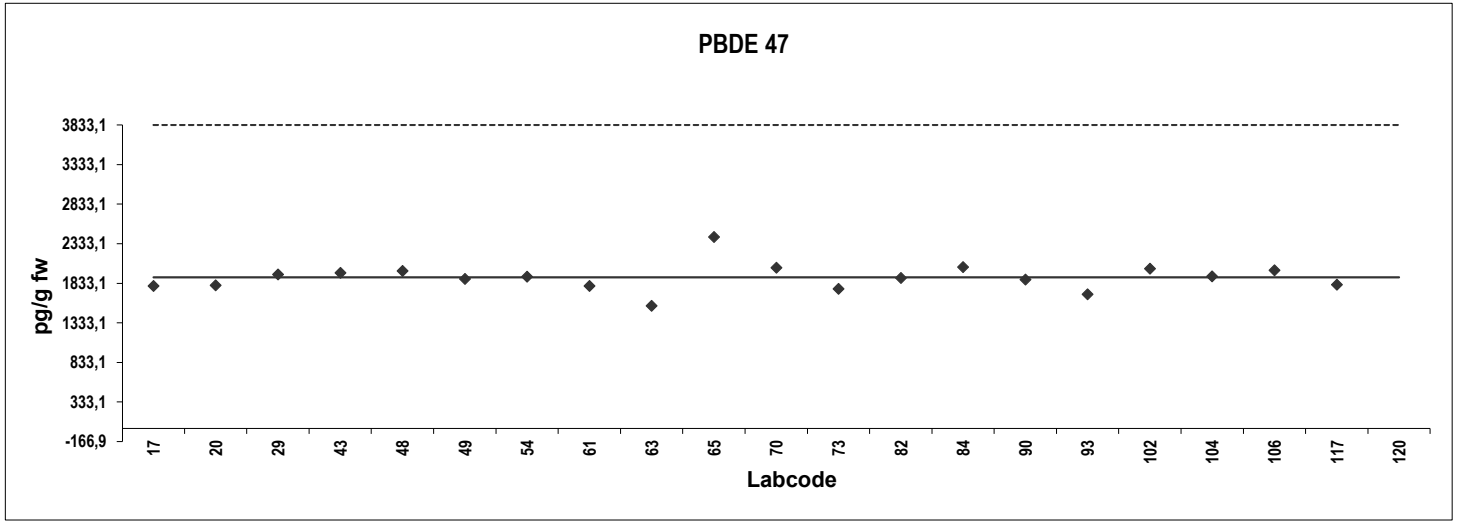
Fish oil

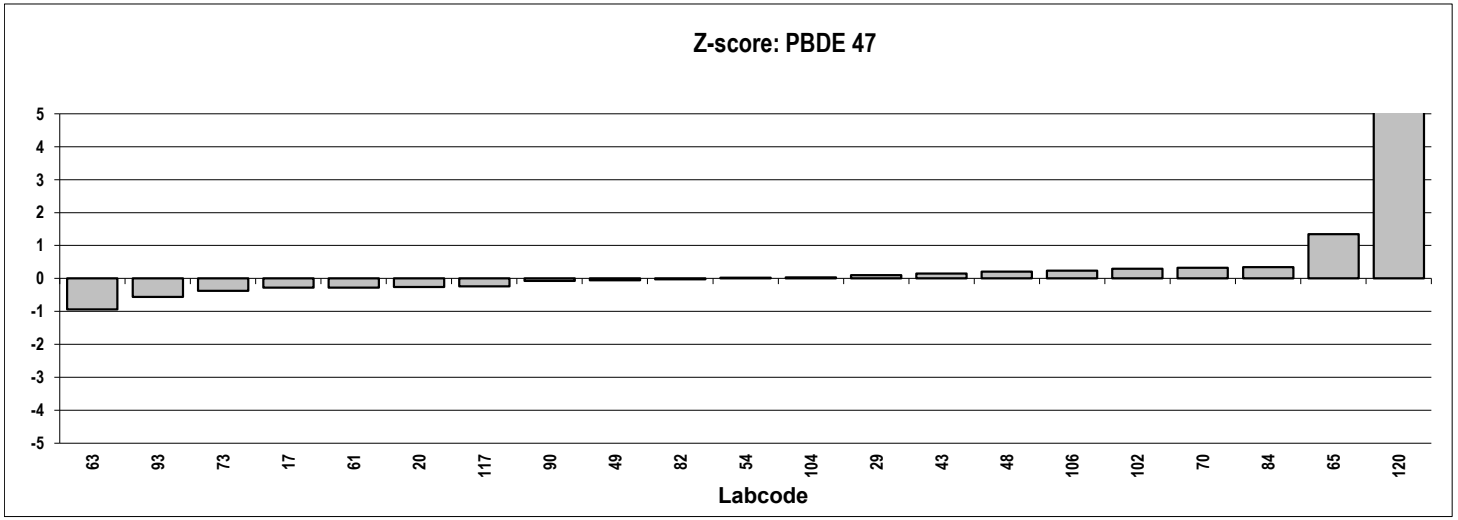
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	1800	-0,28				
20	1808	-0,26				
29	1947	0,10				
43	1965	0,15				
48	1989	0,21				
49	1889	-0,051				
54	1917	0,022				
61	1800	-0,28				
63	1550	-0,94				
65	2420	1,3				
70	2030	0,32				
73	1764	-0,38				
82	1900	-0,022				
84	2040	0,35				
90	1880	-0,074				
93	1695	-0,56				
102	2020	0,29				
104	1920	0,031				
106	2000	0,24				
117	1818	-0,24				
120	38570	96	Outlier			

Consenus statistics

Consensus median, pg/g	1908
Median all values pg/g	1917
Consensus mean, pg/g	1908
Standard deviation, pg/g	172
Relative standard deviation, %	9
No. of values reported	21
No. of values removed	1
No. of reported non-detects	0


PBDE 47
3833,1
3333,1
2833,1
2333,1
1833,1
1333,1
833,1
333,1
-166,9
pg/g fw
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
120
Labcode


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
63
93
73
17
61
20
117
90
49
82
54
104
29
43
48
106
102
70
84
65
120
Labcode

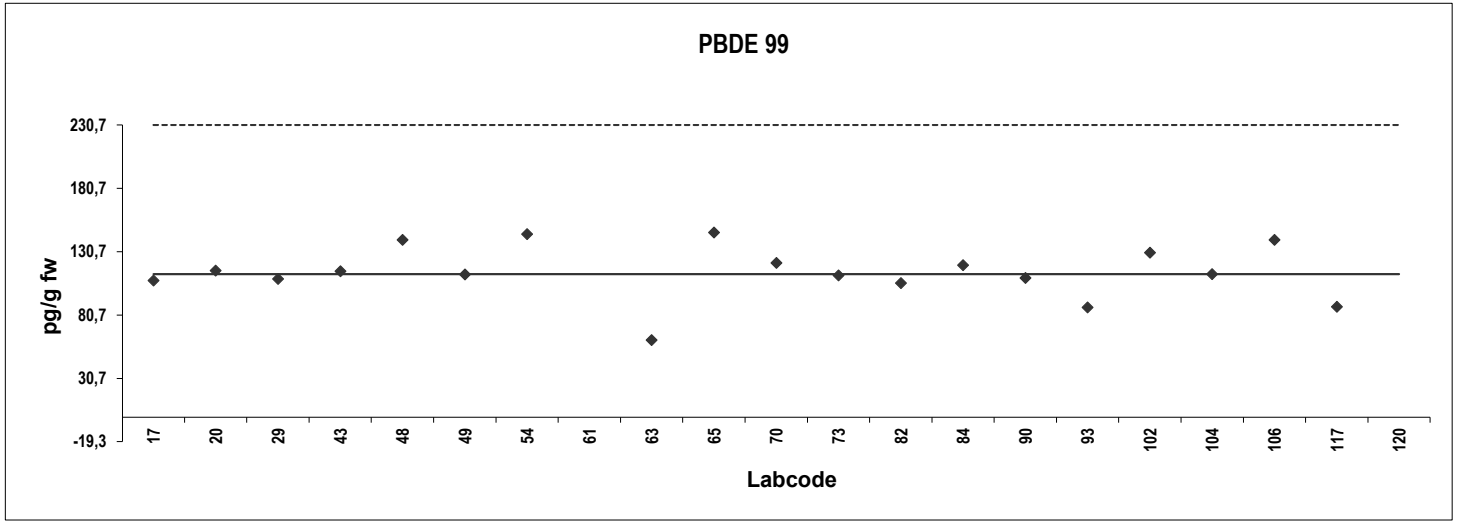
Fish oil

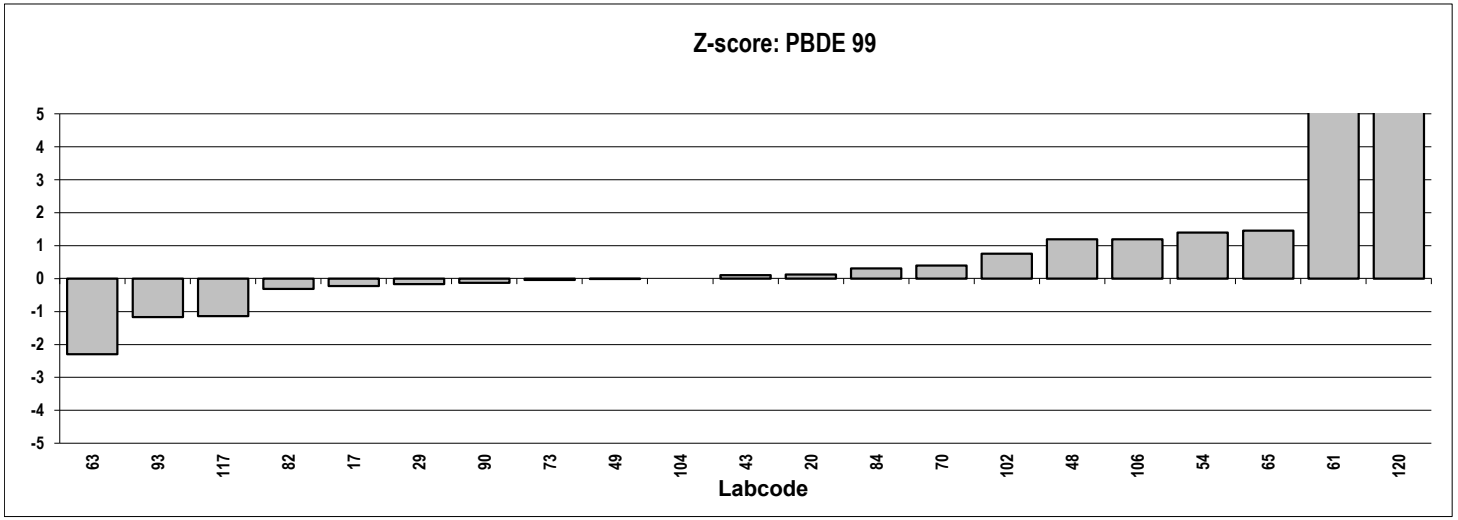
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	108	-0,22				
20	116	0,13				
29	109	-0,17				
43	115	0,10				
48	140	1,2				
49	113	-0,0081				
54	145	1,4				
61	1000	39	Outlier,ND			
63	61	-2,3				
65	146	1,5				
70	122	0,40				
73	112	-0,044				
82	106	-0,31				
84	120	0,31				
90	110	-0,13				
93	87	-1,2				
102	130	0,75				
104	113	0,0				
106	140	1,2				
117	87	-1,1				
120	2237	94	Outlier			

Consenus statistics

Consensus median, pg/g	113
Median all values pg/g	115
Consensus mean, pg/g	115
Standard deviation, pg/g	21
Relative standard deviation, %	18
No. of values reported	21
No. of values removed	2
No. of reported non-detects	1


PBDE 99
230,7
180,7
130,7
80,7
30,7
-19,3
pg/g fw
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
120
Labcode


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
63
93
117
82
17
29
90
73
49
104
43
20
84
70
102
48
106
54
65
61
120
Labcode

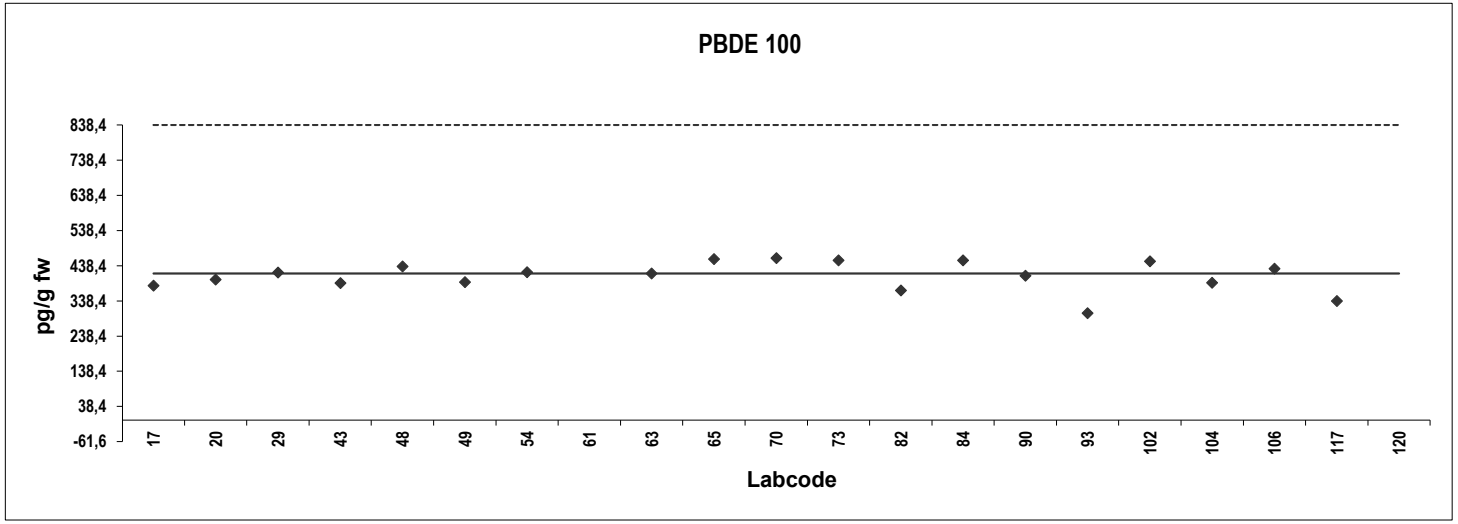
Fish oil

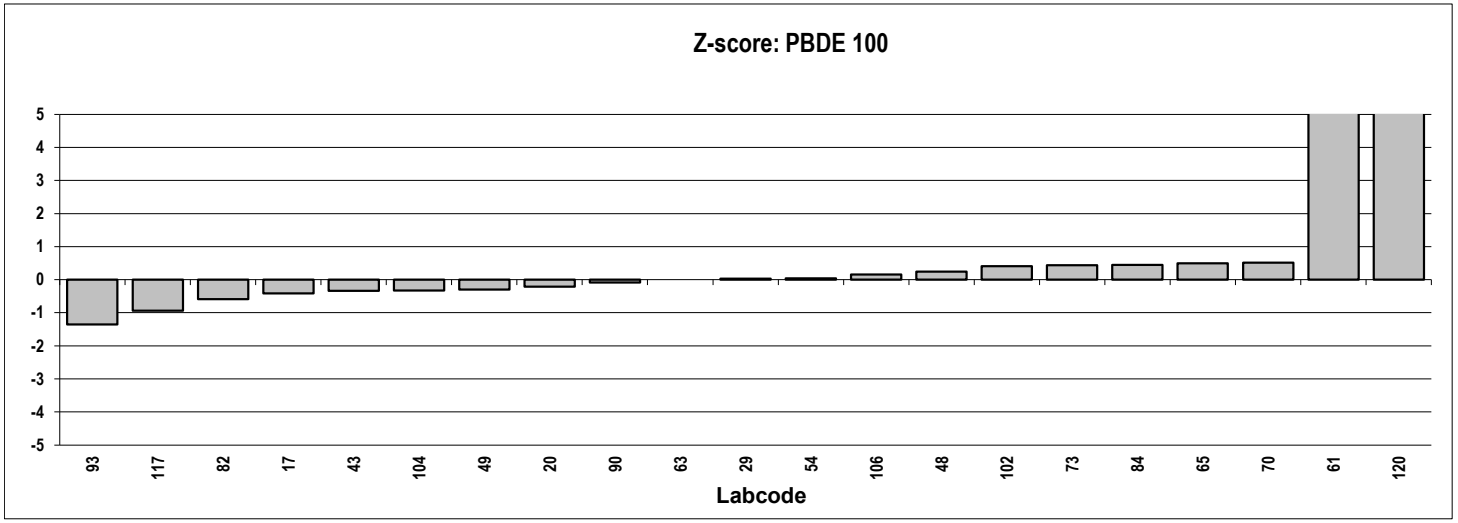
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	382	-0,42				
20	399	-0,21				
29	419	0,027				
43	389	-0,33				
48	437	0,24				
49	392	-0,30				
54	420	0,040				
61	1000	7,0	Outlier,ND			
63	417	0,0				
65	458	0,49				
70	460	0,52				
73	454	0,44				
82	368	-0,59				
84	454	0,44				
90	410	-0,084				
93	304	-1,4				
102	451	0,41				
104	390	-0,32				
106	430	0,16				
117	339	-0,94				
120	9605	110	Outlier			

Consenus statistics

Consensus median, pg/g	417
Median all values pg/g	419
Consensus mean, pg/g	409
Standard deviation, pg/g	42
Relative standard deviation, %	10
No. of values reported	21
No. of values removed	2
No. of reported non-detects	1


PBDE 100
838,4
738,4
638,4
538,4
438,4
338,4
238,4
138,4
38,4
-61,6
pg/g fw
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
120
Labcode


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
93
117
82
17
43
104
49
20
90
63
29
54
106
48
102
73
84
65
70
61
120
Labcode

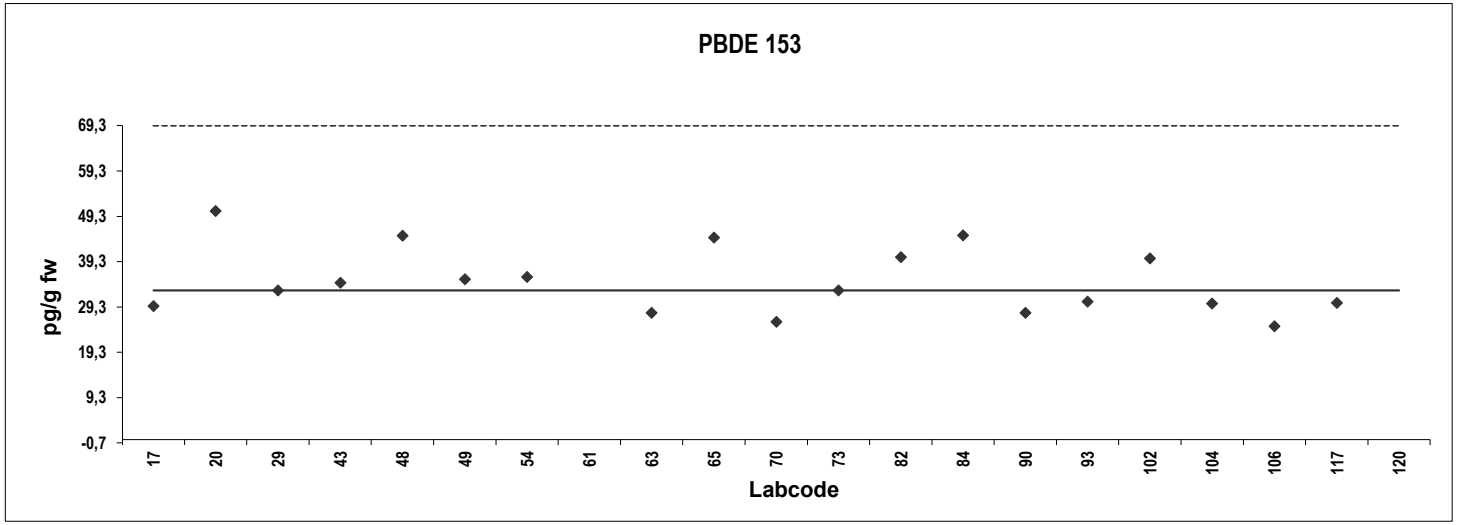
Fish oil

Congener: PBDE 153

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	30	-0,52				
20	50	2,7				
29	33	-0,00053				
43	35	0,26				
48	45	1,8				
49	35	0,38				
54	36	0,46				
61	1000	147	Outlier,ND			
63	28	-0,75				
65	45	1,8				
70	26	-1,0				
73	33	0,00053				
82	40	1,1				
84	45	1,9				
90	28	-0,75				
93	30	-0,37				
102	40	1,1	ND			
104	30	-0,44				
106	25	-1,2				
117	30	-0,42				
120	478	68	Outlier			

Consenus statistics

Consensus median, pg/g	33
Median all values pg/g	35
Consensus mean, pg/g	35
Standard deviation, pg/g	7,4
Relative standard deviation, %	21
No. of values reported	21
No. of values removed	2
No. of reported non-detects	2


PBDE 153
pg/g fw
69,3
59,3
49,3
39,3
29,3
19,3
9,3
-0,7
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
120
Labcode


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
106
70
63
90
17
104
117
93
29
73
43
49
54
102
82
65
48
84
20
120
61
Labcode

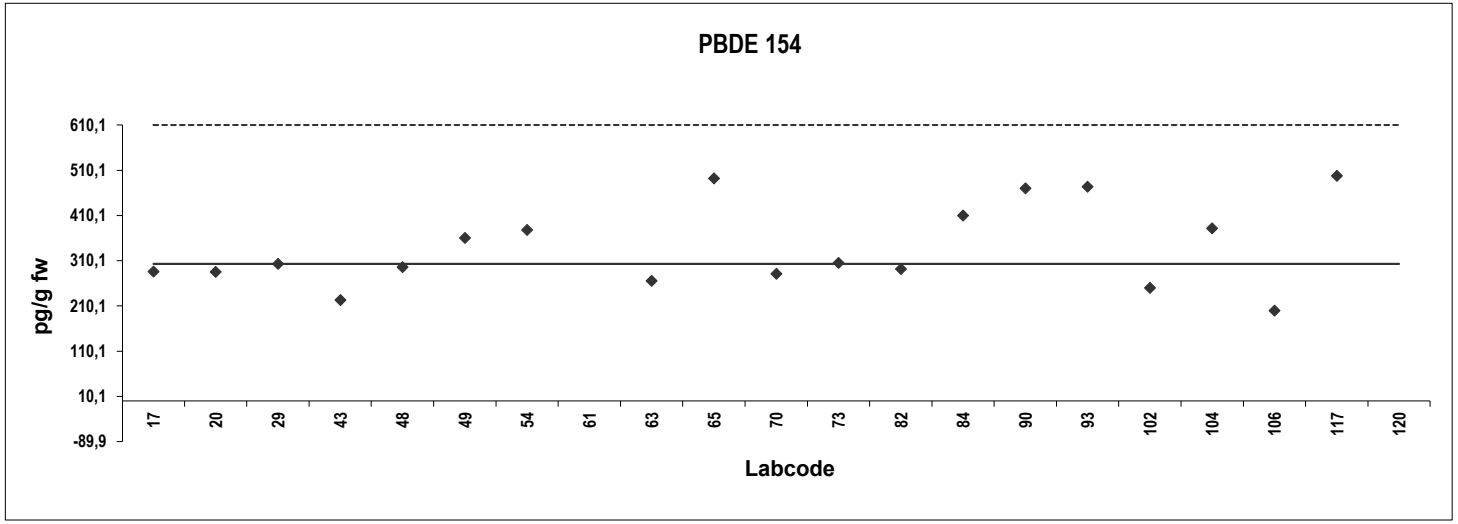
Fish oil

Congener: PBDE 154

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	286	-0,29				
20	286	-0,29				
29	304	0,0				
43	223	-1,3				
48	296	-0,13				
49	360	0,94				
54	379	1,2				
61	1000	11	Outlier,ND			
63	266	-0,62				
65	492	3,1				
70	281	-0,37				
73	305	0,024				
82	292	-0,19				
84	410	1,8				
90	470	2,7				
93	474	2,8				
102	250	-0,88				
104	382	1,3				
106	200	-1,7				
117	498	3,2				
120	5590	87	Outlier			

Consenus statistics

Consensus median, pg/g	304
Median all values pg/g	305
Consensus mean, pg/g	340
Standard deviation, pg/g	93
Relative standard deviation, %	27
No. of values reported	21
No. of values removed	2
No. of reported non-detects	1


PBDE 154
610,1
510,1
410,1
310,1
210,1
110,1
10,1
-89,9
pg/g fw
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
120
Labcode


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
106
43
102
63
70
20
17
82
48
29
73
49
54
104
84
90
93
65
117
61
120
Labcode

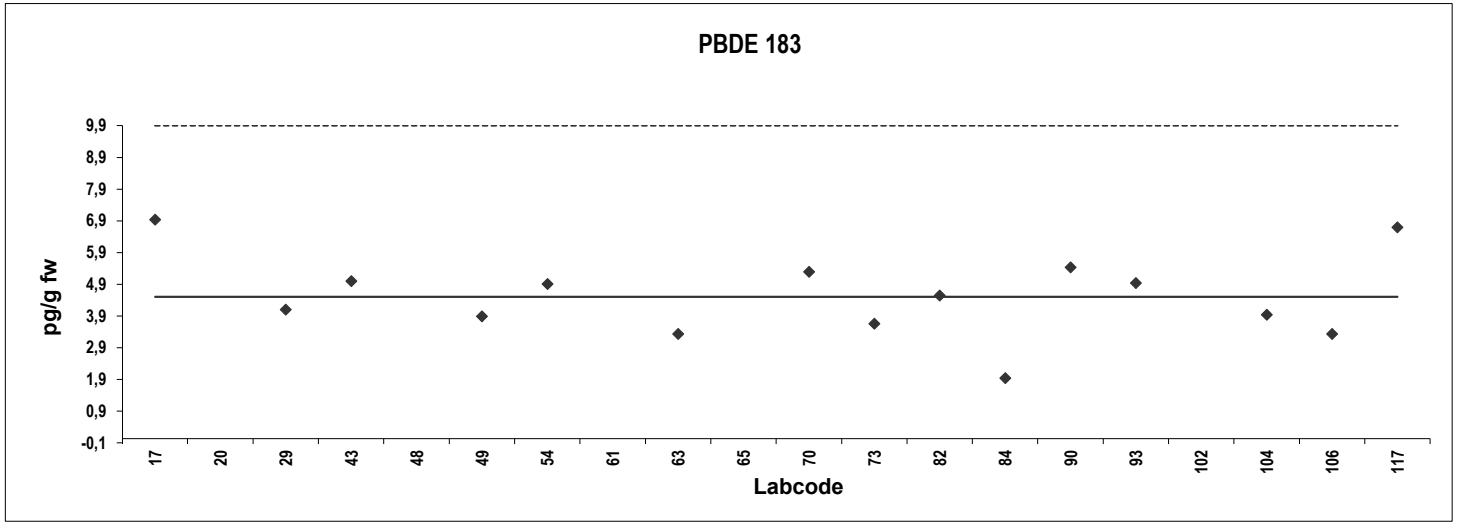
Fish oil

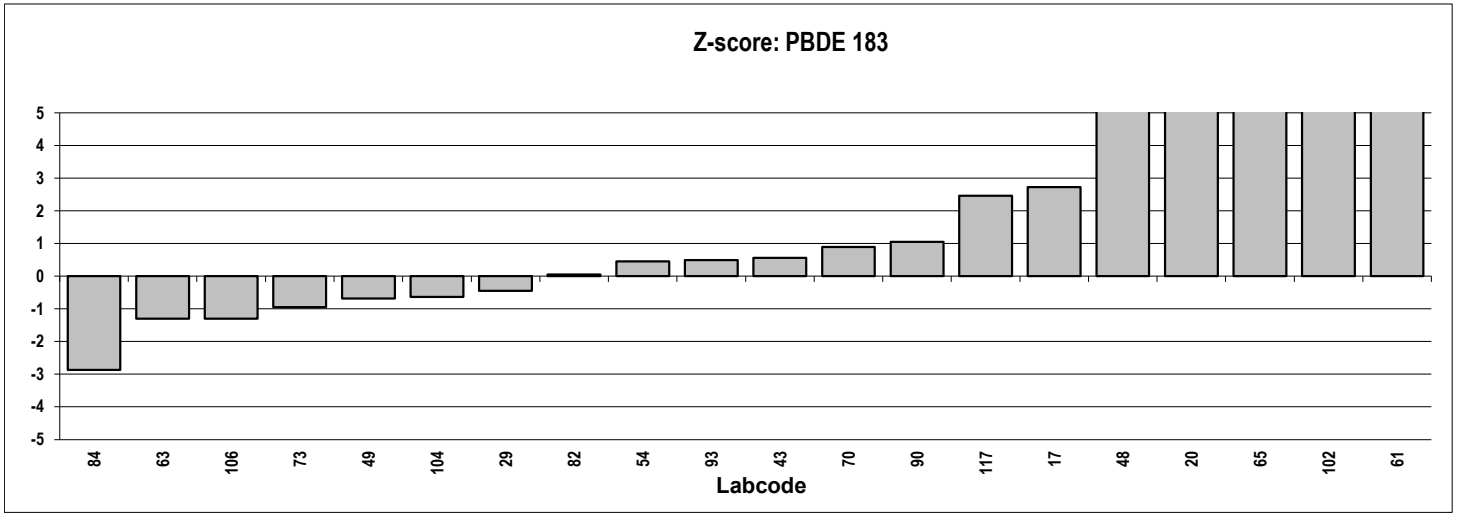
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	6,9	2,7				
20	38	38	Outlier			
29	4,1	-0,45				
43	5,0	0,56	ND			
48	26	24	Outlier,ND			
49	3,9	-0,69				
54	4,9	0,45				
61	1000	1115	Outlier,ND			
63	3,3	-1,3				
65	50	51	Outlier,ND			
70	5,3	0,89				
73	3,6	-0,95				
82	4,5	0,051	ND			
84	1,9	-2,9	ND			
90	5,4	1,0				
93	4,9	0,49				
102	80	85	Outlier,ND			
104	3,9	-0,63				
106	3,3	-1,3				
117	6,7	2,5				

Consenus statistics

Consensus median, pg/g	4,5
Median all values pg/g	4,9
Consensus mean, pg/g	4,5
Standard deviation, pg/g	1,3
Relative standard deviation, %	29
No. of values reported	20
No. of values removed	5
No. of reported non-detects	7


PBDE 183
pg/g fw
9,9
8,9
7,9
6,9
5,9
4,9
3,9
2,9
1,9
0,9
-0,1
17
20
29
43
48
49
54
61
63
65
70
73
82
84
90
93
102
104
106
117
Labcode


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
84
63
106
73
49
104
29
82
54
93
43
70
90
117
17
48
20
65
102
61
Labcode

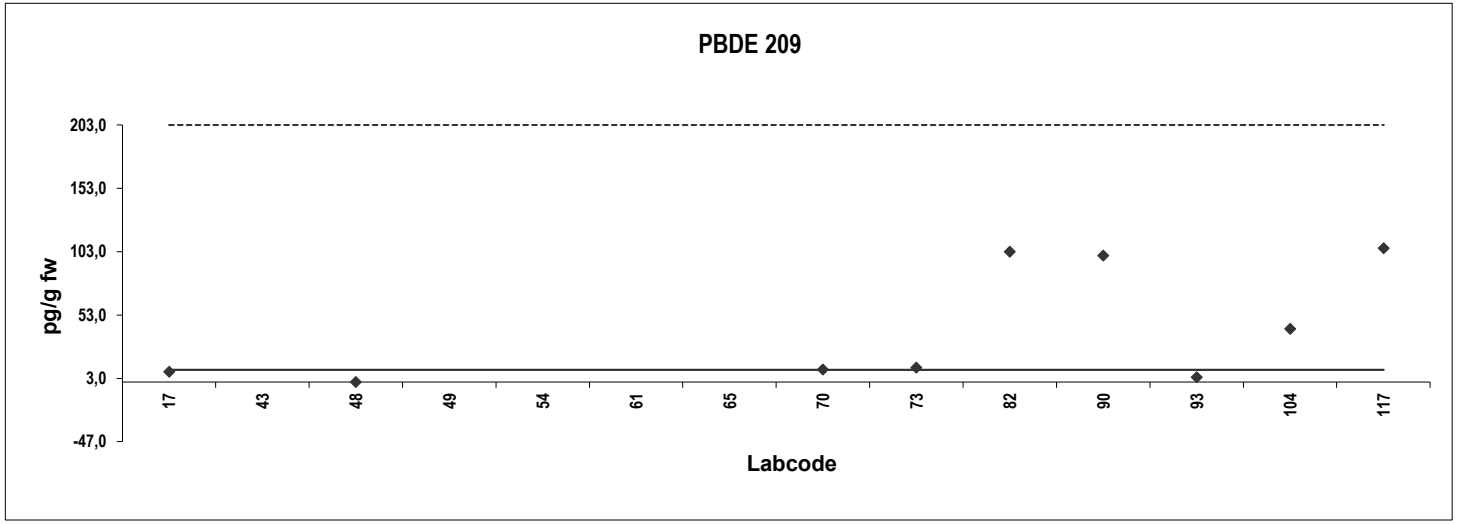
Fish oil

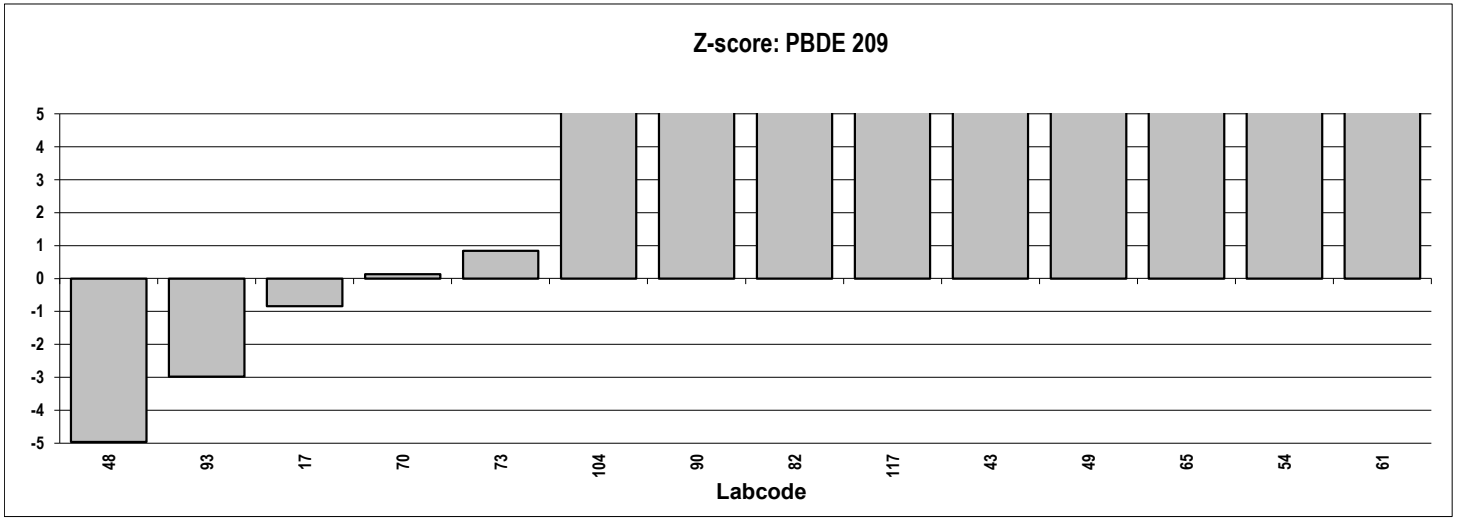
Congener: PBDE 209

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
17	8,1	-0,8				
43	397	199	Outlier,ND			
48	0,065	-5,0				
49	883	449	Outlier			
54	5382	2759	Outlier			
61	50000	25678	Outlier,ND			
65	1000	509	Outlier,ND			
70	10	0,14	ND			
73	11	0,84				
82	103	48	ND			
90	100	46	ND			
93	3,9	-3,0				
104	42	17				
117	106	49				

Consenus statistics

Consensus median, pg/g	9,7
Median all values pg/g	102
Consensus mean, pg/g	43
Standard deviation, pg/g	47
Relative standard deviation, %	109
No. of values reported	14
No. of values removed	5
No. of reported non-detects	6


PBDE 209
203,0
153,0
103,0
53,0
3,0
-47,0
pg/g fw
17
43
48
49
54
61
65
70
73
82
90
93
104
117
Labcode


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
48
93
17
70
73
104
90
82
117
43
49
65
54
61
Labcode

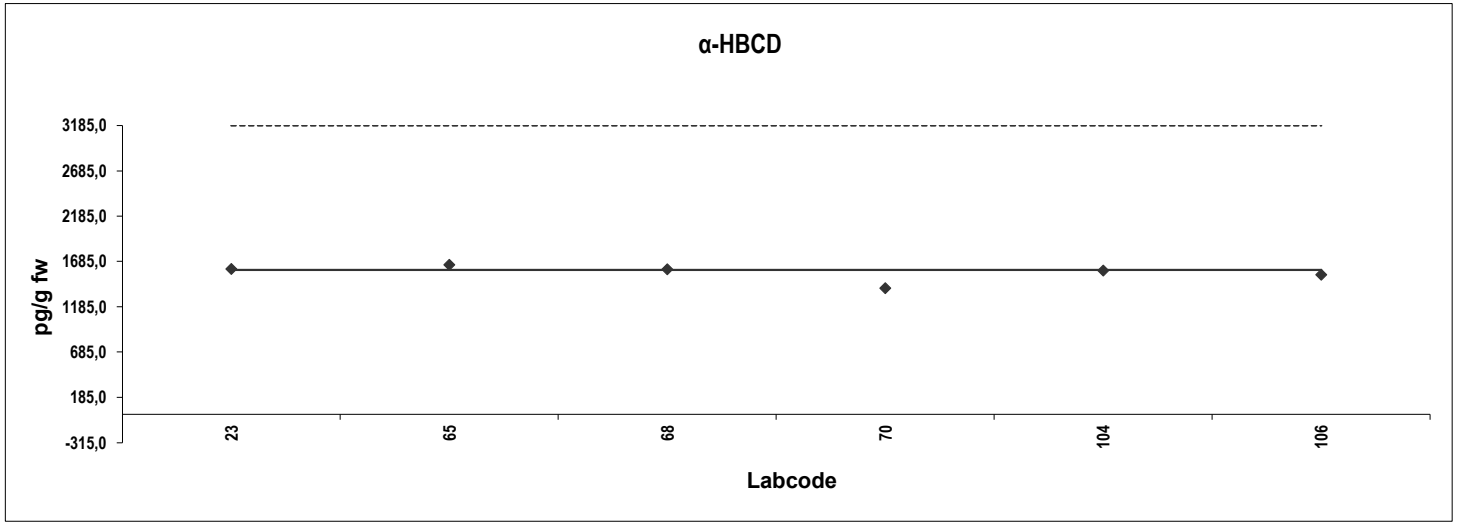
Fish oil

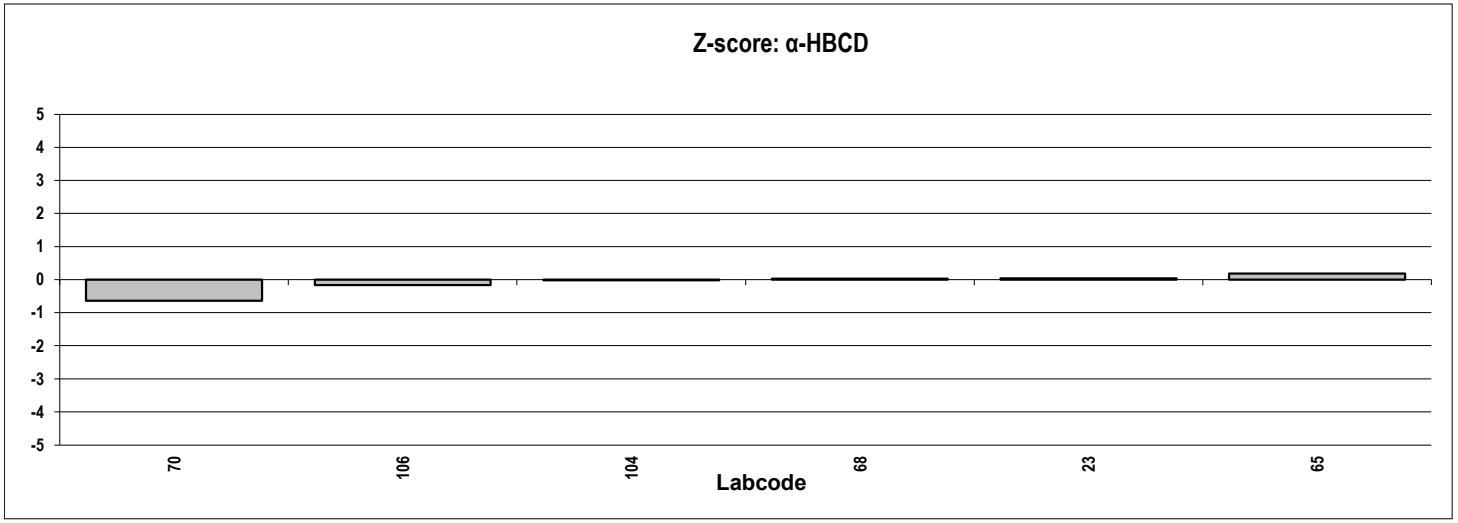
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	1604	0,036				
65	1650	0,18				
68	1600	0,024				
70	1390	-0,64				
104	1585	-0,024				
106	1540	-0,16				

Consenus statistics

Consensus median, pg/g	1593
Median all values pg/g	1593
Consensus mean, pg/g	1561
Standard deviation, pg/g	91
Relative standard deviation, %	6
No. of values reported	6
No. of values removed	0
No. of reported non-detects	0


α-HBCD
3185,0
2685,0
2185,0
1685,0
1185,0
685,0
185,0
-315,0
pg/g fw
23
65
68
70
104
106
Labcode


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
106
104
68
23
65
Labcode

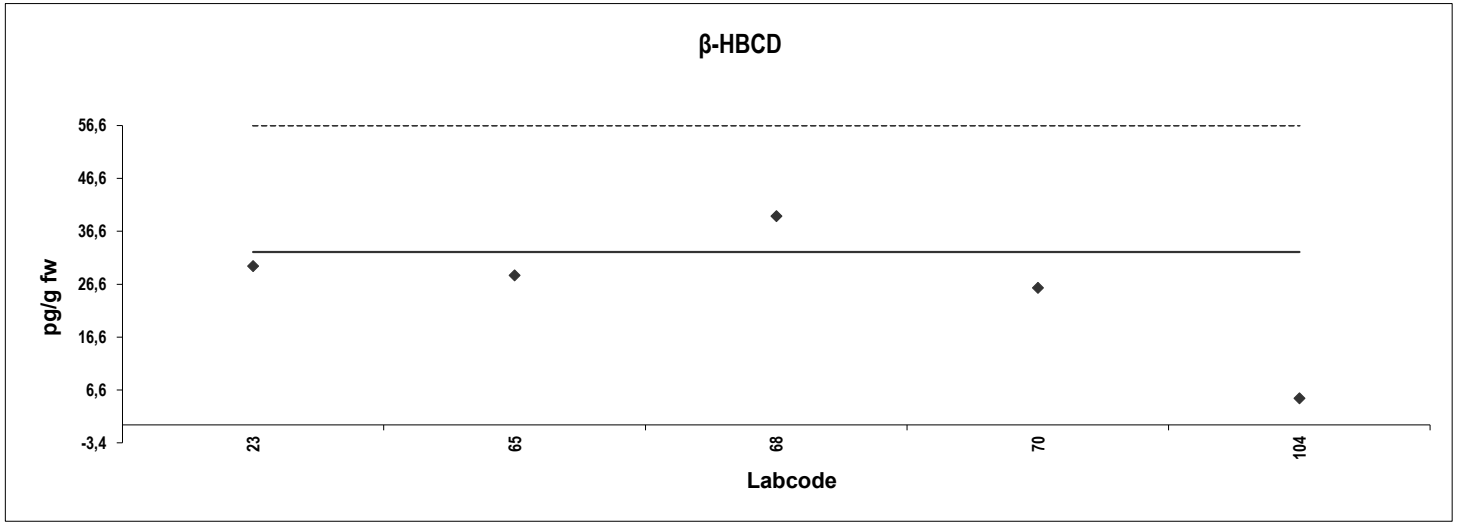
Fish oil

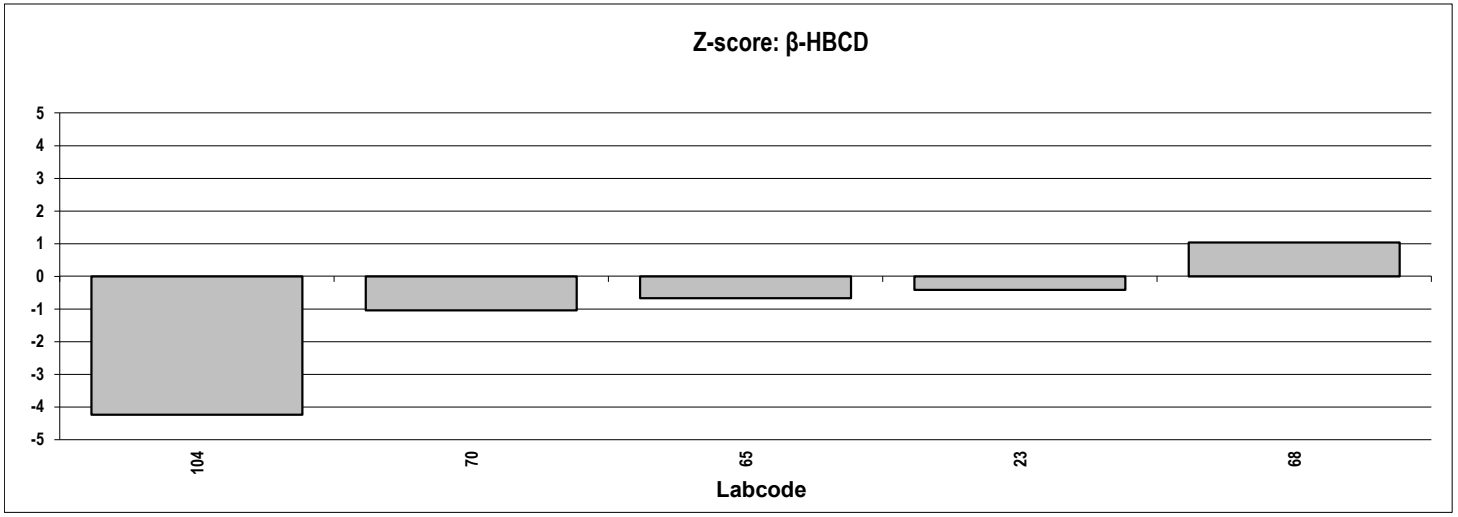
Congener: β-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	30	-0,41	ND			
65	28	-0,67	ND			
68	40	1,0				
70	26	-1,0				
104	5,0	-4,2	ND			

Consenus statistics

Consensus median, pg/g	33
Median all values pg/g	28
Consensus mean, pg/g	26
Standard deviation, pg/g	13
Relative standard deviation, %	49
No. of values reported	5
No. of values removed	0
No. of reported non-detects	3


β-HBCD
56,6
46,6
36,6
26,6
16,6
6,6
-3,4
pg/g fw
23
65
68
70
104
Labcode


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
104
70
65
23
68
Labcode

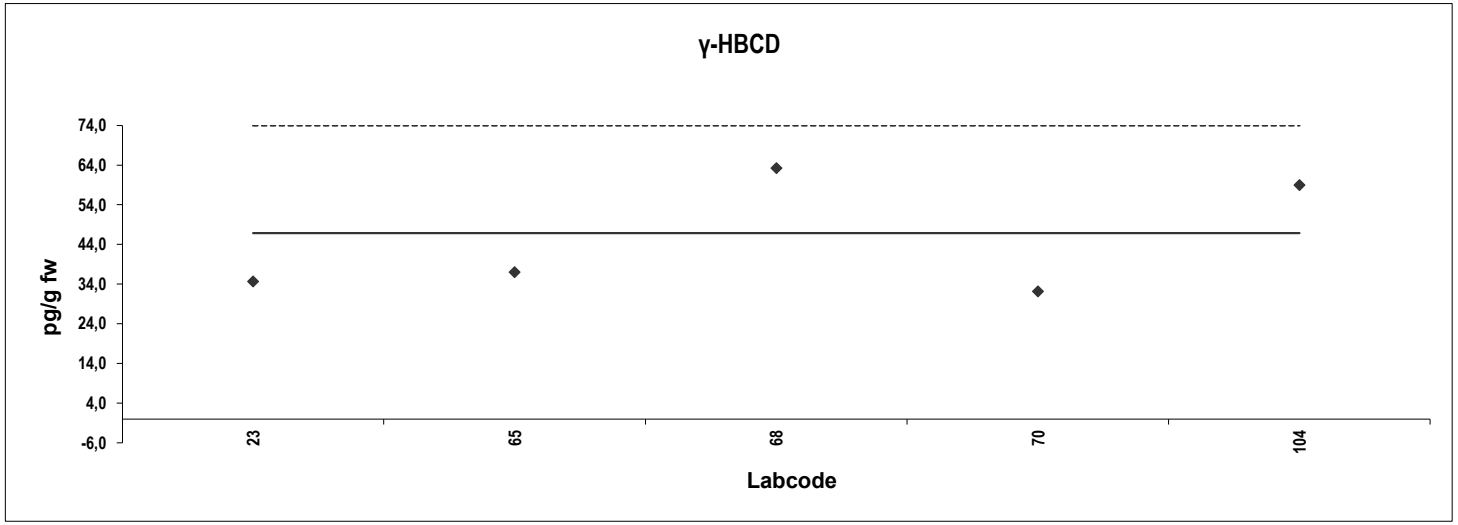
Fish oil

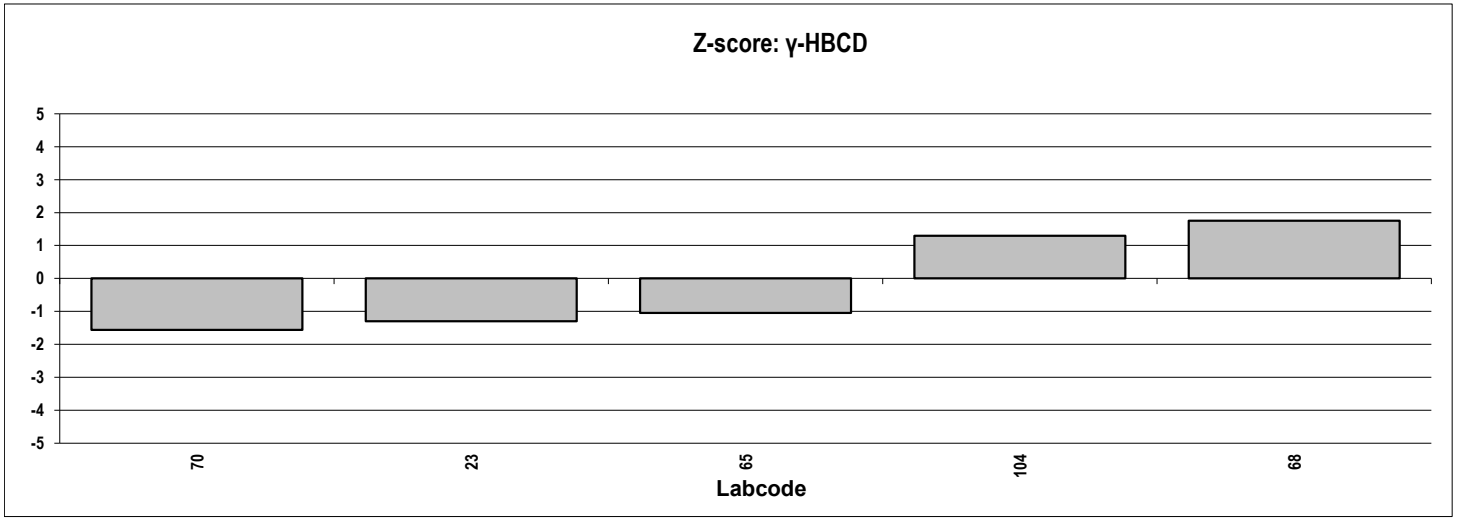
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	35	-1,3				
65	37	-1,1	ND			
68	63	1,8				
70	32	-1,6				
104	59	1,3				

Consenus statistics

Consensus median, pg/g	47
Median all values pg/g	37
Consensus mean, pg/g	45
Standard deviation, pg/g	15
Relative standard deviation, %	33
No. of values reported	5
No. of values removed	0
No. of reported non-detects	1


γ-HBCD
74,0
64,0
54,0
44,0
34,0
24,0
14,0
4,0
-6,0
pg/g fw
23
65
68
70
104
Labcode


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
23
65
104
68
Labcode

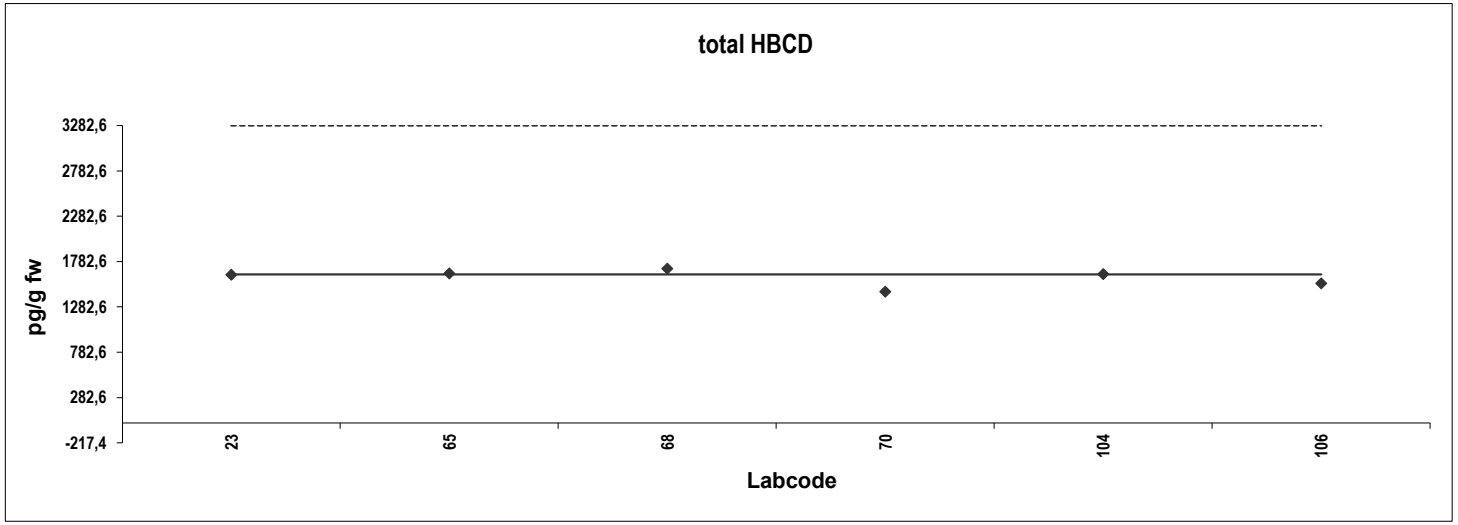
Fish oil

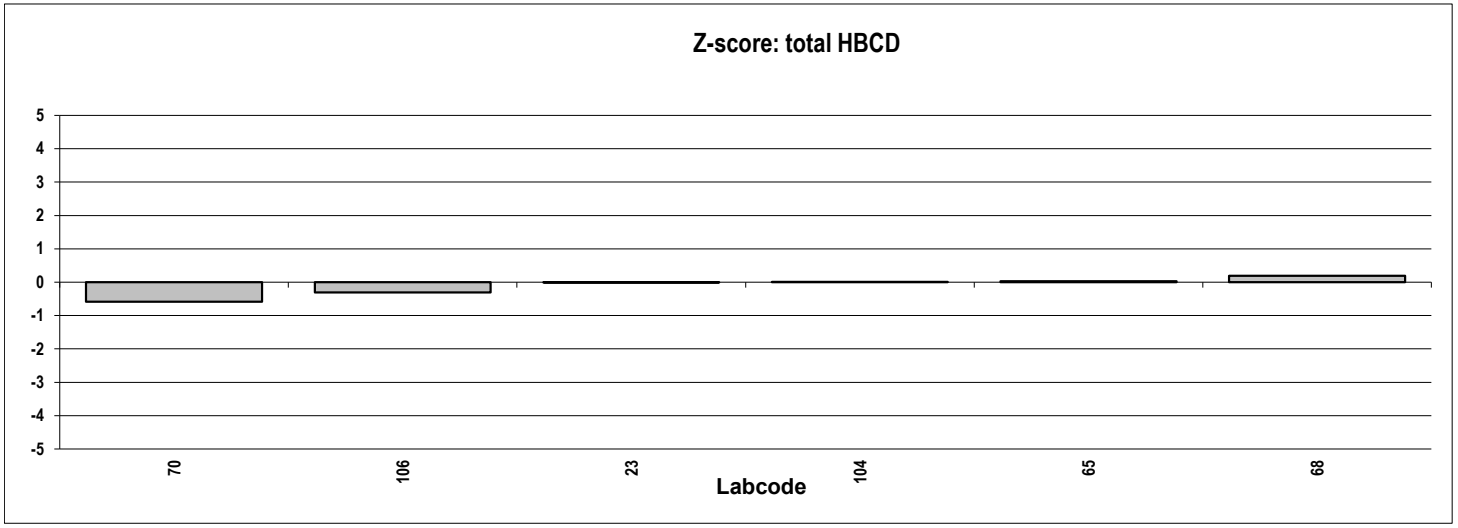
Congener: total HBCD

Lab code	Conc. pg/g fw.	Z-score	Notes	Lab code	Conc. pg/g fw.	Notes
23	1639	-0,0082				
65	1650	0,026				
68	1703	0,19				
70	1450	-0,58				
104	1644	0,0082				
106	1540	-0,31				

Consenus statistics

Consensus median, pg/g	1641
Median all values pg/g	1641
Consensus mean, pg/g	1604
Standard deviation, pg/g	92
Relative standard deviation, %	6
No. of values reported	6
No. of values removed	0
No. of reported non-detects	0


total HBCD
3282,6
2782,6
2282,6
1782,6
1282,6
782,6
282,6
-217,4
pg/g fw
23
65
68
70
104
106
Labcode


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
70
106
23
104
65
68
Labcode

Appendix 5:

Presentation of results for
Fish 2023

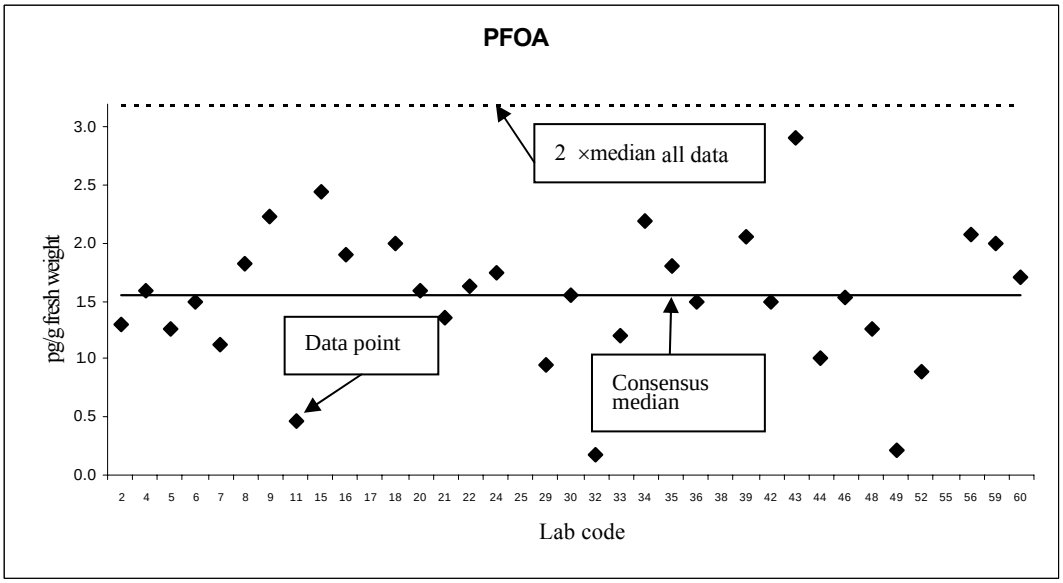
Appendix 5: Presentation of results: Fish 2023

Statistic calculations for PFASs

For each congener, the outliers were removed and the consensus calculated according to the following procedure:

1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners (NDs).
2. Values exceeding 2 × this median were defined as outliers and removed from the data set. The NDs were also removed.
3. Median, mean and standard deviation were re-calculated from the remaining data. This second median was called consensus.
4. For comparison, median, mean and standard deviation were also calculated without removing NDs.

The diagram shows the reported data up to approximately the limit for outliers (2 × the first median).



Z-Scores of individual congeners

Z-scores of each congener were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

Fish

PFOS - All reported forms

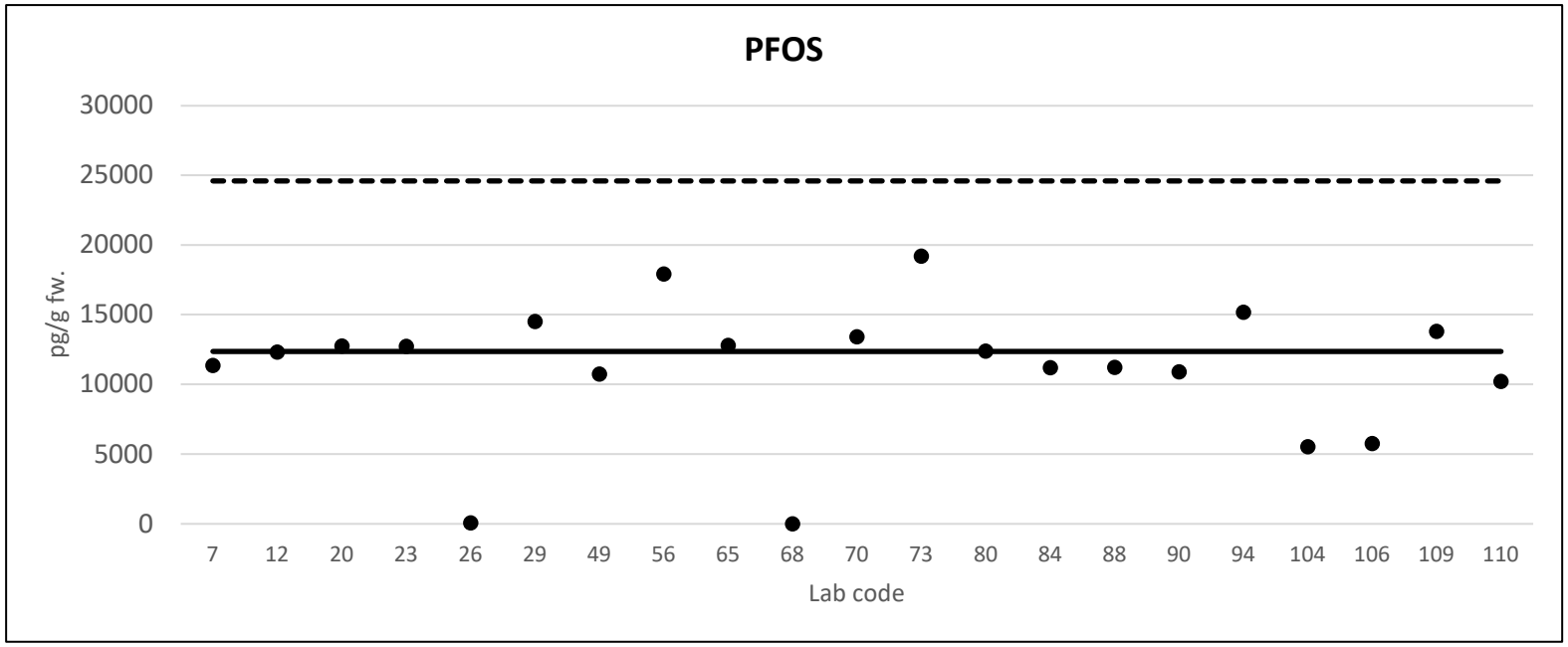
· **All reported forms**

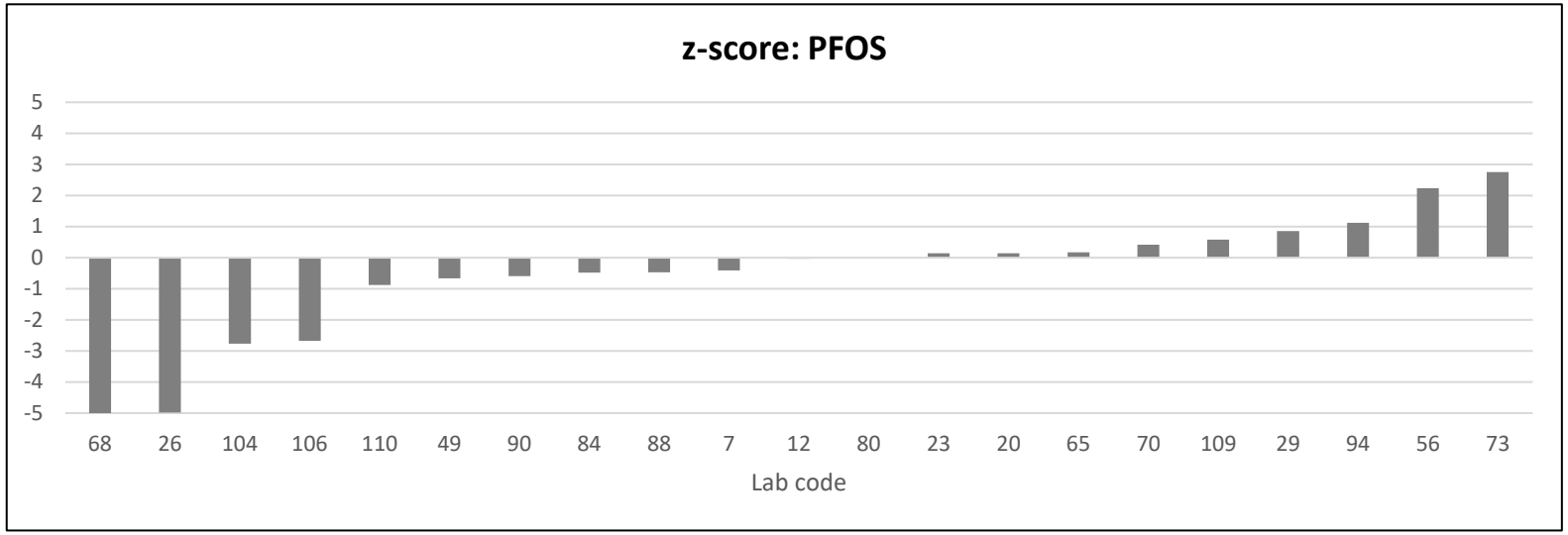
Lab code	pg/g fw.	Z-score	Notes
7	11360	-0,41	
12	12300	-0,030	
20	12735	0,15	
23	12714	0,14	
26	59	-5,0	Outlier*
29	14500	0,86	
49	10738	-0,66	
56	17900	2,2	
65	12800	0,17	
68	0,011	-5,0	Outlier*
70	13400	0,41	
73	19184	2,8	
80	12375	0,0	
84	11180	-0,48	
88	11220	-0,47	
90	10900	-0,60	
94	15156	1,1	
104	5530	-2,8	
106	5750	-2,7	
109	13800	0,58	
110	10200	-0,88	

*Outlier due to very low reported value.

Consensus statistics

Consensus median, pg/g	12375
Median all values pg/g	12300
Consensus mean, pg/g	12302
Standard deviation, pg/g	3305
Relative standard deviation, %	27
No. of values reported	21
No. of values removed	2
No. of reported non-detects	0


PFOS
30000
25000
20000
15000
10000
5000
0
pg/g fw.
7 12 20 23 26 29 49 56 65 68 70 73 80 84 88 90 94 104 106 109 110
Lab code


z-score: PFOS
5
4
3
2
1
0
-1
-2
-3
-4
-5
68 26 104 106 110 49 90 84 88 7 12 80 23 20 65 70 109 29 94 56 73
Lab code

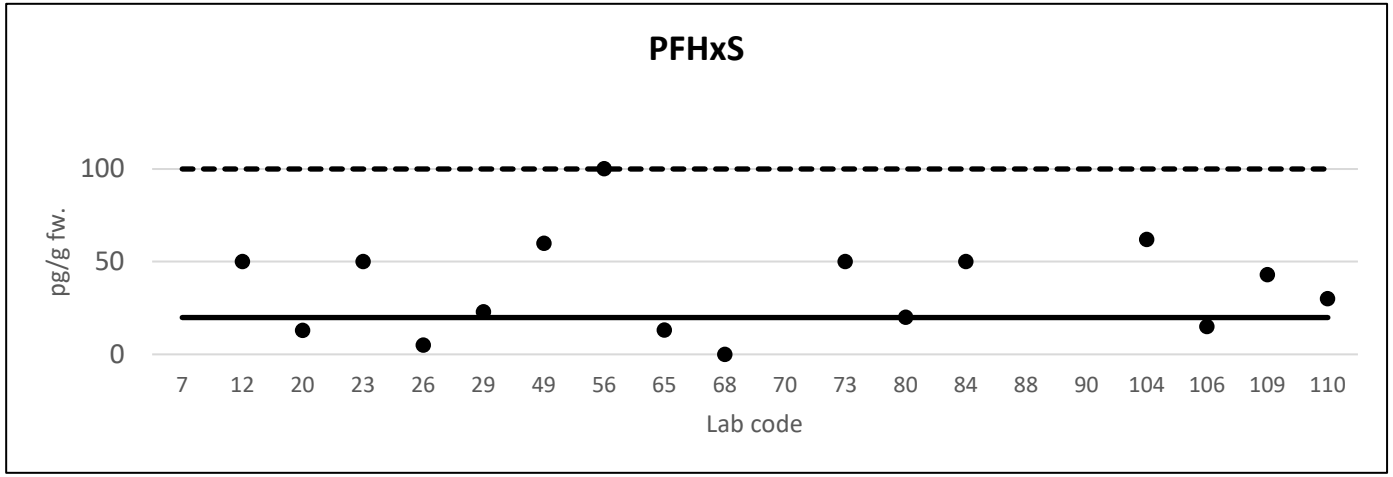
Fish

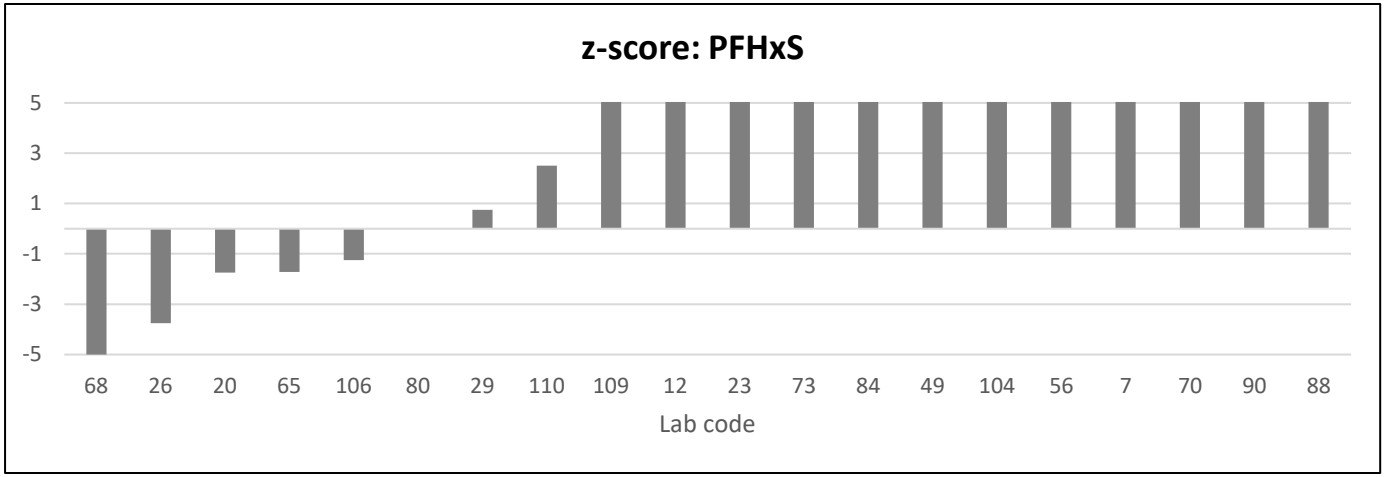
PFHxS - All reported forms

Lab code	pg/g fw.	Z-score	Notes
7	200	45	ND, outlier
12	50	7,5	ND
20	13	-1,8	
23	50	7,5	ND
26	5	-3,8	ND
29	23	0,75	
49	60	10	ND
56	100	20	ND
65	13	-1,7	
68	0,000010	-5,0	ND, outlier*
70	210	48	Outlier
73	50	7,5	
80	20	0,0	
84	50	7,5	ND
88	500	120	ND, outlier
90	300	70	ND, outlier
104	62	11	
106	15	-1,3	
109	43	5,8	ND
110	30	2,5	ND

*Outlier due to very low reported value.

Consensus statistics	
Consensus median, pg/g	20
Median all values pg/g	50
Consensus mean, pg/g	28
Standard deviation, pg/g	20
Relative standard deviation, %	71
No. of values reported	20
No. of values removed	13
No. of reported non-detects	12


PFHxS
100
50
0
pg/g fw.
7
12
20
23
26
29
49
56
65
68
70
73
80
84
88
90
104
106
109
110
Lab code


z-score: PFHxS
5
3
1
-1
-3
-5
68
26
20
65
106
80
29
110
109
12
23
73
84
49
104
56
7
70
90
88
Lab code

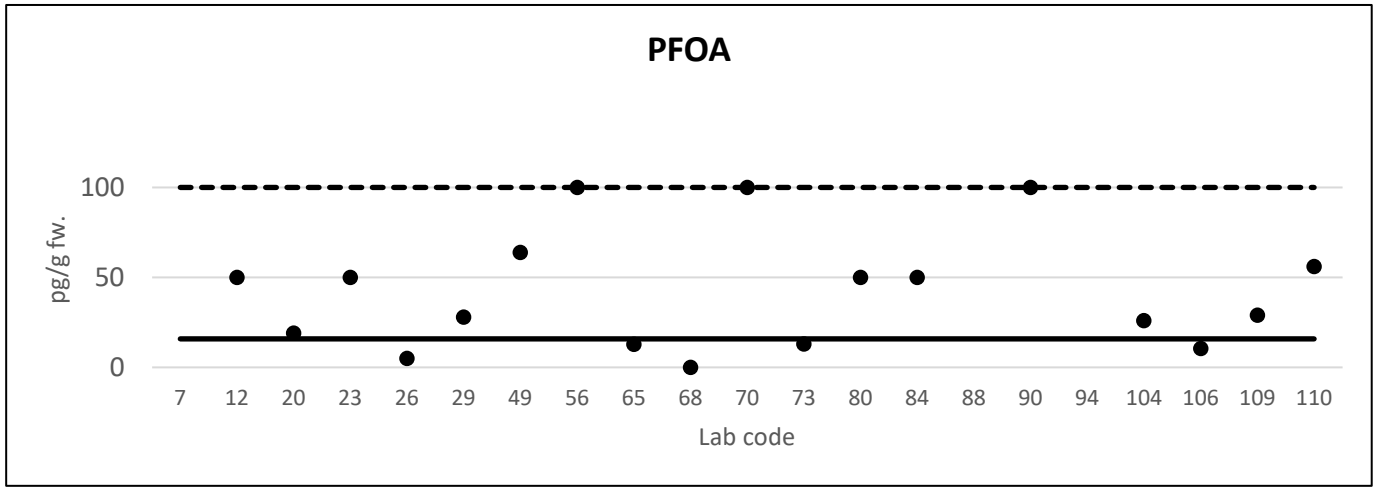
Fish

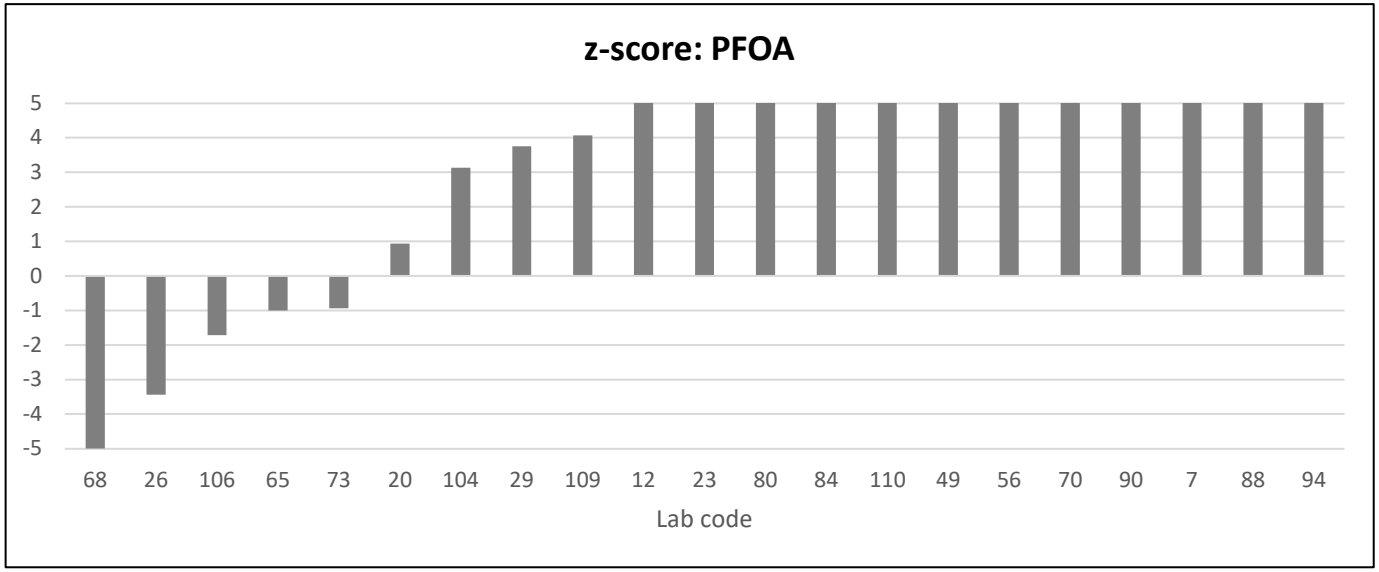
PFOA - All reported forms

Lab code	pg/g fw.	Z-score	Notes
7	200	58	ND, outlier
12	50	11	ND
20	19	0,94	
23	50	11	ND
26	5	-3,4	ND
29	28	3,8	
49	64	15	ND
56	100	26	ND
65	13	-1,0	
68	0,000050	-5,0	ND, outlier*
70	100	26	ND
73	13	-0,94	
80	50	11	ND
84	50	11	ND
88	500	151	ND, outlier
90	100	26	ND
94	500	151	ND, outlier
104	26	3,1	
106	11	-1,7	
109	29	4,1	ND
110	56	13	ND

*Outlier due to very low reported value.

Consensus statistics	
Consensus median, pg/g	16
Median all values pg/g	50
Consensus mean, pg/g	18
Standard deviation, pg/g	7
Relative standard deviation, %	41
No. of values reported	21
No. of values removed	15
No. of reported non-detects	15


PFOA
100
50
0
pg/g fw.
7 12 20 23 26 29 49 56 65 68 70 73 80 84 88 90 94 104 106 109 110
Lab code


z-score: PFOA
5
4
3
2
1
0
-1
-2
-3
-4
-5
68 26 106 65 73 20 104 29 109 12 23 80 84 110 49 56 70 90 7 88 94
Lab code

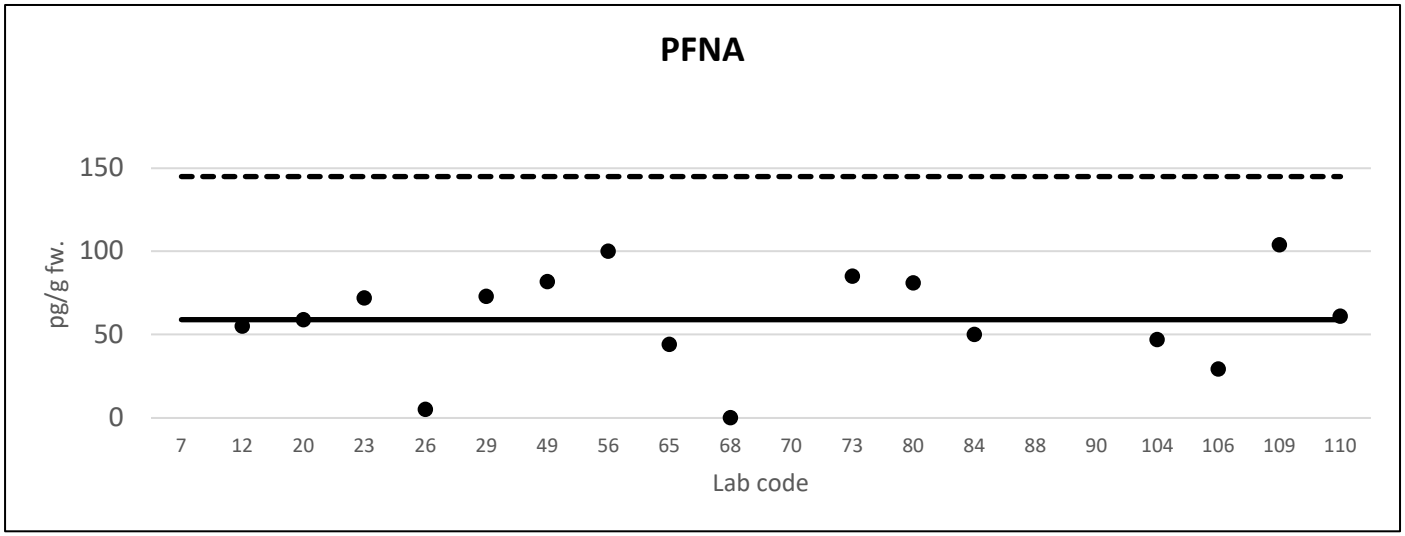
Fish

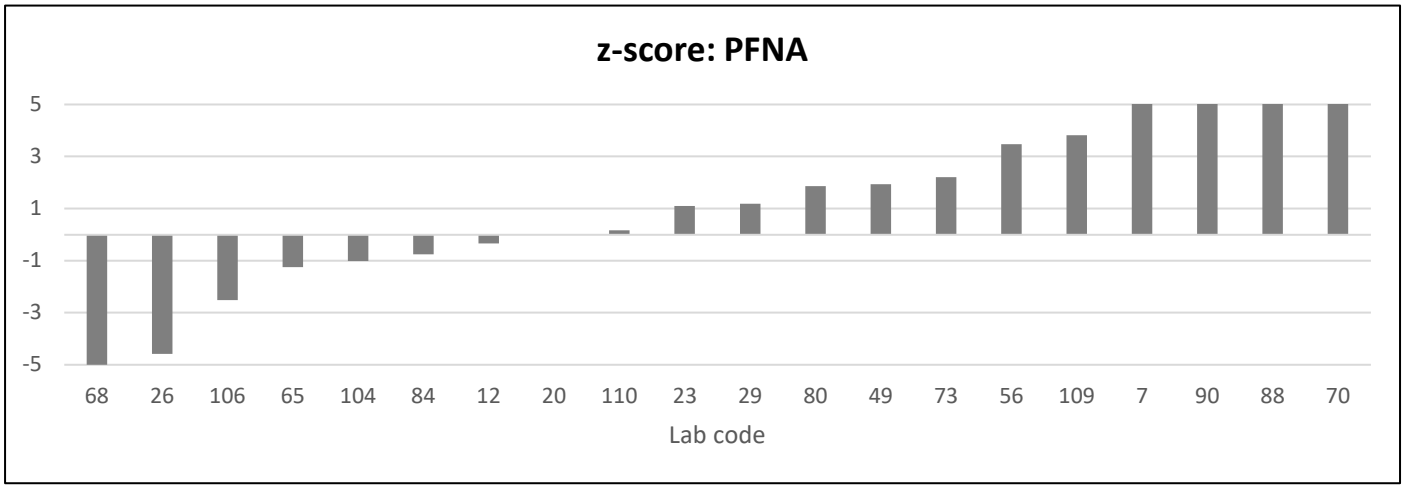
PFNA - All reported forms

Lab code	pg/g fw.	Z-score	Notes
7	200	12	ND, outlier
12	55	-0,34	
20	59	0,0	
23	72	1,1	
26	5	-4,6	ND
29	73	1,2	
49	82	1,9	ND
56	100	3,5	ND
65	44	-1,3	
68	0,000040	-5,0	Outlier*
70	4050	338	Outlier
73	85	2,2	
80	81	1,9	
84	50	-0,76	
88	500	37	ND, outlier
90	200	12	ND, outlier
104	47	-1,0	
106	29	-2,5	
109	104	3,8	ND
110	61	0,17	

*Outlier due to very low reported value.

Consensus statistics	
Consensus median, pg/g	59
Median all values pg/g	73
Consensus mean, pg/g	60
Standard deviation, pg/g	17
Relative standard deviation, %	28
No. of values reported	20
No. of values removed	9
No. of reported non-detects	7


PFNA
150
100
50
0
pg/g fw.
7
12
20
23
26
29
49
56
65
68
70
73
80
84
88
90
104
106
109
110
Lab code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5
3
1
-1
-3
-5
68
26
106
65
104
84
12
20
110
23
29
80
49
73
56
109
7
90
88
70
Lab code

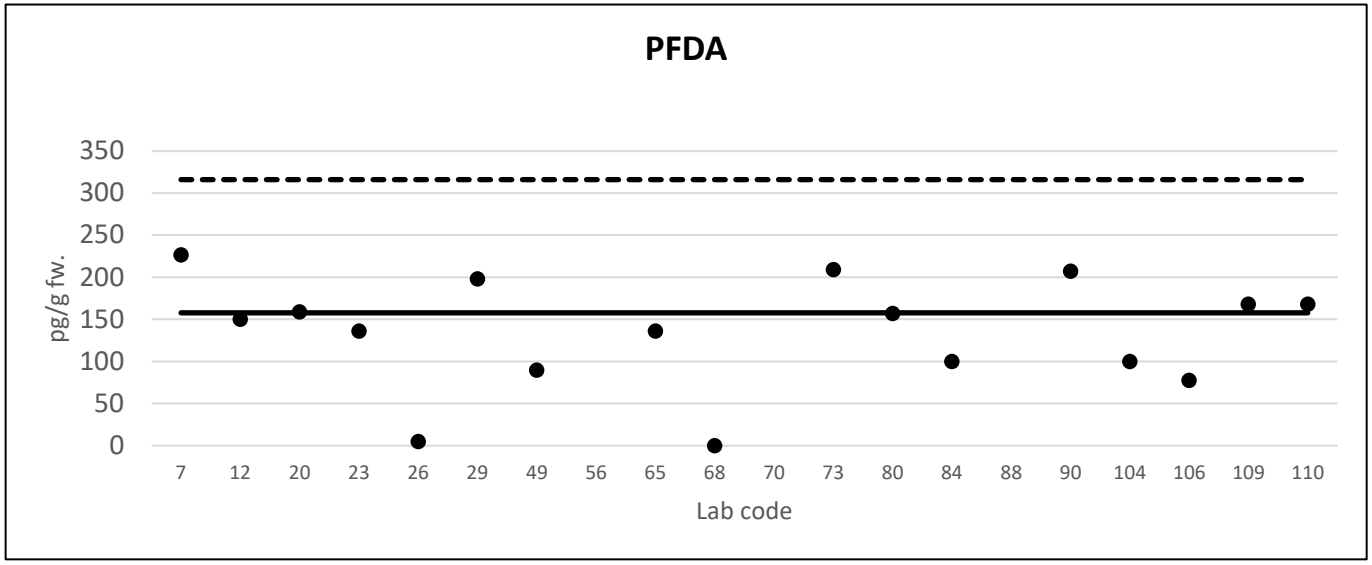
Fish

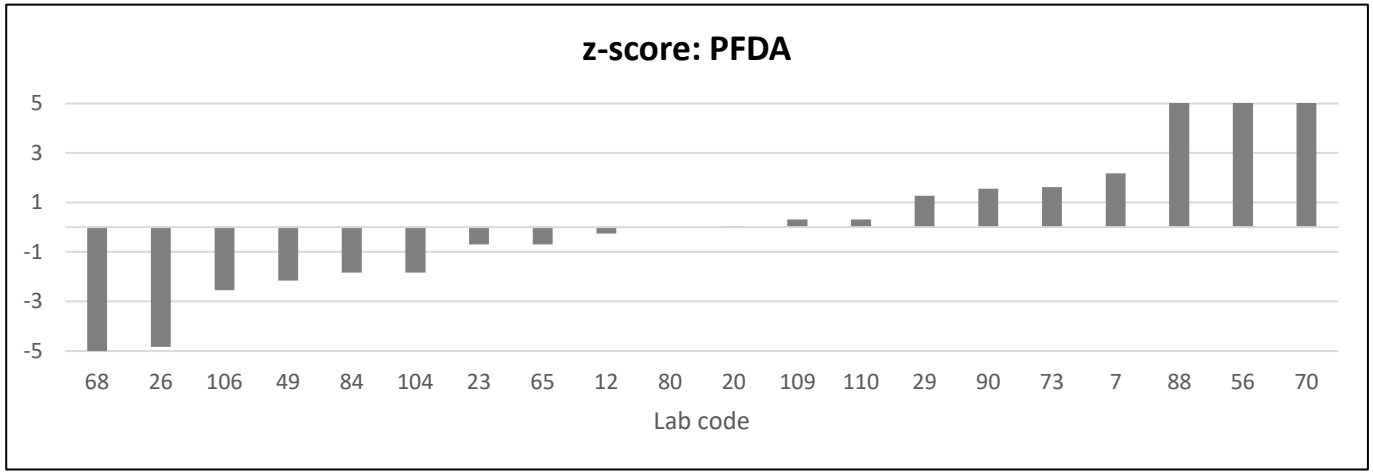
PFDA - All reported forms

Lab code	pg/g fw.	Z-score	Notes
7	227	2,2	
12	150	-0,25	
20	159	0,032	
23	136	-0,70	
26	5,0	-4,8	ND
29	198	1,3	
49	90	-2,2	
56	680	17	Outlier
65	136	-0,70	
68	0,00014	-5,0	Outlier*
70	6580	203	Outlier
73	209	1,6	
80	157	-0,032	
84	100	-1,8	ND
88	500	11	ND, Outlier
90	207	1,6	
104	100	-1,8	
106	78	-2,5	
109	168	0,32	
110	168	0,32	

*Outlier due to very low reported value.

Consensus statistics	
Consensus median, pg/g	158
Median all values pg/g	158
Consensus mean, pg/g	156
Standard deviation, pg/g	46
Relative standard deviation, %	29
No. of values reported	20
No. of values removed	6
No. of reported non-detects	3


PFDA
350
300
250
200
150
100
50
0
pg/g fw.
7 12 20 23 26 29 49 56 65 68 70 73 80 84 88 90 104 106 109 110
Lab code


z-score: PFDA
5
3
1
-1
-3
-5
68 26 106 49 84 104 23 65 12 80 20 109 110 29 90 73 7 88 56 70
Lab code

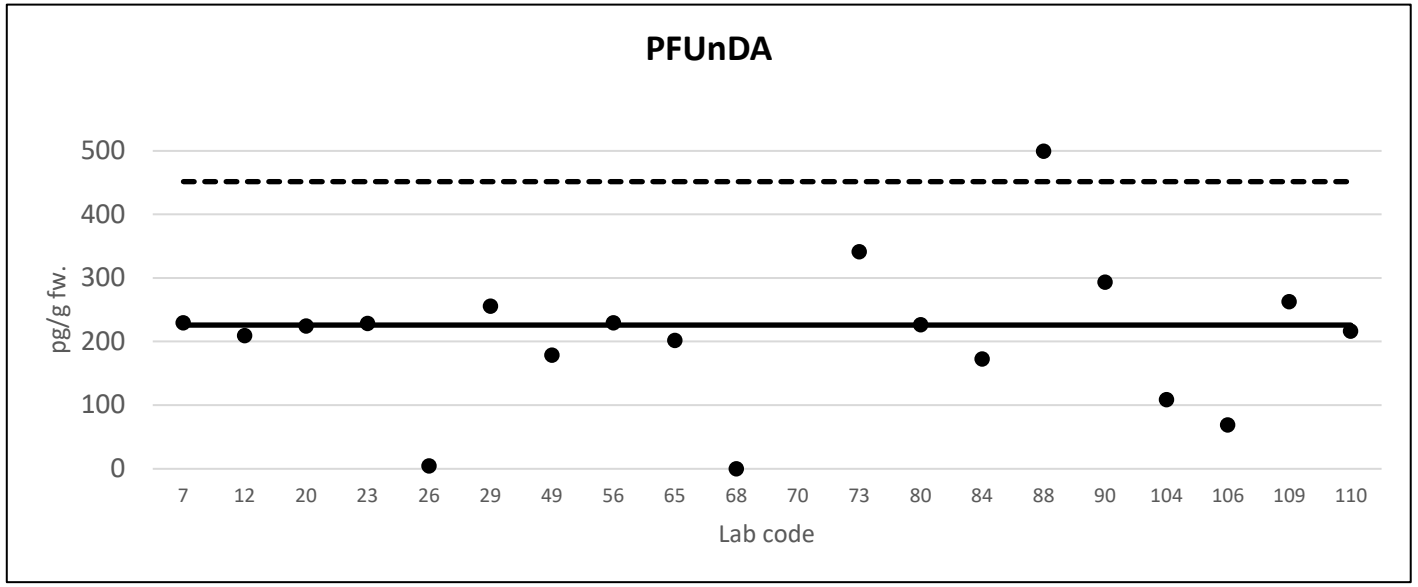
Fish

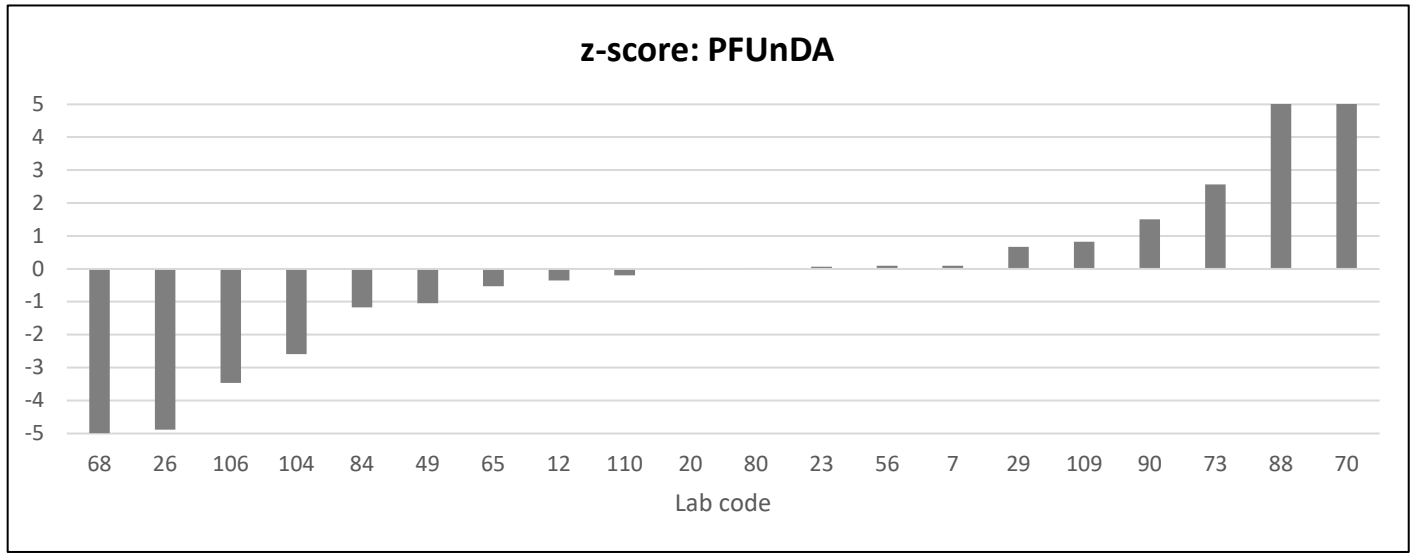
PFUnDA - All reported forms

Lab code	pg/g fw.	Z-score	Notes
7	230	0,091	
12	210	-0,35	
20	225	-0,022	
23	229	0,066	
26	5,0	-4,9	ND
29	256	0,66	
49	179	-1,0	
56	230	0,088	
65	202	-0,53	
68	0,00021	-5,0	Outlier*
70	10500	227	Outlier
73	342	2,6	
80	227	0,022	
84	173	-1,2	
88	500	6,1	ND, Outlier
90	294	1,5	
104	109	-2,6	
106	69	-3,5	
109	263	0,82	
110	217	-0,20	

*Outlier due to very low reported value.

Consensus statistics	
Consensus median, pg/g	226
Median all values pg/g	226
Consensus mean, pg/g	216
Standard deviation, pg/g	65
Relative standard deviation, %	30
No. of values reported	20
No. of values removed	4
No. of reported non-detects	2


PFUnDA
500
400
300
200
100
0
pg/g fw.
7
12
20
23
26
29
49
56
65
68
70
73
80
84
88
90
104
106
109
110
Lab code


z-score: PFUnDA
5
4
3
2
1
0
-1
-2
-3
-4
-5
68
26
106
104
84
49
65
12
110
20
80
23
56
7
29
109
90
73
88
70
Lab code

Appendix 6:

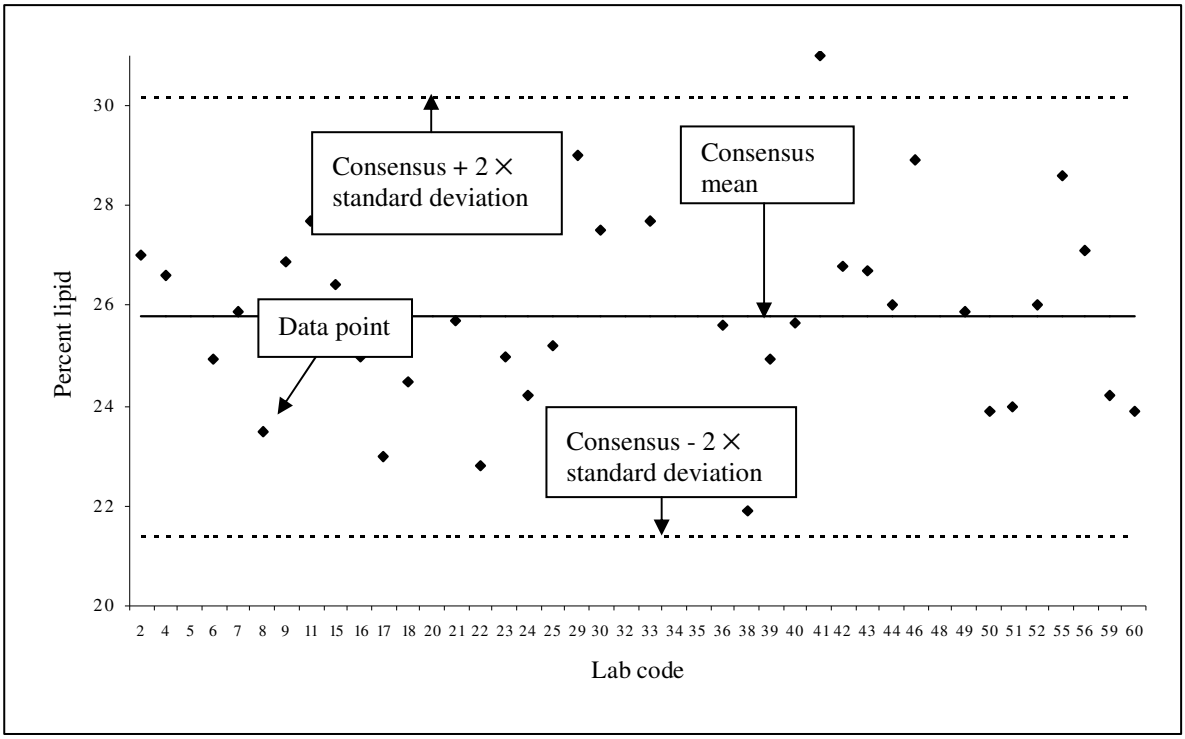
Presentation of results
for lipid determination

Presentation of results for lipid determination

Removal of outliers and calculation of consensus were done by the following procedure:

1. The mean was calculated from all the reported data.
2. Values outside a range of ± 2 × the standard deviation of this mean were defined as outliers and removed from the data set.
3. Mean, standard deviation and median were re-calculated from the remaining data. This mean was called consensus.

The diagram shows the reported data with consensus and consensus ± the new standard deviation × 2.



Z-Scores of lipid content

Z-scores of lipid content were calculated for each laboratory according to the following equation:

$$z = (x - X)/\sigma$$

where x = reported value; X = assigned value (consensus); σ = target value for standard deviation. A σ of 20% of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

Lipid determination for Reindeer

Lab code	% lipid	Z-score	Notes	Lab code	% lipid	Notes
5	11	0,52				
7	10	0,20				
11	6,3	-1,8				
12	11	0,46				
15	7,3	-1,3				
17	9,0	-0,38				
18	7,0	-1,4				
20	11	0,72				
23	7,1	-1,3				
26	9,4	-0,15				
29	8,5	-0,62				
30	9,6	-0,057				
35	11	0,58				
36	10	0,16				
37	9,4	-0,14				
43	10	0,24				
49	10	0,24				
52	9,7	-0,015				
54	7,8	-0,98				
56	9,8	0,031				
61	11	0,43				
65	9,6	-0,057				
66	12	1,0				
68	6,8	-1,5				
73	12	1,3				
82	10	0,33				
84	9,2	-0,27				
88	9,7	-0,017				
93	9,7	0,0				
95	8,2	-0,77				
97	38	14	Outlier			
103	9,7	-0,0051				
104	12	1,1				
111	11	0,46				
114	11	0,81				
115	10	0,32				
117	8,6	-0,57				
120	10	0,20				

Mean	Standard deviation	Relative standard deviation	Median
9,6	1,4	15	9,7

Lipid determination for Herring

Lab code	% lipid	Z-score	Notes	Lab code	% lipid	Notes
5	14	-0,35				
7	15	-0,080				
11	15	0,073				
15	13	-0,83				
17	17	0,54				
18	14	-0,52				
20	16	0,44				
23	14	-0,36				
26	15	-0,13				
29	15	-0,027				
30	16	0,17				
34	15	0,11				
35	16	0,20				
36	15	0,030				
37	14	-0,41				
43	14	-0,20				
45	15	-0,080				
49	14	-0,29				
52	15	-0,050				
54	15	-0,15				
56	13	-0,59				
59	16	0,39				
61	16	0,25				
63	16	0,24				
65	13	-0,82				
66	15	0,13				
71	15	0,027				
73	18	0,83				
80	16	0,44				
82	14	-0,33				
84	17	0,75				
87	30	5,0	Outlier			
88	15	0,082				
90	15	0,14				
93	15	-0,17				
95	11	-1,2				
97	36	6,8	Outlier			
103	16	0,44				
104	16	0,34				
106	16	0,24				
110	8,9	-2,1				
111	15	0,073				
114	15	0,083				
115	13	-0,82				
117	14	-0,26				
120	15	-0,026				

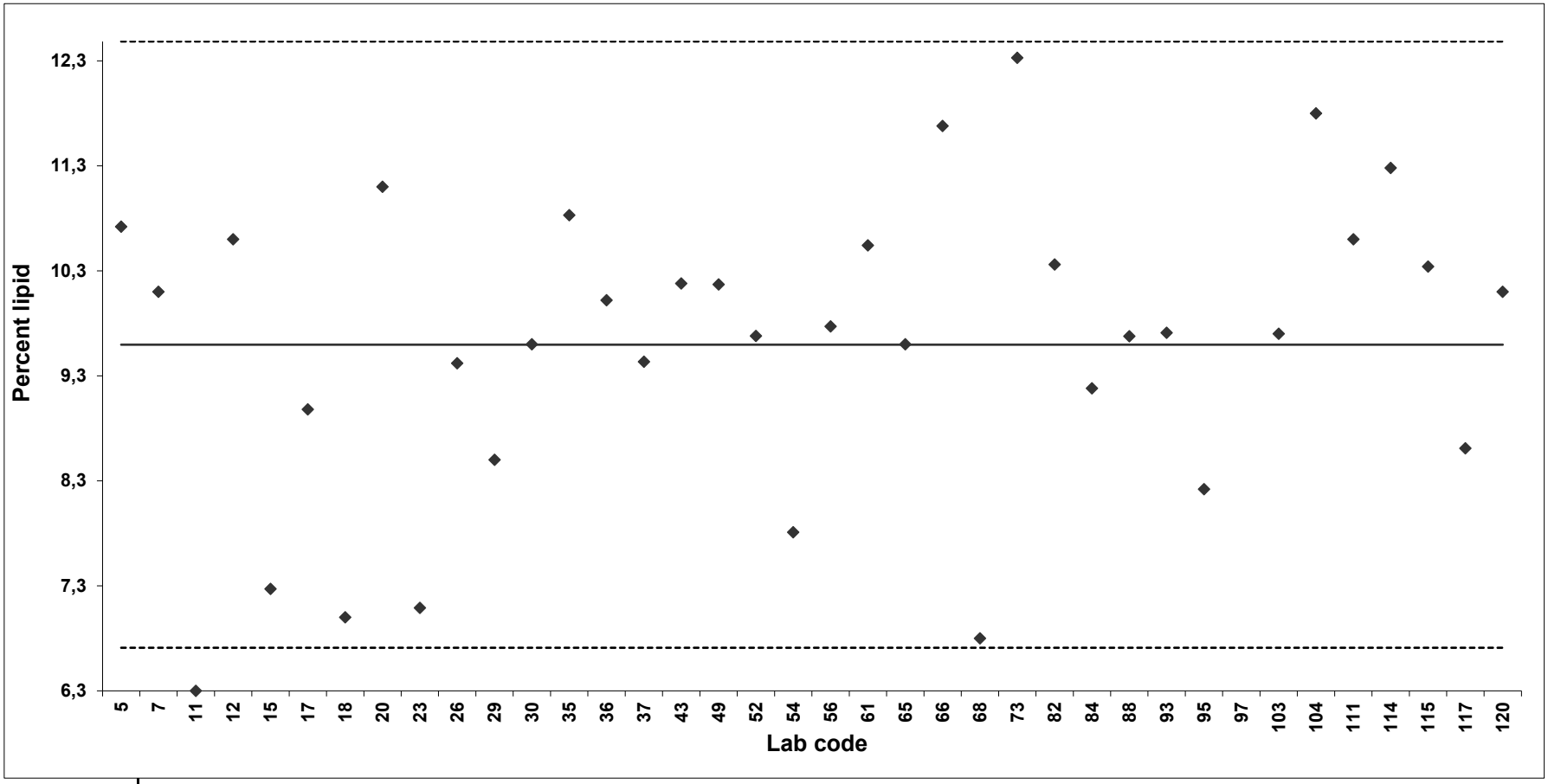
Mean	Standard deviation	Relative standard deviation	Median
15	1,6	11	15

Lipid determination for Fish oil

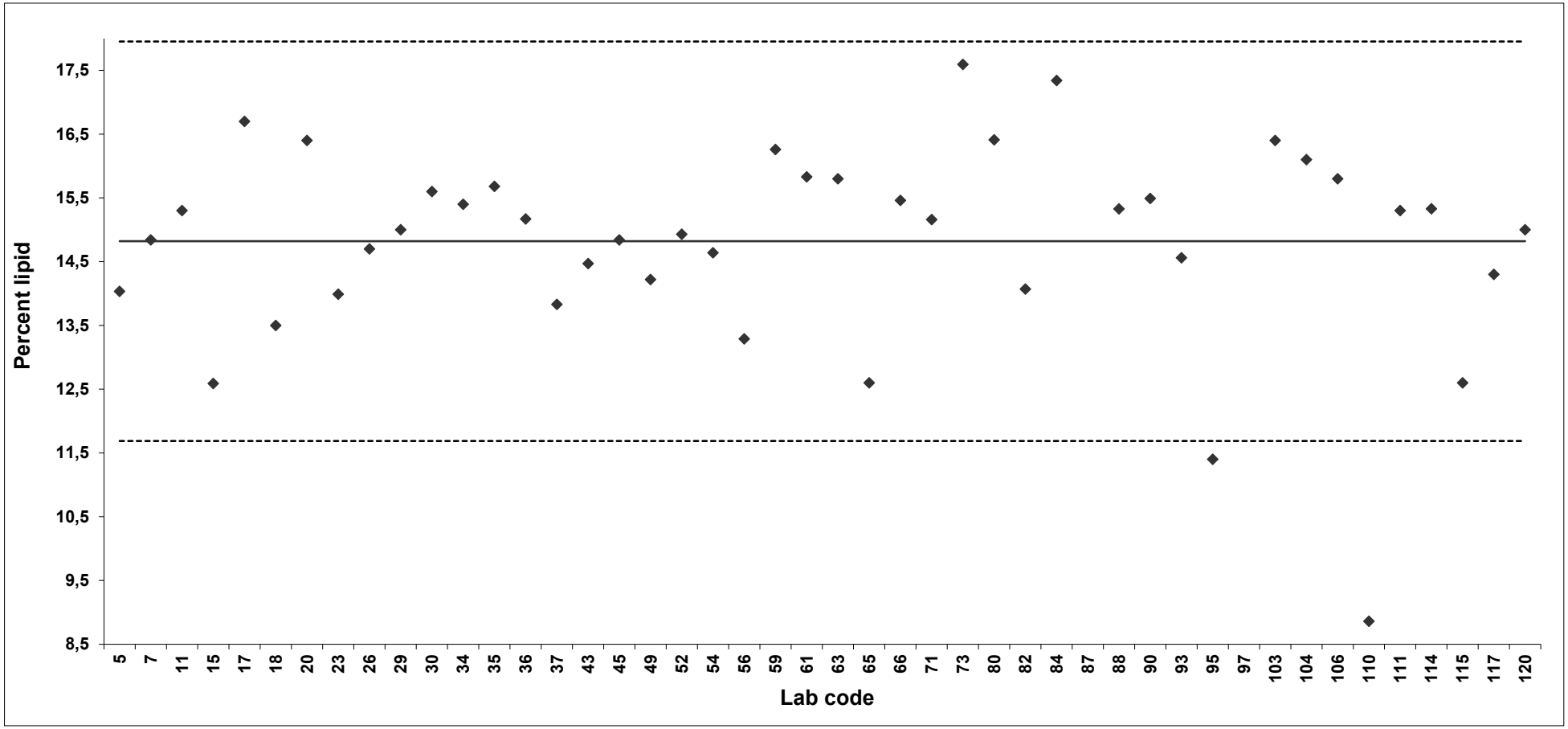
Lab code	% lipid	Z-score	Notes	Lab code	% lipid	Notes
7	100	0,0				
11	99	-0,050				
15	100	-0,013				
17	100	0,0				
18	100	-0,020				
20	100	0,0				
26	100	0,0				
29	100	0,0				
30	100	-0,0050				
35	100	0,0				
37	100	0,0				
40	100	0,0				
43	100	-0,010				
45	100	0,0				
49	100	0,0				
50	100	0,0				
52	100	0,0				
56	100	0,0095				
59	100	0,0				
61	100	0,0				
63	99	-0,040				
65	100	0,0				
66	100	0,0				
68	100	0,0				
73	100	0,0				
82	100	0,0				
84	100	0,0				
90	100	0,0				
93	99	-0,030				
94	100	-0,0050				
95	100	0,0				
97	100	-0,0055				
102	100	0,0				
103	100	0,0				
104	100	0,0				
106	98	-0,10				
109	100	0,0				
111	100	0,0				
114	100	-0,0045				
115	86	-0,69	Outlier			
117	100	0,0				
120	100	0,0				

Mean	Standard deviation	Relative standard deviation	Median
100	0,37	0,38	100

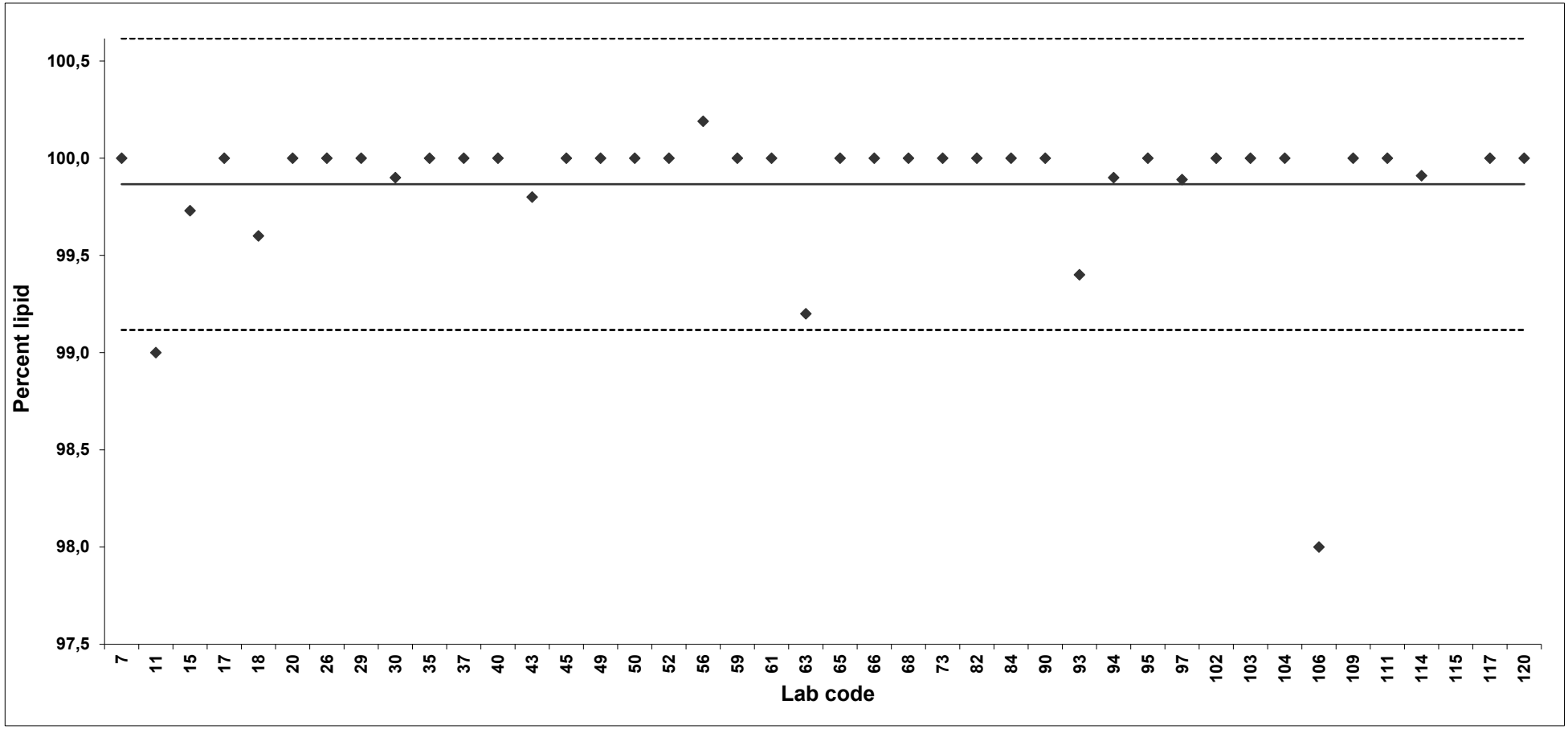
Lipid determination; Reindeer



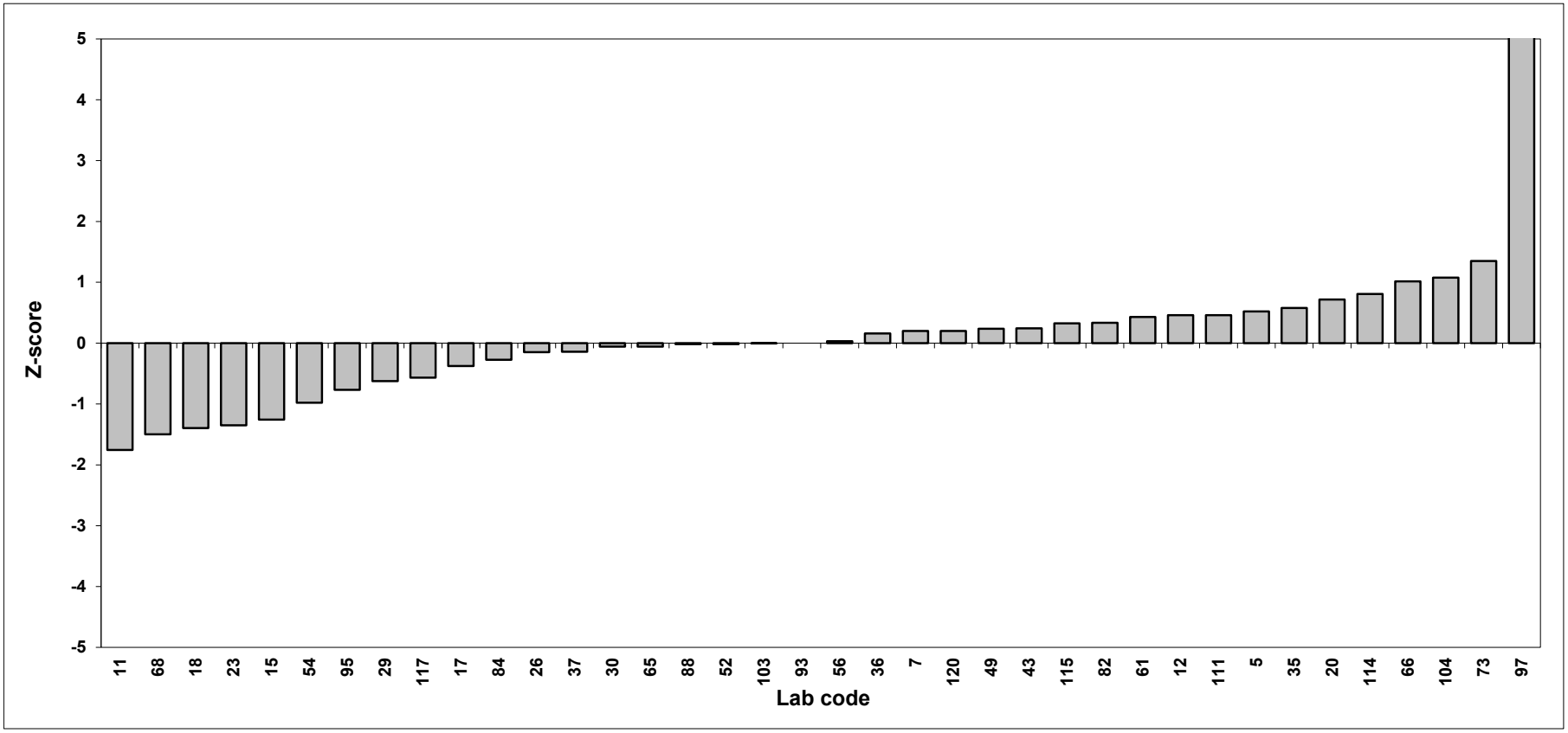
Lipid determination; Herring



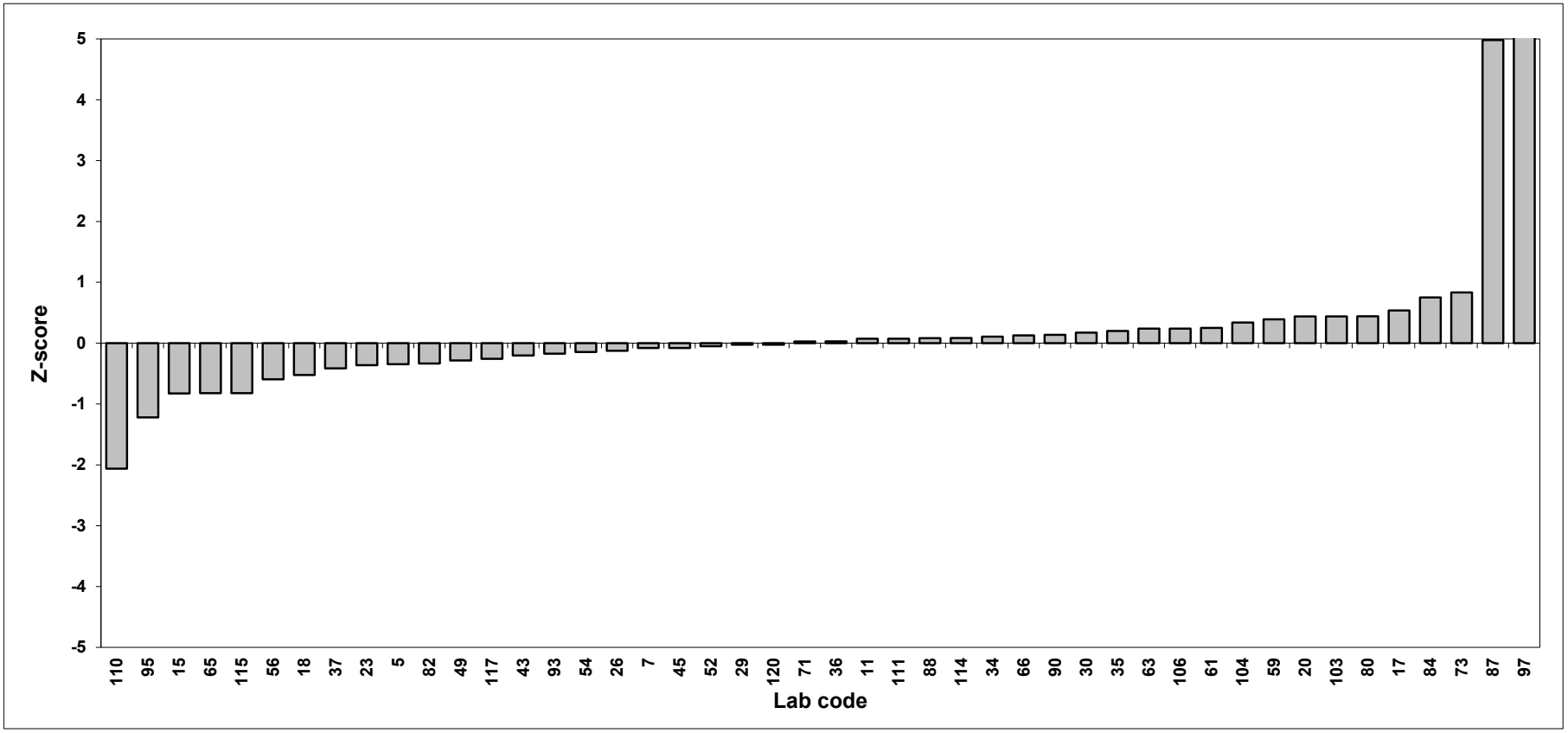
Lipid determination; Fish oil



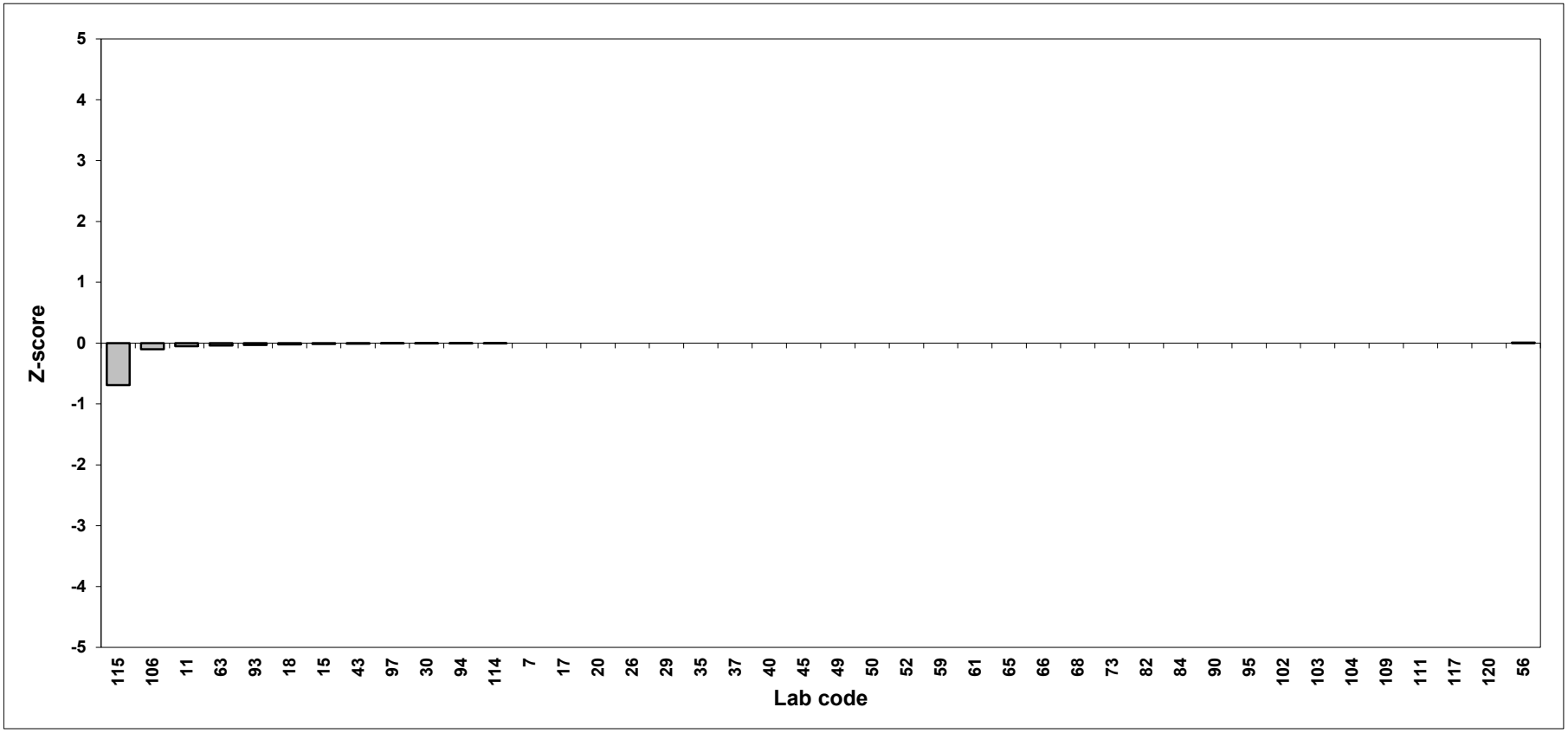
Z-score lipid determination; Reindeer



Z-score lipid determination; Herring



Z-score lipid determination; Fish oil



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