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Interlaboratory Comparison on POPs in Food 2016

Seventeenth Round of an International Study

Nanna Bruun Bremnes
Cathrine Thomsen

Norwegian Institute of Public Health

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Summary

The 17th round of the Interlaboratory Comparison on POPs in Food was conducted in 2016 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.

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 in regular foodstuffs.

In 2016 the study was performed on unfortified homogenates of sheep liver, salmon and unrefined fish oil. 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 test materials were sent to 92 laboratories in 46 different countries in January and early February 2016, and results were returned from 90 of these.

A draft report was made available on our webpage www.fhi.no/ILC by August the 1st, and the deadline for commenting on the published results was set to September 15th 2016.

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

The consensus concentration (assigned value) for each analyte in the three 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 calculation. The consensus median and consensus mean as well as standard deviation (SD) were calculated from the remaining data.

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 and consensus mean as well as standard deviation (SD) were calculated from the remaining data.

Toxic equivalents (TEQs) were calculated from the consensus values of individual congeners using the toxic equivalency factors derived by WHO_{2005} (from 2012: WHO_{2005}TEQs as opposed to WHO_{1998}TEQs as 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). Further, Z-scores were calculated for the non-ortho PCB TEQ, the mono-ortho PCB TEQ, 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 single congener in all three matrices (σ=0.2). From 2015 the Z-scores are calculated both on a fresh weight and a lipid weight basis.

The consensus values of the standard solutions were calculated as mentioned above with the exception

of the removal of all values exceeding ±50 % of the median prior to the final calculation 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.

For the determination of total TEQs in the relatively highly contaminated fish oil-sample (10 pg TE/g, WHO_{2005}TEFs) Z-scores within ±1 were obtained by 84 % of the participating laboratories (assuming a lipid content=100 %), and Z-scores within ±2 were achieved by 91 % of the participants (Corresponding to a trueness of ±20 % and ±40 %, respectively). Also for the salmon-sample, a quite high percentage of the participants achieved good results when considering z-scores, as z-scores within ±1 were obtained by 74 % and ±2 were achieved by 89 % of the participants.

For the sheep liver-sample, which on beforehand rightly was assumed to be quite low-contaminated and therefor more challenging in chemical analytical terms, Z-scores within ±1 were obtained by 53 % of the reporting participants on fresh weight basis, and Z-scores within ±2 was achieved by for 66 % of the participants.

The relative standard deviation (RSD) calculated for the total TEQ after removal of outliers was 10-13 % for the two samples that had the highest levels of contamination (fish oil and salmon, respectively). For the low-contaminated sheep liver-sample the same RSD was 13 %. Considering this, it may be concluded that the abilities and performance of laboratories worldwide in determining dioxin-like compounds is generally good for the three food samples included in this study.

For the food samples, 51-61 laboratories reported results for the six indicator PCBs, 27-35 laboratories reported concentrations for all seven of the tetra- to hepta-PBDEs and 20-24 laboratories reported concentrations for PBDE-209. The concentrations of the sum of the PBDEs with PBDE-209 excluded on fresh weight basis were 4.9 (42 %), 1677 (9.7 %) and 8512 (7.7 %) pg/g in sheep liver, salmon and fish oil, respectively, with average RSD given in parentheses. The consensus concentrations for PBDE-209 were 9.6 (n=20, RSD=79 %), 12 (n=23, RSD=76 %) and 41 (n=24, RSD=51 %) pg/g fresh weight in sheep liver, salmon and fish oil, in that order.

The total concentrations on fresh weight basis for six indicator PCBs were 167 pg/g (18 %) in sheep liver, 24537 pg/g (11 %) in salmon and 56317 pg/g (12 %) in fish oil, with average RSDs given in parentheses.

The consensus concentrations calculated for HBCDs are just indicative values because only few laboratories reported results (n=10-15)

Introduction

Maximum residue limits and official food control systems are established in many countries for the monitoring of the 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. From 2014 the European Union has introduced levels of legislation for the indicator PCBs as well. 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. 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 inter-laboratory studies.

This is the 17th round of a world-wide interlaboratory comparison study on dioxin-like compounds in food, organized by the Department of Environmental Exposure and Epidemiology (Former Department of Exposure and Risk Assessment), at the Norwegian Institute of Public Health (NIPH), Oslo, Norway.

The main objective of this exercise is to assess the between laboratory reproducibility of dioxin-like compounds analyses in frequently consumed foods and provide a QA/QC instrument for each participating laboratory to contribute to its proficiency. Participants were also given the opportunity to determine the concentrations of eight PBDEs, six indicator PCBs and HBCD in the food samples in order to assess the readiness of laboratories to analyze these persistent organic pollutants.

The exercise took place from January 2016, when the samples were shipped to the laboratories for analysis, until the reporting deadline in April 2016, 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) by the first of August, 2016.

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 90 laboratories that submitted results, and thereby contributed to the study results, are presented in Table 1.

Table 1. Participants that reported results in the 17th round of Interlaboratory Comparison on POP's in food 2016

Agri-Food & Veterinary Authority of Singapore Veterinary Public Health Center Republic of Singapore	**ALcontrol Laboratories** Linköping, Sweden
ALPA CHIMIES Rouen, France	**ALS Czech Republic** Pardubice, Czech Republic
ALS Environmental - Burlington Burlington, Ontario, Canada	**Arkansas Regional Laboratory** Jefferson, Arkansas, United States of America
AsureQuality Limited - Wellington Laboratory Wellington, New Zealand	**Australian Ultra Trace Laboratory National Measurement Institute - North Ryde** Sydney, Australia
Bálint Analitika LTD. Budapest, Hungary	**Bayerisches Landesamt für Umwelt Referat 74 - Organische Analytik** Augsburg, Germany
BDS Chile Rancagua, Chile	**Bioassay and Safety Assessment Laboratory Shanghai Academy of Public Measurement** Shanghai, P.R.China

BioDetection Systems B.V. Amsterdam, The Netherlands	**Bureau of Quality and Safety of Food (BQSF)** **Department of Medical Sciences** **Ministry of Public Health** Bangkok, Thailand
CALTAX Des Moines, Iowa, United States of America	**Canadian Food Inspecgtion Agency** Calgary, Alberta, Canada
CARSO-LSEHL Vénissieux, France	**Cefas** Lowestoft, United Kingdom
Center of Analytical Service and Experimentation of Hochiminh city Hochimin city, Vietnam	**Central Lab of Residue Analysis of Pesticides and Heavy Metals in Foods** Giza, Egypt
Chemical and Veterinary Control Laboratory (CVUA MEL) Münster, Germany	**Chemisches und mikrobiologisches Institut UEG GmbH** Wetzlar, Germany
Chemisches und Veterinäruntersuchungsamt (CVUA) Freiburg Freiburg, Germany	**China National Center for Food Safety Risk Assessment** Beijing, China
Danish Veterinary and Food Administration Ringsted, Denmark	**Dioxin Lab, Center for Eco-Environmental Sciences Chinese Academy of Sciences** Beijing, China
Dioxin laboratory of Comprehensive test center of Chinese Academy of Inspection and Quarantine Beijing, China	**Environmental Laboratory – IQS** Barcelona, Spain
Eurofins | Laboratorium Zeeuws Vlaanderen Graauw, The Netherlands	**Eurofins GfA Lab Service GmbH** Hamburg, Germany
Eurofins GfA Lab Service GmbH GMP Laboratory Hamburg, Germany	**Fera Science Ltd.** York, United Kingdom
Food GmbH Jena Analytik & Consulting Jena, Germany	**Food Research Division Health Products and Food Branch Health Canada** Ottawa, Ontario, Canada
Government Laboratory **The Government of the Hong Kong Special Administrative Region** Hong Kong, Hong Kong	**Hessisches Landeslabor** Wiesbaden, Germany
Hong Kong SAR Government Laboratory **Additives, Contaminants and Composition Section** Hong Kong, China	**Hubei Dioxin Lab Hubei Provincial Centre for Disease Control and Prevention** Wuhan, Hubei Province, China
Hyper Quantum Technologies, Ltd. **Food Authenticity & Safety Testing Center** Kaohsiung City, Taiwan, China	**Istituto Zooprofilattico Sperimentale Abruzzo e Molise"G. Caporale"** Teramo, Italy
Istituto Zooprofilattico Sperimentale Dell'Umbria e Delle Marche **Sezione di Ancona** Ancona, Italy	**Istituto Zooprofilattico Sperimentale Lombardia Emilia Romagna-Bologna** Bologna, Italy
Izsler - Istituto Zooprofilattico Sperimentale Lombardia Emilia Romagna **Laboratorio Diossine** Brescia, Italy	**Japan Food Research Laboratories** Nagayama Tama-city, Tokyo, Japan
La Drôme Laboratoire Valence, France	**LABERCA - ONIRIS** Route de Gachet, France
Laboratorios Tecnológicos de Levante, S.L. Paterna, Spain	**Laboratory of SGS Bulgaria Ltd** Varna, Bulgaria
Laboratory of Vendee (LEAV) la Roche sur Yon, France	**Landesamt für Umweltschutz Sachsen-Anhalt** Halle/ Saale, Germany
Landesuntersuchungsamt **Insitut für Lebensmittelchemie** Speyer, Germany	**Marchwood Scientific Services** Southampton, United Kingdom

MARINO SRL Caserta , Italia	**mas | münster analytical solutions gmbh** Münster, Germany, Germany
Mass Spectrometry and Dioxin Analysis Laboratory **National Centre for Scientific Research "Demokritos"** Athens, Greece	**MICROPOLLUANTS TECHNOLOGIE SA** Saint Julien-Les-Metz, France
Ministry of Food & Drug Safety **Food Contaminants Division** Chungcheongbuk-do, South of Korea	**National Cheng Kung University** **Research Center for Environmental Trace Toxic Substances** Tainan, China
National Institute for Health and Welfare **Chemicals and Health unit** Kuopio, Finland	**NEOTRON S.p.A.** Modena, Italy
Niedersächsisches Landesamt für Verbraucherschutz und Lebensmittelsicherheit **Lebensmittel-und Veterinärinstitut Oldenburg** Oldenburg, Germany	**NIFES - National Institute of Nutrition and Seafood Research** Bergen, Norway
NILU (Norwegian Institute for Air Research) Kjeller, Norway	**Nofalab** Schiedam , The Netherlands
Nofer Institute of Occupational Medicine Łódź, Poland	**Nutrition Analytical Service, Institute of Aquaculture** Stirling, UK
Oxigen Analiz Laboratuvar Hizmetleri Ticaret Limited Şirketi Edirne Şubesi Edirne, Turkey	**Oxigen Analiz Laboratuvar Hizmetleri Tic.Ltd.Şti.** Istanbul, Turkey
Pacific Rim Laboratories Inc. Surrey, British Columbia, Canada	**POP Lab,** **Shenzhen Center for Disease Control & Prevention** Shenzhen, Guangdong, China
Research and Productivity Council (RPC) Fredericton, New Brunswick, Canada	**RIKILT** Wageningen, The Netherlands
Scientific Analysis Laboratories Manchester, United Kingdom	**SGS Belgium NV Division IAC** Antwerpen, Belgium
SGS Environmental Wilmington, North Carolina, United States of America	**SGS Institut Fresenius GmbH** Bayreuth, Germany
SGS Taiwan New Taipei City, Taiwan, China	**Shanghai Municipal Center for Disease Control and Prevention** Shanghai, China
Shimadzu Techno-Research Inc **Environment Division** Kyoto, Japan	**State Laboratory - Ireland** Celbridge, Kildare, Ireland
Sun Dream Environmental Technology Corporation **Food Hygiene Laboratory** Taichung City, China	**Super Micro Mass Research & Technology Center** **Cheng Shiu University** Niaosong District, Kaohsiung City, Taiwan(ROC)
TLR International Laboratories Rotterdam, The Netherlands	**Umeå University Department of Chemistry** **Trace Analysis Platform** Umeå, Sweden
Vietnam - Russia Tropical Centre **Department of Chemistry and Environment** Hanoi, Vietnam	**Vista Analytical Laboratory** El Dorado Hills, California, USA
Wellington Laboratories Inc. Guelph, Ontario, Canada	**Western Region Laboratory,** **RAPB Health Canada** Burnaby, British Columbia, Canada
Worthies Engineering Consultants Corp. **Environmental & Ultra Trace Testing Lab** Taichung, Taiwan	**Ökometric** Bayreuth, Germany

Design and practical implementation

Study design and reporting of results

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 sheep liver, the salmon sample and the sample of fish oil.

The laboratories were to report the concentration of each detected congener in the food items on fresh weight basis (e.g. S/N ≥3) 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 percent 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 analyzed, 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 sheep liver, salmon and fish oil. The laboratories could choose to analyze one, two or all three food samples.

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 by August 1st, 2016.

Collection, preparation, and distribution of samples

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

- Sheep liver (~100 g
- Salmon (~100 g)
- Fish oil (~60 g)

The test materials were produced from natural products unfortified with standards.

The sheep liver was provided by the Norwegian agricultural cooperative "Nortura", and the fish oil was donated by the Norwegian fish oil manufacturer "Vedde AS", with enthusiastic help from managing director Ola Dybvik. The salmon sample was made by mixing Baltic salmon from Søren Sørensen at the Danish Veterinary and Food Administration with

Norwegian farmed salmon bought from a Norwegian super marked.

The sheep liver arrived as whole, frozen livers of sheep. The livers were pooled, grinded and homogenaized thorughly in a large, industrial food grinder.

The Baltic salmon arrived as frozen halves of the whole fish and the Norwegian farmed salmon was allready skinned and fileted when purchased. The skin was removed from the Baltic salmon, the Norwegian and Baltic salmon were pooled and then grinded and repeatdely homogenized in a large food grinder.

All fish oil used to make the fish oil-sample was received unrefined and from the same production batch. At arrivel to the Norwegian Institute of Public Health the crude oil batch was carefully heaten while stiring continuously, before it was divided into subsamples.

Sub-samples of at least 100 g of sheep liver (Sheep liver-2016), 100 g of salmon (Salmon-2016) and 60 g of fish oil (Fish oil-2016) 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

Based on experiences from previous rounds, we have chosen the following approach for the calculation of the consensus concentrations 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.

Outliers for all congeners were defined as those values exceeding 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 which were removed prior to consensus calculation 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 subsequently removed from the data set before the calculation of 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*SD.

TEQs were calculated from the consensus values for PCDDs/PCDFs, non-ortho PCBs, and mono-ortho PCBs, using the toxic equivalency factors derived by WHO in 1998 and 2005. 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_{2005}TEFs), the sum of six indicator PCBs, the sum of eight PBDEs, total HBCD and for each 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 on the web by the first of August 2016.

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

A certificate, stating the participant's laboratory code, will be sent to each participant who has contributed to the results by the end of 2016.

Coordination

The study was initiated and carried out by the Dept. of Environmental Exposure and Epidemiology, Norwegian Institute of Public Health, Oslo, Norway. Members of the coordination committee were:

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Cathrine Thomsen, Department Director
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Results

Presentation in the report

Ninety laboratories in 45 different countries 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 performances are based on several factors, it is recommended that each laboratory carefully evaluates the factors that, favorably or unfavorably, 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 and HBCD in regular food stuffs.

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_{2005}-values.

Individual results reported by the laboratories for each congener are given for sheep liver, salmon and fish oil in Appendix 2, 3 and 4. Results of the lipid determinations are presented in Appendix 5.

Summary of results

PCDDs/PCDFs

Analyte solution

Concentrations for PCDDs/PCDFs were reported by 78 laboratories. The average RSD for the 17 congeners was 8.3 % ranging from 6.4 % for 1,2,3,6,7,8-HxCDF to 11 % for 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_{2005}-values) of the PCDD/PCDF standard solution showed that 88 % of the laboratories were within the range of ±20 % of the consensus value. This clearly demonstrates that the calibration solutions used by the laboratories generally are of high quality.

Sheep liver

For the sample of sheep, PCDD/PCDF results from 58 laboratories were received. From these results, the calculated consensus TEQ (PCDD/PCDF TEQ based on WHO_{2005}-TEFs) was 0.052 pg TE/g fresh weight and 0.93 pg TE/g lipid weight.

The average RSD was 39 %, ranging from 21-74 % for 1,2,3,6,7,8-HxCDF and 2,3,7,8-TCDF respectively. Z-scores within ±1 were obtained by 44 % of the laboratories and 64 % of the laboratories had Z-scores within ±2 (fresh weight basis).

Salmon

PCDD/PCDF concentrations in the salmon sample were reported by 69 laboratories. The consensus TEQ was 1.9 pg TEQ/g fresh weight, and 18 pg TEQ/g lipid weight (PCDD/PCDF TEQ based on WHO_{2005}TEFs).

The average RSD was 36 % ranging from 19-74 % (2,3,7,8-TCDF and 1,2,3,7,8,9-HxCDF respectively). Z-scores were within ±1 for 79 % of the laboratories and within ±2 for 96 % of the laboratories (fresh weight basis).

Fish oil

PCDD/PCDF concentrations in the fish oil-sample were determined by 73 laboratories. The consensus TEQ for PCDD/PCDF based on WHO_{2005}TEFs was 5.4 pg TEQ/g.

The average RSD was 33 % ranging from 16-69 % (2,3,7,8-TCDF and 1,2,3,7,8,9-HxCDF respectively). Z-scores for PCDD/PCDF TEQ within ±1 were obtained by 80 % of the laboratories and 91 % had Z-scores within ±2, with the assumption that the fish oil is 100 % lipid.

Dioxin-like PCBs

Analyte solution

The 12 dioxin-like PCBs in the analyte solution were analyzed and reported by 77 laboratories. The RSDs for the different congeners were ranging from 6.2 % for PCB-81 to 9.5 % for PCB-123, with an average of 7.8 %.

Sheep liver

Dioxin-like PCB concentrations in the sheep liver sample were reported from 56 laboratories. The concentrations of the 12 congeners varied between 0.029 pg/g fresh weight (PCB-169) and 9.5 pg/g fresh weight (CB-118). The average RSD for concentrations of individual dioxin-like PCB congeners was 44 % ranging from 27 % for PCB-126 to 62 % for PCB-123

The dioxin-like PCBs contribute 37 % to the total TEQ (WHO TEF_{2005}) in the sample with PCB-126 as the main contributor (35 %).

Salmon

Of the participating laboratories, 67 measured and reported dioxin-like PCB concentrations in the salmon sample. The concentrations ranged from 1.4 pg/g fresh weight for PCB-81 to 3341 pg/g fresh weight for PCB-118. The average RSD for concentrations of individual dioxin-like PCB congeners on fresh weight basis was 25 % ranging from 17 % for PCB-167 to 46 % for PCB-123.

The dioxin-like PCBs contribute to about 63 % of the total TEQ in the sample with PCB-126 as the main contributor (56 %).

Fish oil

Dioxin-like PCBs in the fish oil sample were reported by 72 laboratories. Levels were ranging from 1.9 pg/g fresh weigh for PCB-81 to 7991 pg/g fresh weight for PCB-118. The average RSD for concentrations of individual dioxin-like PCB congeners on fresh weight basis was 24 % ranging from 15 % for PCB-118 to 48 % for PCB-123.

The contribution of the dioxin-like PCBs to the total TEQ was about 49 % with PCB-126 as the main contributor (40 % of total TEQ).

Total TEQ

The total TEQ for the sheep liver sample was 0.083 pg TEQ/g fresh weight and 1.5 pg TEQ/g lipid weight (WHO TEF_{2005}). The total TEQ of the salmon-sample was 5.1 pg TEQ/g fresh weight and 48 pg TEQ/g lipid weight, and the fish oil contained 10 pg TEQ/g fresh weight.

The RSDs for total TEQs on fresh weight basis calculated from the RSD of individual congeners were 13 % for sheep liver and salmon and 10 % for fish oil.

In Figure 1 the contribution on the TEQ-values in percent of the three groups of compounds is depicted based on WHO TEF_{2005} and WHO TEF_{1998}, respectively. In the selection of food-items included in this study the dioxin-like PCBs contributed from 37 % to 63 % to the total TEQ (using WHO TEF_{2005}), 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.

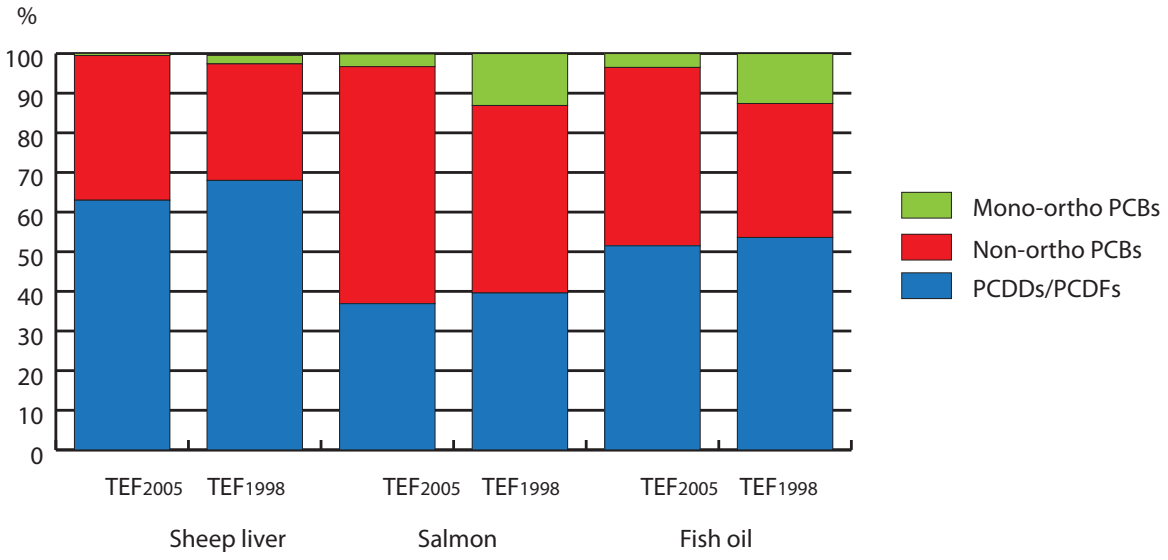

Figure 1. The contribution of PCDDs/PCDFs, non-ortho PCBs and mono-ortho PCBs to the total TEQ calculated using both the WHO_{2005} TEFs and WHO_{1998} TEFs, in the three food samples.

Indicator PCBs

Analyte solution

66 laboratories reported indicator PCBs in the analyte solution. The average RSD was 8.5 % ranging from 7.8 to 9.1 % (outliers removed).

Sheep liver

For the sample of sheep liver, results for indicator PCBs were received from 51 laboratories. The consensus concentrations varied between 11 pg/g fresh weight (PCB-180) and 65 pg/g fresh weight (PCB-153). The RSDs were ranging from 29 to 50 % for PCB-153 and PCB-28 respectively, with an average of 39 % for all indicator PCBs. The consensus median for the sum of indicator PCBs was 167 pg/g fresh weight.

Salmon

Within the deadline, 61 laboratories reported results for indicator PCBs in the salmon sample. The consensus concentrations ranged from 533 pg/g fresh weight (PCB-28) to 9630 pg/g fresh weight (PCB-153) with a consensus median for the sum of indicator PCBs of 24537 pg/g fresh weight. The average RSD was 24 %, ranging from 22 to 31 % for PCB-101 and PCB-28 respectively.

Fish oil

Results were obtained from 61 laboratories. The concentrations of indicator PCBs in the fish oil sample ranged from 2059 pg/g fresh weight (PCB-28) to 21356 pg/g (PCB-153) and the consensus median for the sum was 56317 pg/g fresh weight. The average RSD was 25 %, ranging from 22 to 31 % for PCB-52 and PCB-28 respectively.

PBDEs

Analyte solution

The tri- to hepta-PBDE standard solution was analyzed by 34-35 laboratories and 26 laboratories reported values for PBDE-209. The RSDs were between 5.8-8.9 % for all congeners.

Sheep liver

The PBDE concentrations in sheep liver were reported by 27 laboratories, except for PBDE-209 for which 20 results were received. The consensus concentrations were in the range from 0.14 pg/g fresh weight for PBDE-28 to 1.7 pg/g fresh weight for PBDE-47. The consensus concentration for PBDE-209 was 9.6 pg/g fresh weight. The sum of tri- to hepta-PBDEs was 4.9 pg/g fresh weight. The range of RSDs on fresh weight basis was 30-79 %, with an average of 58 % including PBDE-209.

Salmon

Within the deadline, 35 laboratories had reported results for tri- to hepta-PBDEs in salmon and 23 laboratories had reported results for PBDE-209. The consensus concentrations varied between 1.6 pg/g fresh weight (PBDE-183) and 984 pg/g fresh weight (PBDE-47). The concentration for PBDE-209 was 12 pg/g fresh weight. The sum of tri- to hepta-PBDEs was 1677 pg/g fresh weight. The RSD calculated from the concentrations on fresh weight ranged from 14-76 %, with an average of 30 % for PBDEs including PBDE-209.

Fish oil

Thirty-three laboratories reported results for tri- to hepta-PBDEs in fish oil, and 24 reported results for PBDE-209. The concentrations varied between 10 pg/g fresh weight (PBDE-183) and 5258 pg/g (PBDE-47). The concentration for PBDE-209 was 41 pg/g. The sum of tri- to hepta-PBDEs was 8512 pg/g fresh weight. The RSDs for the individual congeners were ranging from 11 to 51 % with an average of 25 % 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 14 laboratories reported α-HBCD in the standard solution and 10-15 laboratories reported one or more of the three isomers in the food samples. The consensus concentrations for the sum of individual HBCD isomers were 5.7 pg/g fresh weight for the sheep liver sample, 1990 pg/g for the salmon and 4003 pg/g fresh weight for the fish oil sample. Since only a few laboratories reported HBCD, these results must be regarded as indicative values.

Lipid content

The mean and RSDs (in parentheses) for the lipid contents of the food samples were calculated to be 5.7 % (RSD=23 %) for the sheep liver sample and 11 % (RSD=10 %) for the salmon sample. The sample of fish oil was assumed to be 100 % lipid based.

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.

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Appendix A:

Participants´ affiliations
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Appendix A: Affiliations and addresses of participants

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Appendix B:

Study announcement and
instructions for participants

|December 2015

Announcement for Interlaboratory Comparison on POPs in Food 2016

Introduction

We hereby announce the 17th round of the Interlaboratory Comparison on the Determination of POPs in Food. The study is open for academic, regulatory as well as commercial laboratories world-wide. The organizer of this study is the Domain for Infection Control and Environmental Health, Department of Exposure and Risk Assessment at the Norwegian Institute of Public Health, Oslo, Norway. The study is scheduled to take place from January to April 2016.
A draft report will be available by mid July 2016, and the final report will be available to the participants by November 2016. 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 and HBCDs 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 world-wide 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 analytes 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, CB-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: CB-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. The test materials 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.

We also include standard solutions of all analytes 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, Sheep liver (labelled “Sheep liver-2016”) ~100 g, Salmon (labelled “Salmon-2016”) ~100 g and Fish oil

(labelled “Fish oil-2016”) ~60 g, and 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
Further detailed instructions and reporting forms will be sent by e-mail simultaneously with the dispatch of the samples in January.

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

Time schedule

Announcement	**December 2015**
Return of registration form	**Mid-January, 2016**
Shipment of test material	**Third week, 2016**
Confirmation of receipt of test material by participant	**Within 7 days**
Reporting of test results [a)]	**April 22, 2016**
Publication of draft report on web-site	**July 2016**
Final report available to all participants	**November 2016**

a) Please be sure that your results are reported on time as there will be **no extension of the deadline.**

Participation fee
All laboratories that have received the test materials will also receive a corresponding invoice in Norwegian kroner (NOK). The participation fee for any combination of the analytes in one food item is 9 500 NOK, in two food items 11 700 NOK, and for the complete set of all three food items 13 900 NOK.

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Interlaboratory Comparison on Dioxins in Food 2016

Instructions for participants

January 2016

1. Introduction

This is the 17th Round of the Interlaboratory Comparison Study on the Determination of POPs in Food organised by the Department of Exposure and Risk Assessment, 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 objective 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.

Please read these instructions carefully before starting the experimental work.

The participating laboratories will collaboratively assess 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: PCB-77, 81, 126 and 169
- mono-ortho PCBs: PCB-105, 114, 118, 123, 156, 157, 167 and 189.
- marker PCBs: PCB-28, 52, 101, 138, 153 and 180
- PBDEs: PBDE-28, 47, 99, 100, 153, 154, 183 and 209
- HBCD α-HBCD, β-HBCD, γ-HBCD and total HBCD

in samples of Sheep liver (Sheep liver-2016), Salmon (Salmon-2016) and Fish oil (Fish oil-2016).The mentioned analytes should 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. Both results from GC-MS and LC-MS or LC-MS/MS are welcome.

2. Participants

A list of participants is attached. 86 laboratories have 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 PBDE-209 at 100 pg/µl
- ULM-4834-S/100 with α-HBCD at a concentration 500 pg/µl

One sample of each
- ca. 100 g sheep liver
- ca. 100 g salmon
- ca. 60 g fish oil

Fortification
The samples are prepared from regular market foods. There is no fortification or spiking of the PCDD, PCDF, PCB, PBDE or HBCD analytes in the food samples.

Shipment
The samples are fresh frozen food homogenates. They are distributed by Jetpak 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 **immediately** returned to the co-ordinators by e-mail or telefax. 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 third parties.

Coding of samples

Sheep liver	Sheep liver-2016
Salmon	Salmon-2016
Fish oil	Fish oil-2016

The above sample coding is marked on the sample bottles.

3.3 Analytical procedure

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.

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 must include the determined lipid percent for the samples. Also, the actual sample amount (g) for each determination must be reported.

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.

Laboratories must report one 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.**

4.2 Checklist

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

4.3 Submitting results

Three 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

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.

If necessary, a hard copy of the Report forms can be provided. Please contact one of the co-ordinators. If a hard copy report is used, it shall either be faxed to: + 47 21 07 66 86 or mailed to:

Norwegian Institute of Public Health
att. Nanna Bruun Bremnes
P.O. Box 4403 Nydalen
N-0403 Oslo, Norway

Deadline

The reports must be in our hands no later than April 22, 2016 to enable us to prepare the draft report to be published by the end of July 2016. 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 April 22$^{th.}$ 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 a best available estimate of the true value. 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 PCDD/PCDF TEQs and PCB TEQs.

6. Final report

The final report will be prepared by the co-ordinators by November 2016 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 July.
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 and HBCD is

- NOK 9500 for one food item
- NOK 11700 for two food items
- NOK 13900 for the complete set of all three 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	**December 2015**
Return of registration form	**Mid-January, 2016**
Shipment of test material	**Third week, 2016**
Confirmation of receipt of test material by participant	**Within 7 days**
Reporting of test results [a)]	**April 22, 2016**
Publication of draft report on web-site	**July 2016**
Final report available to all participants	**November 2016**

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

9. Co-ordinators of the study

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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?

☐ 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).

Much depends on the quality of the analytical results of the homogeneity testing. 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 congener concentrations

	Sheep liver		Salmon		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	0.0030	0.053	0.23	2.1	0.34	0.34
1,2,3,7,8 PeCDD	0.0063	0.11	0.42	3.9	1.6	1.6
1,2,3,4,7,8 HxCDD	0.0057	0.10	0.025	0.23	0.24	0.24
1,2,3,6,7,8 HxCDD	0.011	0.19	0.18	1.6	1.1	1.1
1,2,3,7,8,9 HxCDD	0.0052	0.092	0.017	0.16	0.21	0.21
1,2,3,4,6,7,8 HpCDD	0.077	1.4	0.030	0.28	0.37	0.37
1,2,3,4,6,7,8,9 OCDD	0.24	4.3	0.083	0.77	0.27	0.27
2,3,7,8 TCDF	0.0072	0.13	3.6	33	8.4	8.4
1,2,3,7,8 PeCDF	0.0043	0.077	0.54	5.0	1.6	1.6
2,3,4,7,8 PeCDF	0.083	1.5	2.8	25	7.4	7.4
1,2,3,4,7,8 HxCDF	0.047	0.83	0.081	0.75	0.51	0.51
1,2,3,6,7,8 HxCDF	0.042	0.75	0.12	1.1	0.56	0.56
2,3,4,6,7,8 HxCDF	0.040	0.71	0.10	0.91	0.81	0.81
1,2,3,7,8,9 HxCDF	0.0035	0.062	0.0050	0.046	0.030	0.030
1,2,3,4,6,7,8 HpCDF	0.061	1.1	0.015	0.14	0.23	0.23
1,2,3,4,7,8,9 HpCDF	0.0089	0.16	0.0063	0.058	0.037	0.037
1,2,3,4,6,7,8,9 OCDF	0.021	0.37	0.019	0.18	0.091	0.091
PCB 77	0.75	13	70	649	78	78
PCB 126	0.29	5.2	29	264	41	41
PCB 169	0.029	0.52	7.2	66	18	18
PCB 81	0.034	0.60	1.4	13	1.9	1.9
PCB 105	3.1	55	1137	10528	2632	2632
PCB 114	0.23	4.1	70	645	134	134
PCB 118	9.5	170	3341	30938	7991	7991
PCB 123	0.15	2.7	34	317	74	74
PCB 156	1.2	22	512	4741	709	709
PCB 157	0.24	4.3	120	1115	233	233
PCB 167	0.47	8.3	285	2639	404	404
PCB 189	0.10	1.7	56	522	73	73

fw. - fresh weight

lw. - lipid weight

Consensus congener concentrations

	Sheep liver		Salmon		Fish oil	
	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.	pg/g fw.	pg/g lw.
PCB 28	14	242	533	4935	2059	2059
PCB 52	18	328	1130	10464	5186	5186
PCB 101	37	666	3989	36934	10472	10472
PCB 138	21	376	6545	60604	13719	13719
PCB 153	65	1165	9630	89165	21356	21356
PCB 180	11	193	2710	25093	3525	3525
PBDE 28	0.14	2.6	40	367	264	264
PBDE 47	1.7	30	984	9110	5258	5258
PBDE 99	1.0	18	204	1889	621	621
PBDE 100	0.43	7.6	251	2327	1690	1690
PBDE 153	0.54	10	53	490	118	118
PBDE 154	0.25	4.4	144	1333	549	549
PBDE 183	0.81	14	1.6	15	10	10
PBDE 209	9.6	171	12	110	41	41
α-HBCD	6.7	120	1915	17729	3679	3679
β-HBCD	1.2	21	37	341	27	27
γ-HBCD	3.9	70	80	741	70	70
Tot HBCD	5.7	102	1990	18426	4003	4003
Sum PCB	167	2970	24537	227195	56317	56317
Sum PBDE without 209	4.9	87	1677	15531	8512	8512
Sum PBDE	14	258	1689	15640	8552	8552

fw. - fresh weight

lw. - lipid weight

Consensus of TEQs

TEF_{2006}

	Sheep liver		Salmon		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	0.0030	0.053	0.23	2.1	0.34	0.34
1,2,3,7,8-PeCDD	0.0063	0.11	0.42	3.9	1.6	1.6
1,2,3,4,7,8-HxCDD	0.00057	0.010	0.0025	0.023	0.024	0.024
1,2,3,6,7,8-HxCDD	0.0011	0.019	0.018	0.16	0.11	0.11
1,2,3,7,8,9-HxCDD	0.00052	0.0092	0.0017	0.016	0.021	0.021
1,2,3,4,6,7,8-HpCDD	0.00077	0.014	0.00030	0.0028	0.0037	0.0037
1,2,3,4,6,7,8,9-OCDD	0.000072	0.0013	0.000025	0.00023	0.000081	0.000081
2,3,7,8-TCDF	0.00072	0.013	0.36	3.3	0.84	0.84
1,2,3,7,8-PeCDF	0.00013	0.0023	0.016	0.15	0.049	0.049
2,3,4,7,8-PeCDF	0.025	0.44	0.83	7.6	2.2	2.2
1,2,3,4,7,8-HxCDF	0.0047	0.083	0.0081	0.075	0.051	0.051
1,2,3,6,7,8-HxCDF	0.0042	0.075	0.012	0.11	0.056	0.056
2,3,4,6,7,8-HxCDF	0.0040	0.071	0.010	0.09	0.081	0.081
1,2,3,7,8,9-HxCDF	0.00035	0.0062	0.00050	0.0046	0.0030	0.0030
1,2,3,4,6,7,8-HpCDF	0.00061	0.011	0.00015	0.0014	0.0023	0.0023
1,2,3,4,7,8,9-HpCDF	0.000089	0.0016	0.000063	0.00058	0.00037	0.00037
1,2,3,4,6,7,8,9-OCDF	0.0000063	0.00011	0.0000057	0.000053	0.000027	0.000027
PCB 77	0.000075	0.0013	0.0070	0.065	0.0078	0.0078
PCB 126	0.029	0.52	2.9	26	4.1	4.1
PCB 169	0.00088	0.016	0.21	2.0	0.55	0.55
PCB 81	0.000010	0.00018	0.00042	0.0039	0.00057	0.00057
PCB 105	0.000092	0.0016	0.034	0.32	0.079	0.079
PCB 114	0.0000069	0.00012	0.0021	0.019	0.0040	0.0040
PCB 118	0.00029	0.0051	0.10	0.93	0.24	0.24
PCB 123	0.0000046	0.000081	0.0010	0.010	0.0022	0.0022
PCB 156	0.000037	0.00066	0.015	0.14	0.021	0.021
PCB 157	0.0000072	0.00013	0.0036	0.033	0.0070	0.0070
PCB 167	0.000014	0.00025	0.0086	0.079	0.012	0.012
PCB 189	0.0000029	0.000052	0.0017	0.016	0.0022	0.0022
PCDDs/PCDFs	0.052	0.93	1.9	18	5.4	5.4
Non-ortho PCBs	0.030	0.54	3.1	28	4.7	4.7
Mono-ortho PCBs	0.00045	0.0080	0.17	1.5	0.37	0.37
Total TEQ	0.083	1.5	5.1	48	10	10

fw. - fresh weight

lw. - lipid weight

Consensus of TEQs

TEF_{1998}

	Sheep liver		Salmon		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	0.0030	0.053	0.23	2.1	0.34	0.34
1,2,3,7,8-PeCDD	0.0063	0.11	0.42	3.9	1.6	1.6
1,2,3,4,7,8-HxCDD	0.00057	0.010	0.0025	0.023	0.024	0.024
1,2,3,6,7,8-HxCDD	0.0011	0.019	0.018	0.16	0.11	0.11
1,2,3,7,8,9-HxCDD	0.00052	0.0092	0.0017	0.016	0.021	0.021
1,2,3,4,6,7,8-HpCDD	0.00077	0.014	0.00030	0.0028	0.0037	0.0037
1,2,3,4,6,7,8,9-OCDD	0.000024	0.00043	0.0000083	0.000077	0.000027	0.000027
2,3,7,8-TCDF	0.00072	0.013	0.36	3.3	0.84	0.84
1,2,3,7,8-PeCDF	0.00021	0.0038	0.027	0.25	0.081	0.081
2,3,4,7,8-PeCDF	0.042	0.74	1.4	13	3.7	3.7
1,2,3,4,7,8-HxCDF	0.0047	0.083	0.0081	0.075	0.051	0.051
1,2,3,6,7,8-HxCDF	0.0042	0.075	0.012	0.11	0.056	0.056
2,3,4,6,7,8-HxCDF	0.0040	0.071	0.010	0.091	0.081	0.081
1,2,3,7,8,9-HxCDF	0.00035	0.0062	0.00050	0.0046	0.0030	0.0030
1,2,3,4,6,7,8-HpCDF	0.00061	0.011	0.00015	0.0014	0.0023	0.0023
1,2,3,4,7,8,9-HpCDF	0.000089	0.0016	0.000063	0.00058	0.00037	0.00037
1,2,3,4,6,7,8,9-OCDF	0.0000021	0.000037	0.0000019	0.000018	0.0000091	0.0000091
PCB 77	0.000075	0.0013	0.0070	0.065	0.0078	0.0078
PCB 126	0.029	0.52	2.9	26	4.1	4.1
PCB 169	0.00029	0.0052	0.072	0.66	0.18	0.18
PCB 81	0.0000034	0.000060	0.00014	0.0013	0.00019	0.00019
PCB 105	0.00031	0.0055	0.11	1.1	0.26	0.26
PCB 114	0.00012	0.0020	0.035	0.32	0.067	0.067
PCB 118	0.00095	0.017	0.33	3.1	0.80	0.80
PCB 123	0.000015	0.00027	0.0034	0.032	0.0074	0.0074
PCB 156	0.00062	0.011	0.26	2.4	0.35	0.35
PCB 157	0.00012	0.0021	0.06	0.56	0.12	0.12
PCB 167	0.0000047	0.00008	0.0029	0.026	0.0040	0.0040
PCB 189	0.000010	0.00017	0.0056	0.052	0.0073	0.0073
PCDDs/PCDFs	0.069	1.2	2.5	23	6.9	6.9
Non-ortho PCBs	0.030	0.53	2.9	27	4.3	4.3
Mono-ortho PCBs	0.0021	0.038	0.81	7.5	1.6	1.6
Total TEQ	0.10	1.8	6.2	57	13	13

fw. - fresh weight

lw. - lipid weight

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	0.17	8.3	78	6
1,2,3,7,8 PeCDD	5.0	4.9	4.9	4.9	0.40	8.1	78	6
1,2,3,4,7,8 HxCDD	5.0	4.9	4.9	4.9	0.35	7.2	78	5
1,2,3,6,7,8 HxCDD	5.0	4.9	4.9	4.8	0.41	8.6	78	5
1,2,3,7,8,9 HxCDD	5.0	5.1	5.1	5.1	0.41	8.0	78	5
1,2,3,4,6,7,8 HpCDD	5.0	5.0	5.0	5.0	0.47	9.4	78	5
1,2,3,4,6,7,8,9 OCDD	10	9.8	9.8	9.8	0.9	9.1	78	5
2,3,7,8 TCDF	2.0	2.0	2.0	2.0	0.15	7.4	78	5
1,2,3,7,8 PeCDF	5.0	5.0	5.0	5.0	0.34	6.9	78	6
2,3,4,7,8 PeCDF	5.0	4.8	4.9	4.8	0.35	7.3	78	6
1,2,3,4,7,8 HxCDF	5.0	5.0	5.0	5.0	0.46	9.2	78	5
1,2,3,6,7,8 HxCDF	5.0	5.0	5.0	5.0	0.32	6.4	78	6
2,3,4,6,7,8 HxCDF	5.0	5.0	5.0	4.9	0.39	7.8	78	7
1,2,3,7,8,9 HxCDF	5.0	5.0	5.0	4.9	0.36	7.3	78	6
1,2,3,4,6,7,8 HpCDF	5.0	5.0	5.0	5.0	0.50	10	78	6
1,2,3,4,7,8,9 HpCDF	5.0	5.0	5.0	5.0	0.41	8.2	78	6
1,2,3,4,6,7,8,9 OCDF	10	10	10	9.5	1.1	11	78	5
PCB 77	10	10	10	10	0.67	6.7	77	4
PCB 126	10	10	10	10	0.62	6.3	77	4
PCB 169	10	10	10	10	0.83	8.4	77	3
PCB 81	10	10	10	10	0.62	6.2	77	4
PCB 105	100	98	98	98	6.7	6.8	77	4
PCB 114	100	99	99	98	6.8	7.0	77	4
PCB 118	100	99	99	100	7.1	7.1	77	3
PCB 123	100	100	100	99	9.4	9.5	77	3
PCB 156	100	101	101	101	8.6	8.5	77	3
PCB 157	100	99	99	100	9.1	9.1	77	3
PCB 167	100	100	100	100	8.5	8.6	77	4
PCB 189	100	100	100	101	9.2	9.1	77	3

Consensus statistics

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	98	98	126	98
PCB 52	100	99	98	127	98
PCB 101	100	99	99	126	98
PCB 138	100	99	99	128	99
PCB 153	100	99	99	128	99
PCB 180	100	100	100	129	99
PBDE 28	25	25	25	25	25
PBDE 47	25	24	24	24	24
PBDE 99	25	24	24	24	24
PBDE 100	25	25	25	25	25
PBDE 153	25	24	24	24	24
PBDE 154	25	24	24	24	24
PBDE 183	25	24	24	24	24
PBDE 209	100	96	96	97	97
α-HBCD *	500	494	499	480	498

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Number of reported values	Number of reported outliers
PCB 28	187	8.5	66	4
PCB 52	185	8.8	66	3
PCB 101	185	8.4	66	3
PCB 138	181	8.4	66	3
PCB 153	184	7.8	66	3
PCB 180	181	9.1	66	3
PBDE 28	8.4	8.4	35	0
PBDE 47	6.4	6.4	35	0
PBDE 99	6.2	6.2	35	0
PBDE 100	7.0	7.0	35	0
PBDE 153	5.8	5.8	35	0
PBDE 154	6.5	6.5	34	0
PBDE 183	8.0	8.0	35	0
PBDE 209	8.9	8.9	26	0
α-HBCD *	17	9.3	14	1

NDs: Non-detects

* : Indicative value due to few reported values

Consensus statistics

Sheep liver, 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	0.0030	0.0042	0.0033	0.0015	46	58	20	41
1,2,3,7,8-PeCDD	0.0063	0.0086	0.0073	0.0032	43	58	16	24
1,2,3,4,7,8-HxCDD	0.0057	0.0072	0.0061	0.0025	41	58	21	30
1,2,3,6,7,8-HxCDD	0.011	0.013	0.012	0.0055	47	58	13	24
1,2,3,7,8,9-HxCDD	0.0052	0.0070	0.0059	0.0028	47	58	21	28
1,2,3,4,6,7,8-HpCDD	0.077	0.080	0.082	0.023	28	58	5	3
1,2,3,4,6,7,8,9-OCDD	0.24	0.25	0.25	0.077	32	58	6	3
2,3,7,8-TCDF	0.0072	0.012	0.0097	0.0072	74	58	17	23
1,2,3,7,8-PeCDF	0.0043	0.0068	0.0055	0.0033	60	58	16	37
2,3,4,7,8-PeCDF	0.083	0.084	0.083	0.019	23	58	3	3
1,2,3,4,7,8-HxCDF	0.047	0.048	0.046	0.011	23	58	6	4
1,2,3,6,7,8-HxCDF	0.042	0.043	0.042	0.0087	21	58	5	6
2,3,4,6,7,8-HxCDF	0.040	0.041	0.040	0.009	23	58	6	7
1,2,3,7,8,9-HxCDF	0.0035	0.0067	0.0046	0.0032	69	58	20	43
1,2,3,4,6,7,8-HpCDF	0.061	0.063	0.060	0.013	22	58	8	4
1,2,3,4,7,8,9-HpCDF	0.0089	0.010	0.0091	0.0028	31	58	16	18
1,2,3,4,6,7,8,9-OCDF	0.021	0.028	0.024	0.0098	41	58	14	14
PCB 77	0.75	0.80	0.77	0.32	41	56	8	3
PCB 126	0.29	0.30	0.30	0.080	27	56	2	2
PCB 169	0.029	0.036	0.032	0.013	41	56	13	19
PCB 81	0.034	0.045	0.038	0.020	54	56	12	17
PCB 105	3.1	3.4	3.3	1.4	42	56	10	4
PCB 114	0.23	0.32	0.27	0.13	47	56	15	16
PCB 118	9.5	11	11	4.6	42	56	8	3
PCB 123	0.15	0.22	0.17	0.11	62	56	16	20
PCB 156	1.2	1.4	1.3	0.48	36	56	12	5
PCB 157	0.24	0.28	0.26	0.11	43	56	14	16
PCB 167	0.47	0.54	0.52	0.23	44	56	13	10
PCB 189	0.097	0.14	0.11	0.050	46	56	20	20

Consensus statistics

Sheep liver, 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	20	14	14	57	16	16
PCB 52	22	19	18	181	20	20
PCB 101	42	36	37	86	39	40
PCB 138	23	21	21	109	23	23
PCB 153	68	66	65	406	68	67
PCB 180	12	11	11	50	12	12
PBDE 28	0.28	0.15	0.14	1.0	0.21	0.19
PBDE 47	3.2	1.6	1.7	7.6	2.3	2.5
PBDE 99	1.8	1.1	1.0	4.7	1.6	1.5
PBDE 100	0.71	0.43	0.43	1.9	0.61	0.58
PBDE 153	0.65	0.55	0.54	2.6	0.64	0.61
PBDE 154	0.47	0.25	0.25	1.4	0.35	0.35
PBDE 183	0.94	0.81	0.81	8.0	0.80	0.80
PBDE 209	36	11	10	261	20	17
α-HBCD *	6.7	4.0	6.7	14	5.0	6.3
β-HBCD *	5.0	2.4	1.2	5.6	3.6	1.2
γ-HBCD *	5.0	3.9	3.9	7.0	4.2	3.9
Tot HBCD *	6.2	5.1	5.7	24	5.2	5.9

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	Number of reported values	Number of outliers	Number of reported NDs
PCB 28	257	52	50	51	14	8
PCB 52	521	44	43	51	10	7
PCB 101	196	45	44	51	9	4
PCB 138	370	35	36	51	11	5
PCB 153	532	30	29	51	8	2
PCB 180	323	32	32	51	10	9
PBDE 28	227	69	66	27	10	9
PBDE 47	167	71	66	27	7	4
PBDE 99	154	67	64	27	7	6
PBDE 100	184	69	63	27	7	9
PBDE 153	259	36	31	27	5	4
PBDE 154	196	61	63	27	6	6
PBDE 183	379	42	30	27	8	8
PBDE 209	279	89	79	20	8	4
α-HBCD *	123	71	65	11	3	6
β-HBCD *	93	83	104	11	2	8
γ-HBCD *	84	77	38	11	3	7
Tot HBCD *	126	22	13	10	4	4

NDs: Non-detects

* : Indicative value due to few reported values

Consensus statistics

Salmon, 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	0.23	0.23	0.23	0.050	21	69	2	2
1,2,3,7,8-PeCDD	0.42	0.42	0.41	0.10	25	69	1	3
1,2,3,4,7,8-HxCDD	0.025	0.026	0.026	0.0080	30	69	11	15
1,2,3,6,7,8-HxCDD	0.18	0.18	0.17	0.042	25	69	2	6
1,2,3,7,8,9-HxCDD	0.017	0.019	0.018	0.0067	36	69	12	23
1,2,3,4,6,7,8-HpCDD	0.030	0.033	0.032	0.0097	30	69	12	14
1,2,3,4,6,7,8,9-OCDD	0.083	0.088	0.091	0.031	35	69	13	14
2,3,7,8-TCDF	3.6	3.6	3.5	0.68	19	69	0	1
1,2,3,7,8-PeCDF	0.54	0.54	0.55	0.12	21	69	3	1
2,3,4,7,8-PeCDF	2.8	2.8	2.7	0.62	23	69	0	2
1,2,3,4,7,8-HxCDF	0.081	0.082	0.085	0.0266	31	69	6	5
1,2,3,6,7,8-HxCDF	0.12	0.12	0.12	0.035	30	69	3	4
2,3,4,6,7,8-HxCDF	0.098	0.10	0.096	0.029	30	69	4	6
1,2,3,7,8,9-HxCDF	0.0050	0.011	0.0074	0.0055	74	69	23	45
1,2,3,4,6,7,8-HpCDF	0.015	0.018	0.016	0.0082	50	69	15	18
1,2,3,4,7,8,9-HpCDF	0.0063	0.010	0.0084	0.0053	63	69	20	45
1,2,3,4,6,7,8,9-OCDF	0.019	0.028	0.022	0.013	60	69	19	27
PCB 77	70	70	70	16	22	67	0	0
PCB 126	29	29	29	7.3	25	67	0	1
PCB 169	7.2	7.2	7.0	1.8	25	67	0	1
PCB 81	1.4	1.5	1.4	0.50	35	67	5	6
PCB 105	1137	1137	1162	272	23	67	0	0
PCB 114	70	70	70	16	23	67	0	0
PCB 118	3341	3341	3334	674	20	67	0	0
PCB 123	34	36	35	16	46	67	7	4
PCB 156	512	512	515	113	22	67	0	0
PCB 157	120	120	119	23	20	67	0	0
PCB 167	285	286	277	48	17	67	2	0
PCB 189	56	56	55	11	20	67	0	0

Consensus statistics

Salmon, 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	553	543	533	618	545	537
PCB 52	1130	1115	1130	1511	1092	1094
PCB 101	3994	3989	3989	43337	3902	3902
PCB 138	6556	6545	6545	13901	6651	6651
PCB 153	9710	9630	9630	17061	9288	9288
PCB 180	2720	2710	2710	5576	2724	2724
PBDE 28	41	40	40	46	38	38
PBDE 47	990	984	984	1073	978	978
PBDE 99	206	204	204	230	206	206
PBDE 100	253	251	251	249	240	240
PBDE 153	53	53	53	54	52	52
PBDE 154	144	144	144	153	147	147
PBDE 183	1.7	1.6	1.6	4.1	1.6	1.6
PBDE 209	24	14	12	87	19	20
α-HBCD *	1915	1915	1915	1968	1968	1968
β-HBCD *	37	33	37	45	33	38
γ-HBCD *	80	80	80	83	83	84
Tot HBCD *	1990	1990	1990	1975	1975	1975

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	Number of reported values	Number of outliers	Number of reported NDs
PCB 28	97	32	31	61	1	1
PCB 52	217	25	25	61	1	1
PCB 101	707	22	22	61	2	0
PCB 138	385	22	22	61	2	0
PCB 153	337	22	22	61	2	0
PCB 180	384	25	25	61	2	0
PBDE 28	61	24	24	35	4	0
PBDE 47	40	14	14	35	2	0
PBDE 99	51	16	16	35	2	0
PBDE 100	32	26	26	35	1	0
PBDE 153	30	20	20	35	1	1
PBDE 154	38	30	30	35	1	0
PBDE 183	225	36	33	35	4	11
PBDE 209	175	71	76	23	6	6
α-HBCD *	20	20	20	14	0	0
β-HBCD *	82	48	31	13	2	3
γ-HBCD *	40	40	21	13	0	2
Tot HBCD *	31	31	31	13	0	0

NDs: Non-detects

* : Indicative value due to few reported values

Consensus statistics

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	0.34	0.34	0.34	0.079	23	73	3	4
1,2,3,7,8-PeCDD	1.6	1.6	1.5	0.37	25	73	1	4
1,2,3,4,7,8-HxCDD	0.24	0.24	0.24	0.067	28	73	4	8
1,2,3,6,7,8-HxCDD	1.1	1.1	1.1	0.22	21	73	1	5
1,2,3,7,8,9-HxCDD	0.21	0.21	0.21	0.073	35	73	4	10
1,2,3,4,6,7,8-HpCDD	0.37	0.37	0.38	0.12	31	73	3	8
1,2,3,4,6,7,8,9-OCDD	0.27	0.32	0.30	0.13	42	73	12	17
2,3,7,8-TCDF	8.4	8.4	8.4	1.4	16	73	1	0
1,2,3,7,8-PeCDF	1.6	1.6	1.6	0.36	23	73	2	2
2,3,4,7,8-PeCDF	7.4	7.4	7.2	1.4	20	73	2	1
1,2,3,4,7,8-HxCDF	0.51	0.51	0.51	0.13	26	73	4	3
1,2,3,6,7,8-HxCDF	0.56	0.56	0.54	0.15	28	73	2	5
2,3,4,6,7,8-HxCDF	0.81	0.82	0.82	0.20	25	73	1	4
1,2,3,7,8,9-HxCDF	0.030	0.050	0.04	0.026	69	73	26	49
1,2,3,4,6,7,8-HpCDF	0.23	0.24	0.25	0.089	36	73	8	9
1,2,3,4,7,8,9-HpCDF	0.037	0.050	0.040	0.025	61	73	17	44
1,2,3,4,6,7,8,9-OCDF	0.091	0.11	0.095	0.054	58	73	19	39
PCB 77	78	78	78	20	25	72	2	0
PCB 126	41	41	41	11	27	72	0	2
PCB 169	18	18	18	3.8	21	72	0	1
PCB 81	1.9	2.0	1.9	0.73	38	72	8	7
PCB 105	2632	2632	2627	446	17	72	0	0
PCB 114	134	135	135	36	26	72	1	0
PCB 118	7991	7991	7959	1230	15	72	0	0
PCB 123	74	85	75	36	48	72	12	4
PCB 156	709	709	705	110	16	72	0	0
PCB 157	233	233	236	40	17	72	0	0
PCB 167	404	405	411	72	17	72	3	0
PCB 189	73	73	74	14	19	72	0	1

Consensus statistics

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	2059	2040	2059	2125	2029	2063
PCB 52	5230	5186	5186	18750	4939	4939
PCB 101	10475	10472	10472	46455	10236	10236
PCB 138	13800	13719	13719	45791	13780	13780
PCB 153	21400	21356	21356	80538	20741	20741
PCB 180	3550	3525	3525	13847	3475	3475
PBDE 28	265	264	264	288	279	279
PBDE 47	5258	5258	5258	5135	5135	5135
PBDE 99	621	621	621	604	604	604
PBDE 100	1710	1690	1690	1769	1707	1707
PBDE 153	118	118	118	115	115	115
PBDE 154	549	549	549	577	577	577
PBDE 183	10	10	10	22	10	11
PBDE 209	46	35	41	128	37	47
α-HBCD *	3728	3679	3679	7594	3481	3481
β-HBCD *	29	27	27	34	26	27
γ-HBCD *	77	62	70	78	60	66
Tot HBCD *	4061	4003	4003	8005	3606	3606

	Relative standard deviation, % all values	Relative standard deviation, % outliers removed	Relative standard deviation, % outliers and NDs removed	Number of reported values	Number of outliers	Number of reported NDs
PCB 28	48	34	31	61	1	1
PCB 52	575	22	22	61	1	0
PCB 101	609	25	25	61	1	0
PCB 138	534	26	26	61	2	0
PCB 153	580	24	24	61	1	0
PCB 180	585	25	25	61	1	0
PBDE 28	29	22	22	33	1	0
PBDE 47	11	11	11	33	0	0
PBDE 99	15	15	15	33	0	0
PBDE 100	25	15	15	33	1	0
PBDE 153	22	22	22	33	0	0
PBDE 154	27	27	27	33	0	0
PBDE 183	199	49	32	33	5	11
PBDE 209	166	66	51	24	7	9
α-HBCD *	210	26	26	15	1	0
β-HBCD *	73	47	52	14	2	7
γ-HBCD *	75	60	46	14	2	3
Tot HBCD *	206	28	28	14	1	0

NDs: Non-detects

* : Indicative value due to few reported values

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
Sheep liver, fresh weight							
PCDD/PCDF TEQ	0.062	0.18	0.58	325	0.016	4.5	59
Non-ortho PCB TEQ	0.031	0.035	0.018	51	0.014	0.13	56
Mono-ortho PCB TEQ	0.00054	0.00094	0.0012	126	0.00013	0.0077	56
Total TEQ	0.093	0.34	1.7	500	0.016	13	59
Sum indicator PCB	198	888	3777	425	0.16	26692	51
Sum PBDE without PBDE 209	10	27	48	176	1.1	211	27
Salmon, fresh weight							
PCDD/PCDF TEQ	1.9	2.6	1.2	47	0.88	12	70
Non-ortho PCB TEQ	3.1	3.1	0.77	25	0.036	5.4	67
Mono-ortho PCB TEQ	0.17	0.17	0.033	20	0.069	0.25	67
Total TEQ	5.2	5.2	1.6	31	1.6	15	70
Sum indicator PCB	24613	82005	442258	539	25	3478579	61
Sum PBDE without PBDE 209	1707	1809	582	32	1238	4140	35
Fish oil, fresh weight							
PCDD/PCDF TEQ	5.4	7.0	1.6	22	2.6	15	75
Non-ortho PCB TEQ	4.7	4.6	1.2	26	0.34	7.9	72
Mono-ortho PCB TEQ	0.37	0.37	0.056	15	0.16	0.62	72
Total TEQ	10	10	2.4	23	3.8	20	75
Sum indicator PCB	56838	207506	1184050	571	56	9303039	61
Sum PBDE without PBDE 209	8580	8510	1028	12	6415	11263	33

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
Sheep liver, fresh weight							
PCDD/PCDF TEQ	0.079	0.18	0.58	324	0.017	4.5	59
Non-ortho PCB TEQ	0.030	0.033	0.015	45	0.013	0.11	56
Mono-ortho PCB TEQ	0.0027	0.0050	0.0074	147	0.00065	0.050	56
Total TEQ	0.12	0.36	1.7	471	0.017	13	59
Sum indicator PCB	198	888	3777	425	0.16	26692	51
Sum PBDE without PBDE 209	10	27	48	176	1.1	211	27
Salmon, fresh weight							
PCDD/PCDF TEQ	2.5	2.6	1.3	50	1.1	13	70
Non-ortho PCB TEQ	2.9	2.9	0.74	25	0.030	5.2	67
Mono-ortho PCB TEQ	0.83	0.82	0.16	20	0.33	1.3	67
Total TEQ	6.3	6.2	1.8	28	2.5	17	70
Sum indicator PCB	24613	82005	442258	539	25	3478579	61
Sum PBDE without PBDE 209	1707	1809	582	32	1238	4140	35
Fish oil, fresh weight							
PCDD/PCDF TEQ	6.9	7.0	2.0	29	3.1	19	75
Non-ortho PCB TEQ	4.3	4.2	1.1	27	0.15	7.6	72
Mono-ortho PCB TEQ	1.6	1.6	0.25	15	0.68	2.7	72
Total TEQ	13	13	2.7	21	4.8	25	75
Sum indicator PCB	56838	207506	1184050	571	56	9303039	61
Sum PBDE without PBDE 209	8580	8510	1028	12	6415	11263	33

Laboratories' Z-scores: Analyte solution

LAB CODE	Sum TE	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	43	47	3.9	5.3	6.0		
2	-0.091	-0.11	0.037	0.18	0.15	-0.031	-0.11
3	0.049	0.050	0.045	-0.0061	0.043		
4	-0.30	-0.36	0.30	0.17	0.33	0.19	0.25
5	-0.23	-0.23	-0.27	0.14	-0.36	0.15	0.25
6	0.19	0.56	-3.7	-3.7	-1.7		
7							
8	-0.25	-0.21	-0.64	-0.45	-0.44	-0.45	-0.42
9	1.9	2.1	-0.35	-0.027			
10							
11							
12	0.14	0.15	0.11	-0.21	-0.036		
13	-0.27	-0.30	0.049	-0.19	0.12		
14	0.12	0.11	0.23	0.47			
15							
16	-0.041	-0.036	-0.090	-0.11	-0.041		
17	-0.048	-0.035	-0.20	-0.10	-0.016		
18	0.00043	-0.013	0.10	0.35	0.089	-0.023	0.00067
19							
20							
21	-0.14	-0.14	-0.092	-0.16	-0.087		
22	-0.077	-0.085	-0.049	0.33	0.27		
23					0.45	-0.26	-0.23
24	0.081	0.075	0.20	-0.18	0.086	-0.46	-0.73
25	-0.040	-0.047	0.077	-0.27	0.12		
26	-0.26	-0.32	0.37	0.27	-0.25	-1.8	0.0071
27	0.28	0.34	-0.29	-0.21	-0.23		
28	-0.042	-0.060	0.11	0.27	0.39	-2.1	-0.48
29	-0.28	-0.26	-0.58	0.12			
30	-0.70	-0.78	0.30	-0.57	-0.0061		
31	-0.15	-0.15	-0.21	-0.33			
32	-0.041	-0.018	-0.33	-0.061			
33	0.11	0.16	-0.49	0.062	0.22	-0.069	-0.060
34							
35	0.31	0.36	-0.23	0.10	0.069	-0.12	0.036
36	81	79	94	99	96		
37							
38	0.12	0.092	0.44	0.14	0.086	-2.0	-0.26
39	-0.040	-0.070	0.33	0.00089	0.16		
40	-0.32	-0.31	-0.47	-0.21	-0.15	0.14	0.40
41	0.088	0.11	-0.27	0.27	-1.3		
42	-0.037	-0.034	-0.015	-0.38	-0.11	-0.14	-0.015
43							
44	-0.14	-0.15	-0.0092	-0.060	-0.057	0.23	0.24
45	-0.37	-0.38	-0.25	-0.18			
46	-0.65	-0.67	-0.47	-0.39	-0.44	-2.1	-0.40
47	0.047	0.055	-0.052	0.053	0.52		
48	-0.048	-0.10	0.54	0.16	0.42	0.047	0.045
49	15	17	-0.031	0.68	-0.24	0.20	0.28
50	-0.24	-0.20	-0.68	-0.22			
51							
52							
53	0.55	0.60	0.00067	0.27	-0.17	-1.5	0.54
54	-0.15	-0.15	-0.080	-0.085	-0.19		
55	0.0072	0.015	-0.090	-0.020	0.0099		
56							
57	-0.86	-1.2	2.4	2.3			
58	-0.023	0.0038	-0.36	-0.027	0.17	-0.010	-0.25
59	0.21	0.24	-0.014	-0.044		-0.21	-0.27
60	-0.67	-0.62	-1.1	-1.1	-4.9	-0.59	-0.74
61	0.076	0.087	-0.028	-0.14	0.22		
62	-0.30	0.15					
63							
64							
65	-1.1	-1.2	-0.031	0.055	0.099		
66	0.18	0.19	0.13	-0.43			
67							
68	-0.24	-0.26	-0.055	-0.17	-0.16		
69	0.15	0.15	0.14	0.075	0.11		
70							

Laboratories' Z-scores: Analyte solution (continued)

LAB CODE	Sum TE	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	-3.7	-4.0	-0.10	-0.14	-0.081		
72	-0.080	-0.091	0.024	0.046			
73	-0.35	-0.37	-0.26	0.60	0.37	-1.7	0.18
74							
75	0.12	0.13	0.089	-0.16	0.020	-1.7	0.14
76							
77	-0.13	-0.13	-0.19	-0.12	0.069	0.25	0.030
78							
79	-0.14	-0.11	-0.56	-0.48	-0.062		
80							
81	-0.32	-0.36	0.20	0.010	0.025		
82	-0.010	0.011	-0.18	-0.48	-0.59		
83	-0.025	-0.032	0.065	0.0010	-0.00087		
84							
85							
86							
87	1.1	1.2	-0.18	-0.38	-0.35	0.53	-0.057
88							
89	-0.29	-0.32	-0.054	0.55			
90	0.57	0.68	-0.64	-0.32	0.34	0.053	-0.15
91							
92	-0.41	-0.43	-0.17	-0.69	0.071	0.14	0.13
93							
94	-0.43	-0.45	-0.13	-0.11	-0.0065	0.30	-0.018
95	94	103	0.37	0.35			
96							
97	-0.23	-0.26	-0.028	0.50	-0.27	-0.12	-0.015
98							
99							
100							
101	-0.12	-0.17	0.45	0.37	-0.057		
102							
103	-0.36	-0.38	-0.14	-0.11	0.055	0.14	0.032
104							
105	-0.060	-0.074	0.11	-0.064	-0.10		
106	-0.36	-0.40	-0.0039	-0.23	0.023	-0.23	-0.22
107	-0.38	-0.38	-0.38	-0.22	0.17	-1.8	0.023
108					0.39		
109							
110							
111	0.021	0.016	0.080	0.023			
112	0.020	-0.0051	0.29	0.27	0.21	0.12	0.21
113							
114					-0.075		
115	0.029	0.026	0.066	0.0061	0.047		
116							
117	-0.057	-0.038	-0.29	-0.10	-0.13	-1.9	-0.11
118							
119							
120							

Laboratories' Z-scores: Sheep liver, fresh weight

LAB CODE	Sum TE	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	-0.92	-0.61	-1.5	0.13	-0.15		
2	11	17	-0.18	-0.81	-0.95		
3							
4	-0.48	-0.55	-0.35	-1.6	-1.0	127	-1.5
5	0.45	0.86	-0.28	2.3	1.1	0.30	0.90
6	2.4	3.7	0.32	-0.26	-0.53		
7							
8	-0.52	-0.42	-0.68	-1.4	-1.1	1.9	8.7
9							
10	-0.28	-1.5	1.8	0.29			
11							
12	1.0	1.5	0.068	9.8	2.4		
13							
14							
15							
16							
17	12	8.9	17	15	175		
18							
19	2.7	0.55	6.3	0.68	2.6	-3.5	-0.64
20							
21	0.44	0.24	0.74	4.0	4.0		
22	0.062	0.28	-0.34	1.5	1.1		
23					5.4	56	115
24	0.28	0.34	0.18	0.24	-5.0	5.3	0.054
25	0.61	0.51	0.78	-0.021	-0.16		
26	0.61	0.34	1.0	3.0	21	-1.5	5.3
27							
28							
29							
30	0.62	0.90	0.11	3.4	0.99		
31	-1.1	-1.1	-1.1	-1.5			
32	7.2	13	-2.2	0.74			
33	0.47	-0.090	0.82	42	17	14	38
34							
35	0.39	0.92	-0.85	22	-0.20		
36	1.3	2.8	-1.1	-0.72	1.2		
37							
38							
39							
40	10	14	4.2	24	8.8	211	211
41	-0.41	-0.20	-0.78	-0.19	-1.0		
42	2.0	3.5	-0.72	12	9.2	3.6	11
43							
44							
45	-4.0	-3.5					
46							
47	7.5	10	2.1	80	25	36	115
48	0.11	0.46	-0.49	-1.2	0.14	28	-0.67
49	1.8	3.3	-0.90	-1.8	-1.4	57	17
50							
51							
52							
53	0.99	1.4	0.35	-0.91	-0.57	-3.2	0.24
54	-0.81	-0.79	-0.85	-0.45	796		
55							
56							
57	5.7	7.4	2.7	5.0			
58							
59	2.5	1.6	4.0	3.4		107	6.8
60	5.1	9.7	-2.7	-3.6	-1.8	55	9.7
61	0.054	1.0	-1.8	13	5.6		
62	14	25					
63							
64							
65	3.8	4.8	2.3	-0.37	0.039		
66							
67							
68	7.9	11	1.7	24	5.3		
69	2.5	2.7	1.8	16	10		
70	-0.25	0.14	-0.92	-1.5	0.51		

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

LAB CODE	Sum TE	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	6.7	9.1	2.5	3.1	9.0		
72	-1.7	-1.2	-2.5	-2.2			
73							
74							
75	-0.30	0.024	-0.84	-1.0	-1.1	-1.2	6.1
76							
77	-0.64	-0.49	-0.87	-1.9	-1.3	1142	3.8
78							
79							
80	1.6	1.8	1.3	0.48	-0.77	-4.6	-3.9
81	-0.34	-0.43	-0.15	-1.4	-0.39		
82	0.61	1.5	-0.89	2.4	0.37		
83							
84							
85							
86							
87	8.2	7.7	9.2	5.8	3.6	60	23
88							
89							
90							
91							
92	1.1	1.4	0.58	-0.33	-0.26	3.9	-2.6
93							
94	0.90	1.4	0.10	1.3	2.7	-0.34	-0.53
95	11	17	1.7	5.0			
96							
97	0.68	0.60	0.82	0.18	-0.0066	-1.9	-1.5
98							
99	-0.57	-0.24	-1.1	-1.8	-0.87		
100							
101							
102							
103	0.59	1.5	-1.0	1.5	0.61	-0.36	-0.22
104							
105	0.48	0.36	0.66	2.9	2.9		
106	3.1	4.6	0.44	5.3	3.2	15	6.3
107	0.79	0.64	0.88	13	5.9	12	45
108	795	428			-0.42		
109							
110							
111							
112	0.16	-0.21	0.72	5.5	1.6	3.8	3.7
113							
114					0.94		
115							
116							
117							
118							
119							
120	0.37	0.31	0.48	1.4			

Laboratories' Z-scores: Sheep liver, lipid weight

LAB CODE	Sum TE	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	-1.4	-1.1	-1.9	-0.49	-0.74		
2	9.8	16	-0.42	-1.0	-1.2		
3							
4	-0.046	-0.12	0.093	-1.3	-0.65	140	-1.1
5	0.018	0.39	-0.65	1.7	0.62	-0.12	0.43
6	2.3	3.5	0.21	-0.36	-0.62		
7							
8	0.68	0.80	0.48	-0.45	-0.016	3.7	12
9							
10	-0.36	-1.5	1.7	0.21			
11							
12	0.54	1.0	-0.34	8.7	1.8		
13							
14							
15							
16							
17	15	11	20	18	205		
18							
19	0.55	-0.97	3.2	-0.88	0.52	-3.9	-1.8
20							
21	-1.3	-1.5	-1.1	1.1	1.1		
22	-0.85	-0.66	-1.2	0.37	0.0078		
23					3.3	44	90
24	0.49	0.55	0.39	0.45	-5.0	5.7	0.25
25	-0.43	-0.51	-0.29	-0.9	-1.1		
26	1.2	0.88	1.6	3.8	24	-1.2	6.3
27							
28							
29							
30	0.64	0.91	0.123	3.4	1.0		
31	-1.5	-1.5	-1.6	-1.9			
32	10	17	-1.5	2.2			
33	-0.16	-0.66	0.14	36	15	12	33
34							
35	1.1	1.7	-0.33	25	0.41		
36	-0.18	0.93	-2.1	-1.7	-0.26		
37							
38							
39							
40	17	22	8.1	36	15	304	305
41	-0.37	-0.15	-0.74	-0.15	-1.0		
42	3.0	4.7	-0.10	14	11	4.9	13
43							
44							
45	-2.1	-0.44					
46							
47							
48	0.0024	0.35	-0.58	-1.3	0.035	27	-0.76
49	2.3	3.9	-0.60	-1.6	-1.1	61	19
50							
51							
52							
53	3.8	4.4	2.9	1.0	1.5	-2.4	2.7
54	-1.3	-1.3	-1.4	-1.0	697		
55							
56							
57	6.8	8.7	3.6	6.0			
58							
59	-2.9	-3.1	-2.4	-2.6		27	-1.7
60							
61	-0.53	0.31	-2.1	11	4.4		
62							
63							
64							
65	1.4	2.1	0.30	-1.6	-1.3		
66							
67							
68	7.2	11	1.3	22	4.7		
69	1.7	2.0	1.1	14	8.1		
70	0.33	0.78	-0.42	-1.0	1.2		

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

LAB CODE	Sum TE	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	6.8	9.2	2.6	3.2	9.2		
72	-0.88	-0.30	-1.9	-1.5			
73							
74							
75	0.18	0.53	-0.42	-0.60	-0.67	-0.87	7.2
76							
77	-0.64	-0.49	-0.87	-1.9	-1.3	1142	3.8
78							
79							
80	2.9	3.2	2.5	1.6	0.051	-4.5	-3.7
81	-1.6	-1.7	-1.5	-2.4	-1.6		
82	3.7	5.1	1.4	6.5	3.4		
83							
84							
85							
86							
87	5.3	4.9	6.1	3.4	1.7	45	17
88							
89							
90							
91							
92	-0.29	-0.044	-0.71	-1.4	-1.4	1.9	-3.2
93							
94	-0.61	-0.27	-1.2	-0.35	0.72	-1.5	-1.7
95	25	35	7.2	13			
96							
97	1.5	1.4	1.6	0.88	0.67	-1.5	-1.0
98							
99	0.85	1.3	0.12	-0.74	0.46		
100							
101							
102							
103	-0.24	0.55	-1.6	0.53	-0.22	-1.0	-0.93
104							
105	-1.3	-1.4	-1.2	0.29	0.29		
106	2.8	4.3	0.27	5.0	2.9	14	5.9
107	2.4	2.2	2.5	18	8.8	16	58
108	697	375			-1.0		
109							
110							
111							
112	0.57	0.18	1.2	6.3	2.1	4.5	4.4
113							
114					1.6		
115							
116							
117							
118							
119							
120	1.6	1.5	1.7	2.8			

Laboratories' Z-scores: Salmon, fresh weight

LAB CODE	Sum TE	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	-0.11	0.31	-0.46	1.5	1.4		
2	0.30	0.23	0.29	1.3	-0.056	0.23	0.19
3							
4	0.51	0.012	0.81	0.62	0.45	-0.020	-0.12
5	-0.51	-0.50	-0.51	-0.70	-0.34	-0.57	-0.58
6	-3.5	-1.2	-4.9	-1.9	-1.7		
7							
8	1.0	0.42	1.4	0.28	0.92	0.46	0.47
9	-2.5	1.7				7.3	7.3
10	0.22	-0.58	0.69	0.67			
11							
12	-0.23	-0.29	-0.17	-0.44	-0.28		
13	-1.9	-1.2	-2.3	-1.7	-0.90		
14	0.33	-0.32	0.73	0.37			
15							
16	-0.11	-1.4	0.59	0.93	0.33		
17	-0.9	-0.7	-1.1	-0.94	0.016		
18							
19	-0.23	0.045	-0.37	-0.67	-0.020	0.55	0.49
20							
21	0.28	0.63	0.062	0.17	-0.15		
22	-0.048	0.31	-0.27	-0.12	-0.51		
23					-0.17	0.35	-0.69
24	0.083	-0.52	0.47	-0.18	-5.0	-0.26	-0.28
25	0.66	0.43	0.81	0.43	0.076		
26	1.5	0.78	2.0	1.1	0.30	-0.61	-0.58
27							
28	1.2	1.0	1.2	2.5	2.6	2.7	2.7
29							
30	0.20	-0.052	0.34	0.51	0.71		
31	-0.10	0.040	-0.17	-0.31			
32	-0.13	0.89	-0.73	-0.76			
33	-0.25	0.21	-0.58	0.46	-0.074	0.061	0.058
34							
35	0.040	0.33	-0.14	0.031	-0.067	0.48	0.26
36	0.058	-0.44	0.38	-0.13	0.20		
37							
38	-0.21	-0.27	-0.15	-0.72	-0.73	0.084	0.12
39	0.098	-0.18	0.27	0.18	0.53		
40							
41	0.071	0.41	-0.15	0.41	-0.31		
42	-0.063	-0.19	0.038	-0.46	-0.46	-0.67	-0.72
43							
44	0.46	0.41	0.53	-0.33	-0.40	6.1	6.2
45							
46							
47	-0.015	0.031	-0.030	-0.27	0.66	-1.1	-1.1
48	0.065	0.46	-0.22	0.78	15	1.5	0.089
49	-1.1	-1.2	-1.0	-0.064	-0.11	0.59	0.59
50							
51							
52							
53	0.20	0.26	0.21	-0.53	-0.66	0.018	0.053
54	0.17	0.19	0.19	-0.48	704		
55							
56							
57	2.4	0.26	3.7	2.2			
58	-0.50	-0.19	-0.72	0.11	1.0	-0.089	-0.084
59							
60	-2.9	-2.7	-3.0	-2.94	-0.60	0.55	0.56
61	-0.76	0.32	-1.5	0.51	-0.43		
62	-2.5	1.7					
63							
64							
65	-0.021	-0.20	0.057	0.64	0.44		
66	0.16	0.54	-0.13	0.93	0.32		
67							
68	-1.5	-1.5	-1.5	-1.9	-1.8		
69	2.3	1.5	2.8	2.6	1.1		
70	-0.26	-0.30	-0.24	-0.31	0.34		

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

LAB CODE	Sum TE	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	-1.6	-1.5	-1.7	-1.8			
73	0.69	2.0	-0.10	0.40	0.35	-0.35	-0.31
74							
75	-0.29	-0.38	-0.23	-0.40	-0.35	-0.17	-0.14
76	9.5	26	0.094	-0.065			
77	-0.20	0.15	-0.43	-0.064	-0.31	2.0	0.43
78							
79	-0.67	-0.73	-0.62	-0.79	-0.39		
80	-0.25	-0.054	-0.35	-0.67	-1.4	-1.3	-1.3
81	0.036	-0.16	0.13	0.59	0.30		
82	0.022	0.93	-0.54	-0.031	-0.32		
83							
84							
85							
86							
87	0.018	0.12	-0.049	0.11	0.23	0.87	0.43
88							
89	-2.3	-2.5	-2.2	-2.6			
90	0.24	1.8	-0.66	-0.42	0.48	-0.69	-0.68
91							
92	0.20	-0.34	0.52	0.59	0.76	-0.37	-0.36
93							
94	0.61	0.65	0.63	-0.0096	0.42	0.24	0.16
95	1.8	0.72	2.5	1.4			
96							
97	1.1	0.72	1.29	0.59	0.26	0.14	0.16
98							
99	-0.34	-0.46	-0.30	0.25	0.15		
100							
101							
102							
103	1.1	0.72	1.4	0.47	1.2	0.48	0.39
104							
105	0.31	0.69	0.081	0.24	-0.20		
106	0.86	0.50	1.1	1.0	0.45	0.38	0.27
107	0.25	-0.10	0.47	0.20	-0.30	-0.62	-0.59
108	0.15	-0.52			-2.7		
109							
110							
111							
112	0.45	0.0096	0.74	0.15	0.51	0.54	0.54
113							
114					0.30		
115							
116							
117	0.69	0.42	0.86	0.54	0.013	-0.26	-0.22
118							
119							
120							

Laboratories' Z-scores: Salmon, lipid weight

LAB CODE	Sum TE	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	0.17	0.62	-0.20	1.9	1.7		
2	0.39	0.32	0.39	1.4	0.032	0.32	0.30
3							
4	0.46	-0.038	0.76	0.59	0.40	-0.068	-0.15
5	-0.34	-0.34	-0.34	-0.52	-0.16	-0.41	-0.40
6	-2.5	1.2	-4.9	0.12	0.34		
7							
8	1.2	0.62	1.7	0.48	1.1	0.66	0.69
9	-2.7	1.3	-5.0	-5.0		6.5	6.7
10	0.22	-0.59	0.69	0.68			
11							
12	0.37	0.29	0.43	0.14	0.31		
13	-0.56	0.32	-1.1	-0.25	0.81		
14	0.26	-0.38	0.66	0.31			
15							
16	-0.13	-1.4	0.57	0.92	0.30		
17	-1.2	-1.5	-1.1	-0.92	0.033		
18							
19	-0.10	0.17	-0.25	-0.54	0.11	0.69	0.65
20							
21	0.13	0.47	-0.078	0.041	-0.28		
22	-0.31	0.023	-0.52	-0.37	-0.76		
23					-0.18	0.34	-0.68
24	-0.059	-0.65	0.32	-0.31	-5.0	-0.39	-0.39
25	0.51	0.28	0.66	0.30	-0.058		
26	1.2	0.46	1.6	0.78	0.012	-0.85	-0.80
27							
28	0.60	0.44	0.64	1.8	1.9	1.9	2.0
29							
30	1.6	1.3	1.8	2.0	2.2		
31	-0.82	-0.71	-0.88	-0.99			
32	-0.71	0.19	-1.2	-1.3			
33	-0.26	0.20	-0.58	0.46	-0.079	0.054	0.070
34							
35	-0.23	0.047	-0.39	-0.22	-0.33	0.19	-0.0026
36	8.5	7.2	9.4	8.0	8.9		
37							
38	0.62	0.54	0.70	0.034	0.0051	0.96	1.0
39	-0.23	-0.49	-0.067	-0.14	0.18		
40							
41	0.20	0.54	-0.033	0.56	-0.20		
42	-0.067	-0.20	0.035	-0.46	-0.47	-0.68	-0.71
43							
44	0.46	0.41	0.53	-0.33	-0.41	6.1	6.2
45							
46							
47							
48	-0.077	0.31	-0.35	0.64	14	1.3	-0.037
49	-1.1	-1.3	-1.1	-0.15	-0.21	0.48	0.50
50							
51							
52							
53	1.4	1.5	1.4	0.54	0.36	1.2	1.3
54	-0.39	-0.37	-0.37	-0.96	627		
55							
56							
57	2.4	0.25	3.7	2.2			
58	1.2	1.6	0.88	2.0	3.3	1.75	1.8
59							
60							
61	-1.2	-0.22	-1.8	-0.029	-0.89		
62							
63							
64							
65	-0.25	-0.42	-0.17	0.39	0.19		
66							
67							
68	2.7	2.6	2.7	1.8	1.9		
69	1.6	0.86	2.0	1.8	0.45		
70	-0.27	-0.31	-0.24	-0.30	0.33		

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

LAB CODE	Sum TE	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	-1.3	-1.2	-1.3	-1.4			
73	0.43	1.7	-0.32	0.17	0.11	-0.56	-0.51
74							
75	0.32	0.21	0.39	0.21	0.25	0.45	0.51
76	9.6	26	0.11	-0.035			
77	-0.25	0.10	-0.47	-0.10	-0.36	1.9	0.39
78							
79	-0.16	-0.23	-0.10	-0.28	0.16		
80	-1.2	-1.0	-1.3	-1.5	-2.1	-2.1	-2.0
81	0.079	-0.12	0.17	0.65	0.35		
82	0.42	1.4	-0.19	0.37	0.053		
83							
84							
85							
86							
87	-0.21	-0.12	-0.27	-0.11	-0.0051	0.60	0.21
88							
89	-2.5	-2.7	-2.4	-2.7			
90	0.49	2.1	-0.45	-0.19	0.74	-0.49	-0.46
91							
92	-0.56	-1.0	-0.29	-0.22	-0.087	-1.06	-1.0
93							
94	0.93	0.96	0.94	0.28	0.72	0.53	0.46
95	1.9	0.80	2.6	1.5			
96							
97	1.1	0.76	1.3	0.65	0.30	0.18	0.22
98							
99	-0.30	-0.43	-0.26	0.31	0.20		
100							
101							
102							
103	2.0	1.6	2.4	1.3	2.1	1.3	1.2
104							
105	0.21	0.58	-0.015	0.16	-0.29		
106	0.27	-0.054	0.47	0.40	-0.10	-0.16	-0.24
107	1.5	1.0	1.7	1.4	0.79	0.39	0.45
108	6.3	4.8			0.092		
109							
110							
111							
112	0.25	-0.18	0.53	-0.028	0.31	0.34	0.35
113							
114					1.0		
115							
116							
117	0.68	0.41	0.86	0.55	0.0071	-0.26	-0.21
118							
119							
120							

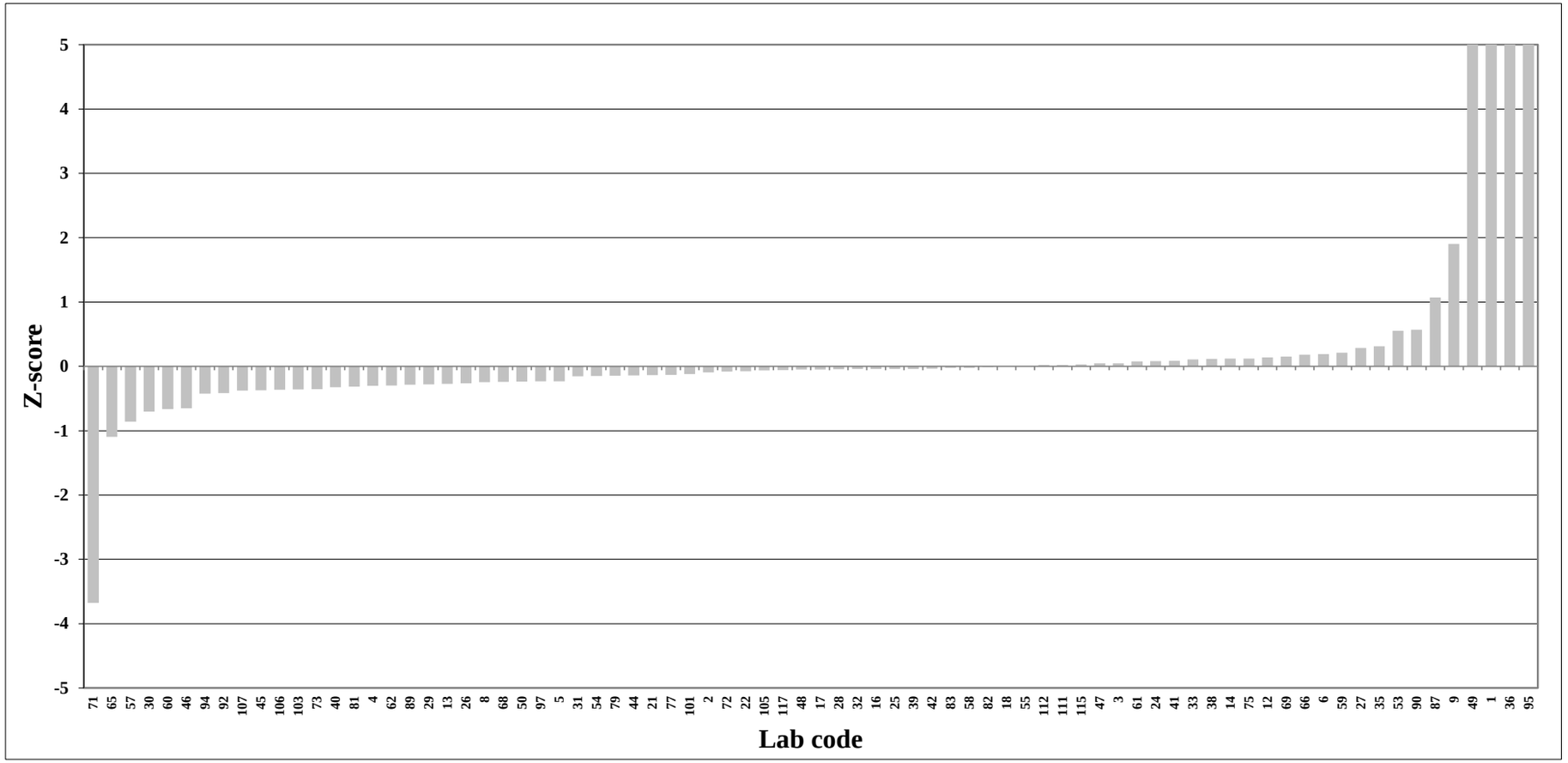
Laboratories' Z-scores: Fish oil

LAB CODE	Sum TE	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	-0.50	0.045	-1.2	0.37	0.94		
2	-0.24	-0.24	-0.30	0.56	0.072	0.62	0.54
3	-0.71	0.81	-2.5	0.27	0.52		
4	0.11	-0.27	0.55	0.25	0.35	-0.036	-0.17
5	-0.030	-0.22	0.22	-0.46	-0.40	-0.32	-0.31
6	-3.2	-2.1	-4.6	-0.17	3.8		
7	-1.4	-1.6					
8	0.64	0.27	1.1	-0.19	0.21	0.065	0.085
9	4.6	9.1	-0.12	0.17		-0.75	-0.73
10	-0.26	-0.91	0.43	0.37	0.66		
11							
12	0.14	0.23	0.055	-0.030	0.023		
13	-0.64	-0.012	-1.4	-0.44	-0.22		
14	0.32	-0.23	0.94	0.35			
15							
16	-0.13	0.035	-0.30	-0.25	0.17		
17	-0.77	-0.80	-0.72	-1.0	-0.47		
18	-0.90	-1.3	-0.59	0.87	0.91	1.9	1.6
19	0.016	0.12	-0.032	-0.89	-0.070	0.63	0.63
20							
21	0.084	0.30	-0.13	-0.35	-1.2		
22	-0.091	0.22	-0.45	-0.058	-0.040		
23							
24	0.025	-0.050	0.14	-0.37	-5.0	-0.45	-0.45
25	0.52	0.46	0.60	0.22	0.27		
26							
27	0.18	0.50	-0.15	-0.24	-5.0		
28							
29	-0.074	0.088	-0.29	0.27			
30							
31	0.28	0.58	-0.045	-0.012			
32	-0.26	0.40	-0.97	-0.79			
33							
34							
35	0.0044	0.23	-0.27	0.16	0.30	0.29	0.26
36	-0.049	-0.26	0.22	-0.39	0.030		
37							
38	-0.14	-0.11	-0.14	-0.59	-0.82	0.34	0.37
39							
40	-1.1	-1.4	-0.88	0.74	1.2	1.1	1.1
41	-0.13	-0.26	-0.0094	0.31	-0.62		
42	-0.22	-0.26	-0.20	0.14	0.26	-1.1	-1.1
43							
44	1.0	0.68	1.4	-0.0090	-0.47	0.43	0.46
45							
46	0.047	0.020	0.081	-0.0035	-0.13	0.016	0.040
47	0.47	0.50	0.46	0.12	1.8	-0.44	-0.42
48	0.19	0.0023	0.41	0.025	0.58	-0.084	-0.11
49	-0.064	-0.38	0.20	1.2	0.53	0.42	0.43
50	0.52	0.37	0.77	-0.37			
51							
52							
53	0.34	0.40	0.32	-0.25	-0.48	0.28	0.31
54	0.039	0.43	-0.41	0.028	821		
55	-0.26	-0.33	-0.20	-0.088	-0.73		
56							
57	0.92	-0.34	2.3	1.3			
58	0.44	0.052	0.91	0.071	0.15	-0.54	-0.54
59	-1.1	-2.4	0.42	0.11		0.082	0.082
60	-2.7	-2.6	-2.9	-2.8	-1.3	-0.12	-0.18
61	-0.84	-0.060	-1.8	0.55	-0.19		
62	-0.10	4.5					
63							
64							
65	1.2	1.3	1.2	0.16	0.0082		
66							
67							
68	0.11	0.30	-0.10	0.16	0.36		
69	2.0	1.3	2.8	3.4	-0.61		
70	-0.12	-0.21	-0.012	-0.19	0.035		

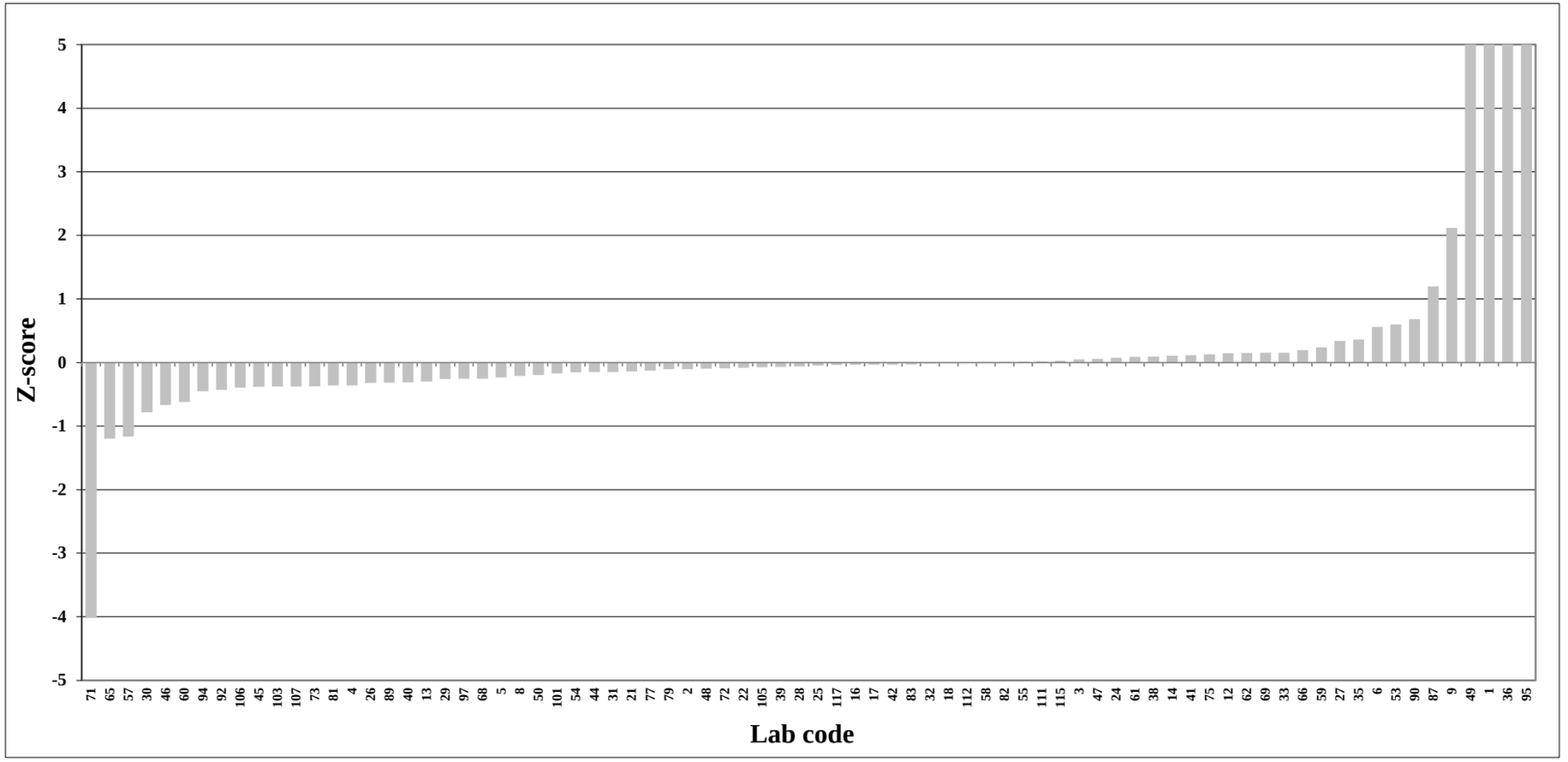
Laboratories' Z-scores: Fish oil (continued)

LAB CODE	Sum TE	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	-0.95	-0.87	-1.0	-1.1			
73							
74	0.14	-0.36	0.58	1.9			
75	0.22	0.33	0.12	-0.10	0.018	0.34	0.36
76							
77	-0.13	-0.017	-0.26	-0.012	-0.070	0.38	0.38
78							
79							
80	-1.0	-1.6	-0.30	-0.35	-0.27	-1.2	-1.2
81	-0.071	-0.078	-0.094	0.32	0.43		
82	-0.33	0.27	-1.0	-0.16	-0.22		
83	-0.11	0.037	-0.28	-0.23	0.051		
84							
85							
86							
87	-0.26	0.11	-0.71	-0.0040	0.23	0.89	0.35
88							
89	-0.14	-0.23	0.044	-1.0			
90	0.25	1.2	-0.78	-0.47	0.49	-0.12	-0.093
91							
92	-0.069	-0.33	0.20	0.27	0.40	-0.59	-0.58
93							
94	0.71	0.29	1.3	-0.036	-0.24	-0.37	-0.38
95	2.1	1.0	3.4	1.7			
96							
97	0.58	0.63	0.57	-0.10	0.26	-0.026	-0.012
98							
99	-0.23	-0.26	-0.25	0.51	0.39		
100							
101	-0.0041	-0.35	0.39	0.0049	-0.36		
102							
103	0.18	-0.021	0.44	-0.35	0.046	-0.47	-0.48
104							
105	0.038	0.24	-0.16	-0.35	-1.2		
106	0.46	0.19	0.75	0.58	0.36	0.49	0.36
107	0.16	-0.065	0.43	0.080	-0.59	-1.0	-0.98
108	4.7	2.6			2.0		
109							
110							
111	-3.2	-2.4	-4.3	-1.6			
112	-0.10	-0.38	0.19	0.37	0.17	0.37	0.37
113							
114					-0.068		
115	-0.76	0.75	-2.5	0.15	0.45		
116							
117							
118							
119							
120							

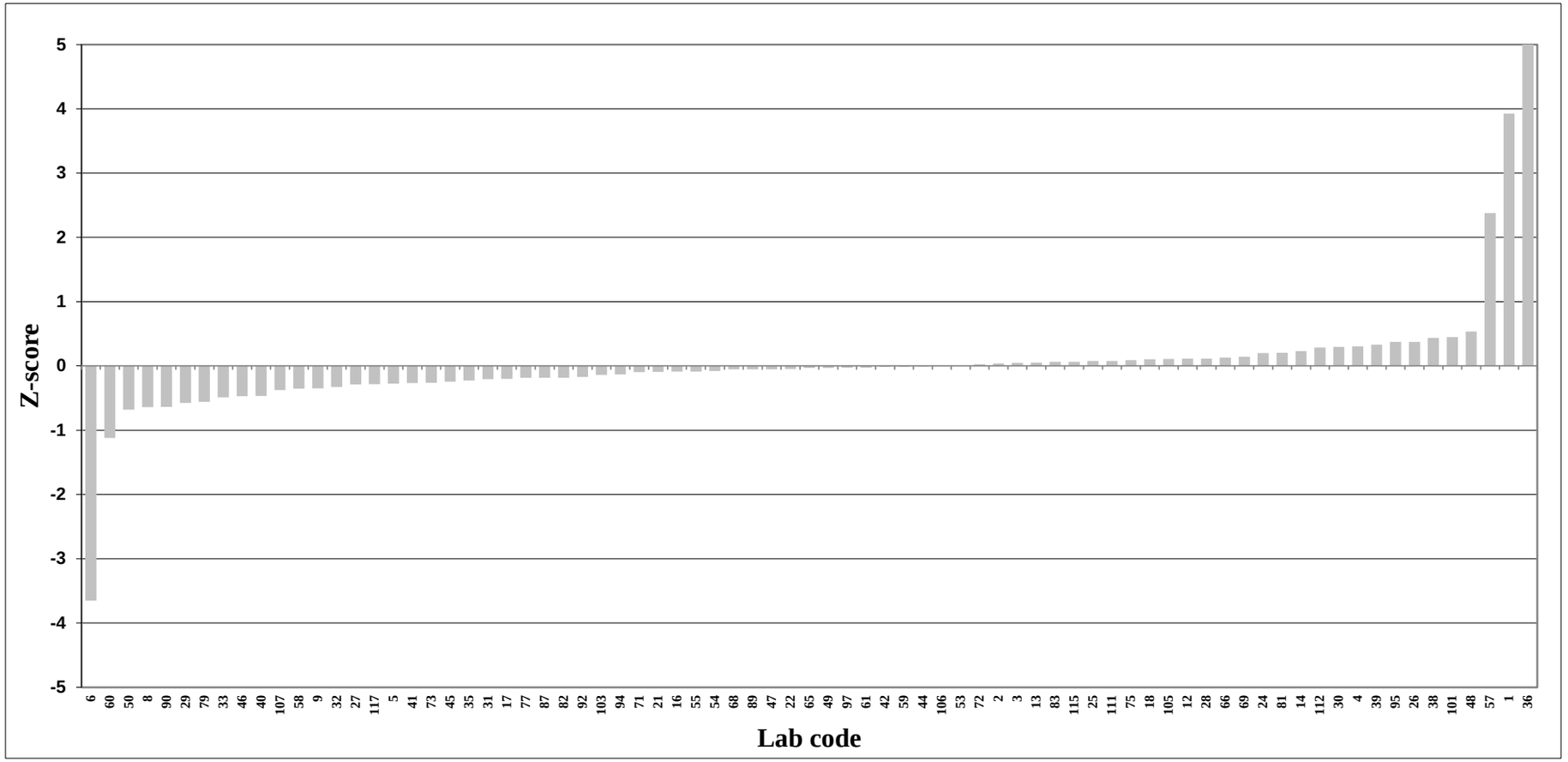
Z-score analyte solution; total TEQ



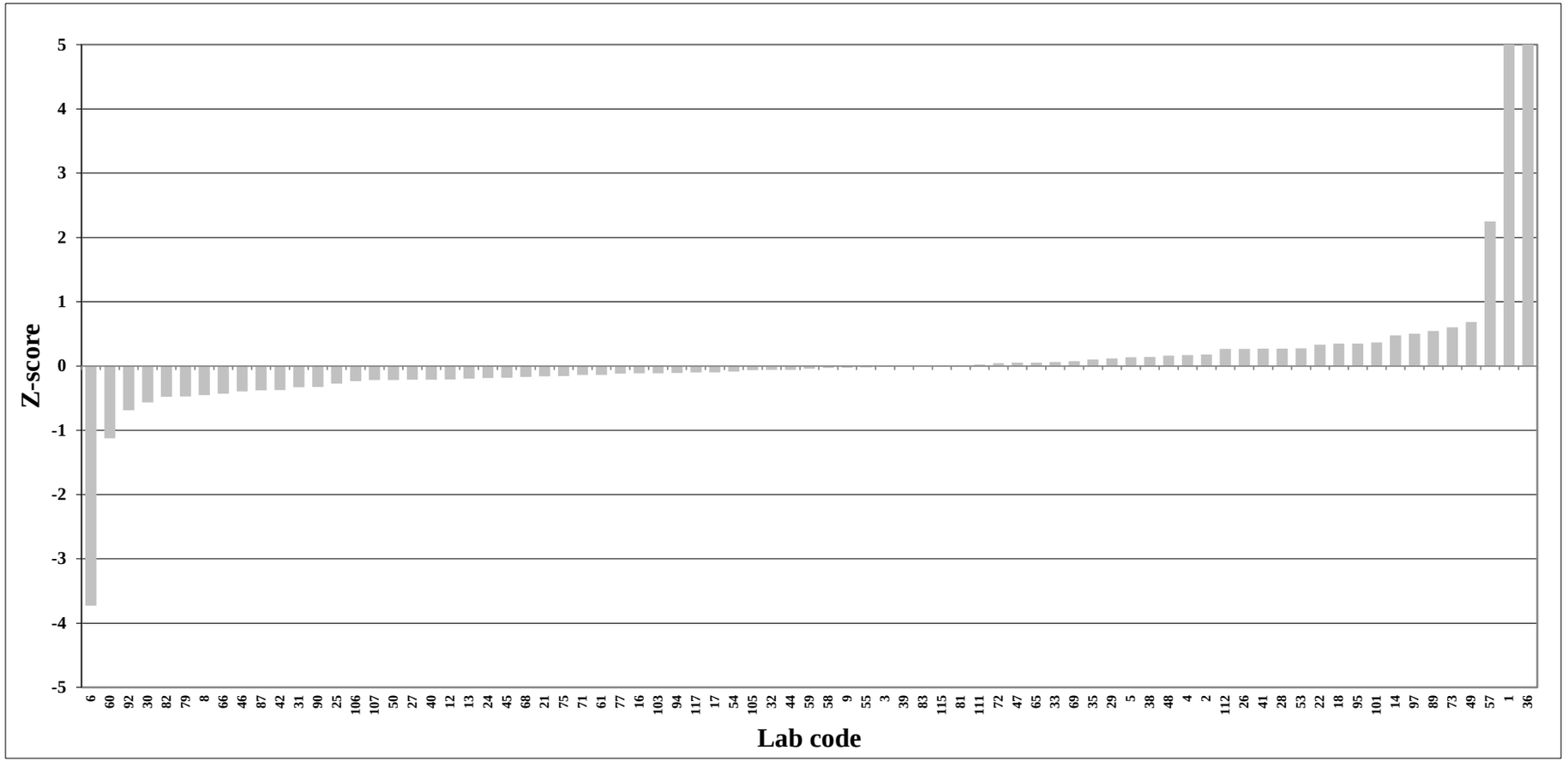
Z-score analyte solution; PCDD/PCDF TEQ



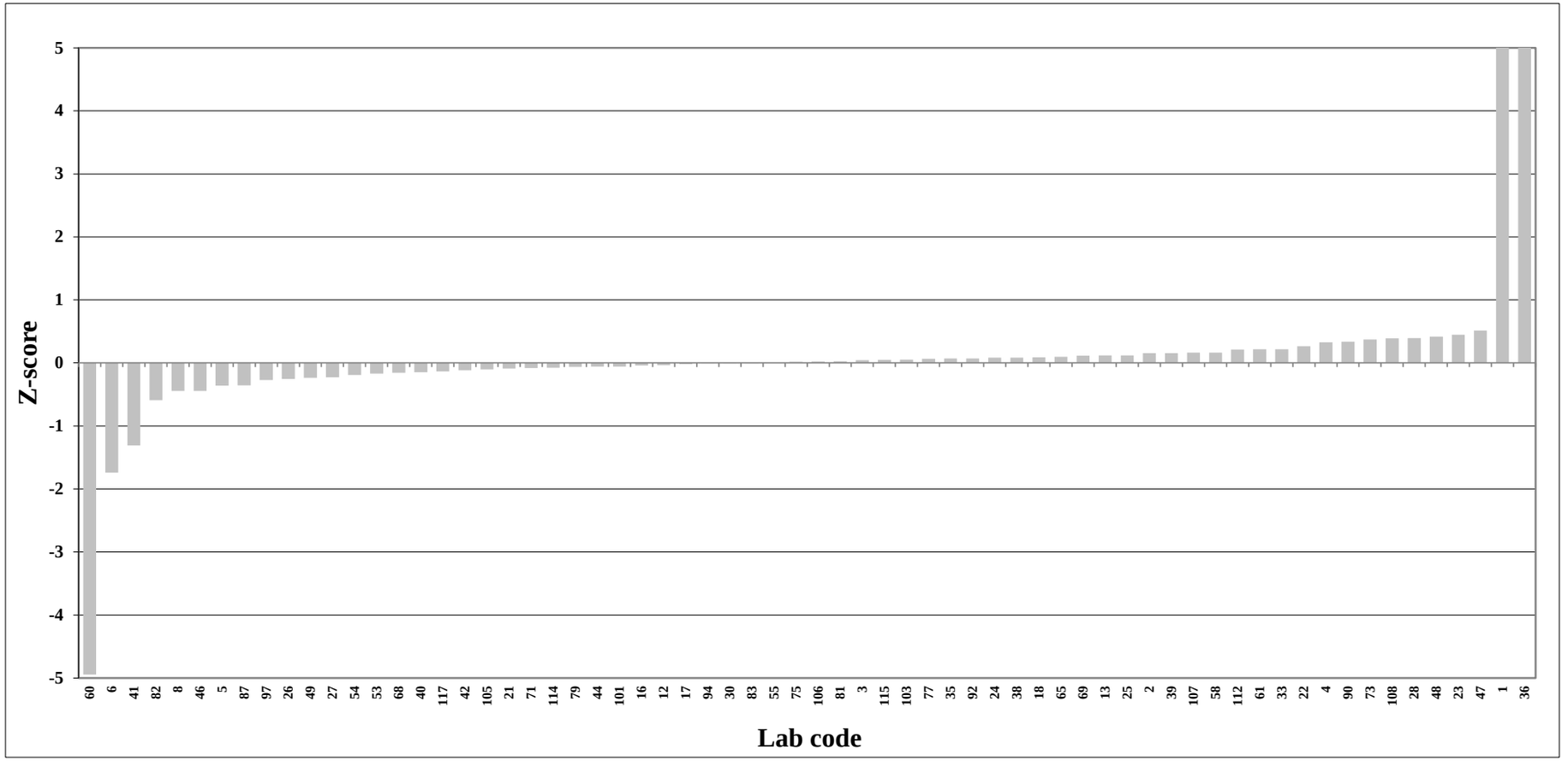
Z-score analyte solution; non-ortho PCB TEQ



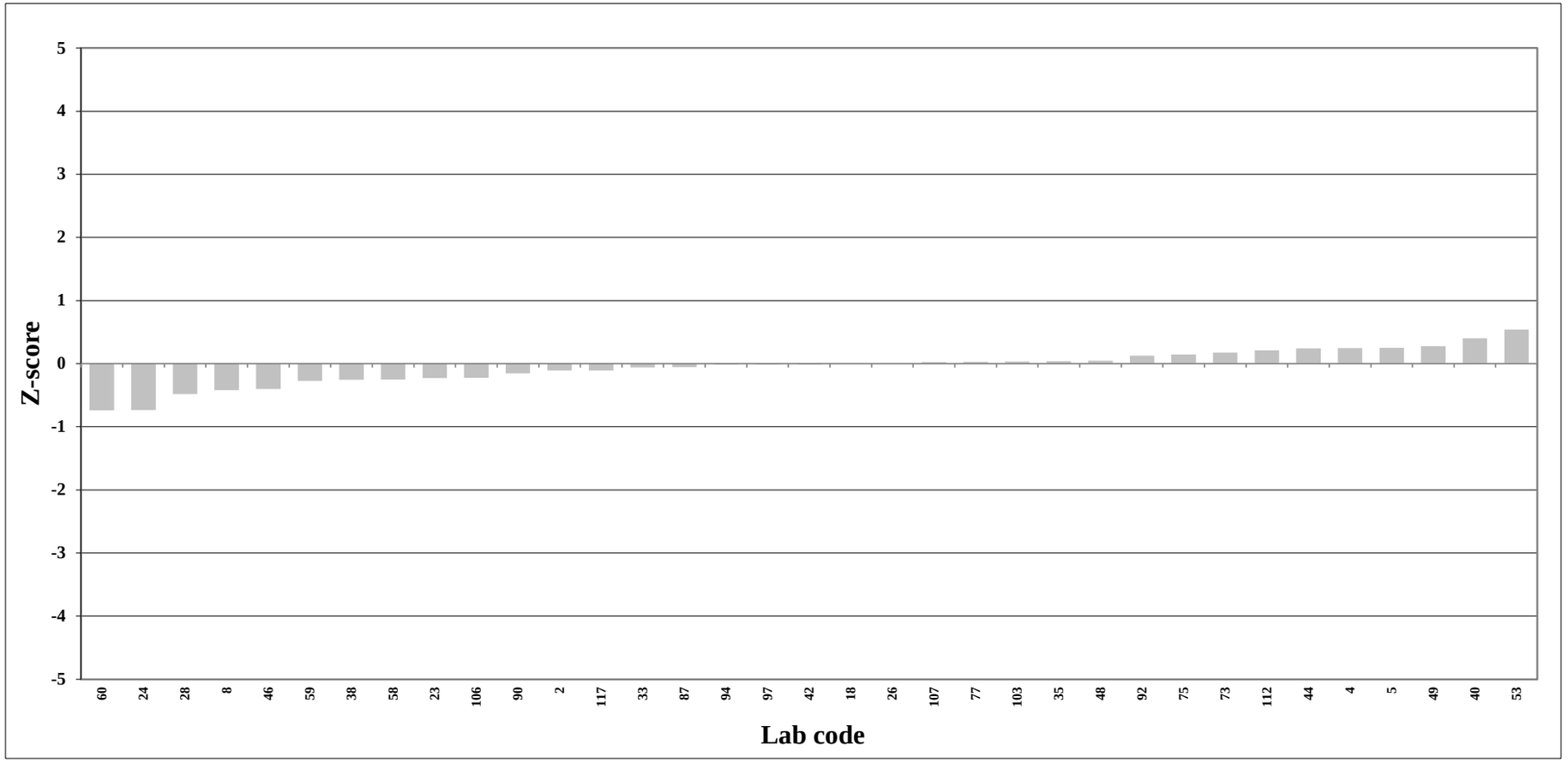
Z-score analyte solution; mono-ortho PCB TEQ



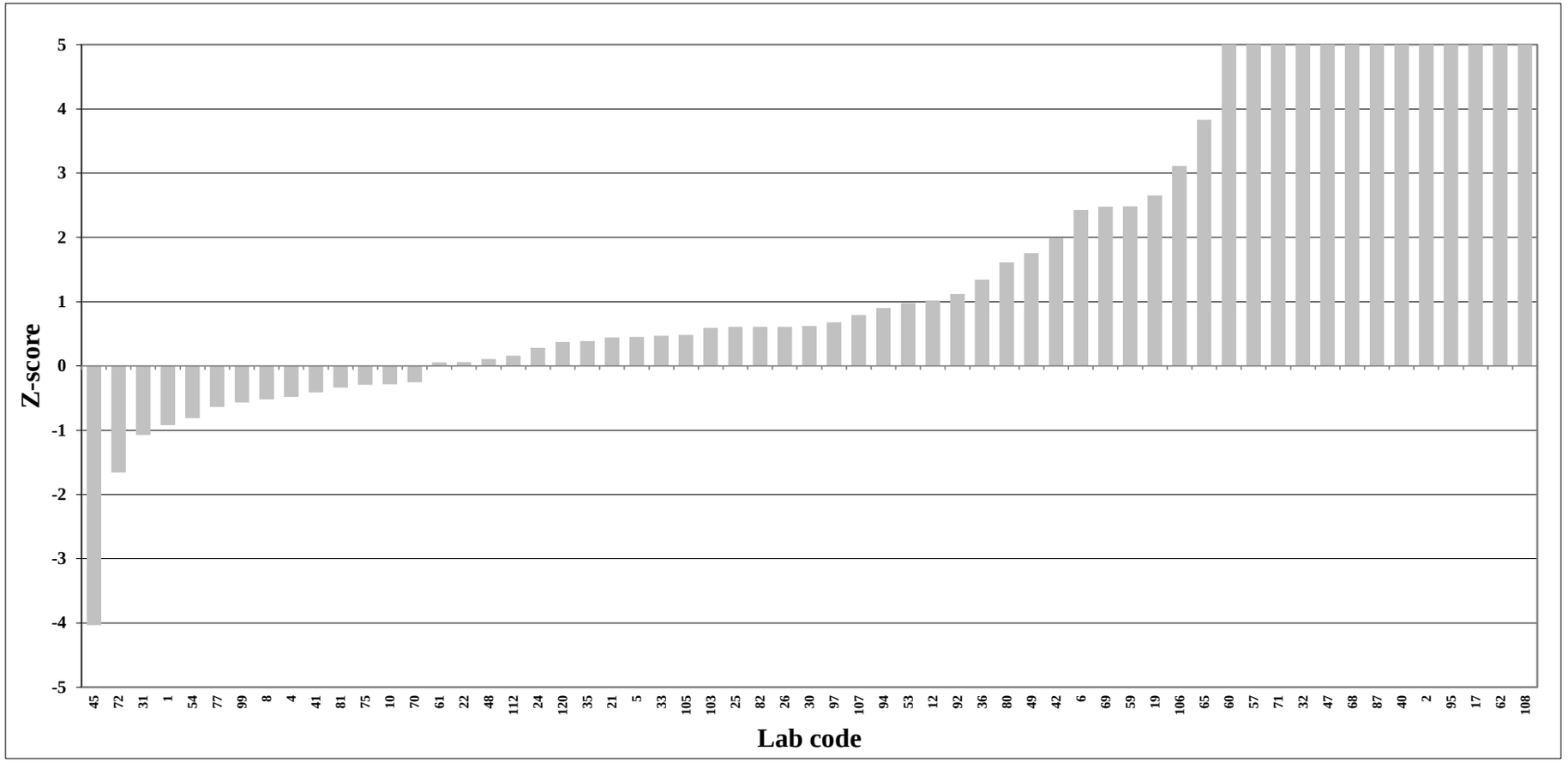
Z-score analyte solution; sum indicator PCB



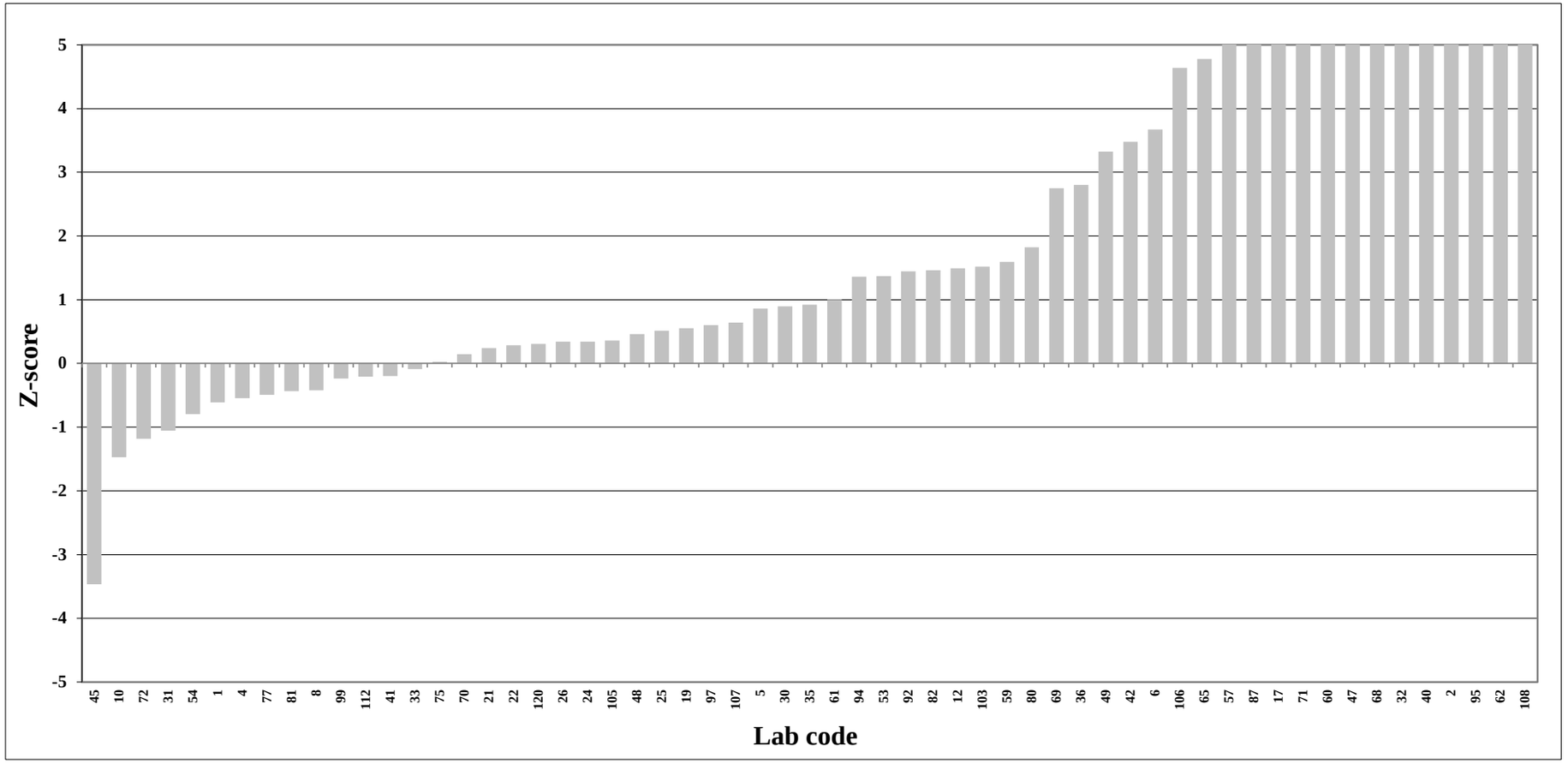
Z-score analyte solution; sum PBDE without PBDE-209



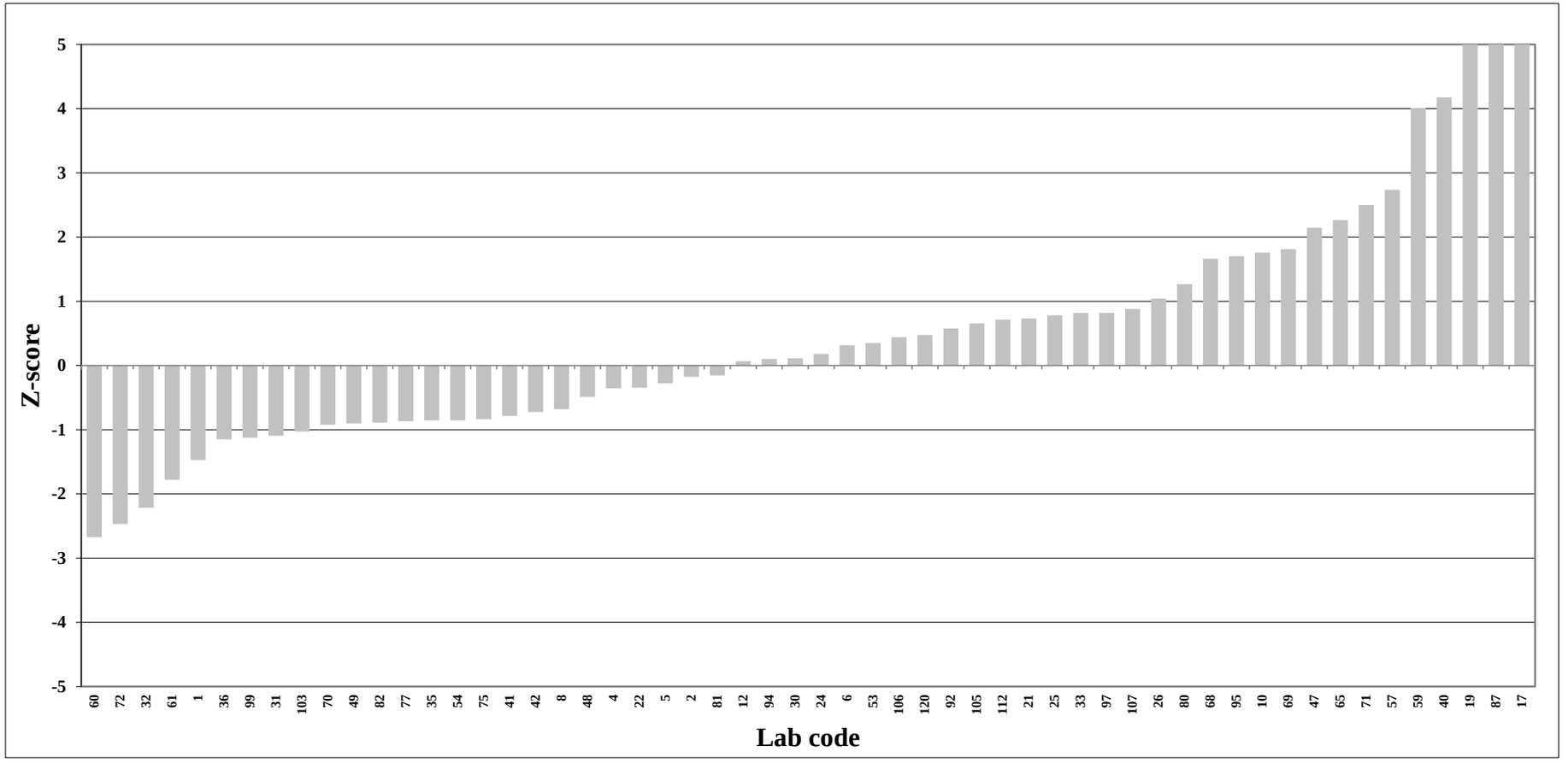
Z-score Sheep liver, fresh weight; total TEQ



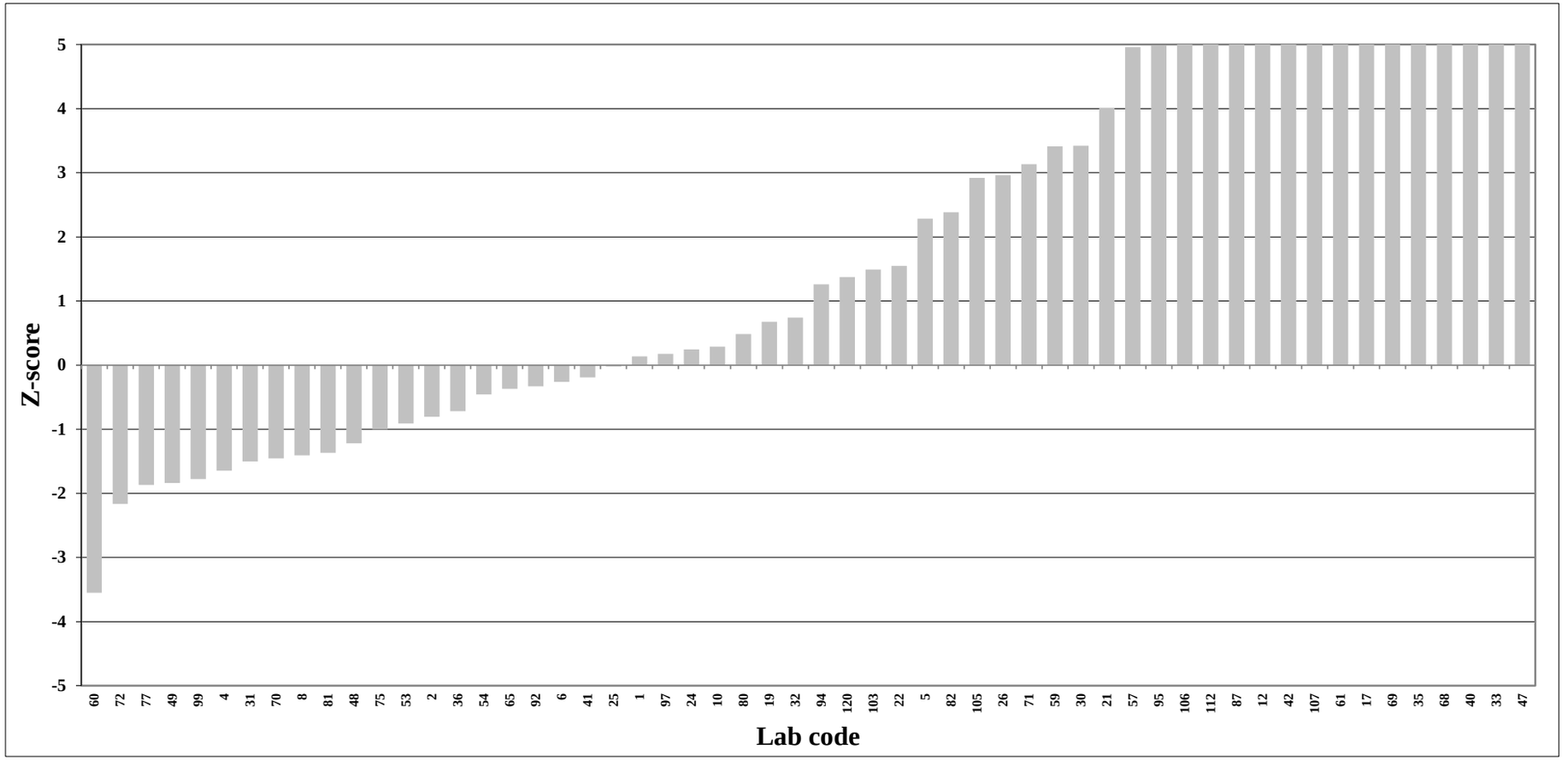
Z-score Sheep liver, fresh weight; PCDD/PCDF TEQ



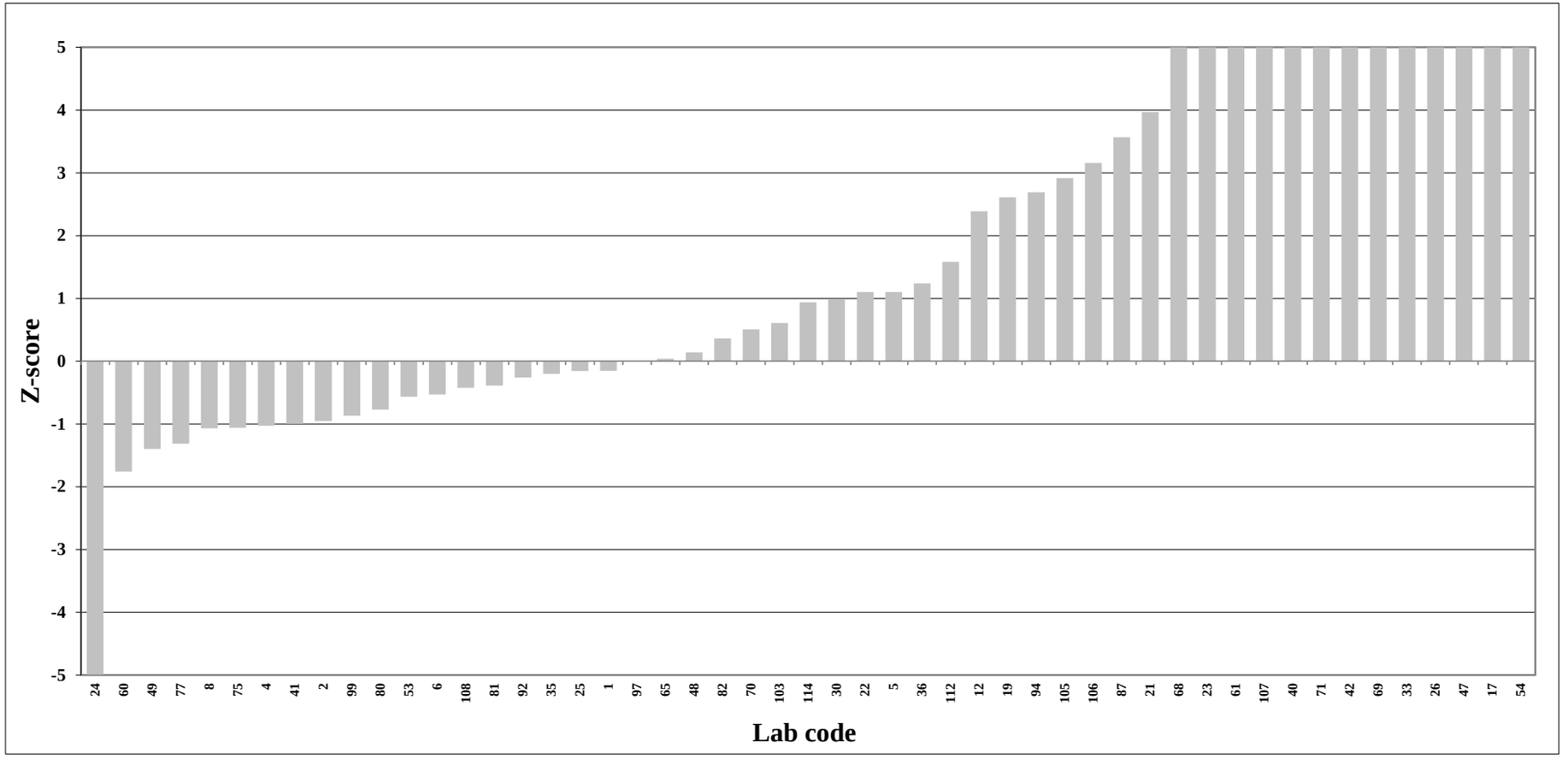
Z-score Sheep liver, fresh weight; non-ortho PCB TEQ



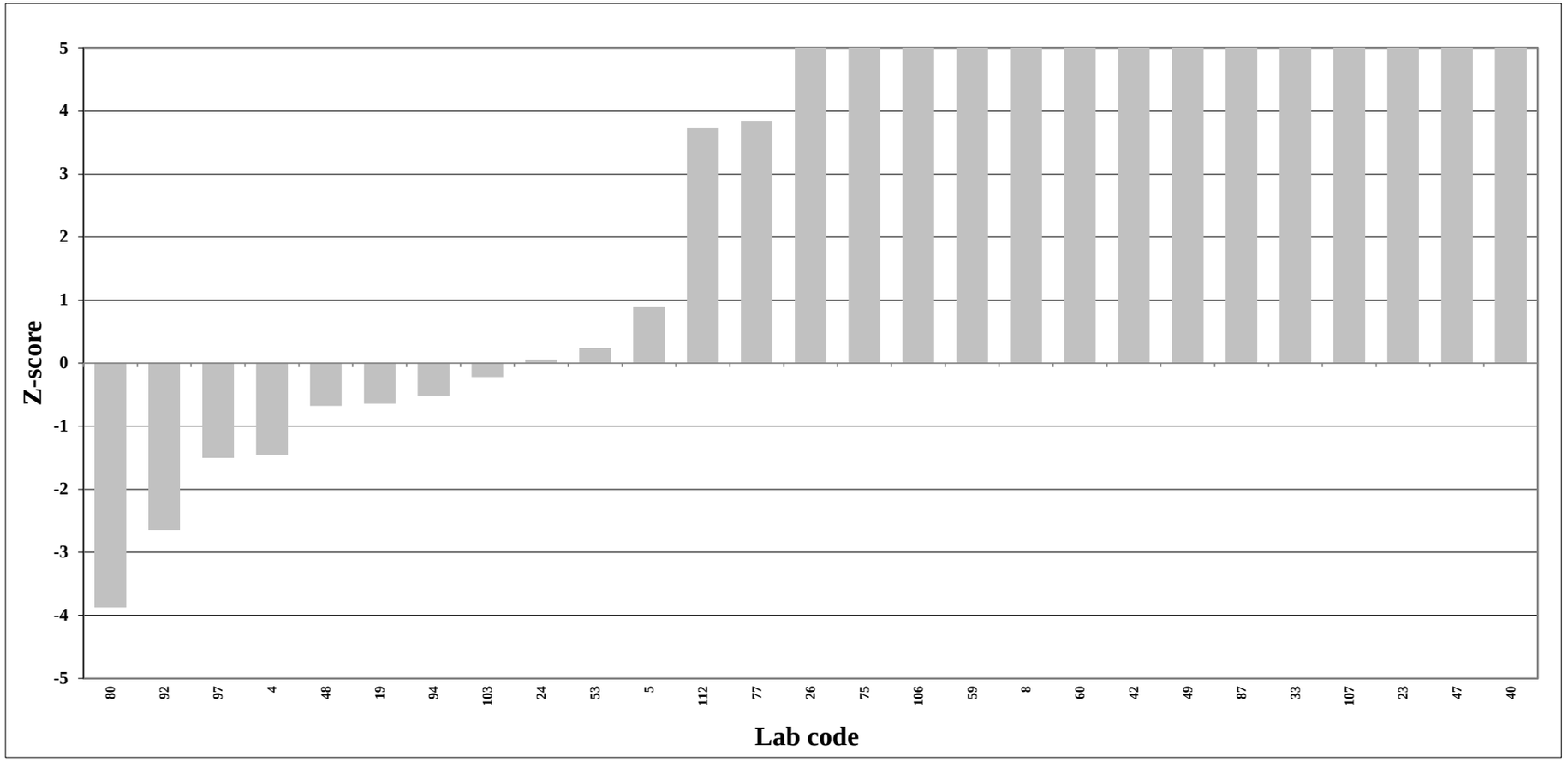
Z-score Sheep liver, fresh weight; mono-ortho PCB TEQ



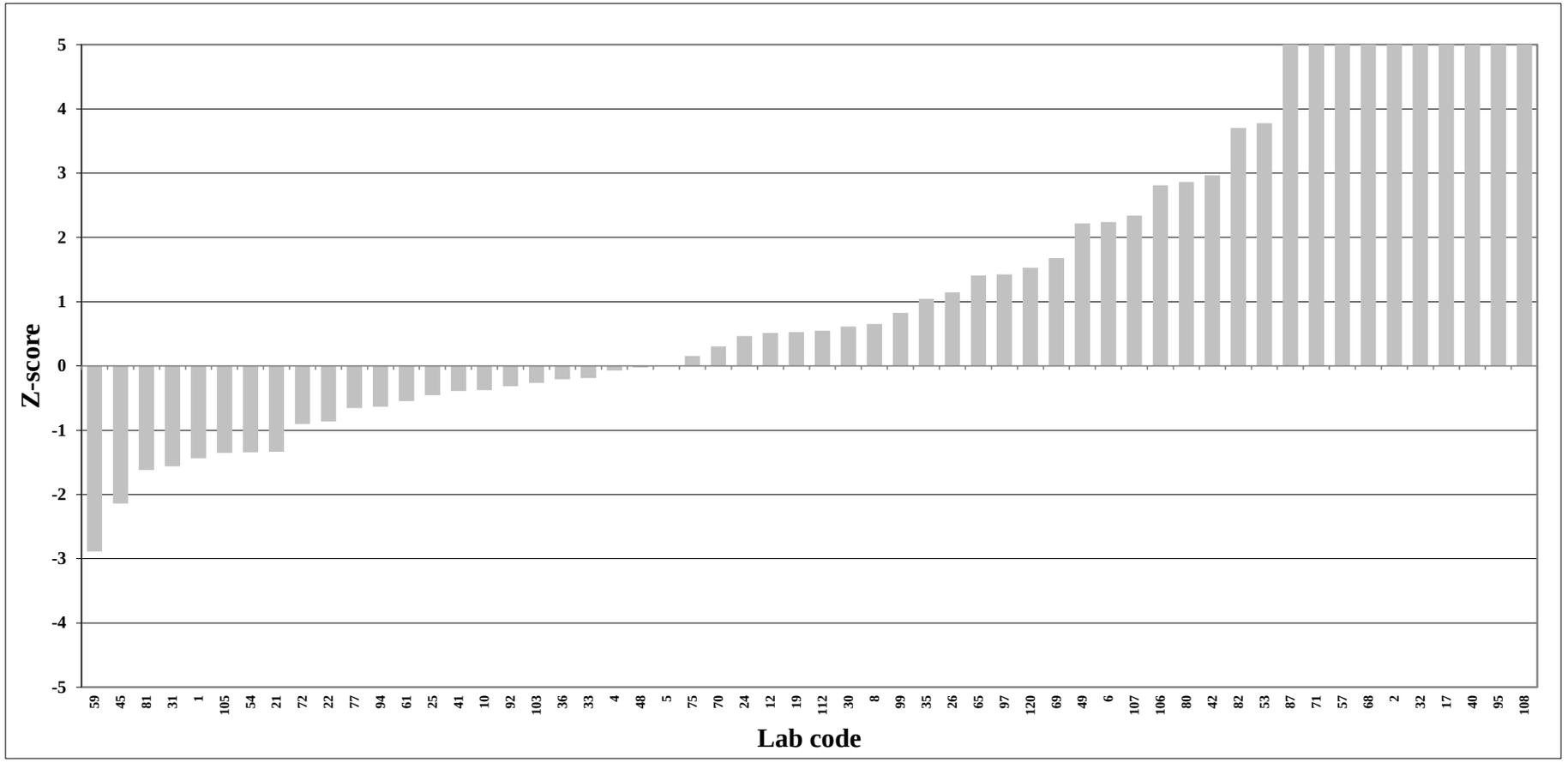
Z-score Sheep liver, fresh weight; sum indicator PCB



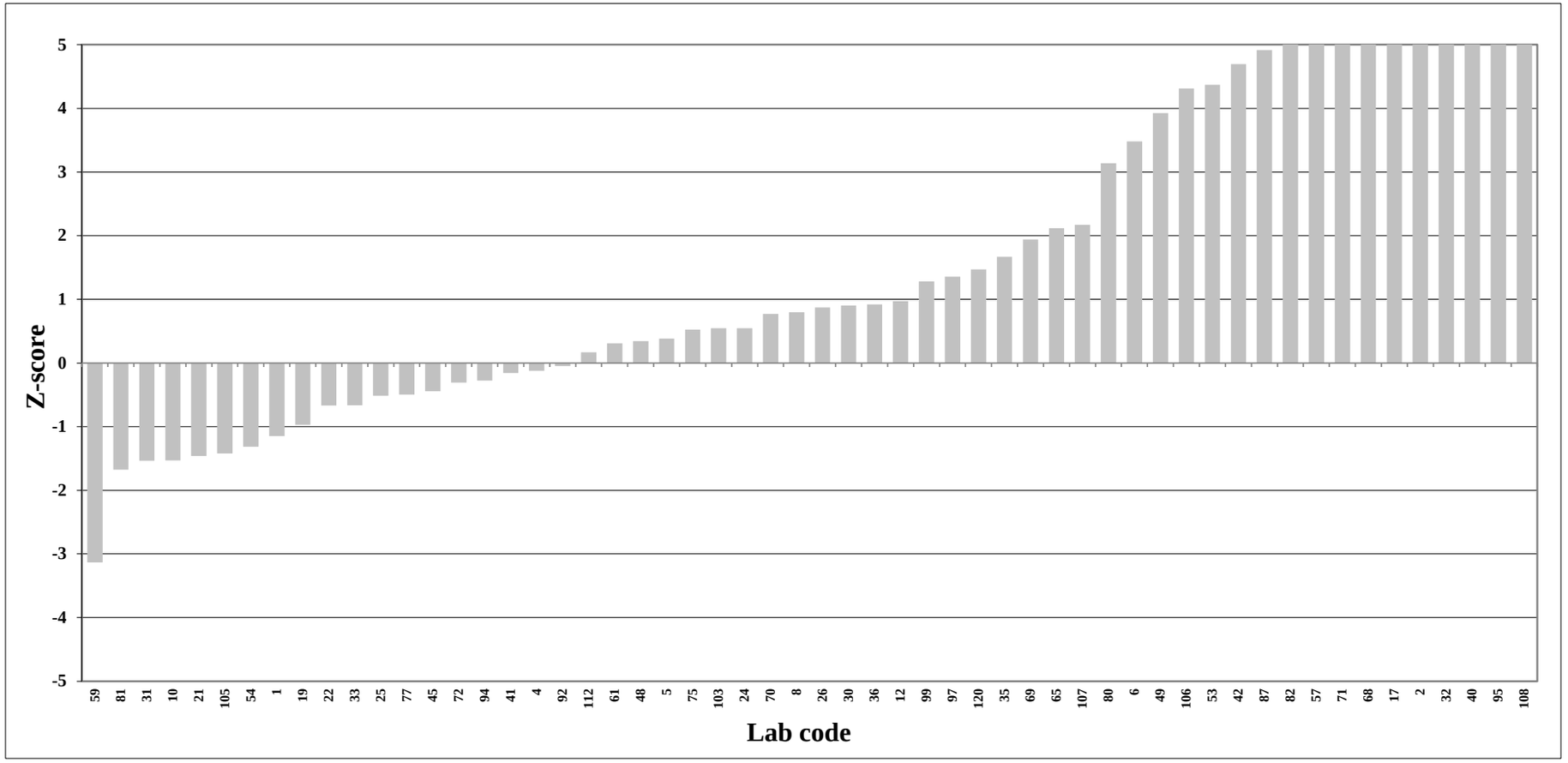
Z-score Sheep liver, fresh weight; sum PBDE without PBDE-209



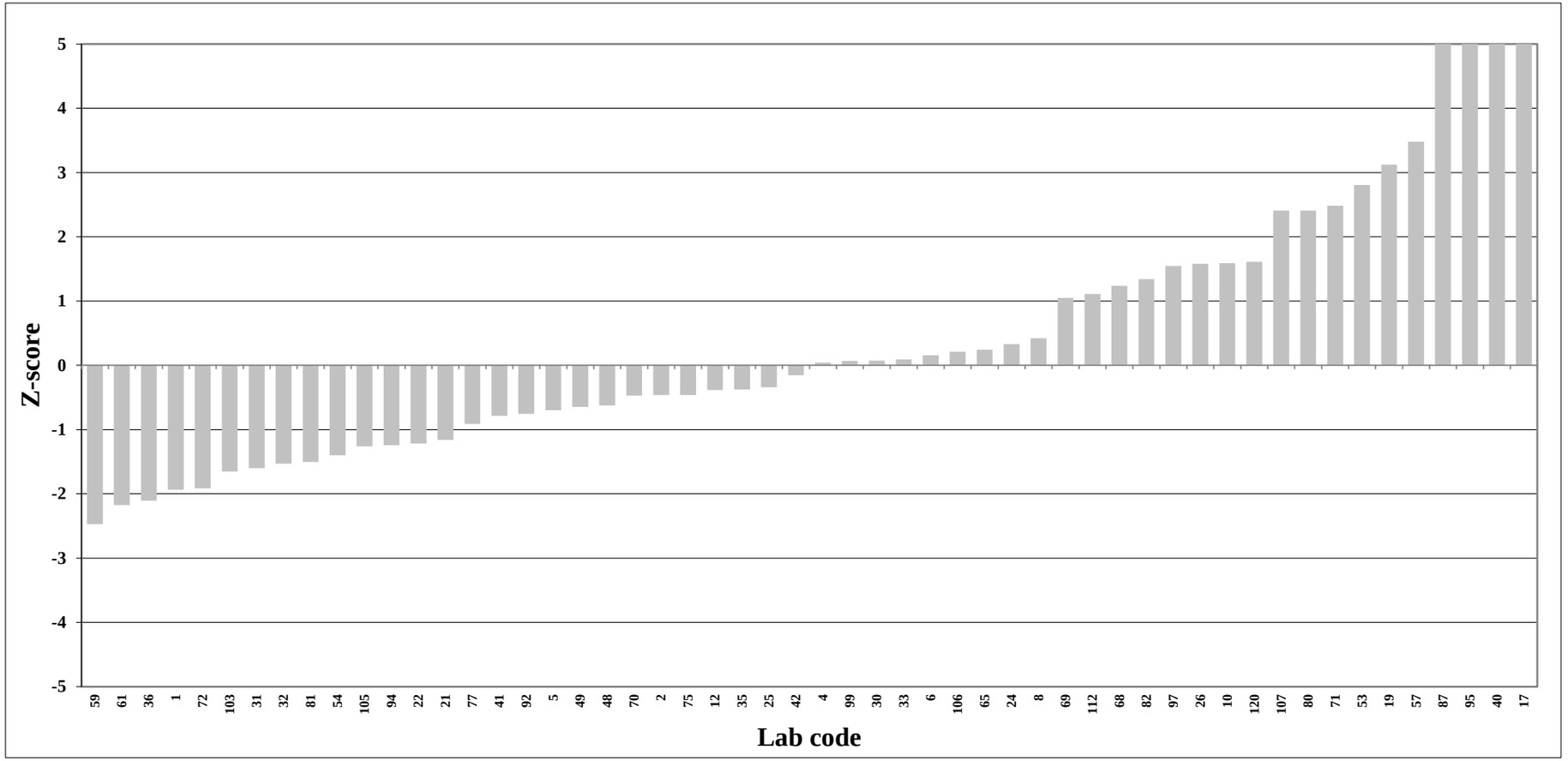
Z-score Sheep liver, lipid weight; total TEQ



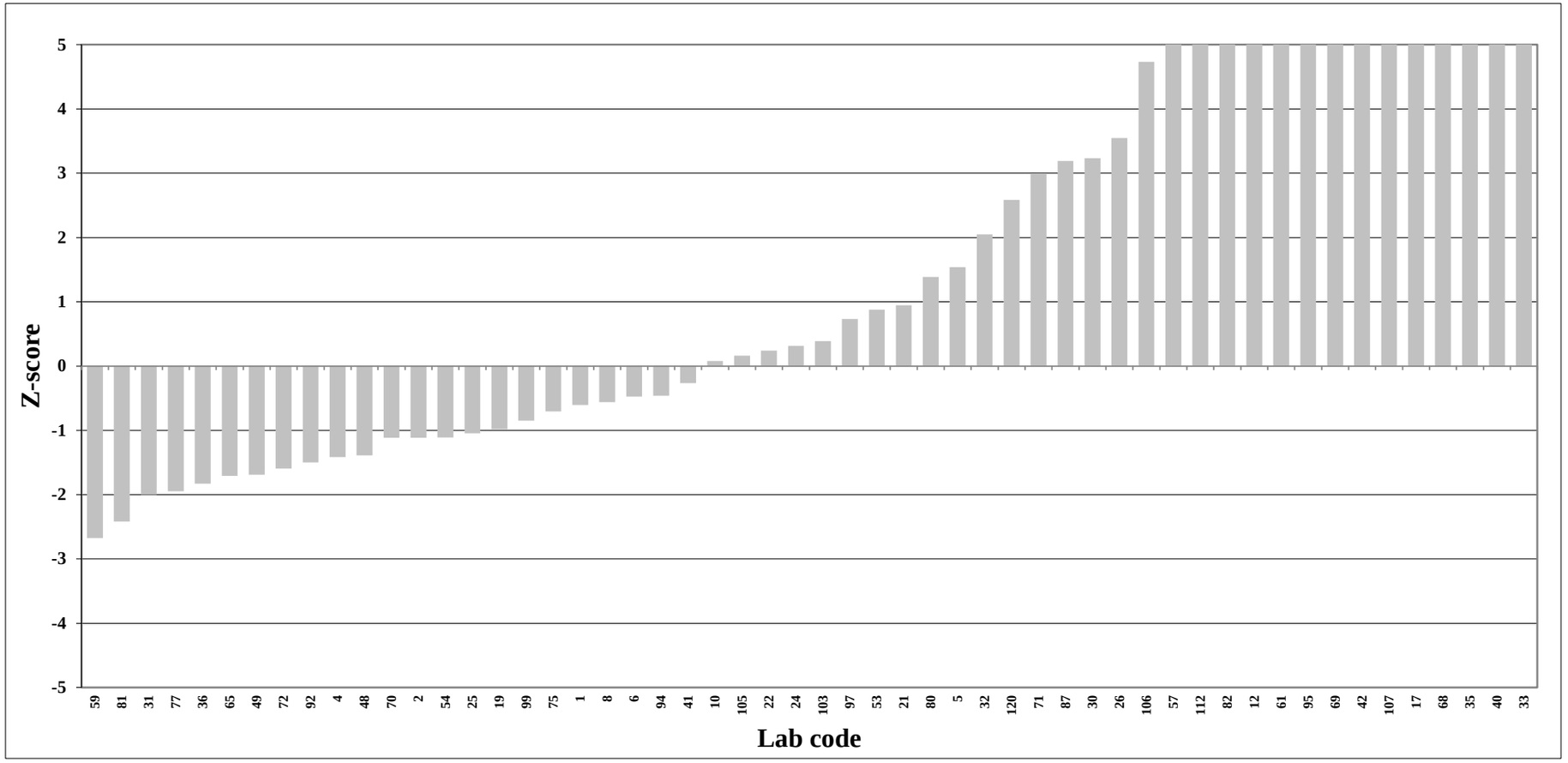
Z-score Sheep liver, lipid weight; PCDD/PCDF TEQ



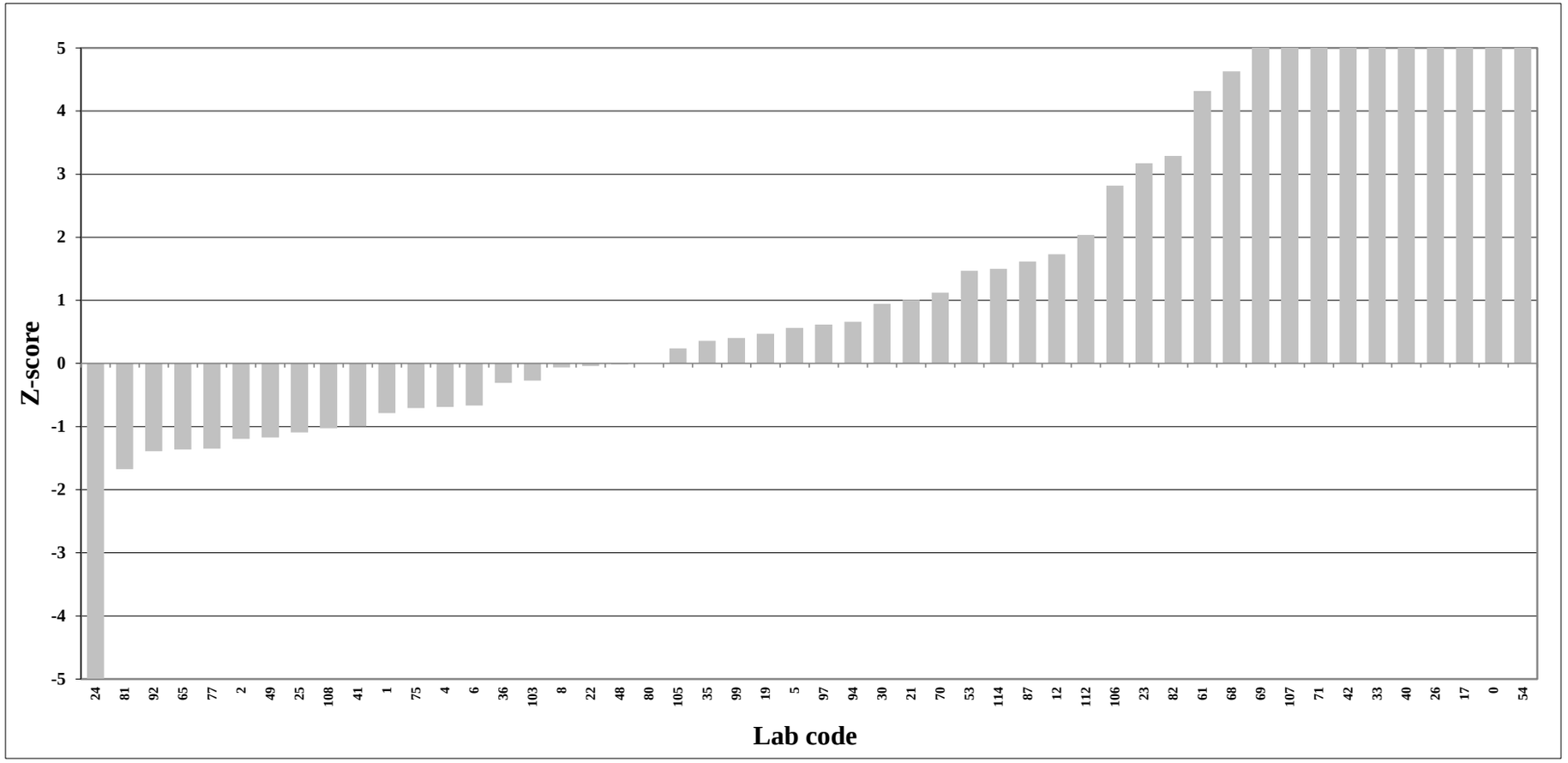
Z-score Sheep liver, lipid weight; non-ortho PCB TEQ



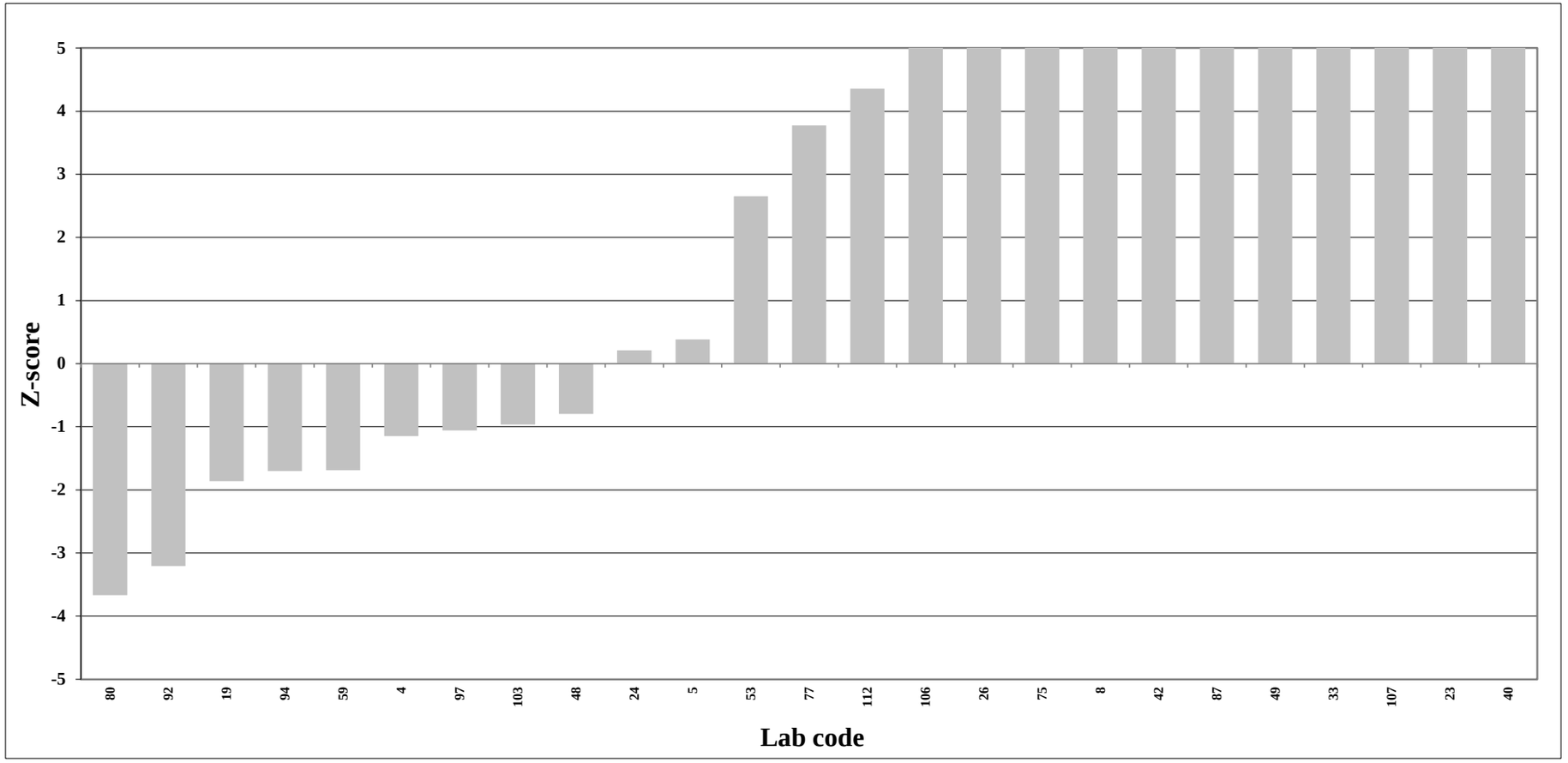
Z-score Sheep liver, lipid weight; mono-ortho PCB TEQ



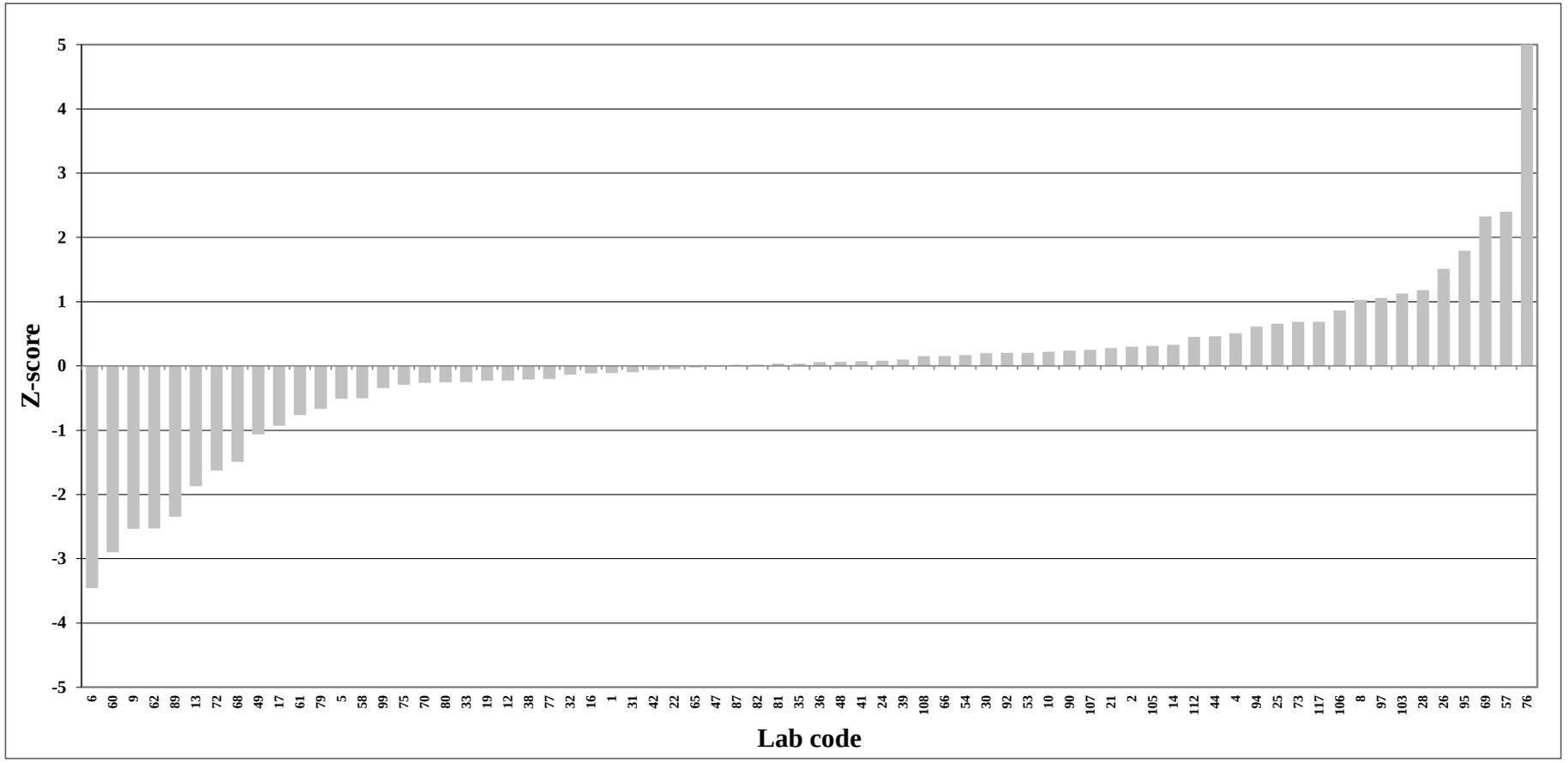
Z-score Sheep liver, lipid weight; sum indicator PCB



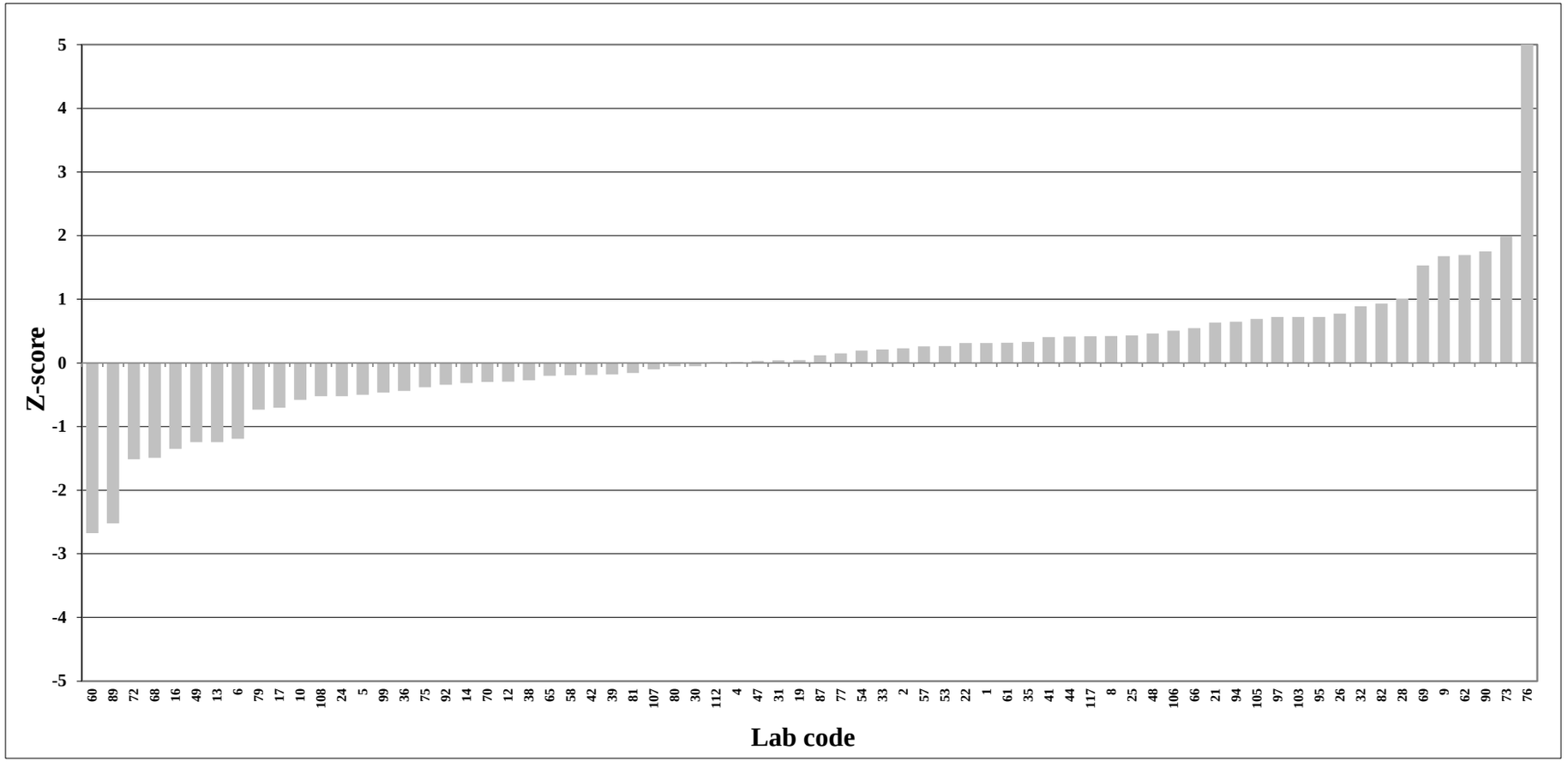
Z-score Sheep liver, lipid weight; sum PBDE without PBDE-209



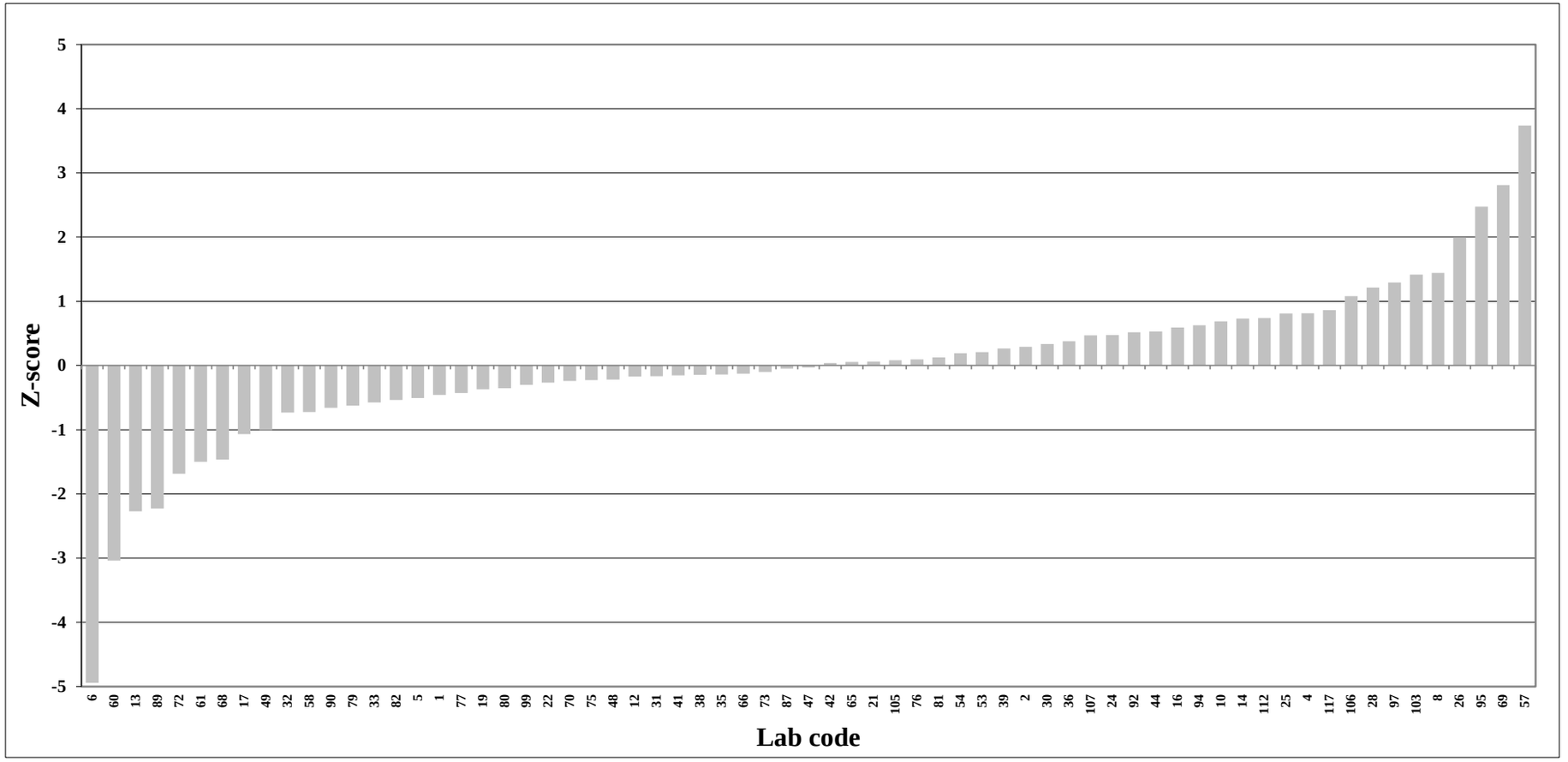
Z-score Salmon, fresh weight; total TEQ



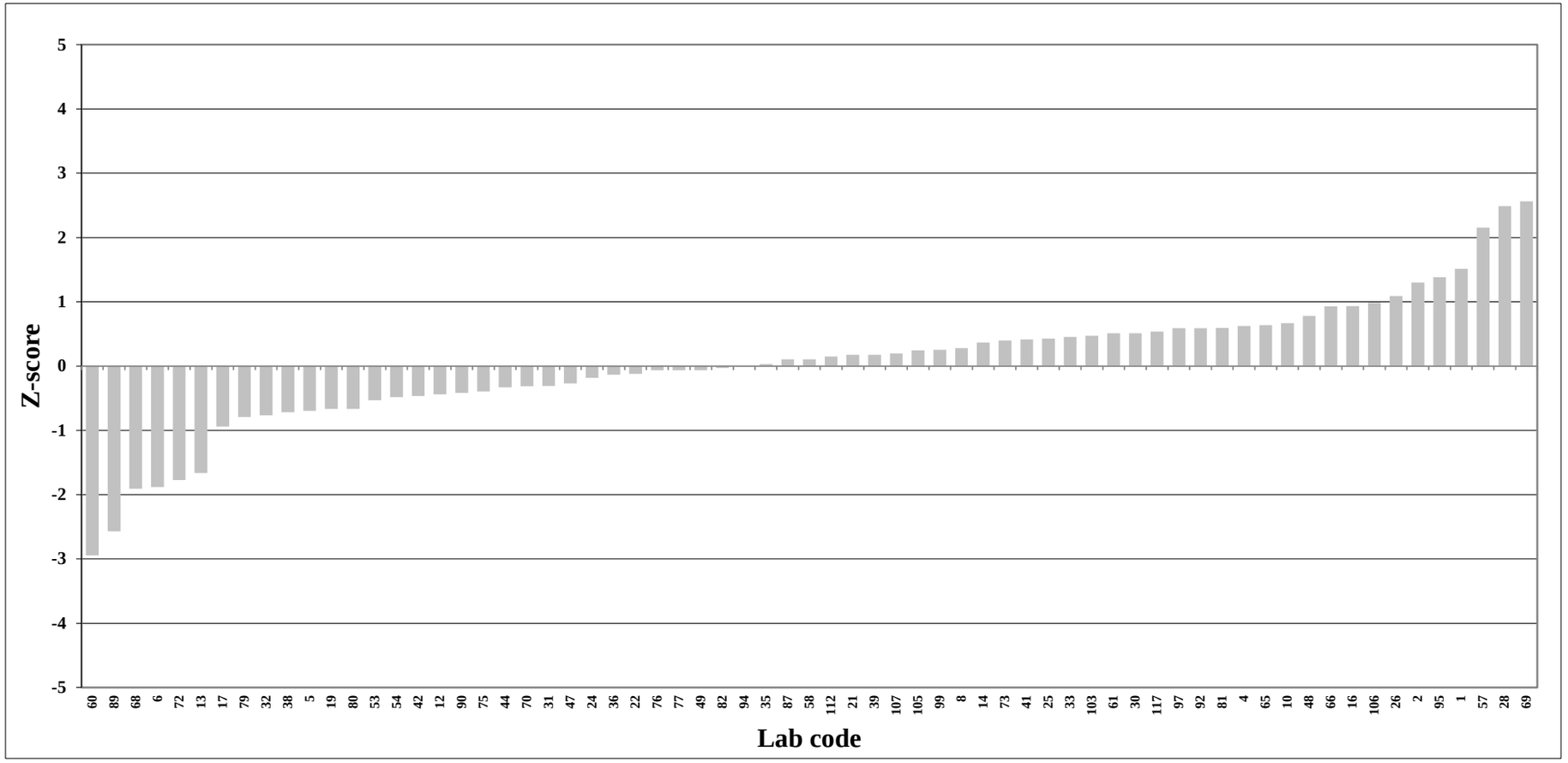
Z-score Salmon, fresh weight; PCDD/PCDF TEQ



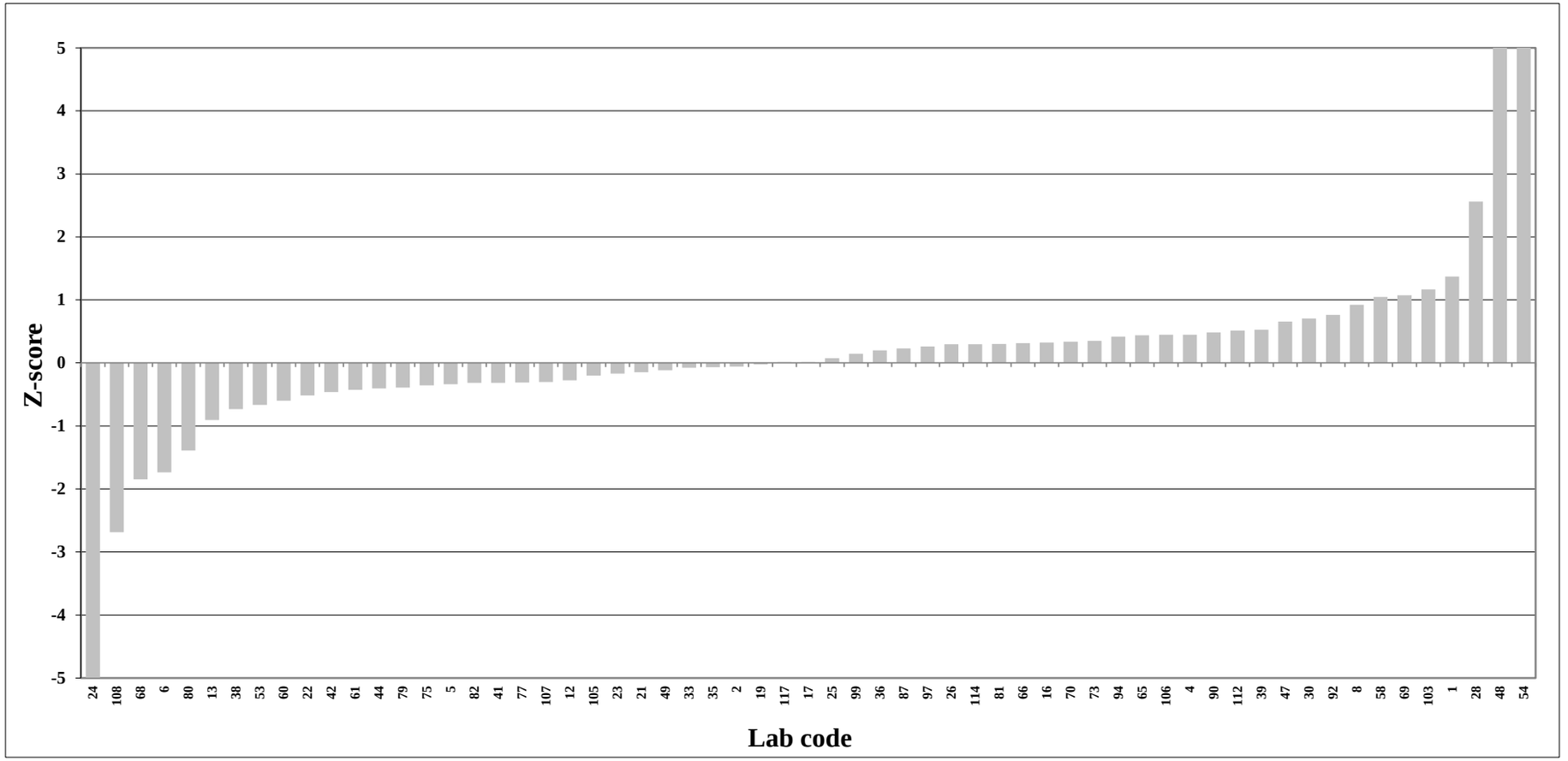
Z-score Salmon, fresh weight; non-ortho PCB TEQ



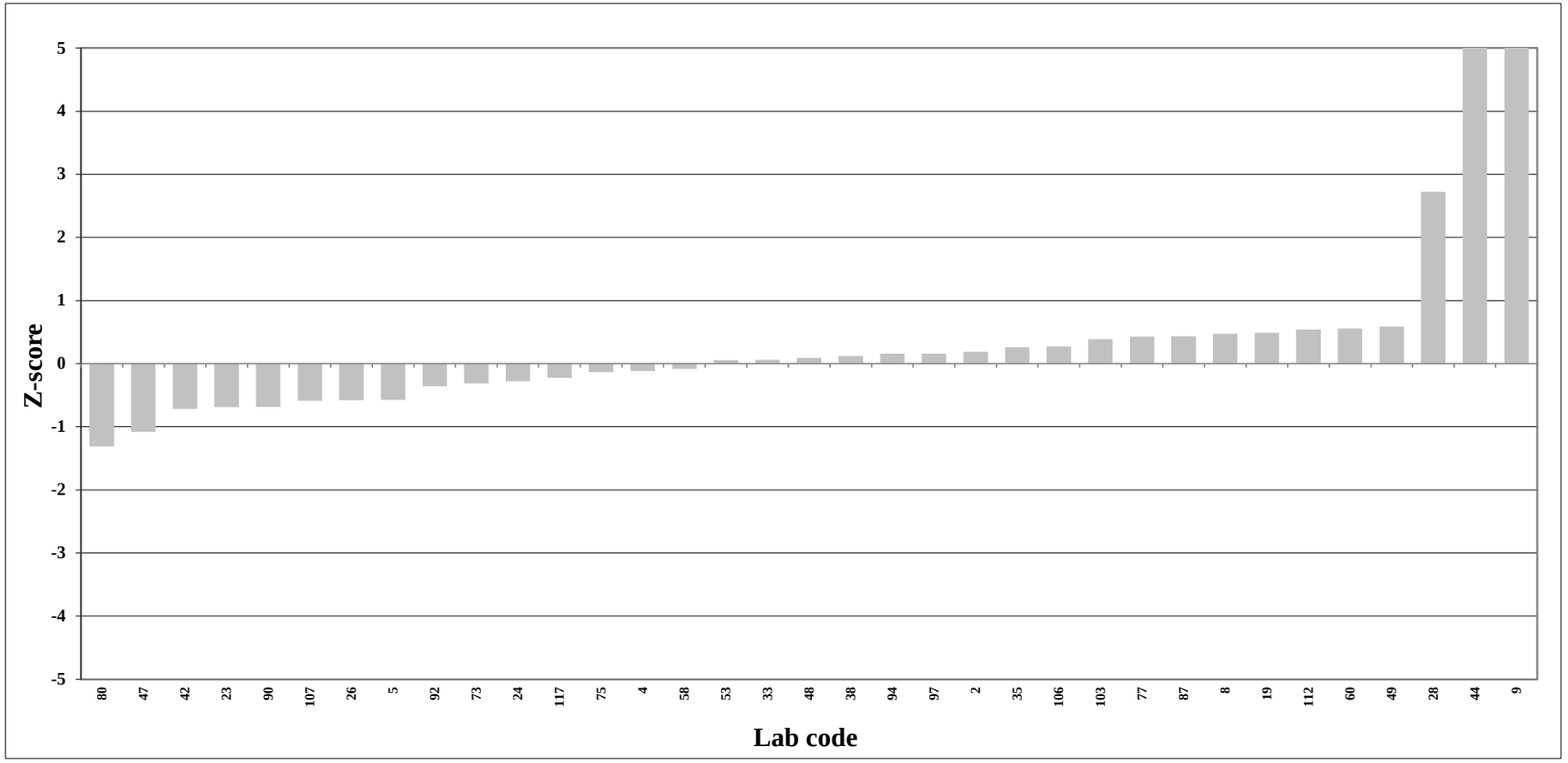
Z-score Salmon, fresh weight; mono-ortho PCB TEQ



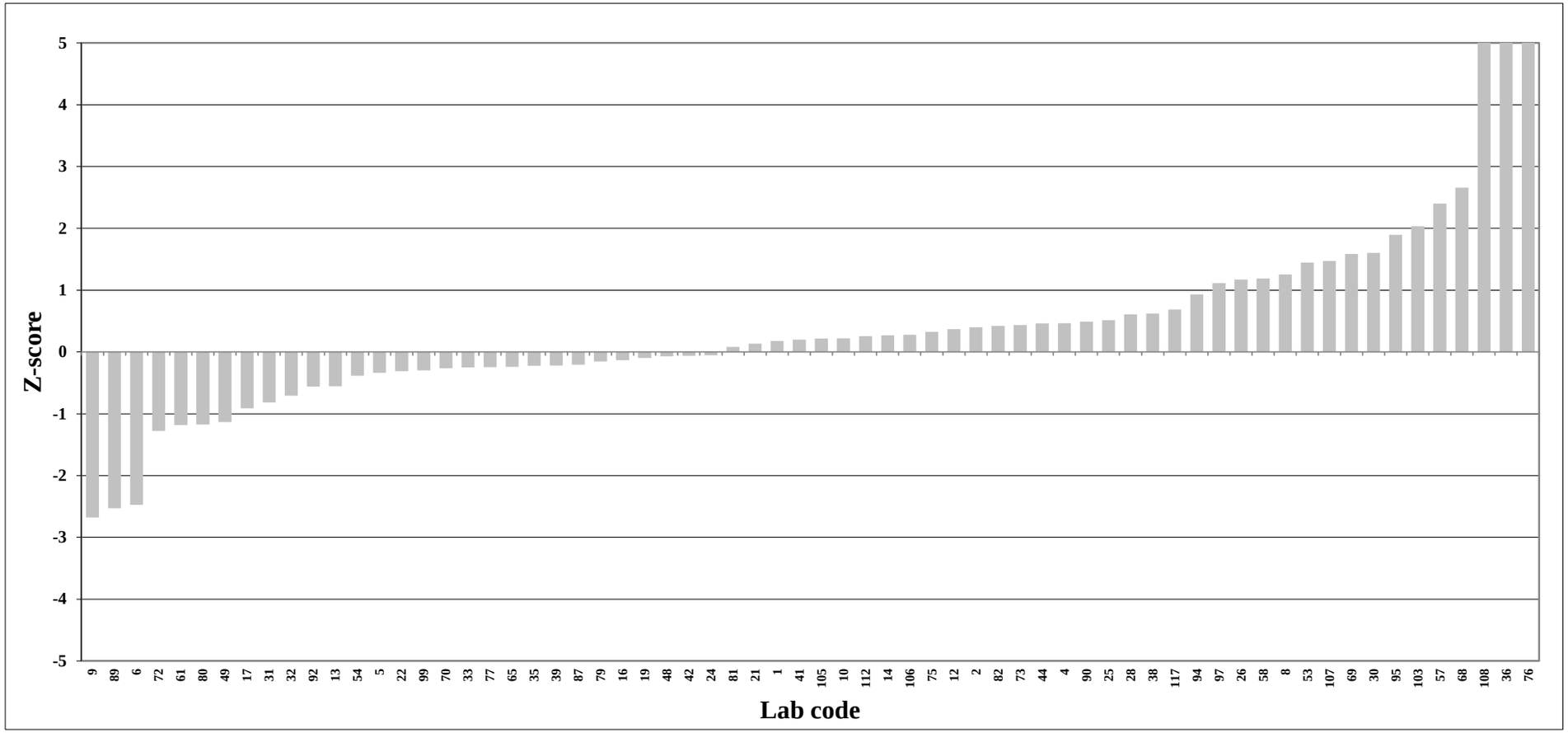
Z-score Salmon, fresh weight; sum indicator PCB



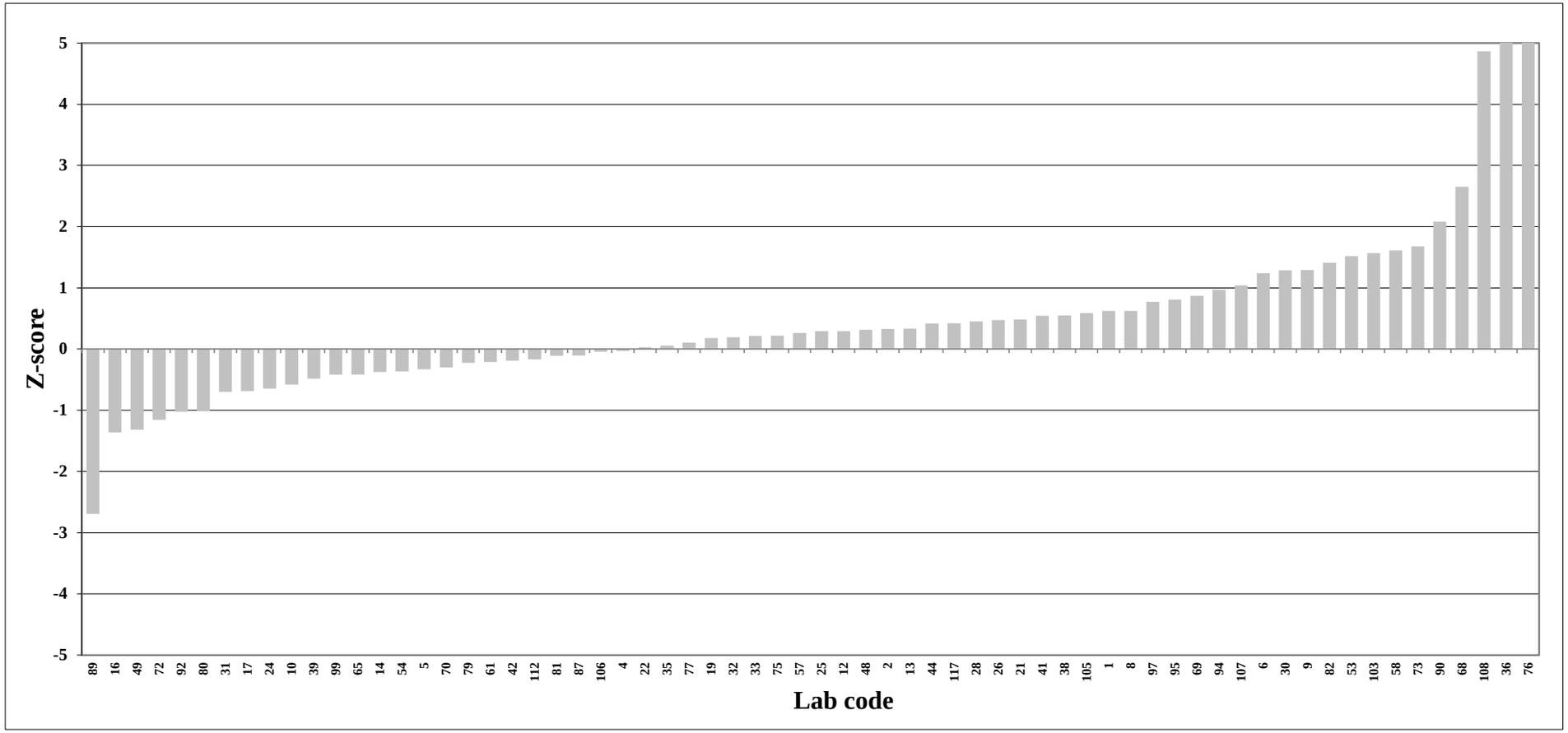
Z-score Salmon, fresh weight; sum PBDE without PBDE-209



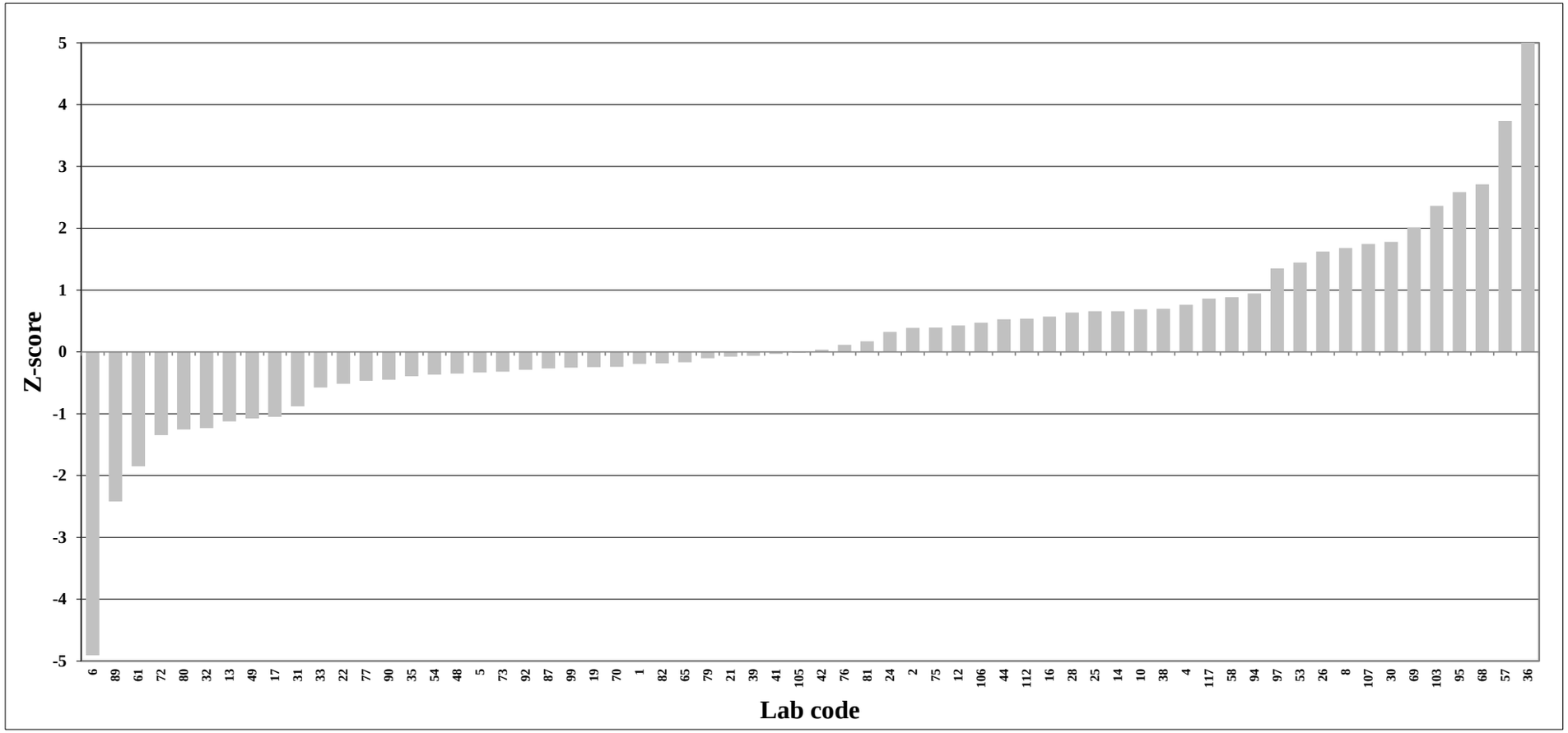
Z-score Salmon, lipid weight; total TEQ



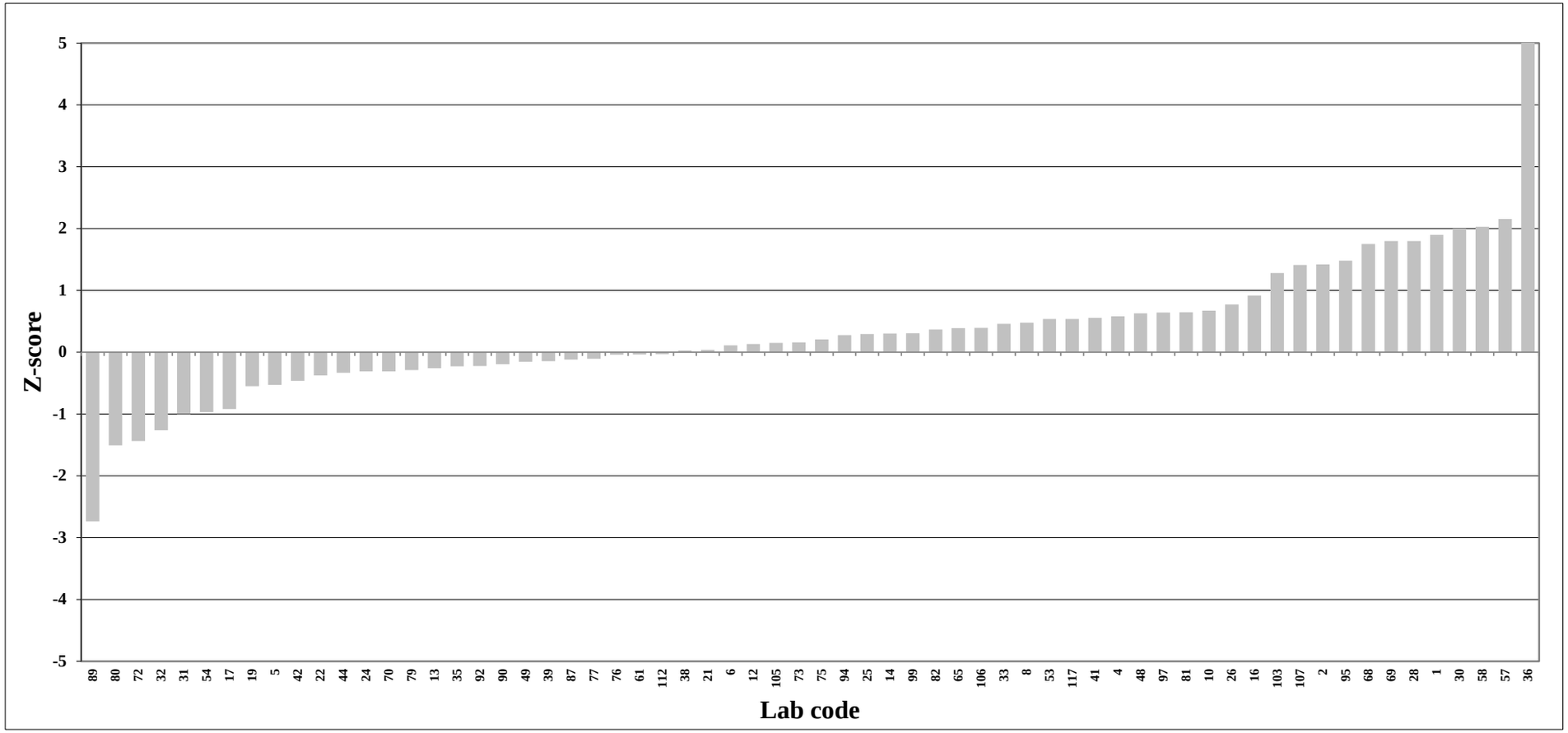
Z-score Salmon, lipid weight; PCDD/PCDF TEQ



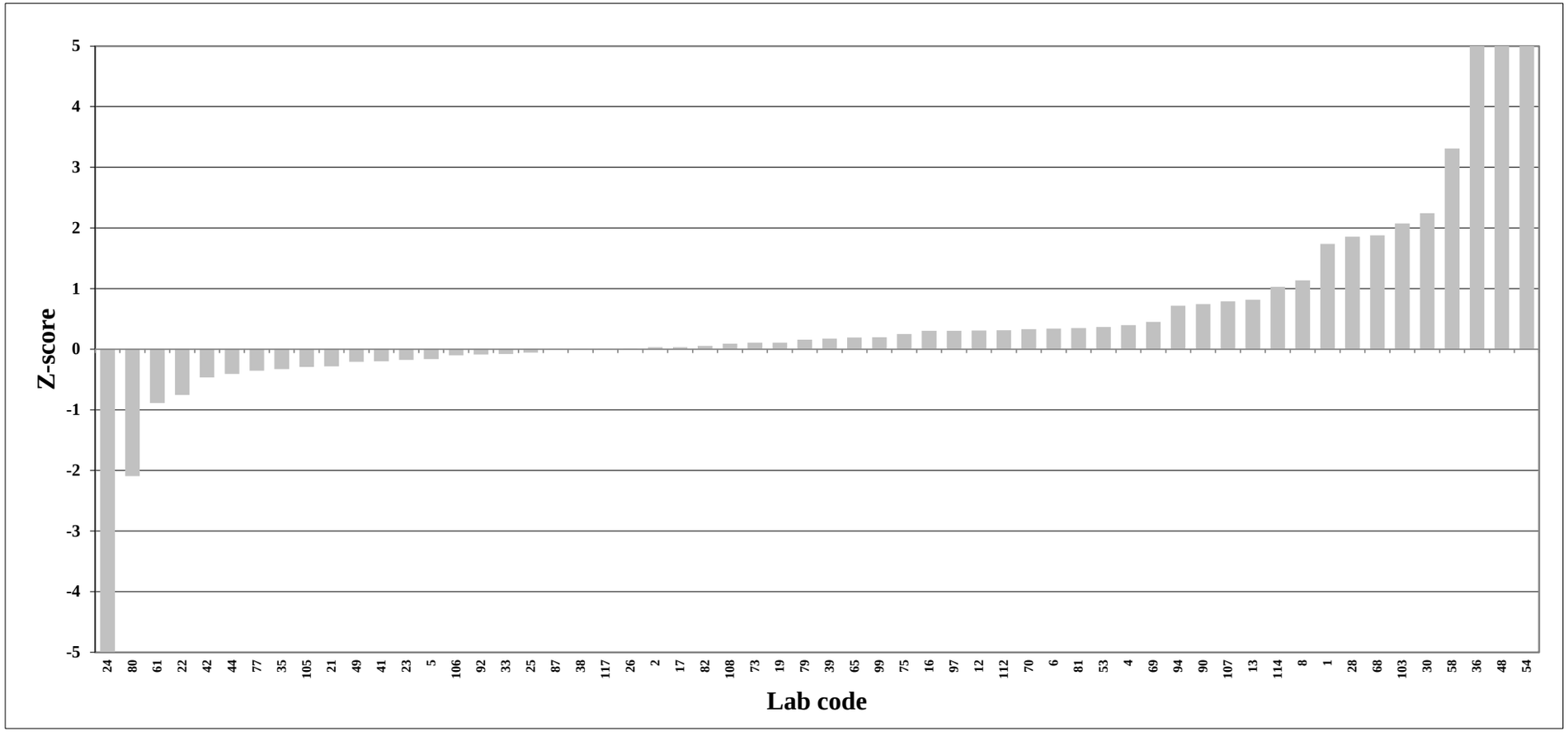
Z-score Salmon, lipid weight; non-ortho PCB TEQ



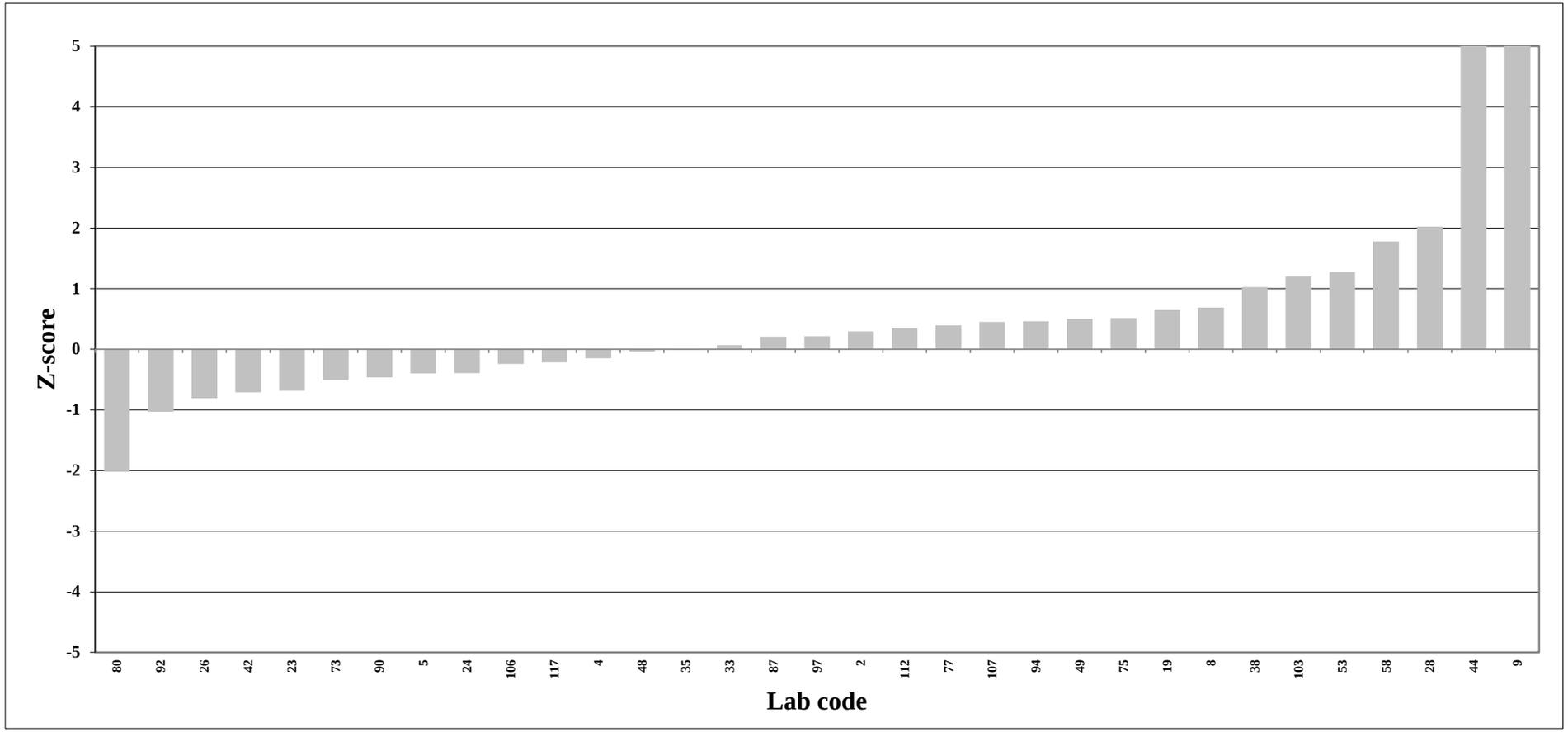
Z-score Salmon, lipid weight; mono-ortho PCB TEQ



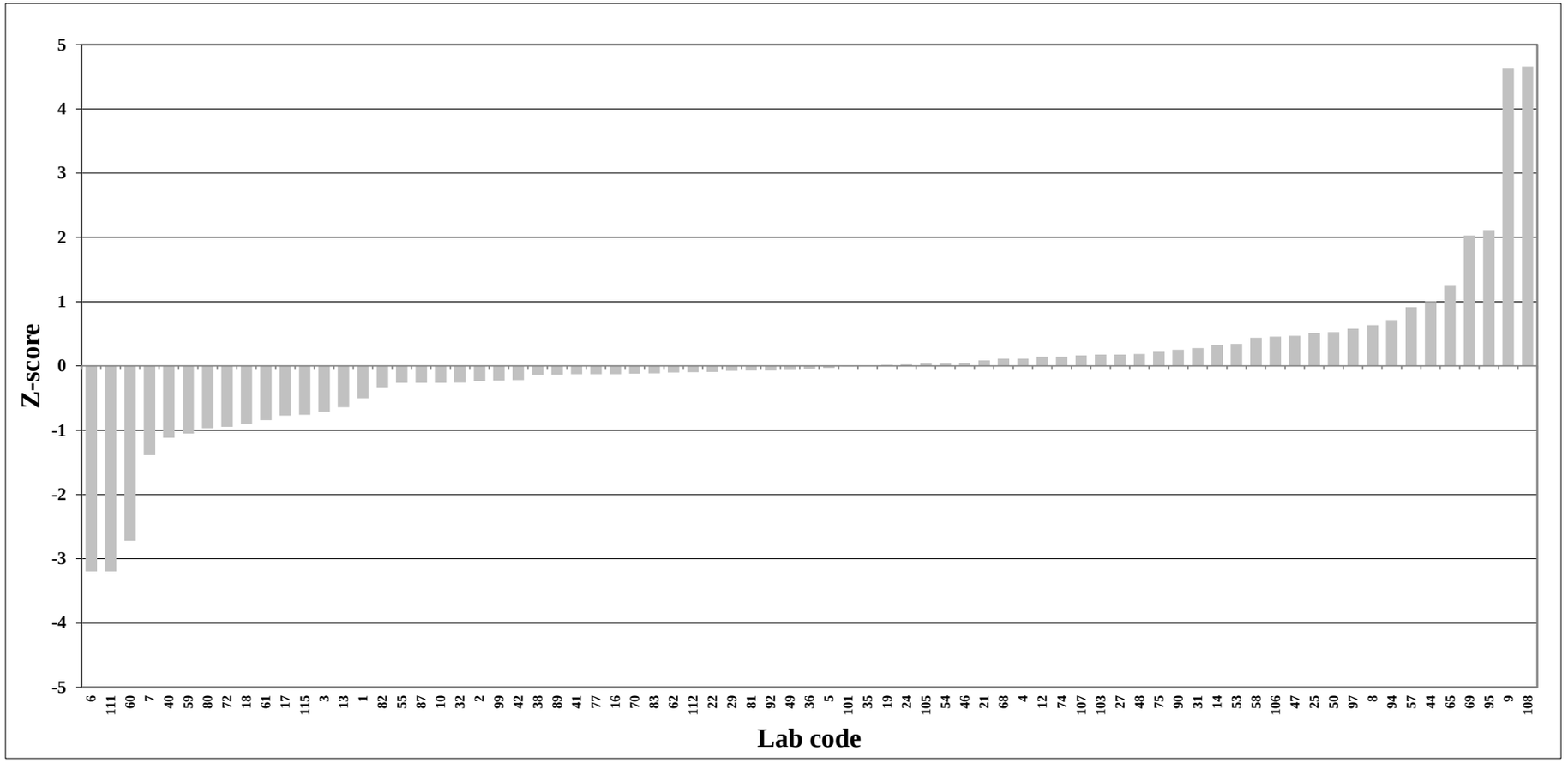
Z-score Salmon, lipid weight; sum indicator PCB



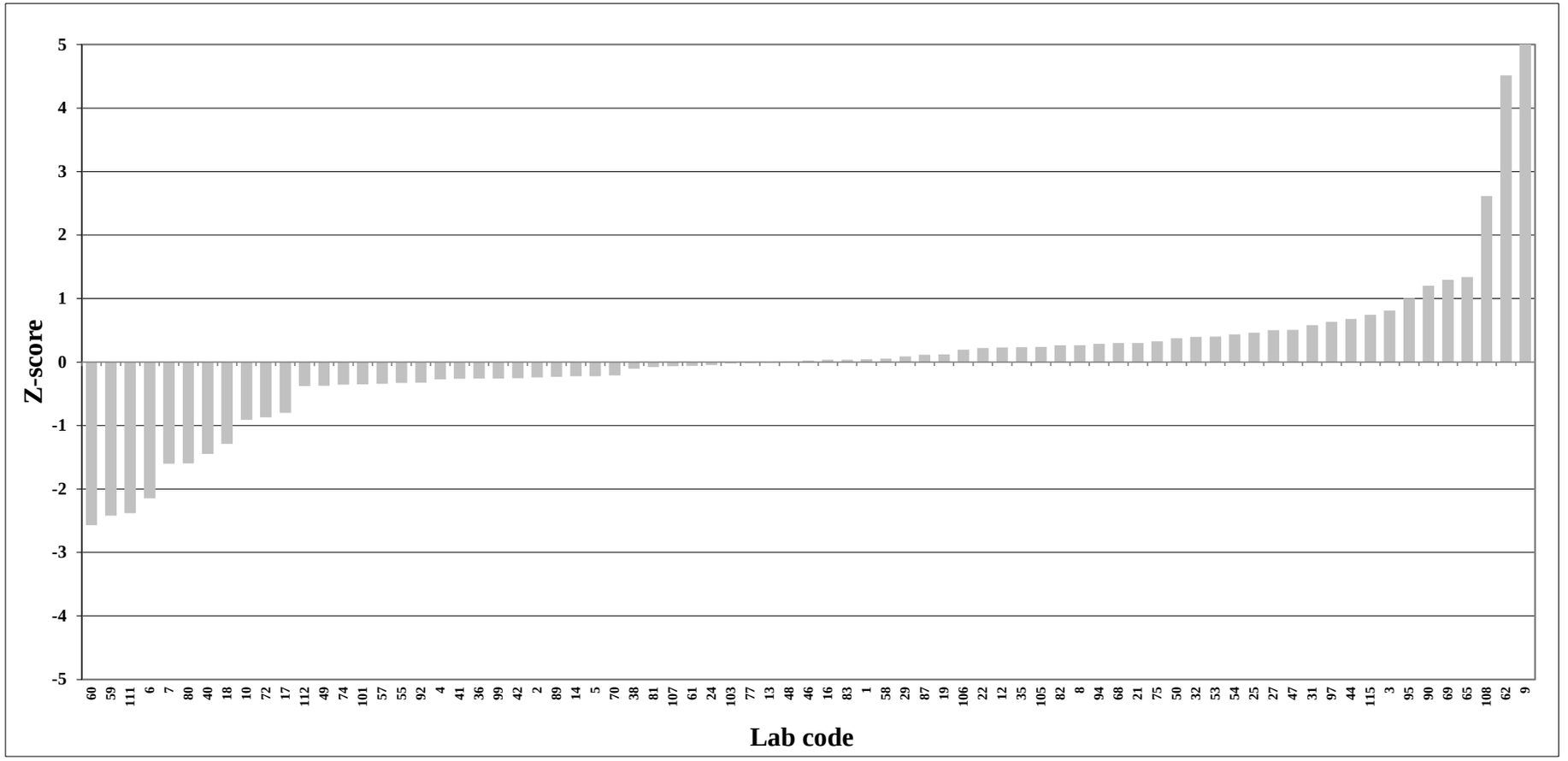
Z-score Salmon, lipid weight; sum PBDE without PBDE-209



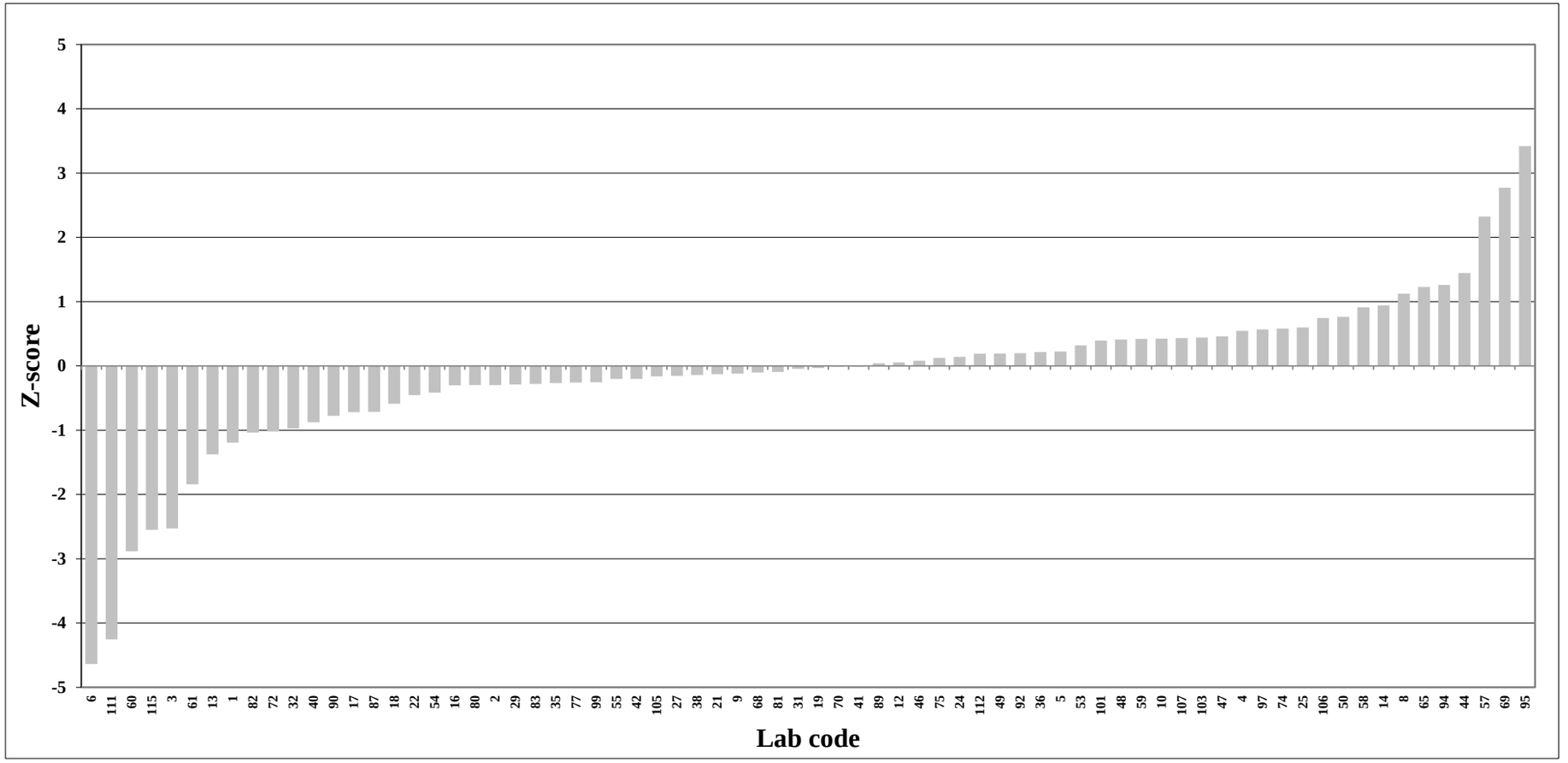
Z-score Fish oil; total TEQ



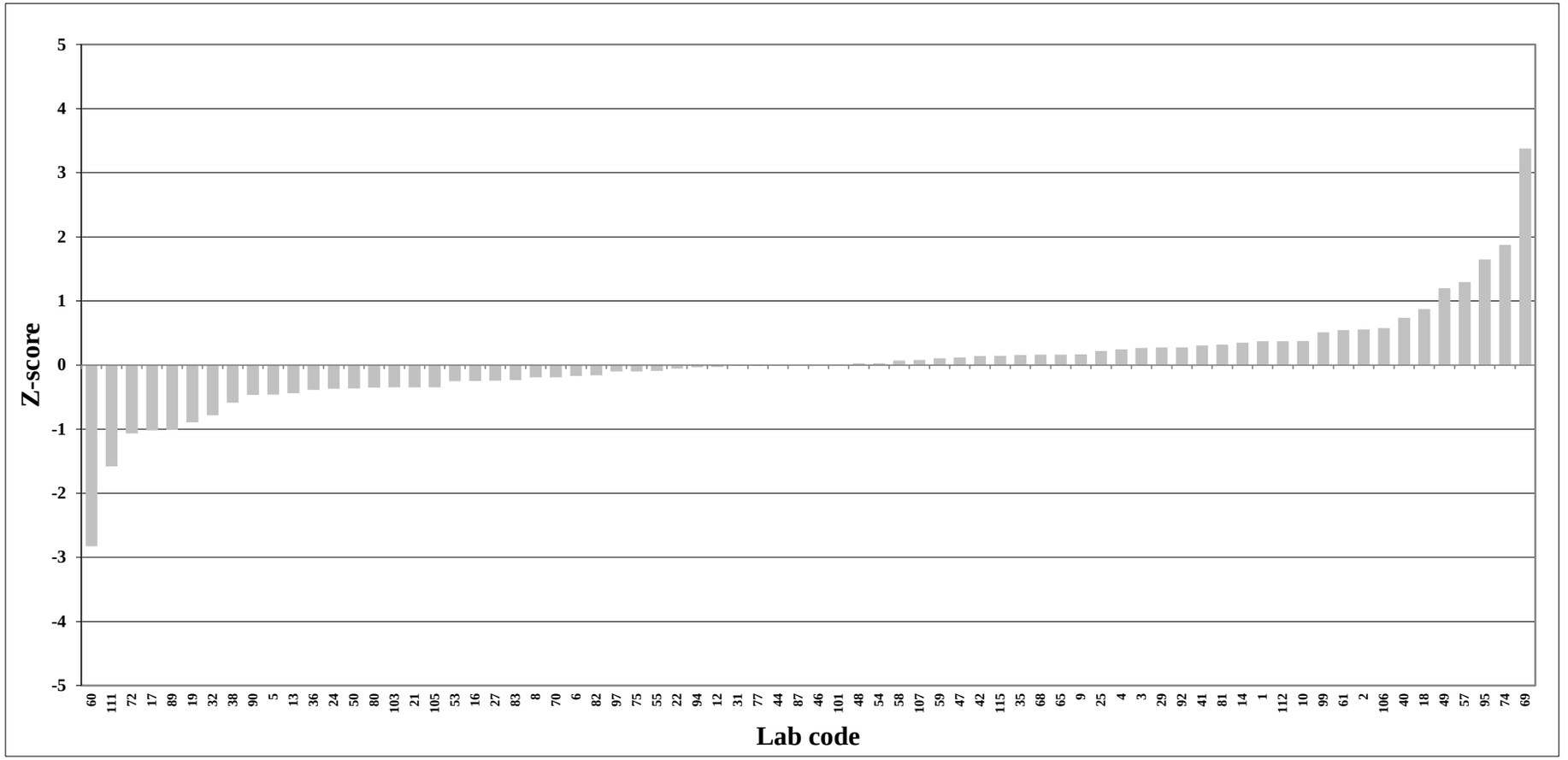
Z-score Fish oil; PCDD/PCDF TEQ



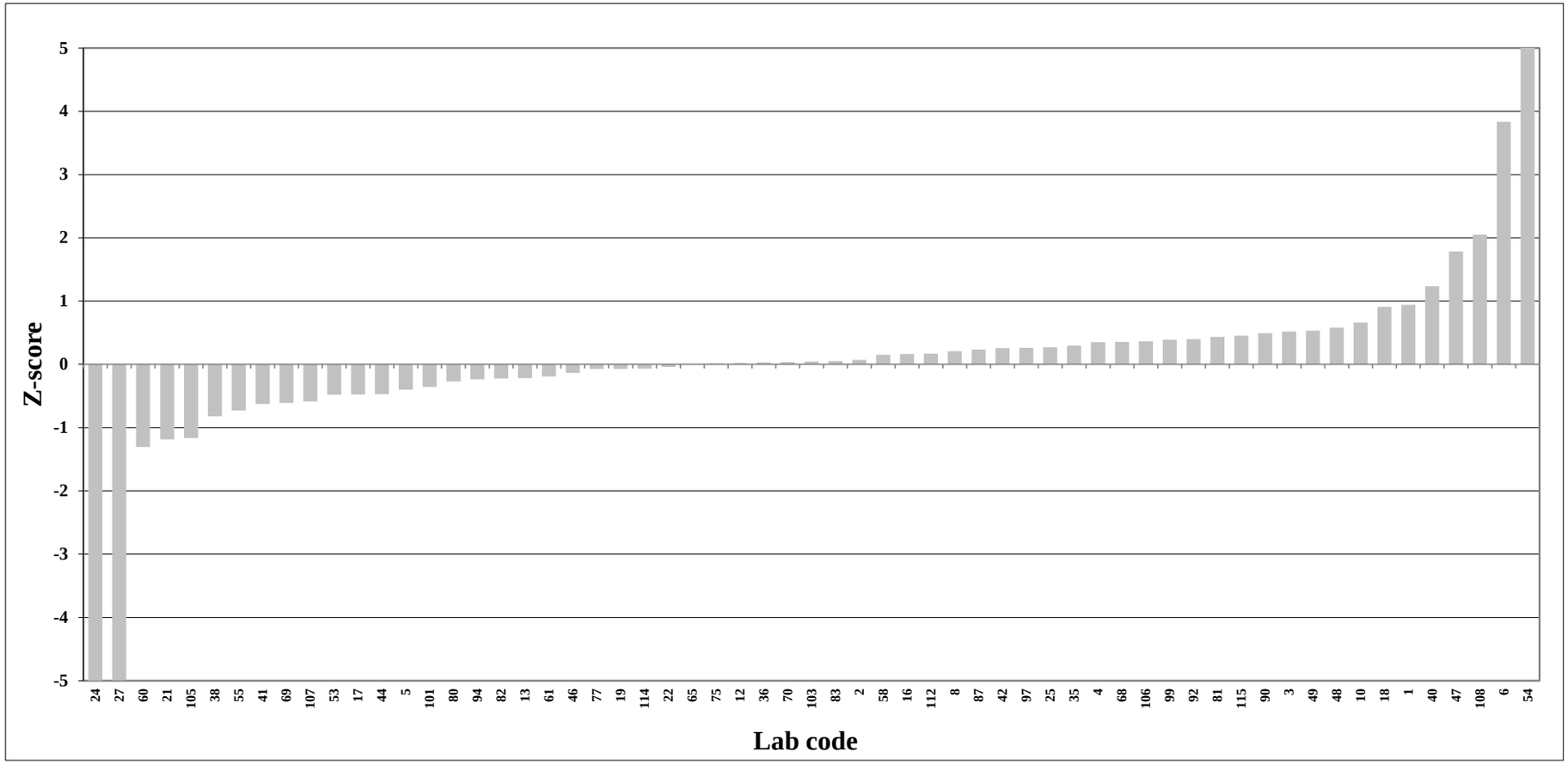
Z-score Fish oil; non-ortho PCB TEQ



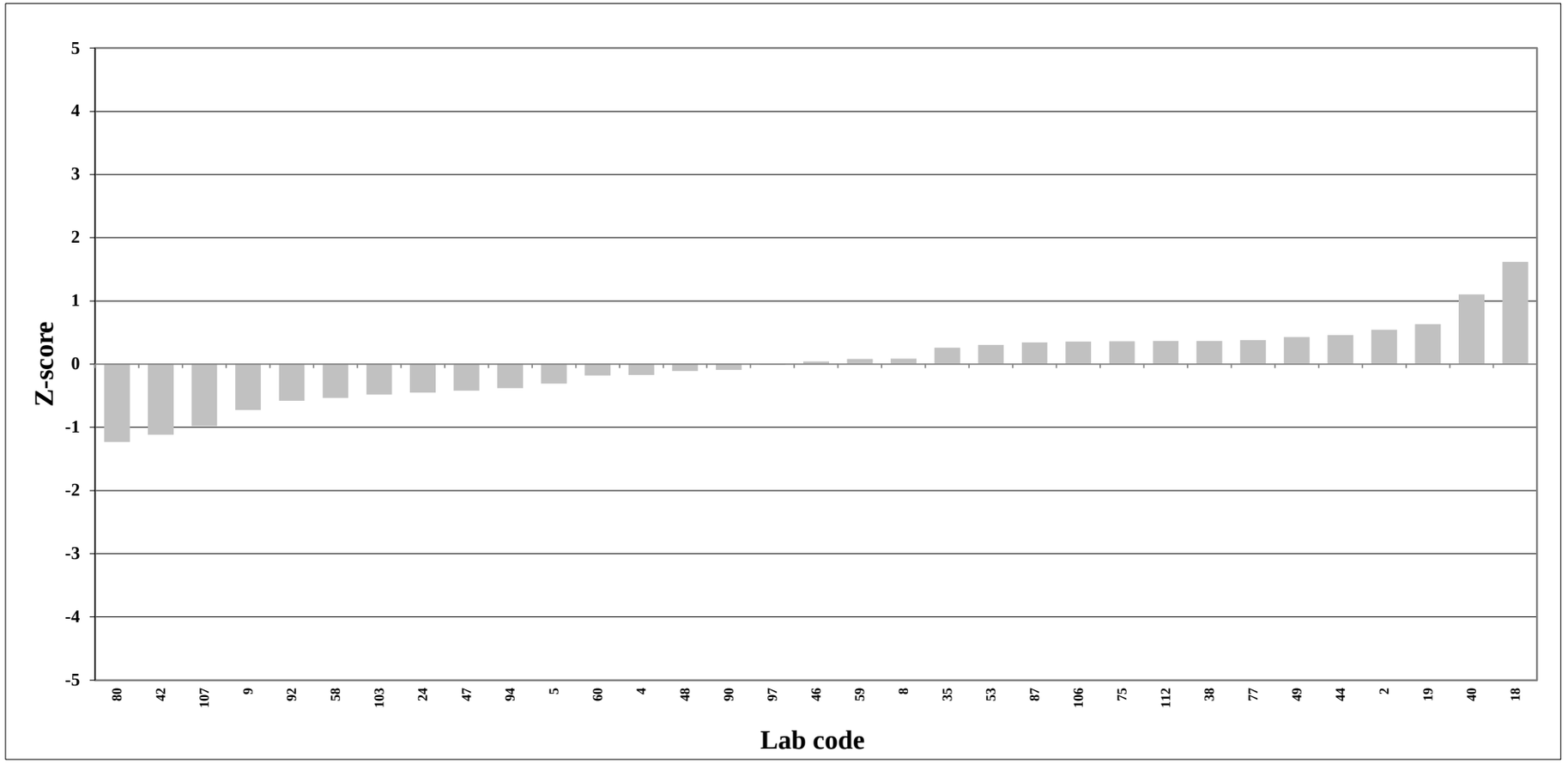
Z-score Fish oil; mono-ortho PCB TEQ



Z-score Fish oil; sum indicator PCB



Z-score Fish oil; sum PBDE without PBDE-209



Appendix 1:

Presentation of results
for analyte solution-2016

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

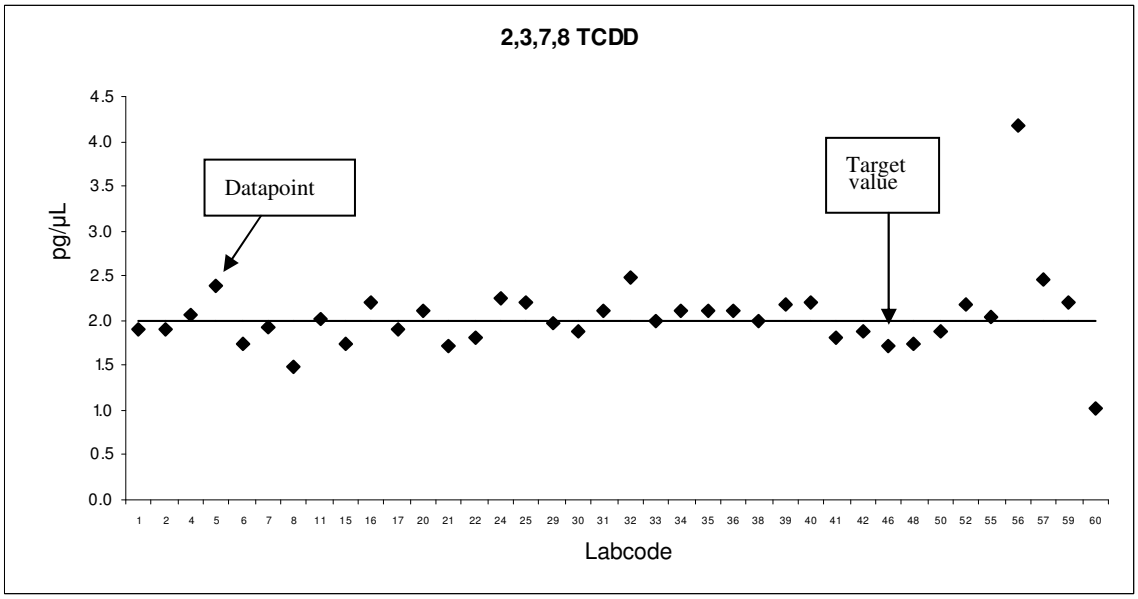
- PCDDs/PCDFs at concentrations of 2:5:10 pg/µl for tetra:penta-hexa-hepta:octa chlorinated dibenzodioxins/furans respectively.
- Non-ortho PCBs at concentration of 10 pg/µl.
- Mono-ortho PCBs and indicator PCBs at concentration of 100 pg/µl.
- PBDE at a concentration of 25 pg/µl, except PBDE-209 at 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 0.2 of the consensus was used, i.e. z-scores between +1 and -1 reflect a deviation of ± 20% from the consensus value.

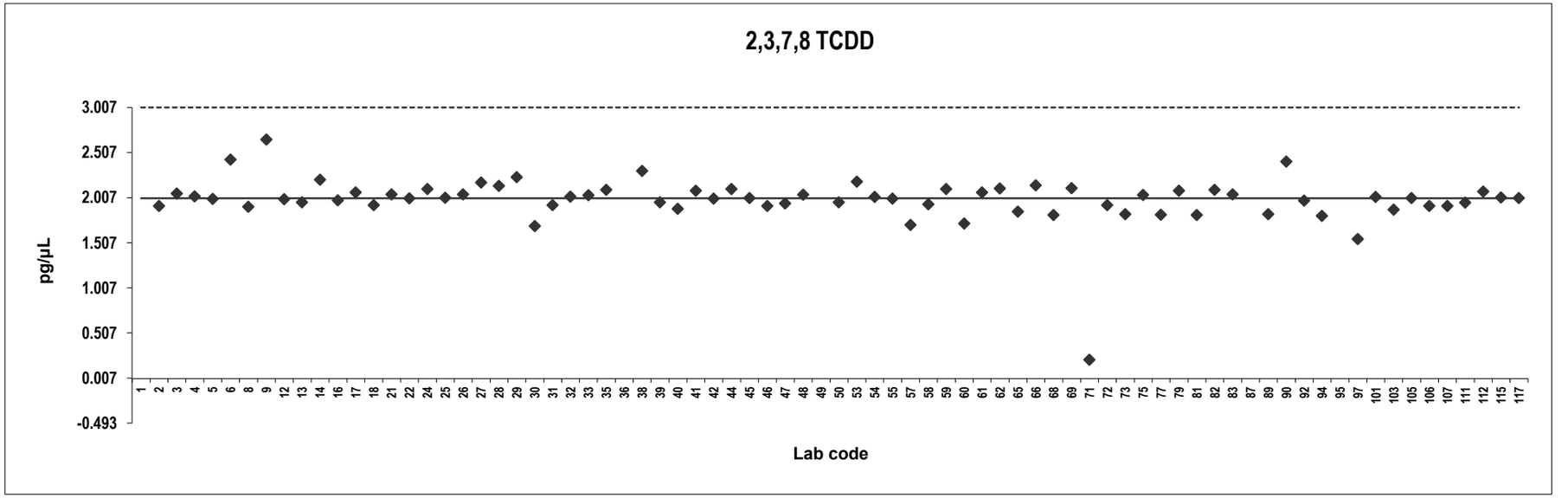
Analyte solution

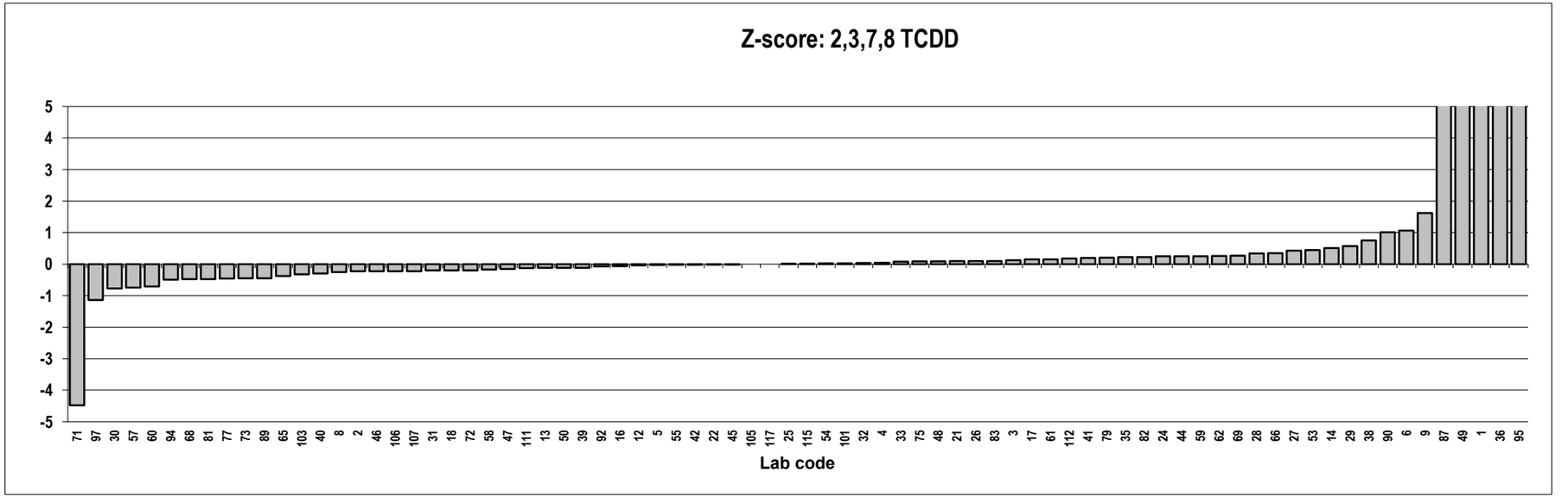
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	20	Outlier	59	2.1	
2	1.9		60	1.7	
3	2.0		61	2.1	
4	2.0		62	2.1	
5	2.0		65	1.9	
6	2.4		66	2.1	
8	1.9		68	1.8	
9	2.6		69	2.1	
12	2.0		71	0.21	Outlier
13	2.0		72	1.9	
14	2.2		73	1.8	
16	2.0		75	2.0	
17	2.1		77	1.8	
18	1.9		79	2.1	
21	2.0		81	1.8	
22	2.0		82	2.1	
24	2.1		83	2.0	
25	2.0		87	4.9	Outlier
26	2.0		89	1.8	
27	2.2		90	2.4	
28	2.1		92	2.0	
29	2.2		94	1.8	
30	1.7		95	42	Outlier
31	1.9		97	1.5	
32	2.0		101	2.0	
33	2.0		103	1.9	
35	2.1		105	2.0	
36	34	Outlier	106	1.9	
38	2.3		107	1.9	
39	2.0		111	2.0	
40	1.9		112	2.1	
41	2.1		115	2.0	
42	2.0		117	2.0	
44	2.1				
45	2.0				
46	1.9				
47	1.9				
48	2.0				
49	8.0	Outlier			
50	2.0				
53	2.2				
54	2.0				
55	2.0				
57	1.7				
58	1.9				

Consenus statistics

Consensus median, pg/µL	2.0
Median all values pg/µL	2.0
Consensus mean, pg/µL	2.0
Standard deviation, pg/µL	0.17
Relative standard deviation, %	8.3
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


2,3,7,8 TCDD
3.007
2.507
2.007
1.507
1.007
0.507
0.007
-0.493
pg/µL
Lab code


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

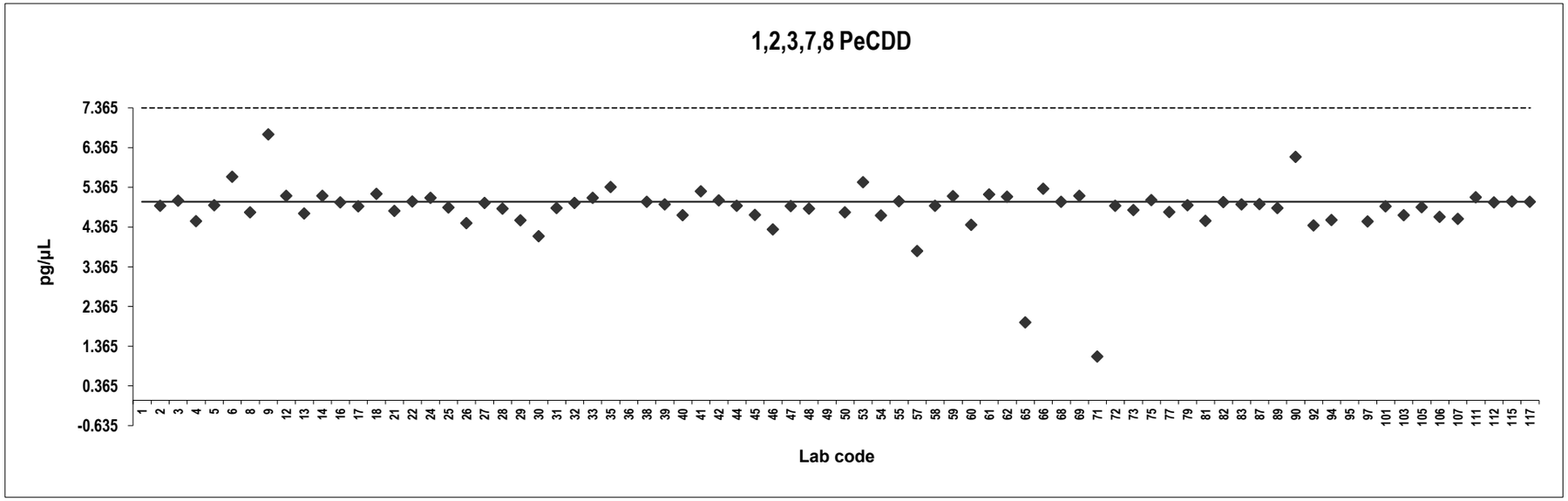
Analyte solution

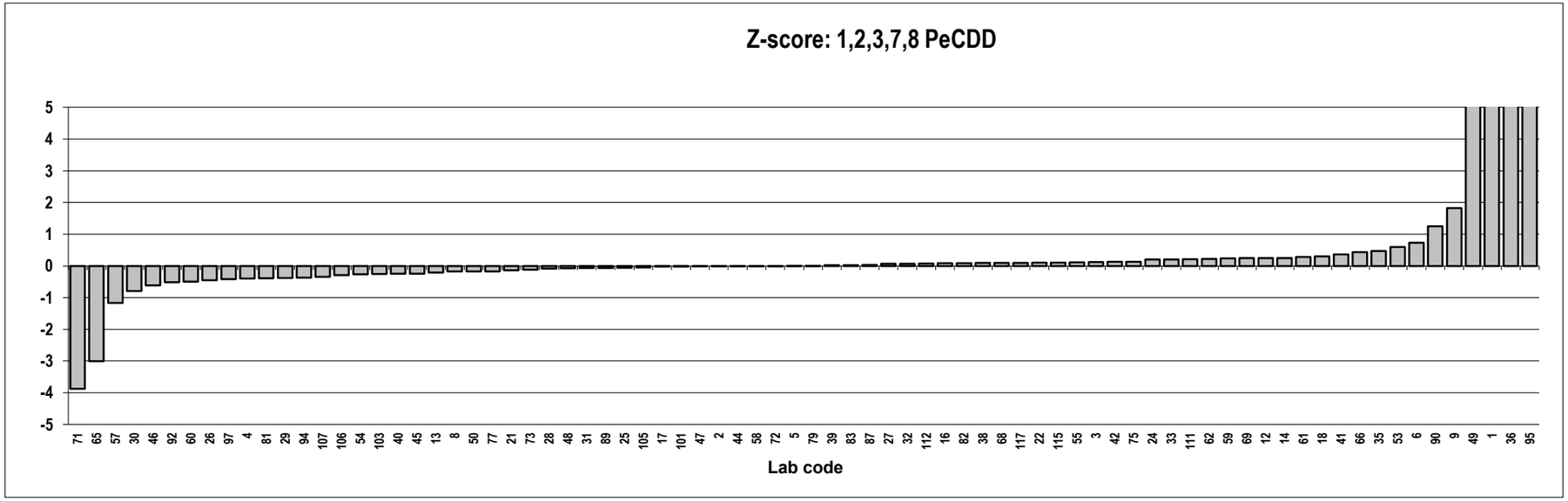
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	53	Outlier	59	5.1	
2	4.9		60	4.4	
3	5.0		61	5.2	
4	4.5		62	5.1	
5	4.9		65	2.0	Outlier
6	5.6		66	5.3	
8	4.7		68	5.0	
9	6.7		69	5.1	
12	5.2		71	1.1	Outlier
13	4.7		72	4.9	
14	5.2		73	4.8	
16	5.0		75	5.0	
17	4.9		77	4.7	
18	5.2		79	4.9	
21	4.8		81	4.5	
22	5.0		82	5.0	
24	5.1		83	4.9	
25	4.9		87	4.9	
26	4.5		89	4.8	
27	5.0		90	6.1	
28	4.8		92	4.4	
29	4.5		94	4.5	
30	4.1		95	108	Outlier
31	4.8		97	4.5	
32	5.0		101	4.9	
33	5.1		103	4.7	
35	5.4		105	4.9	
36	86	Outlier	106	4.6	
38	5.0		107	4.6	
39	4.9		111	5.1	
40	4.7		112	5.0	
41	5.3		115	5.0	
42	5.0		117	5.0	
44	4.9				
45	4.7				
46	4.3				
47	4.9				
48	4.8				
49	23	Outlier			
50	4.7				
53	5.5				
54	4.7				
55	5.0				
57	3.8				
58	4.9				

Consenus statistics

Consensus median, pg/µL	4.9
Median all values pg/µL	4.9
Consensus mean, pg/µL	4.9
Standard deviation, pg/µL	0.40
Relative standard deviation, %	8.1
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,7,8 PeCDD
7.365
6.365
5.365
4.365
3.365
2.365
1.365
0.365
-0.635
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 65 57 30 46 92 60 26 97 4 81 29 94 107 106 54 103 40 45 13 8 50 77 21 73 28 48 31 89 25 105 17 101 47 2 44 58 72 5 79 39 83 87 27 32 112 16 82 38 68 117 22 115 55 3 42 75 24 33 111 62 59 69 12 14 61 18 41 66 35 53 6 90 9 49 1 36 95
Lab code

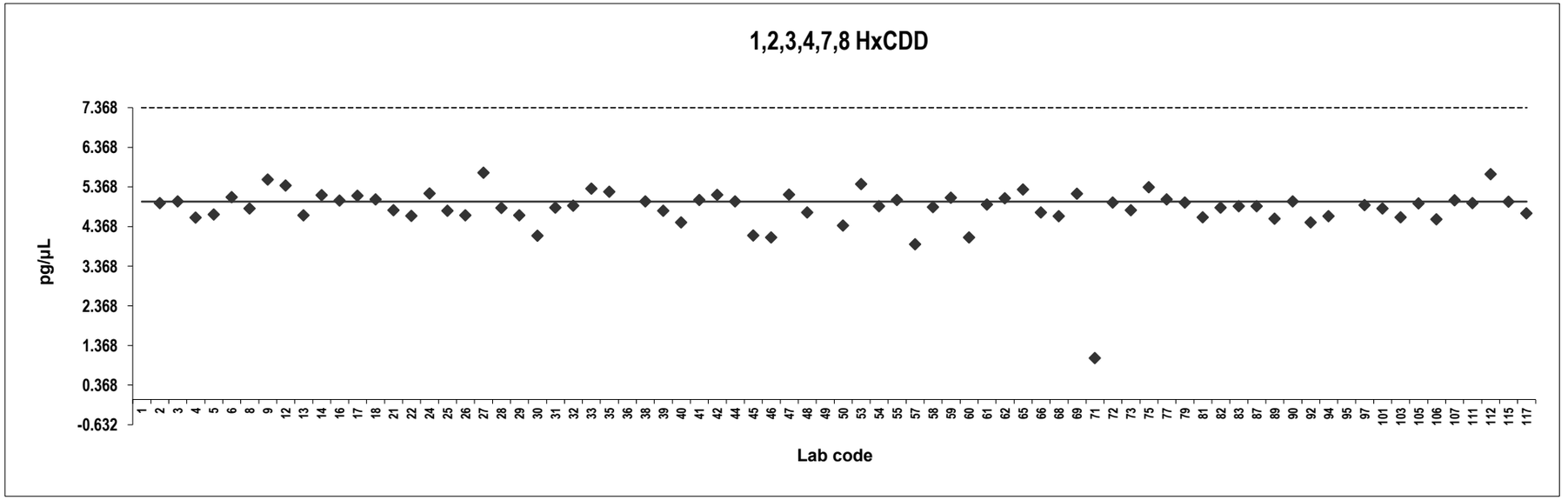
Analyte solution

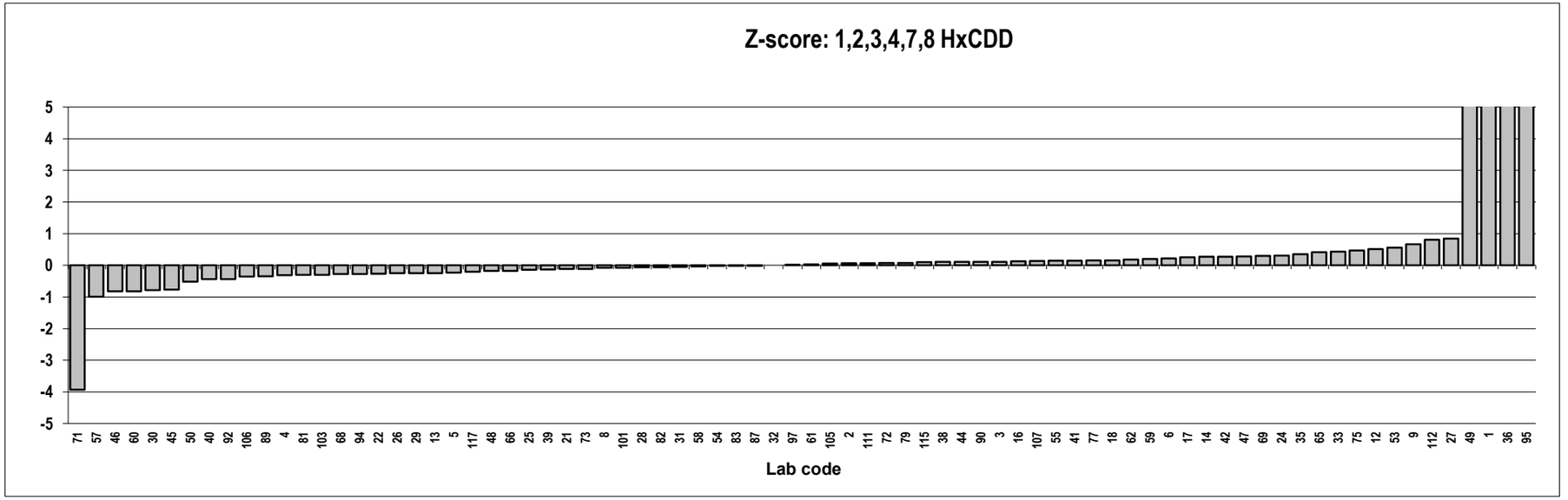
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	42	Outlier	59	5.1	
2	5.0		60	4.1	
3	5.0		61	4.9	
4	4.6		62	5.1	
5	4.7		65	5.3	
6	5.1		66	4.7	
8	4.8		68	4.6	
9	5.5		69	5.2	
12	5.4		71	1.0	Outlier
13	4.7		72	5.0	
14	5.2		73	4.8	
16	5.0		75	5.4	
17	5.1		77	5.0	
18	5.1		79	5.0	
21	4.8		81	4.6	
22	4.6		82	4.8	
24	5.2		83	4.9	
25	4.8		87	4.9	
26	4.7		89	4.6	
27	5.7		90	5.0	
28	4.8		92	4.5	
29	4.7		94	4.6	
30	4.1		95	102	Outlier
31	4.8		97	4.9	
32	4.9		101	4.8	
33	5.3		103	4.6	
35	5.2		105	5.0	
36	82	Outlier	106	4.6	
38	5.0		107	5.0	
39	4.8		111	5.0	
40	4.5		112	5.7	
41	5.0		115	5.0	
42	5.2		117	4.7	
44	5.0				
45	4.1				
46	4.1				
47	5.2				
48	4.7				
49	23	Outlier			
50	4.4				
53	5.4				
54	4.9				
55	5.0				
57	3.9				
58	4.9				

Consenus statistics

Consensus median, pg/µL	4.9
Median all values pg/µL	4.9
Consensus mean, pg/µL	4.9
Standard deviation, pg/µL	0.35
Relative standard deviation, %	7.2
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


1,2,3,4,7,8 HxCDD
7.368
6.368
5.368
4.368
3.368
2.368
1.368
0.368
-0.632
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 57 46 60 30 45 50 40 92 106 89 4 81 103 68 94 22 26 29 13 5 117 48 66 25 39 21 73 8 101 28 82 31 58 54 83 87 32 97 61 105 2 111 72 79 115 38 44 90 3 16 107 55 41 77 18 62 59 6 17 14 42 47 69 24 35 65 33 75 12 53 9 112 27 49 1 36 95
Lab code

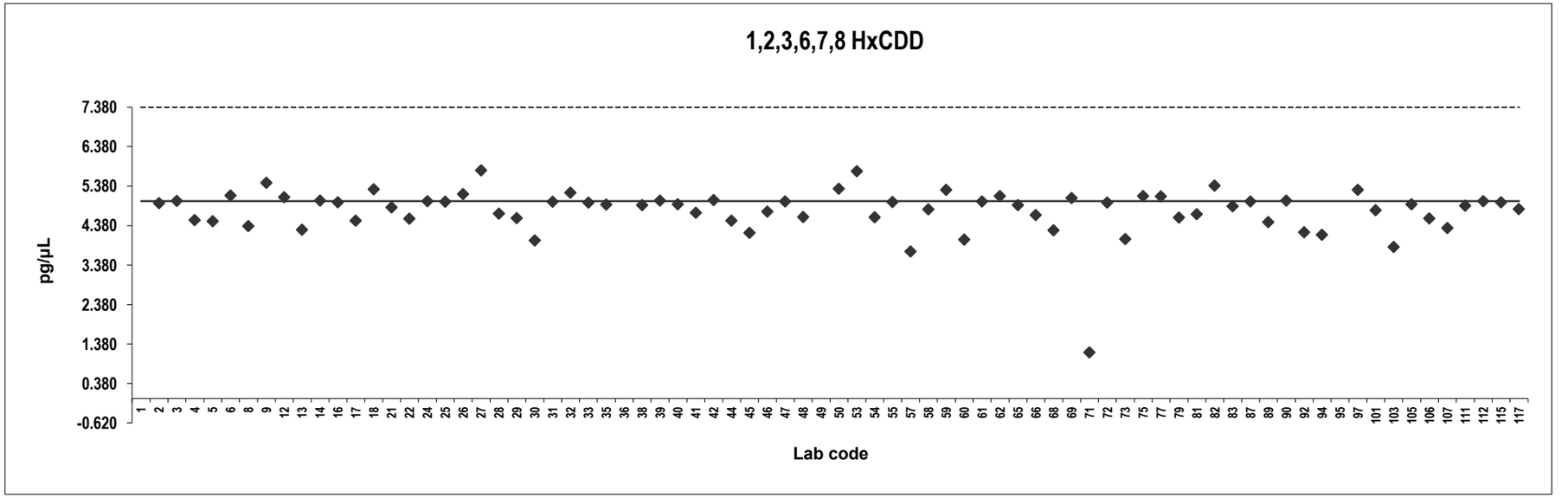
Analyte solution

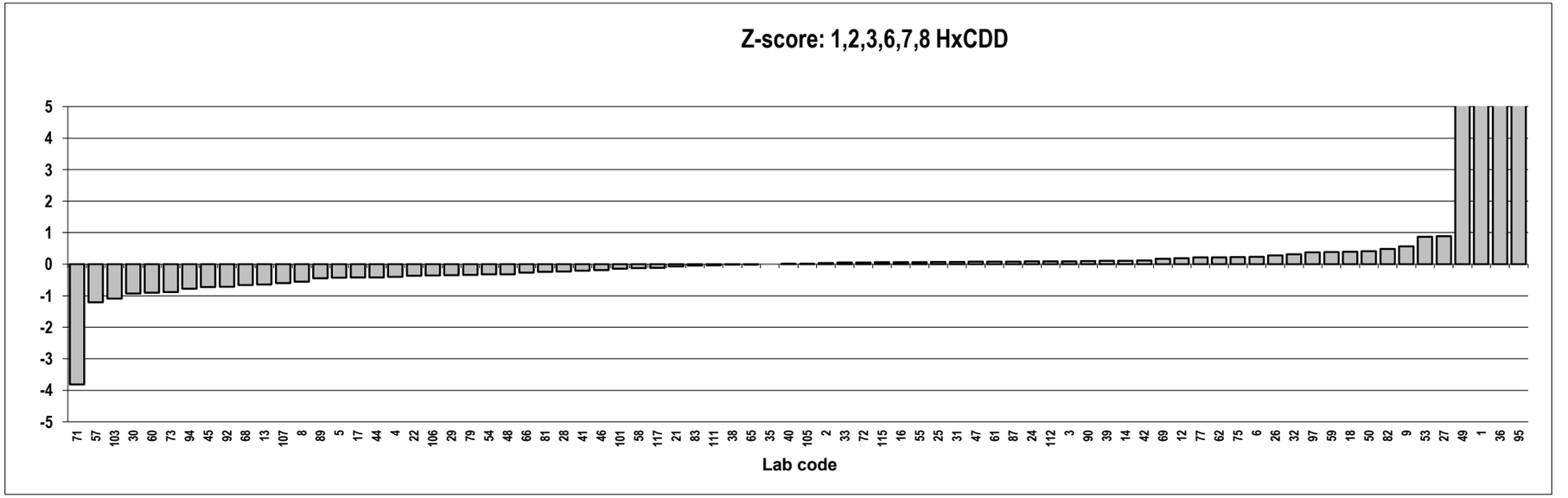
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	47	Outlier	59	5.3	
2	5.0		60	4.0	
3	5.0		61	5.0	
4	4.5		62	5.1	
5	4.5		65	4.9	
6	5.1		66	4.7	
8	4.4		68	4.3	
9	5.5		69	5.1	
12	5.1		71	1.2	Outlier
13	4.3		72	5.0	
14	5.0		73	4.0	
16	5.0		75	5.1	
17	4.5		77	5.1	
18	5.3		79	4.6	
21	4.8		81	4.7	
22	4.6		82	5.4	
24	5.0		83	4.9	
25	5.0		87	5.0	
26	5.2		89	4.5	
27	5.8		90	5.0	
28	4.7		92	4.2	
29	4.6		94	4.1	
30	4.0		95	95	Outlier
31	5.0		97	5.3	
32	5.2		101	4.8	
33	5.0		103	3.8	
35	4.9		105	4.9	
36	76	Outlier	106	4.6	
38	4.9		107	4.3	
39	5.0		111	4.9	
40	4.9		112	5.0	
41	4.7		115	5.0	
42	5.0		117	4.8	
44	4.5				
45	4.2				
46	4.7				
47	5.0				
48	4.6				
49	20	Outlier			
50	5.3				
53	5.8				
54	4.6				
55	5.0				
57	3.7				
58	4.8				

Consenus statistics

Consensus median, pg/µL	4.9
Median all values pg/µL	4.9
Consensus mean, pg/µL	4.8
Standard deviation, pg/µL	0.41
Relative standard deviation, %	8.6
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


1,2,3,6,7,8 HxCDD
7.380
6.380
5.380
4.380
3.380
2.380
1.380
0.380
-0.620
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 57 103 30 60 73 94 45 92 68 13 107 8 89 5 17 44 4 22 106 29 79 54 48 66 81 28 41 46 101 58 117 21 83 111 38 65 35 40 105 2 33 72 115 16 55 25 31 47 61 87 24 112 3 90 39 14 42 69 12 77 62 75 6 26 32 97 59 18 50 82 9 53 27 49 1 36 95
Lab code

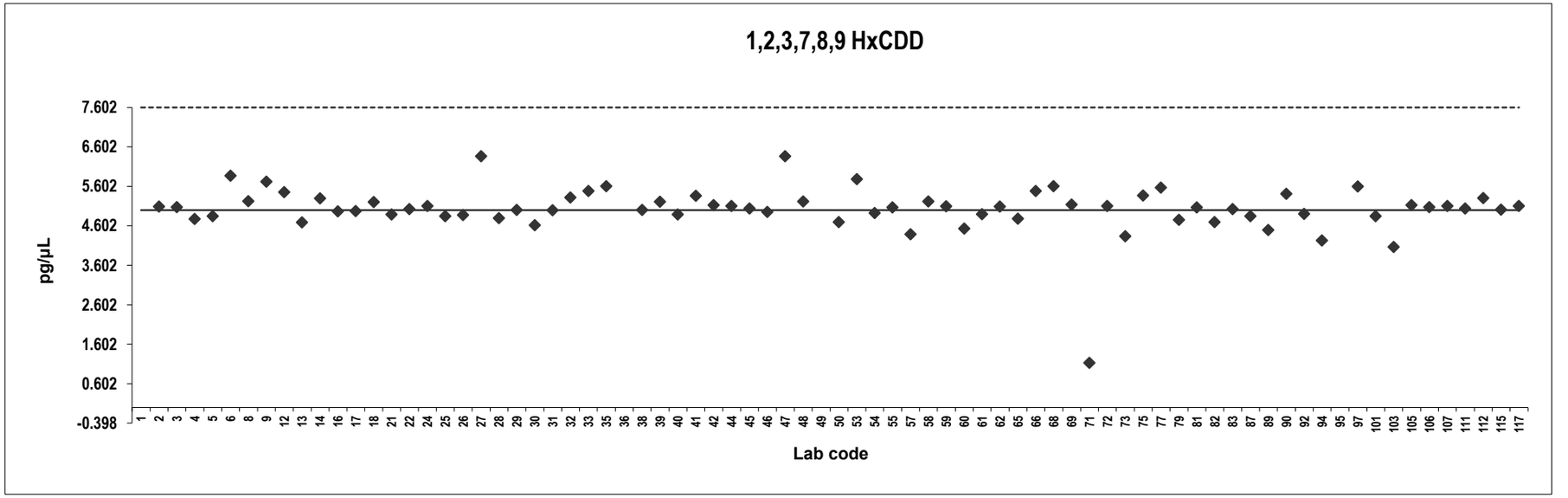
Analyte solution

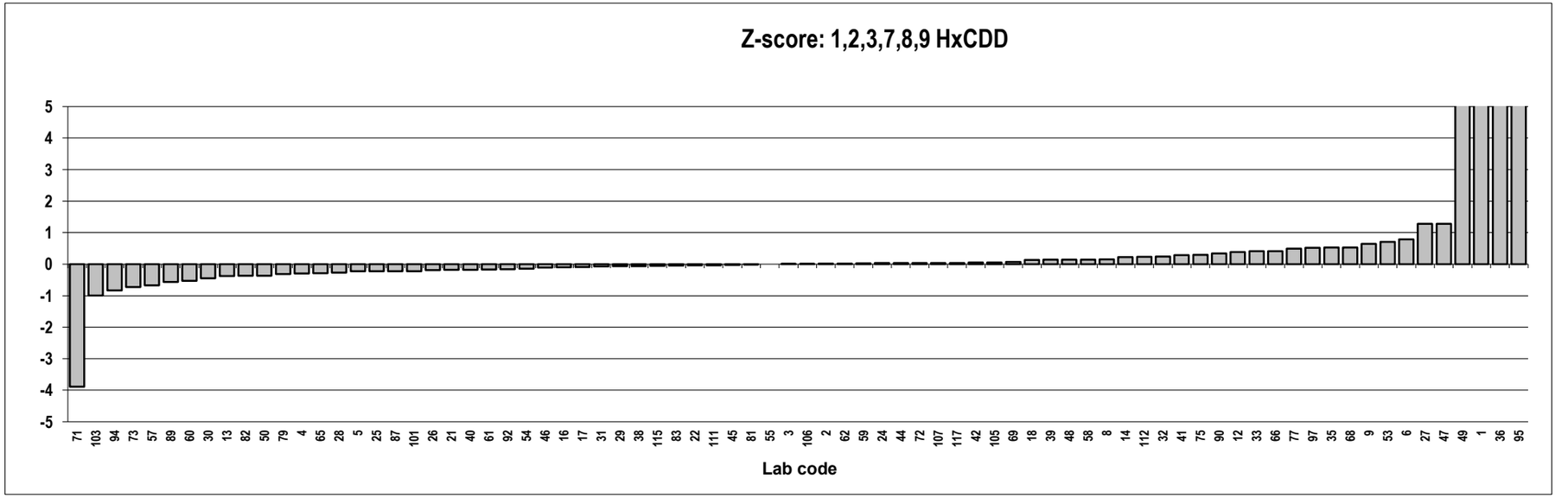
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	50	Outlier	59	5.1	
2	5.1		60	4.5	
3	5.1		61	4.9	
4	4.8		62	5.1	
5	4.8		65	4.8	
6	5.9		66	5.5	
8	5.2		68	5.6	
9	5.7		69	5.1	
12	5.5		71	1.1	Outlier
13	4.7		72	5.1	
14	5.3		73	4.3	
16	5.0		75	5.4	
17	5.0		77	5.6	
18	5.2		79	4.8	
21	4.9		81	5.1	
22	5.0		82	4.7	
24	5.1		83	5.0	
25	4.8		87	4.8	
26	4.9		89	4.5	
27	6.4		90	5.4	
28	4.8		92	4.9	
29	5.0		94	4.2	
30	4.6		95	104	Outlier
31	5.0		97	5.6	
32	5.3		101	4.8	
33	5.5		103	4.1	
35	5.6		105	5.1	
36	89	Outlier	106	5.1	
38	5.0		107	5.1	
39	5.2		111	5.0	
40	4.9		112	5.3	
41	5.4		115	5.0	
42	5.1		117	5.1	
44	5.1				
45	5.0				
46	5.0				
47	6.4				
48	5.2				
49	24	Outlier			
50	4.7				
53	5.8				
54	4.9				
55	5.1				
57	4.4				
58	5.2				

Consenus statistics

Consensus median, pg/µL	5.1
Median all values pg/µL	5.1
Consensus mean, pg/µL	5.1
Standard deviation, pg/µL	0.41
Relative standard deviation, %	8.0
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


1,2,3,7,8,9 HxCDD
7.602
6.602
5.602
4.602
3.602
2.602
1.602
0.602
-0.398
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 103 94 73 57 89 60 30 13 82 50 79 4 65 28 5 25 87 101 26 21 40 61 92 54 46 16 17 31 29 38 115 83 22 111 45 81 55 3 106 2 62 59 24 44 72 107 117 42 105 69 18 39 48 58 8 14 112 32 41 75 90 12 33 66 77 97 35 68 9 53 6 27 47 49 1 36 95
Lab code

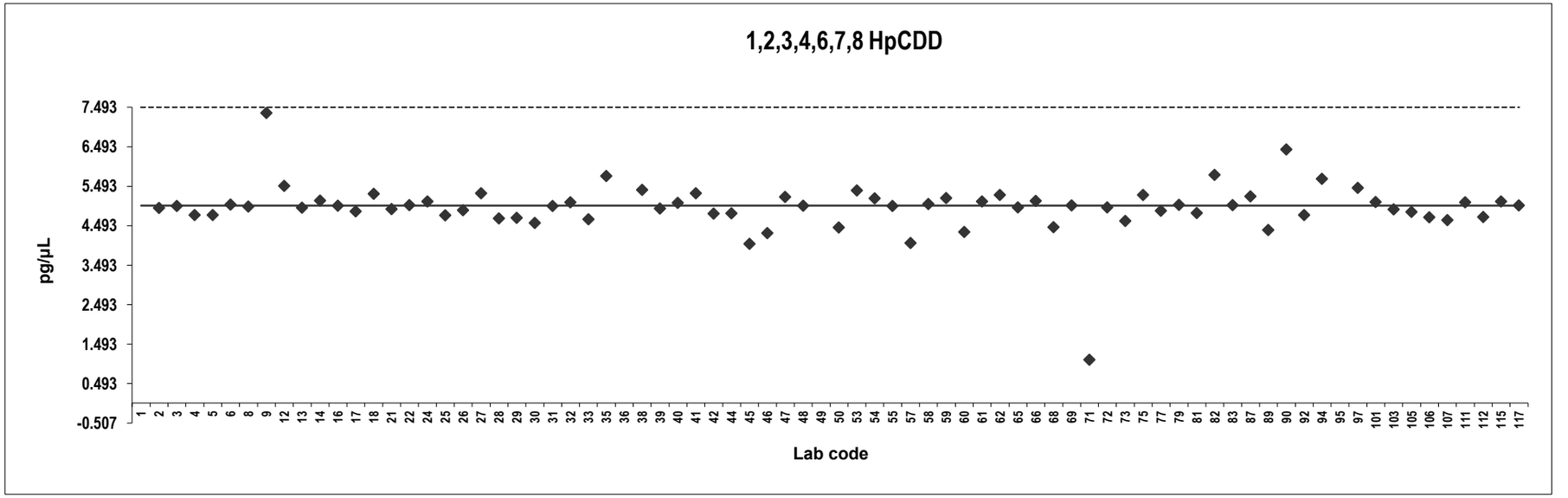
Analyte solution

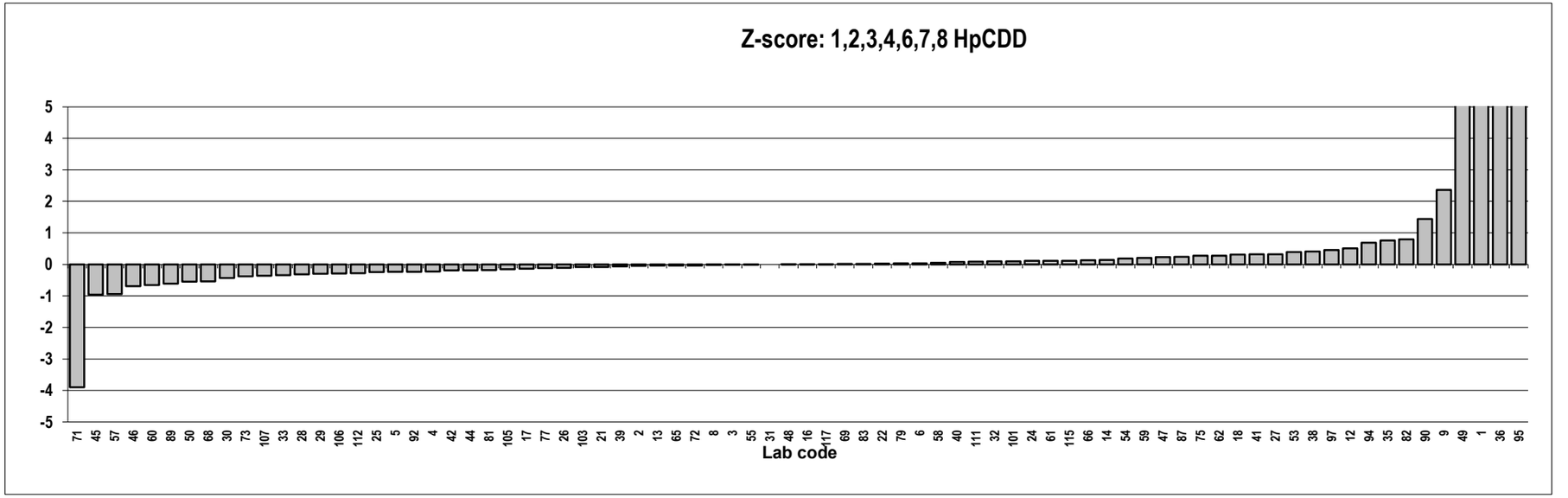
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	48	Outlier	59	5.2	
2	4.9		60	4.3	
3	5.0		61	5.1	
4	4.8		62	5.3	
5	4.8		65	5.0	
6	5.0		66	5.1	
8	5.0		68	4.5	
9	7.3		69	5.0	
12	5.5		71	1.1	Outlier
13	4.9		72	5.0	
14	5.1		73	4.6	
16	5.0		75	5.3	
17	4.9		77	4.9	
18	5.3		79	5.0	
21	4.9		81	4.8	
22	5.0		82	5.8	
24	5.1		83	5.0	
25	4.8		87	5.2	
26	4.9		89	4.4	
27	5.3		90	6.4	
28	4.7		92	4.8	
29	4.7		94	5.7	
30	4.6		95	97	Outlier
31	5.0		97	5.4	
32	5.1		101	5.1	
33	4.7		103	4.9	
35	5.8		105	4.8	
36	88	Outlier	106	4.7	
38	5.4		107	4.6	
39	4.9		111	5.1	
40	5.1		112	4.7	
41	5.3		115	5.1	
42	4.8		117	5.0	
44	4.8				
45	4.0				
46	4.3				
47	5.2				
48	5.0				
49	22	Outlier			
50	4.4				
53	5.4				
54	5.2				
55	5.0				
57	4.1				
58	5.0				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.47
Relative standard deviation, %	9.4
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


1,2,3,4,6,7,8 HpCDD
7.493
6.493
5.493
4.493
3.493
2.493
1.493
0.493
-0.507
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 45 57 46 60 89 50 68 30 73 107 33 28 29 106 112 25 5 92 4 42 44 81 105 17 77 26 103 21 39 2 13 65 72 8 3 55 31 48 16 117 69 83 22 79 6 58 40 111 32 101 24 61 115 66 14 54 59 47 87 75 62 18 41 27 53 38 97 12 94 35 82 90 9 49 1 36 95
Lab code

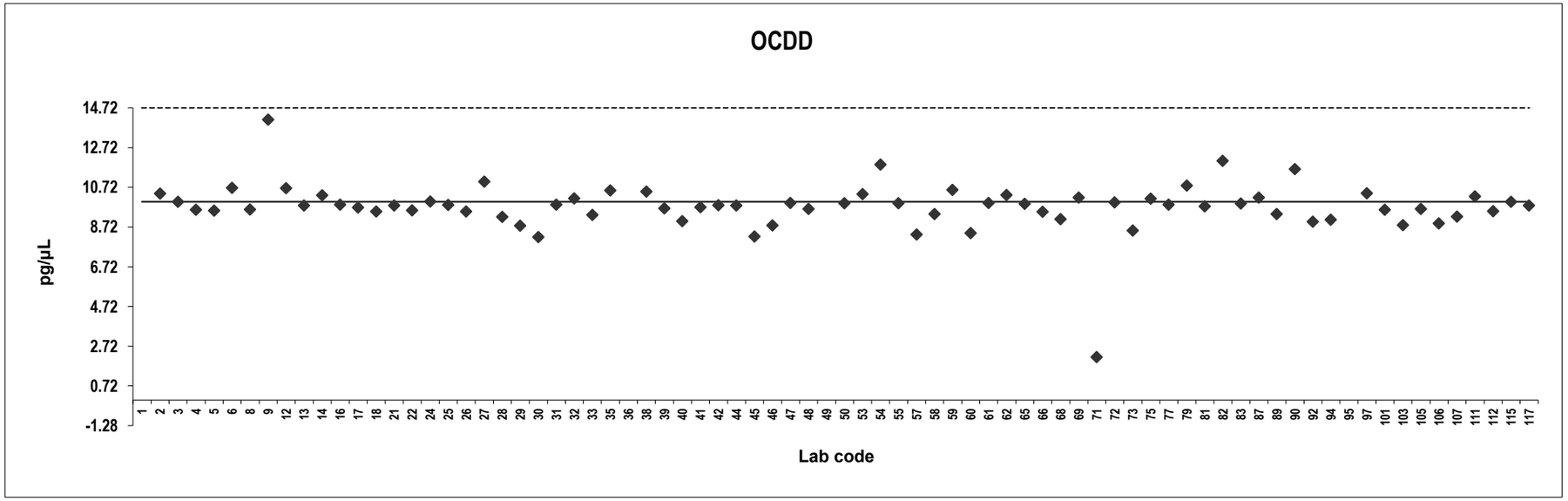
Analyte solution

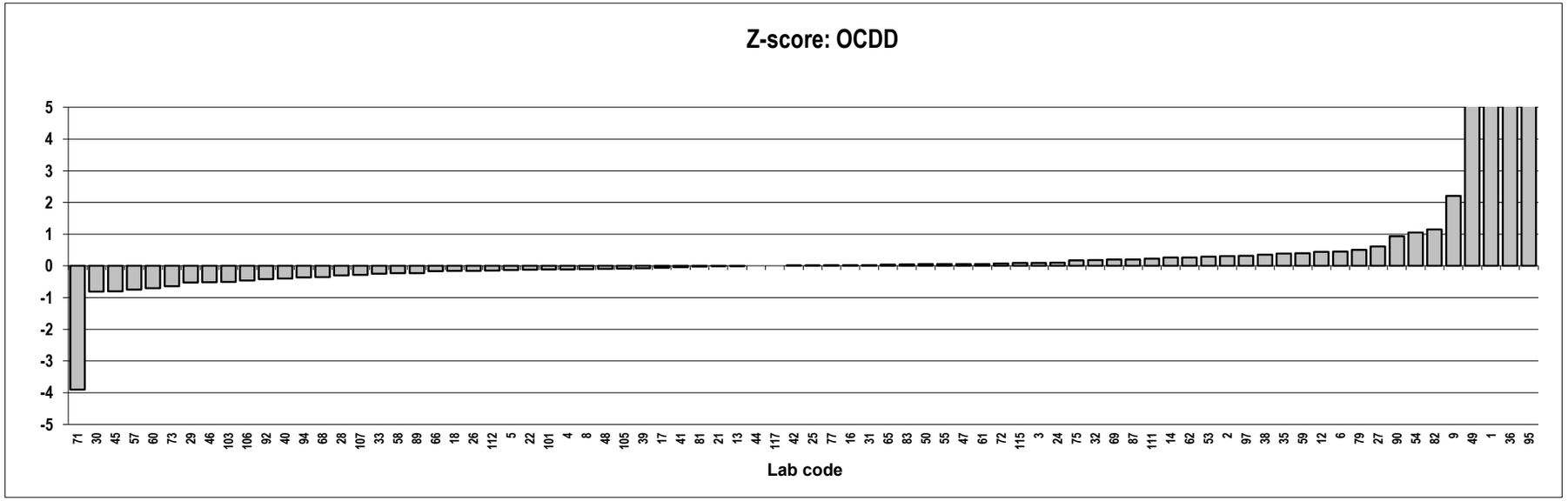
Congener: OCDD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	94	Outlier	59	11	
2	10		60	8.4	
3	10		61	9.9	
4	9.6		62	10	
5	9.5		65	9.9	
6	11		66	9.5	
8	9.6		68	9.1	
9	14		69	10	
12	11		71	2.2	Outlier
13	9.8		72	10	
14	10		73	8.5	
16	9.8		75	10	
17	9.7		77	9.8	
18	9.5		79	11	
21	9.8		81	9.8	
22	9.6		82	12	
24	10		83	9.9	
25	9.8		87	10	
26	9.5		89	9.4	
27	11		90	12	
28	9.2		92	9.0	
29	8.8		94	9.1	
30	8.2		95	205	Outlier
31	9.8		97	10	
32	10		101	9.6	
33	9.3		103	8.8	
35	11		105	9.6	
36	160	Outlier	106	8.9	
38	11		107	9.2	
39	9.7		111	10	
40	9.0		112	9.5	
41	9.7		115	10.0	
42	9.8		117	9.8	
44	9.8				
45	8.2				
46	8.8				
47	9.9				
48	9.6				
49	47	Outlier			
50	9.9				
53	10				
54	12				
55	9.9				
57	8.3				
58	9.4				

Consenus statistics

Consensus median, pg/µL	9.8
Median all values pg/µL	9.8
Consensus mean, pg/µL	9.8
Standard deviation, pg/µL	0.90
Relative standard deviation, %	9.1
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


OCDD
14.72
12.72
10.72
8.72
6.72
4.72
2.72
0.72
-1.28
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 30 45 57 60 73 29 46 103 106 92 40 94 68 28 107 33 58 89 66 18 26 112 5 22 101 4 8 48 105 39 17 41 81 21 13 44 117 42 25 77 16 31 65 83 50 55 47 61 72 115 3 24 75 32 69 87 111 14 62 53 2 97 38 35 59 12 6 79 27 90 54 82 9 49 1 36 95
Lab code

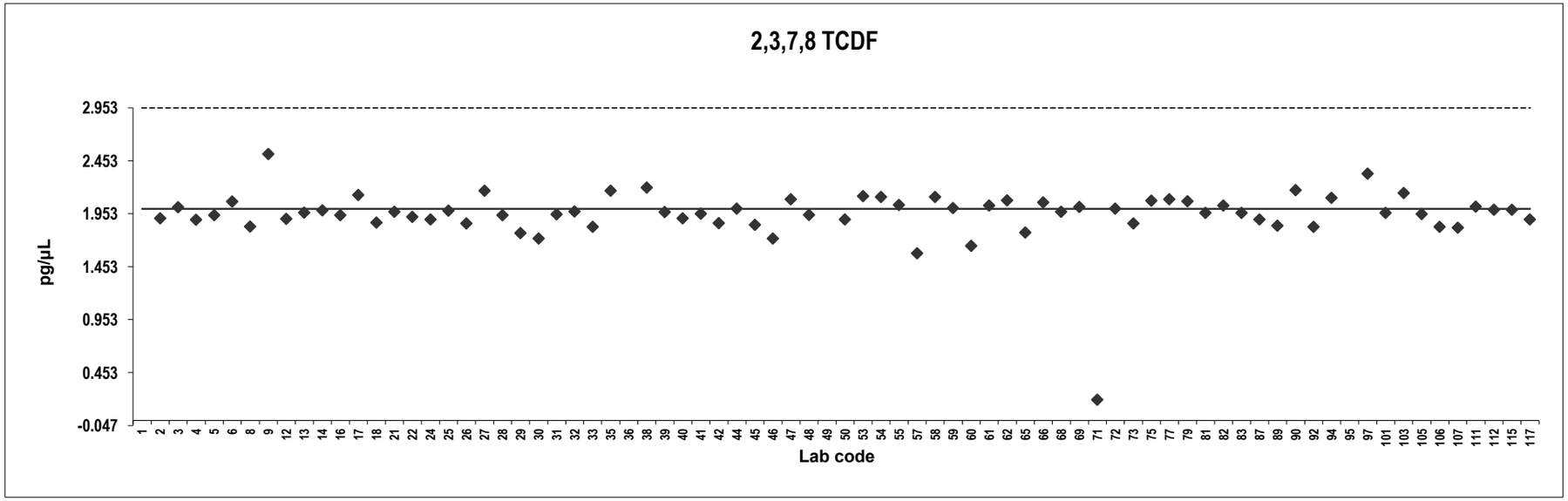
Analyte solution

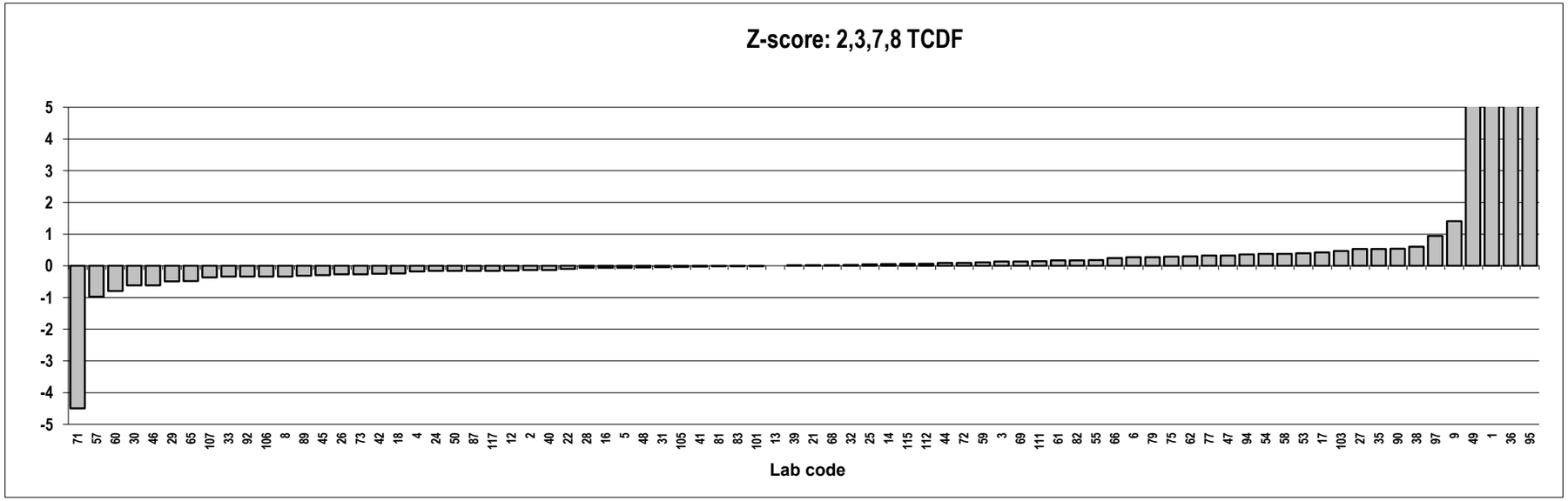
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	18	Outlier	59	2.0	
2	1.9		60	1.6	
3	2.0		61	2.0	
4	1.9		62	2.1	
5	1.9		65	1.8	
6	2.1		66	2.1	
8	1.8		68	2.0	
9	2.5		69	2.0	
12	1.9		71	0.20	Outlier
13	2.0		72	2.0	
14	2.0		73	1.9	
16	1.9		75	2.1	
17	2.1		77	2.1	
18	1.9		79	2.1	
21	2.0		81	2.0	
22	1.9		82	2.0	
24	1.9		83	2.0	
25	2.0		87	1.9	
26	1.9		89	1.8	
27	2.2		90	2.2	
28	1.9		92	1.8	
29	1.8		94	2.1	
30	1.7		95	41	Outlier
31	1.9		97	2.3	
32	2.0		101	2.0	
33	1.8		103	2.1	
35	2.2		105	2.0	
36	33	Outlier	106	1.8	
38	2.2		107	1.8	
39	2.0		111	2.0	
40	1.9		112	2.0	
41	2.0		115	2.0	
42	1.9		117	1.9	
44	2.0				
45	1.8				
46	1.7				
47	2.1				
48	1.9				
49	8.6	Outlier			
50	1.9				
53	2.1				
54	2.1				
55	2.0				
57	1.6				
58	2.1				

Consenus statistics

Consensus median, pg/µL	2.0
Median all values pg/µL	2.0
Consensus mean, pg/µL	2.0
Standard deviation, pg/µL	0.15
Relative standard deviation, %	7.4
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


2,3,7,8 TCDF
2.953
2.453
1.953
1.453
0.953
0.453
-0.047
pg/µL
Lab code


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

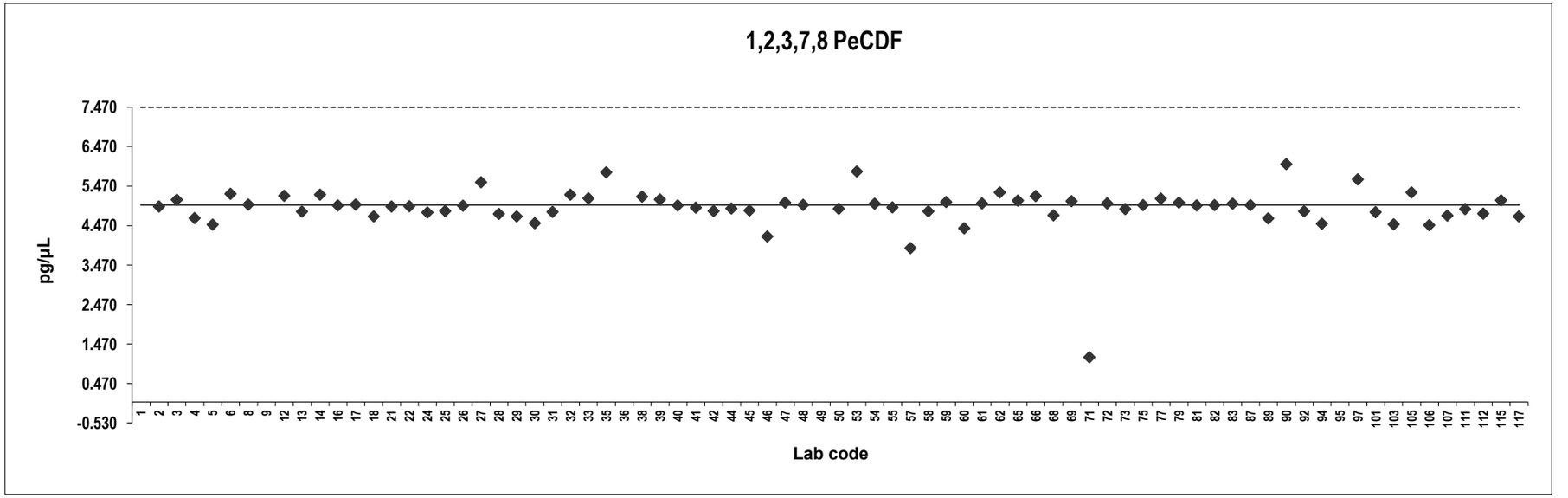
Analyte solution

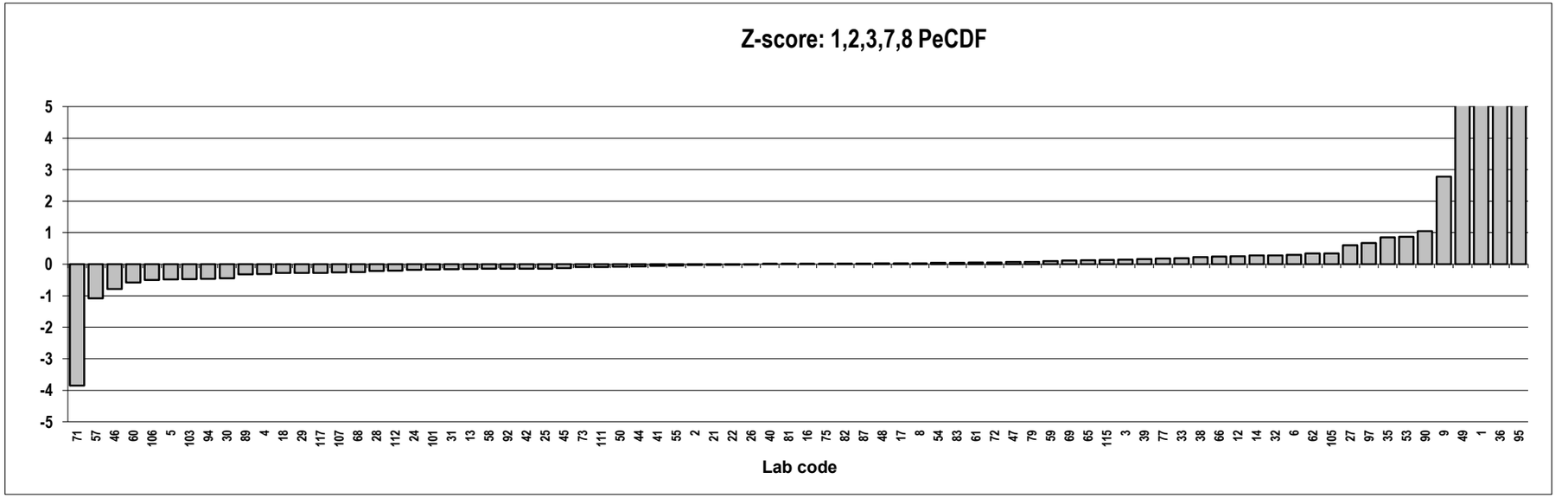
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	45	Outlier	59	5.1	
2	5.0		60	4.4	
3	5.1		61	5.0	
4	4.7		62	5.3	
5	4.5		65	5.1	
6	5.3		66	5.2	
8	5.0		68	4.7	
9	7.7	Outlier	69	5.1	
12	5.2		71	1.1	Outlier
13	4.8		72	5.0	
14	5.3		73	4.9	
16	5.0		75	5.0	
17	5.0		77	5.2	
18	4.7		79	5.1	
21	5.0		81	5.0	
22	5.0		82	5.0	
24	4.8		83	5.0	
25	4.8		87	5.0	
26	5.0		89	4.7	
27	5.6		90	6.0	
28	4.8		92	4.8	
29	4.7		94	4.5	
30	4.5		95	111	Outlier
31	4.8		97	5.6	
32	5.3		101	4.8	
33	5.2		103	4.5	
35	5.8		105	5.3	
36	90	Outlier	106	4.5	
38	5.2		107	4.7	
39	5.1		111	4.9	
40	5.0		112	4.8	
41	4.9		115	5.1	
42	4.8		117	4.7	
44	4.9				
45	4.9				
46	4.2				
47	5.1				
48	5.0				
49	22	Outlier			
50	4.9				
53	5.8				
54	5.0				
55	4.9				
57	3.9				
58	4.8				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.34
Relative standard deviation, %	6.9
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,7,8 PeCDF
7.470
6.470
5.470
4.470
3.470
2.470
1.470
0.470
-0.530
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 57 46 60 106 5 103 94 30 89 4 18 29 117 107 68 28 112 24 101 31 13 58 92 42 25 45 73 111 50 44 41 55 2 21 22 26 40 81 16 75 82 87 48 17 8 54 83 61 72 47 79 59 69 65 115 3 39 77 33 38 66 12 14 32 6 62 105 27 97 35 53 90 9 49 1 36 95
Lab code

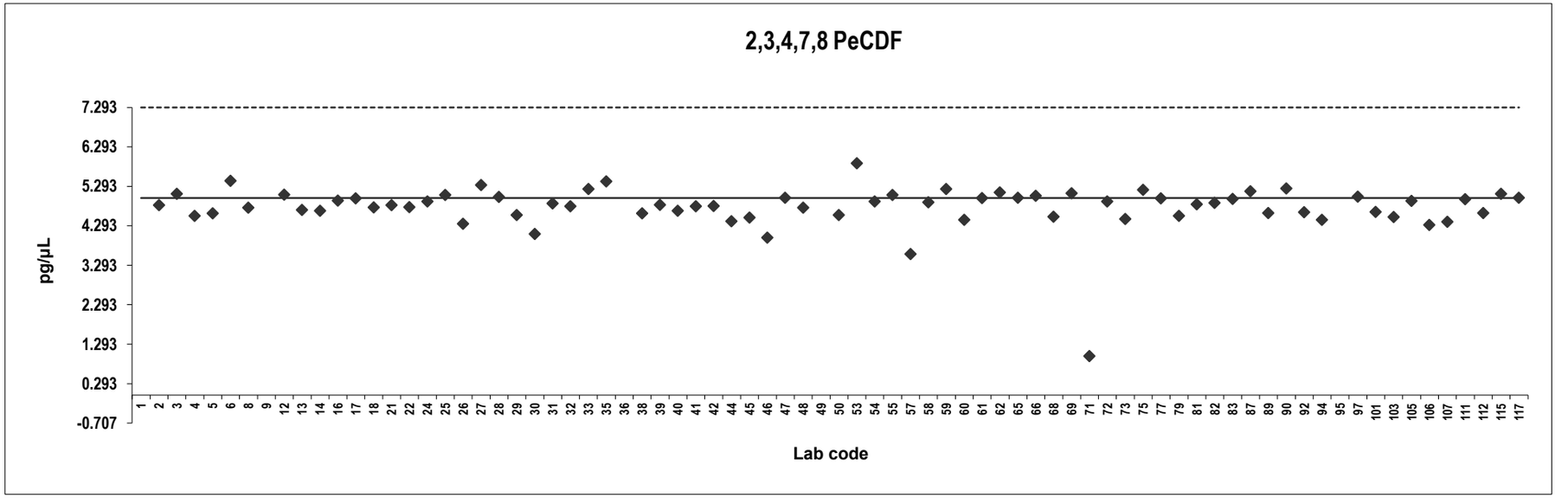
Analyte solution

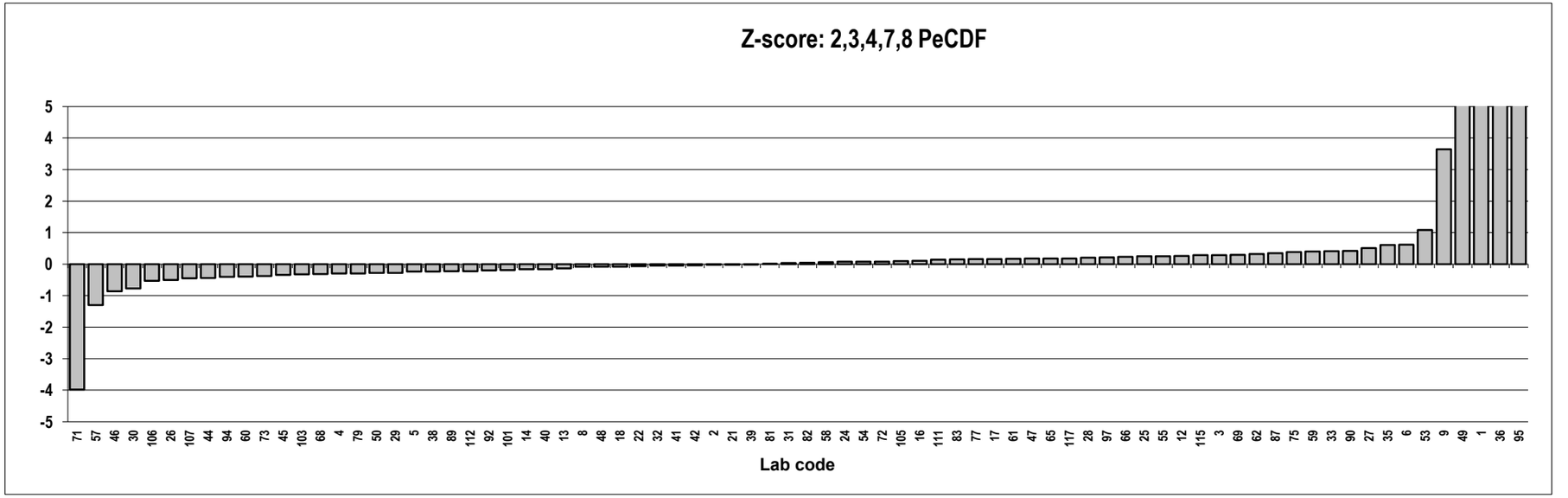
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	55	Outlier	59	5.2	
2	4.8		60	4.4	
3	5.1		61	5.0	
4	4.5		62	5.1	
5	4.6		65	5.0	
6	5.4		66	5.1	
8	4.7		68	4.5	
9	8.3	Outlier	69	5.1	
12	5.1		71	0.99	Outlier
13	4.7		72	4.9	
14	4.7		73	4.5	
16	4.9		75	5.2	
17	5.0		77	5.0	
18	4.8		79	4.5	
21	4.8		81	4.8	
22	4.8		82	4.9	
24	4.9		83	5.0	
25	5.1		87	5.2	
26	4.3		89	4.6	
27	5.3		90	5.2	
28	5.0		92	4.6	
29	4.6		94	4.4	
30	4.1		95	114	Outlier
31	4.9		97	5.0	
32	4.8		101	4.6	
33	5.2		103	4.5	
35	5.4		105	4.9	
36	83	Outlier	106	4.3	
38	4.6		107	4.4	
39	4.8		111	5.0	
40	4.7		112	4.6	
41	4.8		115	5.1	
42	4.8		117	5.0	
44	4.4				
45	4.5				
46	4.0				
47	5.0				
48	4.7				
49	20	Outlier			
50	4.6				
53	5.9				
54	4.9				
55	5.1				
57	3.6				
58	4.9				

Consenus statistics

Consensus median, pg/µL	4.8
Median all values pg/µL	4.9
Consensus mean, pg/µL	4.8
Standard deviation, pg/µL	0.35
Relative standard deviation, %	7.3
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


2,3,4,7,8 PeCDF
7.293
6.293
5.293
4.293
3.293
2.293
1.293
0.293
-0.707
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 57 46 30 106 26 107 44 94 60 73 45 103 68 4 79 50 29 5 38 89 112 92 101 14 40 13 8 48 18 22 32 41 42 2 21 39 81 31 82 58 24 54 72 105 16 111 83 77 17 61 47 65 117 28 97 66 25 55 12 115 3 69 62 87 75 59 33 90 27 35 6 53 9 49 1 36 95
Lab code

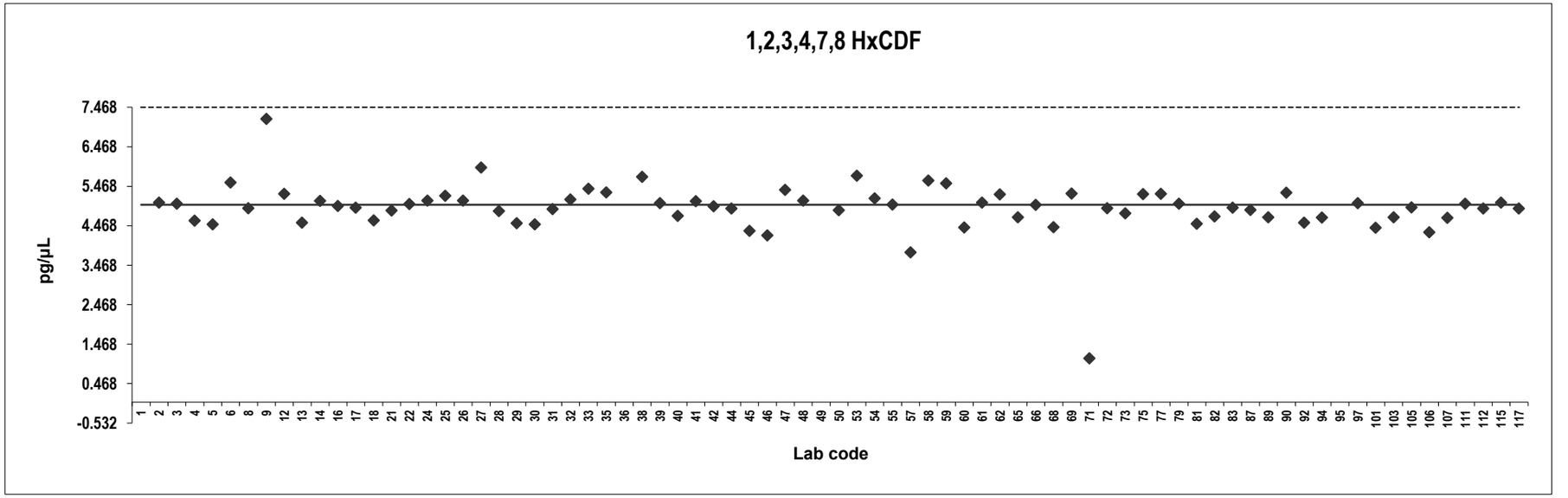
Analyte solution

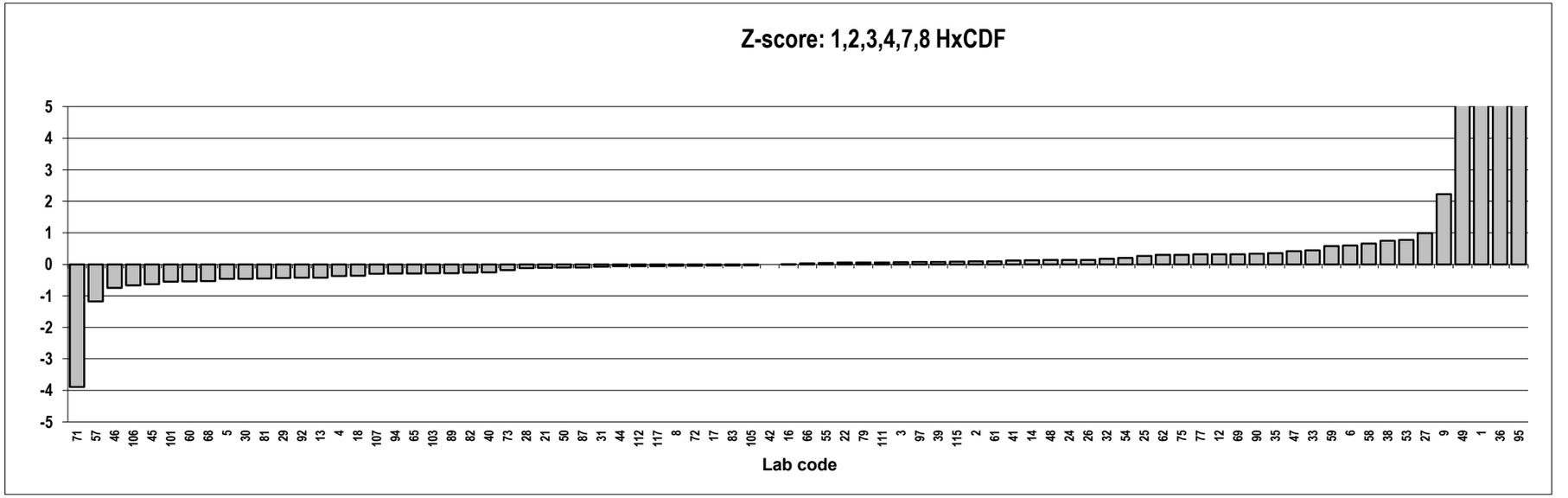
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	50	Outlier	59	5.5	
2	5.1		60	4.4	
3	5.0		61	5.1	
4	4.6		62	5.3	
5	4.5		65	4.7	
6	5.6		66	5.0	
8	4.9		68	4.4	
9	7.2		69	5.3	
12	5.3		71	1.1	Outlier
13	4.5		72	4.9	
14	5.1		73	4.8	
16	5.0		75	5.3	
17	4.9		77	5.3	
18	4.6		79	5.0	
21	4.9		81	4.5	
22	5.0		82	4.7	
24	5.1		83	4.9	
25	5.2		87	4.9	
26	5.1		89	4.7	
27	5.9		90	5.3	
28	4.8		92	4.5	
29	4.5		94	4.7	
30	4.5		95	108	Outlier
31	4.9		97	5.0	
32	5.1		101	4.4	
33	5.4		103	4.7	
35	5.3		105	4.9	
36	84	Outlier	106	4.3	
38	5.7		107	4.7	
39	5.0		111	5.0	
40	4.7		112	4.9	
41	5.1		115	5.0	
42	5.0		117	4.9	
44	4.9				
45	4.3				
46	4.2				
47	5.4				
48	5.1				
49	23	Outlier			
50	4.9				
53	5.7				
54	5.2				
55	5.0				
57	3.8				
58	5.6				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.46
Relative standard deviation, %	9.2
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


1,2,3,4,7,8 HxCDF
pg/µL
7.468
6.468
5.468
4.468
3.468
2.468
1.468
0.468
-0.532
Lab code


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

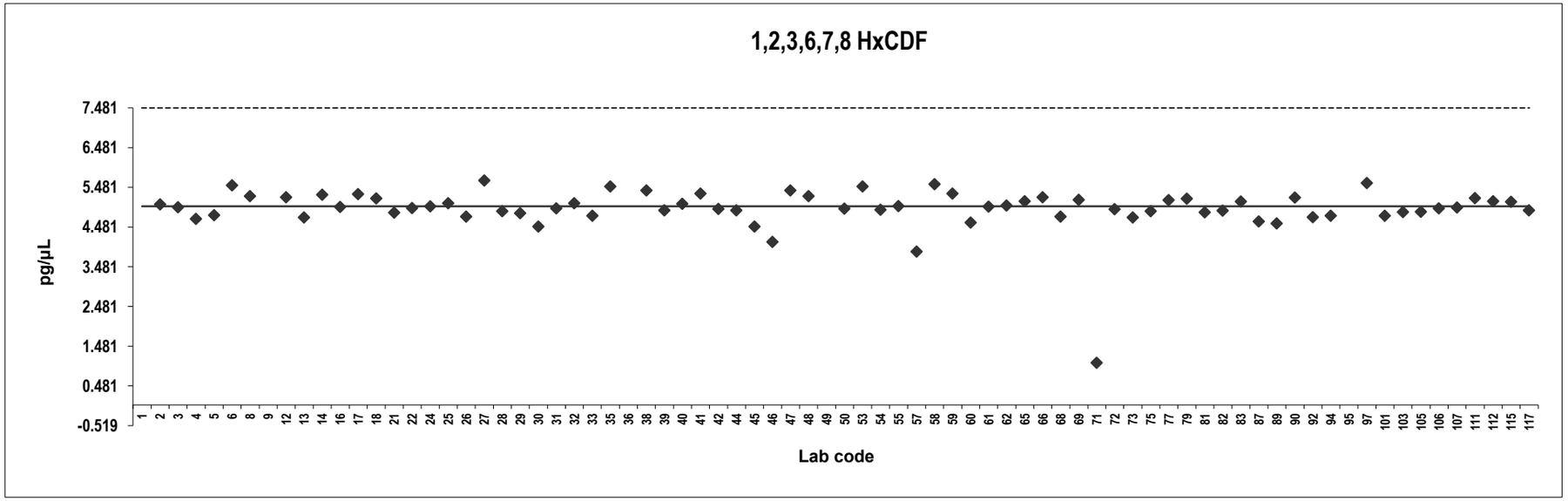
Analyte solution

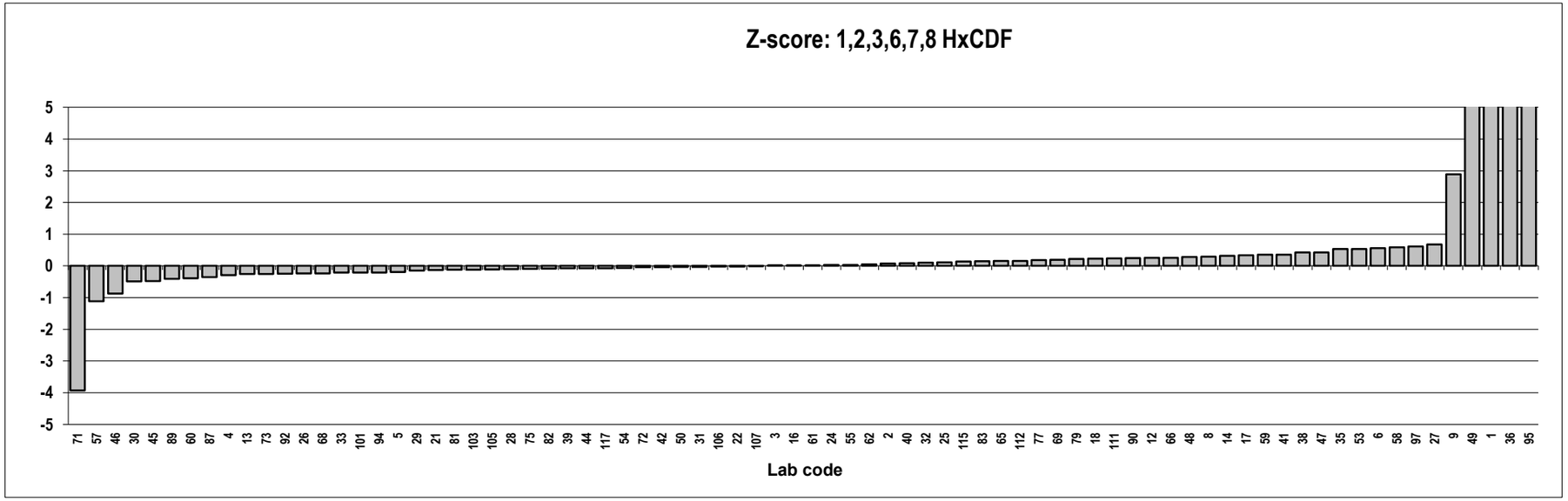
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	54	Outlier	59	5.3	
2	5.1		60	4.6	
3	5.0		61	5.0	
4	4.7		62	5.0	
5	4.8		65	5.1	
6	5.5		66	5.2	
8	5.3		68	4.7	
9	7.8	Outlier	69	5.2	
12	5.2		71	1.1	Outlier
13	4.7		72	4.9	
14	5.3		73	4.7	
16	5.0		75	4.9	
17	5.3		77	5.2	
18	5.2		79	5.2	
21	4.8		81	4.9	
22	5.0		82	4.9	
24	5.0		83	5.1	
25	5.1		87	4.6	
26	4.7		89	4.6	
27	5.7		90	5.2	
28	4.9		92	4.7	
29	4.8		94	4.8	
30	4.5		95	114	Outlier
31	4.9		97	5.6	
32	5.1		101	4.8	
33	4.8		103	4.9	
35	5.5		105	4.9	
36	88	Outlier	106	5.0	
38	5.4		107	5.0	
39	4.9		111	5.2	
40	5.1		112	5.1	
41	5.3		115	5.1	
42	4.9		117	4.9	
44	4.9				
45	4.5				
46	4.1				
47	5.4				
48	5.3				
49	23	Outlier			
50	4.9				
53	5.5				
54	4.9				
55	5.0				
57	3.9				
58	5.6				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.32
Relative standard deviation, %	6.4
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,6,7,8 HxCDF
7.481
6.481
5.481
4.481
3.481
2.481
1.481
0.481
-0.519
pg/µL
Lab code


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

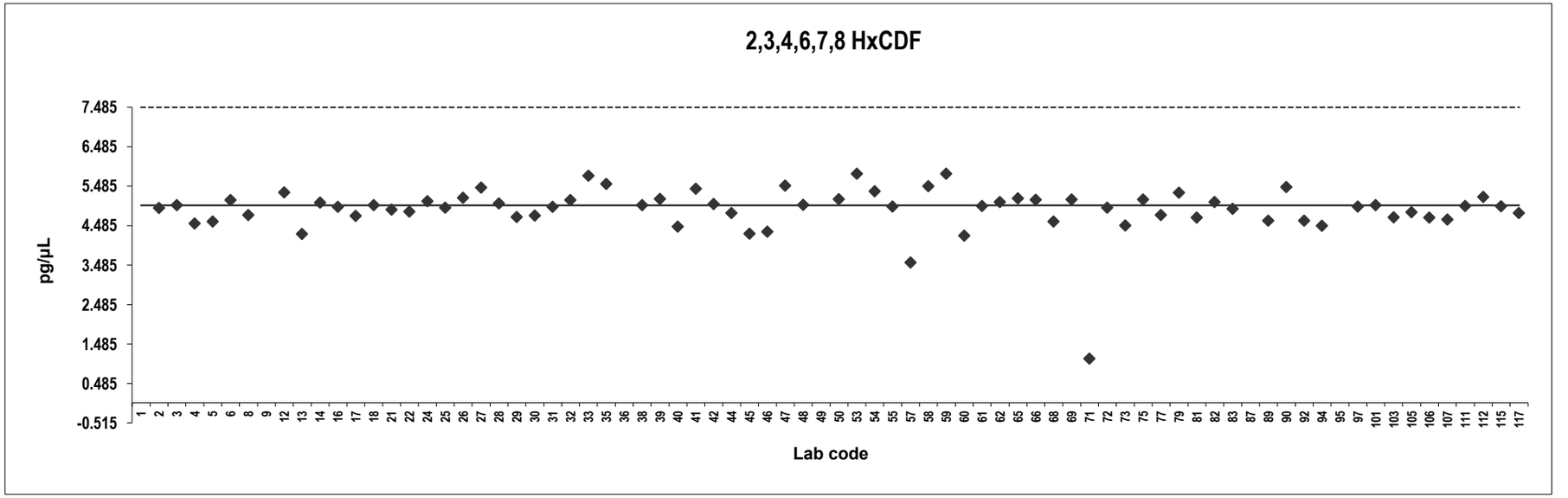
Analyte solution

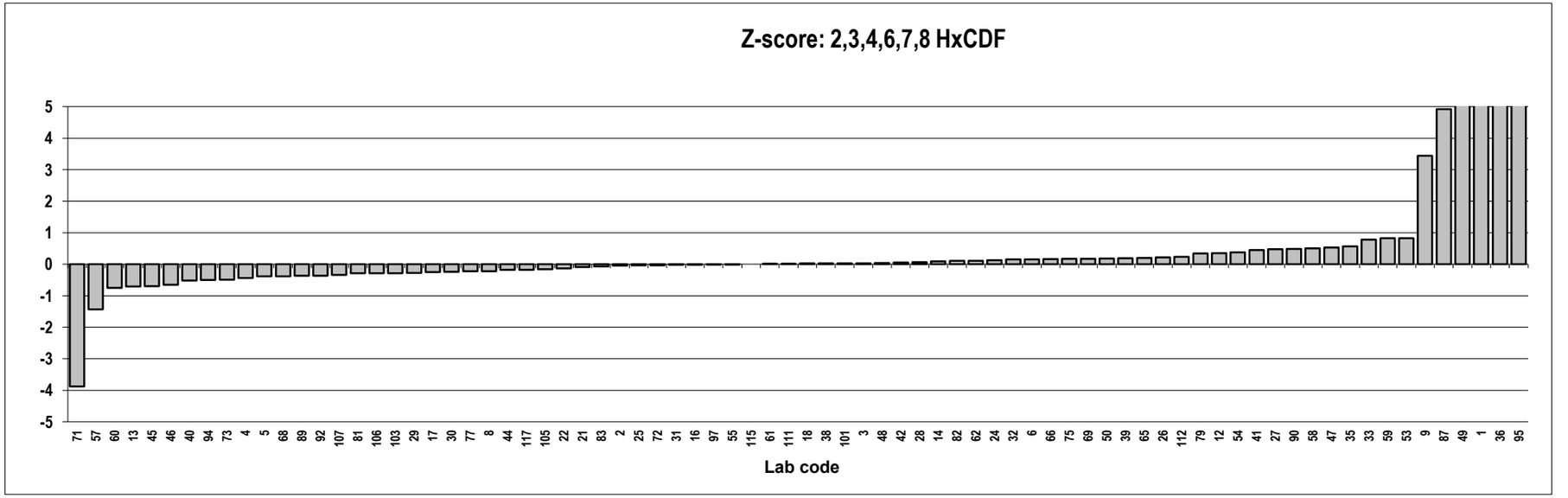
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	48	Outlier	59	5.8	
2	4.9		60	4.2	
3	5.0		61	5.0	
4	4.5		62	5.1	
5	4.6		65	5.2	
6	5.1		66	5.1	
8	4.8		68	4.6	
9	8.4	Outlier	69	5.1	
12	5.3		71	1.1	Outlier
13	4.3		72	4.9	
14	5.1		73	4.5	
16	5.0		75	5.1	
17	4.7		77	4.8	
18	5.0		79	5.3	
21	4.9		81	4.7	
22	4.8		82	5.1	
24	5.1		83	4.9	
25	4.9		87	9.9	Outlier
26	5.2		89	4.6	
27	5.5		90	5.5	
28	5.0		92	4.6	
29	4.7		94	4.5	
30	4.7		95	110	Outlier
31	5.0		97	5.0	
32	5.1		101	5.0	
33	5.8		103	4.7	
35	5.5		105	4.8	
36	83	Outlier	106	4.7	
38	5.0		107	4.6	
39	5.2		111	5.0	
40	4.5		112	5.2	
41	5.4		115	5.0	
42	5.0		117	4.8	
44	4.8				
45	4.3				
46	4.3				
47	5.5				
48	5.0				
49	22	Outlier			
50	5.2				
53	5.8				
54	5.4				
55	5.0				
57	3.6				
58	5.5				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	4.9
Standard deviation, pg/µL	0.39
Relative standard deviation, %	7.8
No. of values reported	78
No. of values removed	7
No. of reported non-detects	0


2,3,4,6,7,8 HxCDF
7.485
6.485
5.485
4.485
3.485
2.485
1.485
0.485
-0.515
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 57 60 13 45 46 40 94 73 4 5 68 89 92 107 81 106 103 29 17 30 77 8 44 117 105 22 21 83 2 25 72 31 16 97 55 115 61 111 18 38 101 3 48 42 28 14 82 62 24 32 6 66 75 69 50 39 65 26 112 79 12 54 41 27 90 58 47 35 33 59 53 9 87 49 1 36 95
Lab code

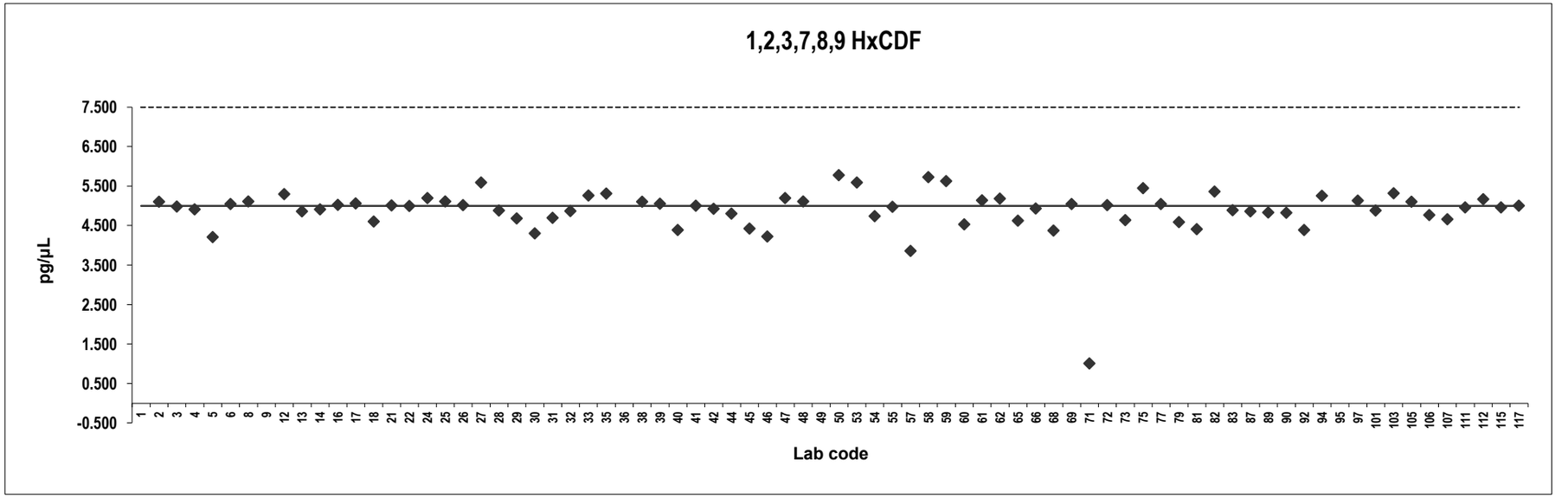
Analyte solution

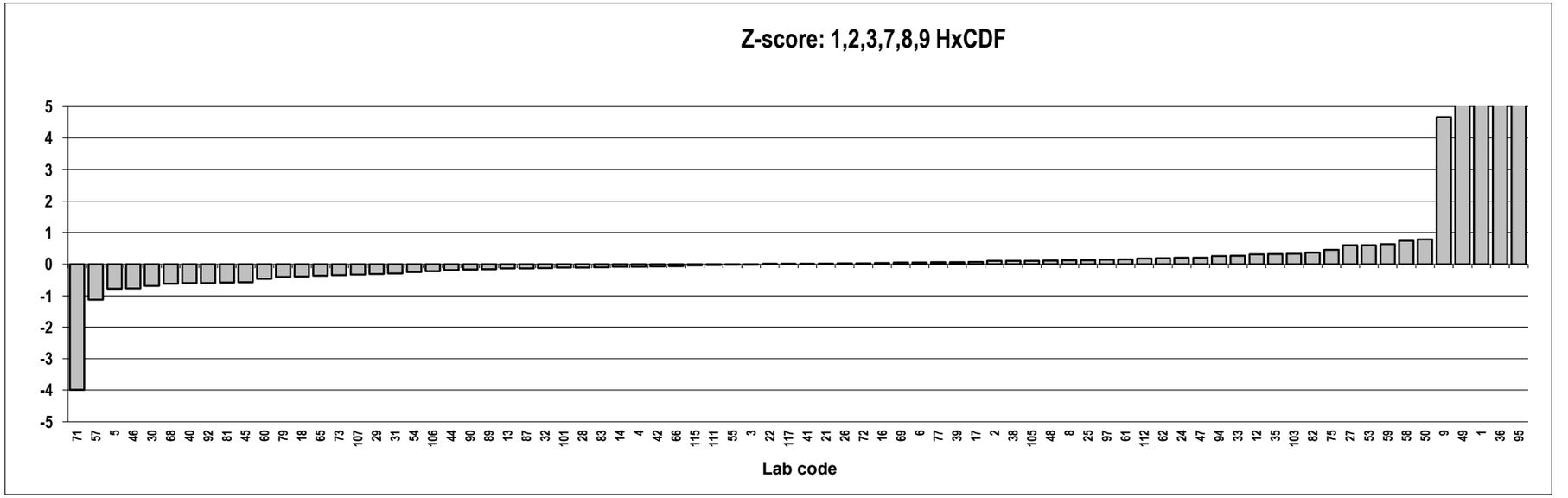
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	51	Outlier	59	5.6	
2	5.1		60	4.5	
3	5.0		61	5.1	
4	4.9		62	5.2	
5	4.2		65	4.6	
6	5.0		66	4.9	
8	5.1		68	4.4	
9	9.6	Outlier	69	5.0	
12	5.3		71	1.0	Outlier
13	4.9		72	5.0	
14	4.9		73	4.6	
16	5.0		75	5.4	
17	5.1		77	5.0	
18	4.6		79	4.6	
21	5.0		81	4.4	
22	5.0		82	5.4	
24	5.2		83	4.9	
25	5.1		87	4.9	
26	5.0		89	4.8	
27	5.6		90	4.8	
28	4.9		92	4.4	
29	4.7		94	5.3	
30	4.3		95	105	Outlier
31	4.7		97	5.1	
32	4.9		101	4.9	
33	5.3		103	5.3	
35	5.3		105	5.1	
36	85	Outlier	106	4.8	
38	5.1		107	4.7	
39	5.1		111	5.0	
40	4.4		112	5.2	
41	5.0		115	5.0	
42	4.9		117	5.0	
44	4.8				
45	4.4				
46	4.2				
47	5.2				
48	5.1				
49	22	Outlier			
50	5.8				
53	5.6				
54	4.7				
55	5.0				
57	3.9				
58	5.7				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	4.9
Standard deviation, pg/µL	0.36
Relative standard deviation, %	7.3
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,7,8,9 HxCDF
pg/µL
7.500
6.500
5.500
4.500
3.500
2.500
1.500
0.500
-0.500
Lab code


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

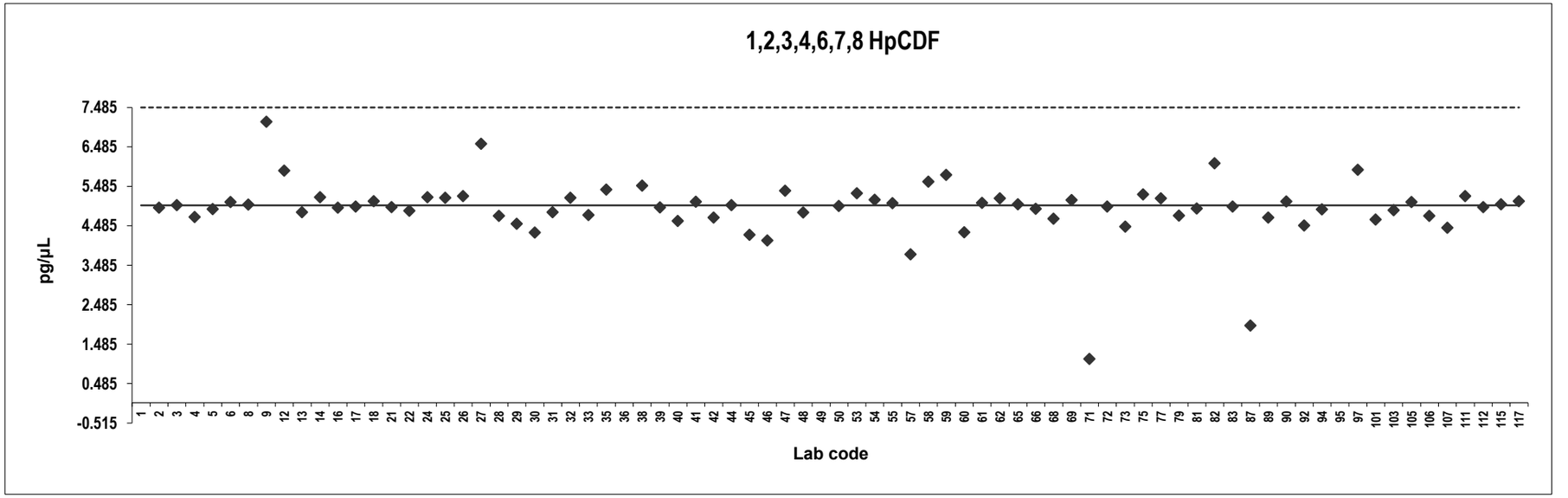
Analyte solution

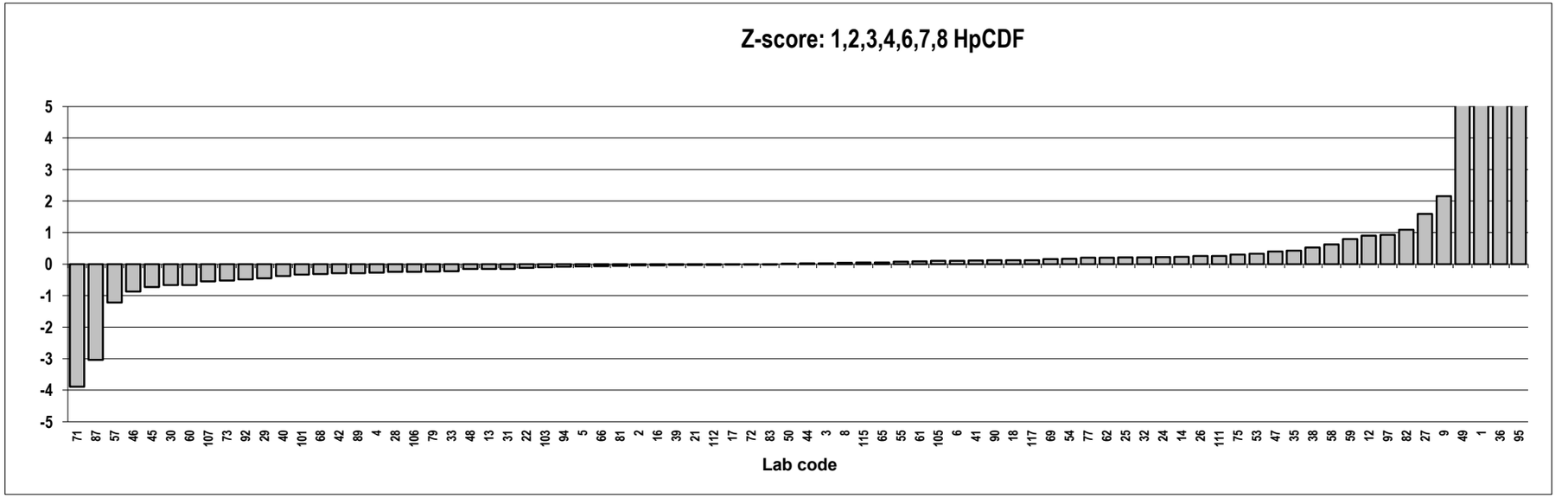
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	49	Outlier	59	5.8	
2	4.9		60	4.3	
3	5.0		61	5.1	
4	4.7		62	5.2	
5	4.9		65	5.0	
6	5.1		66	4.9	
8	5.0		68	4.7	
9	7.1		69	5.1	
12	5.9		71	1.1	Outlier
13	4.8		72	5.0	
14	5.2		73	4.5	
16	4.9		75	5.3	
17	5.0		77	5.2	
18	5.1		79	4.7	
21	5.0		81	4.9	
22	4.9		82	6.1	
24	5.2		83	5.0	
25	5.2		87	2.0	Outlier
26	5.2		89	4.7	
27	6.6		90	5.1	
28	4.7		92	4.5	
29	4.5		94	4.9	
30	4.3		95	111	Outlier
31	4.8		97	5.9	
32	5.2		101	4.6	
33	4.8		103	4.9	
35	5.4		105	5.1	
36	86	Outlier	106	4.7	
38	5.5		107	4.4	
39	4.9		111	5.2	
40	4.6		112	5.0	
41	5.1		115	5.0	
42	4.7		117	5.1	
44	5.0				
45	4.3				
46	4.1				
47	5.4				
48	4.8				
49	24	Outlier			
50	5.0				
53	5.3				
54	5.1				
55	5.1				
57	3.8				
58	5.6				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.50
Relative standard deviation, %	10
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,4,6,7,8 HpCDF
pg/µL
7.485
6.485
5.485
4.485
3.485
2.485
1.485
0.485
-0.515
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

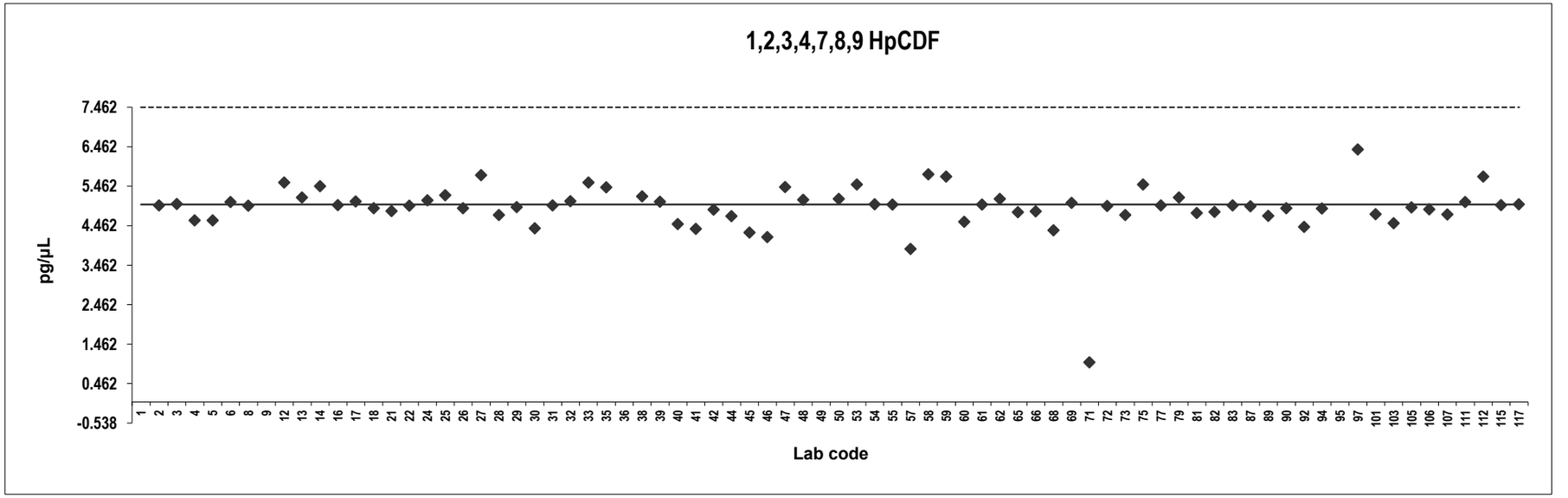
Analyte solution

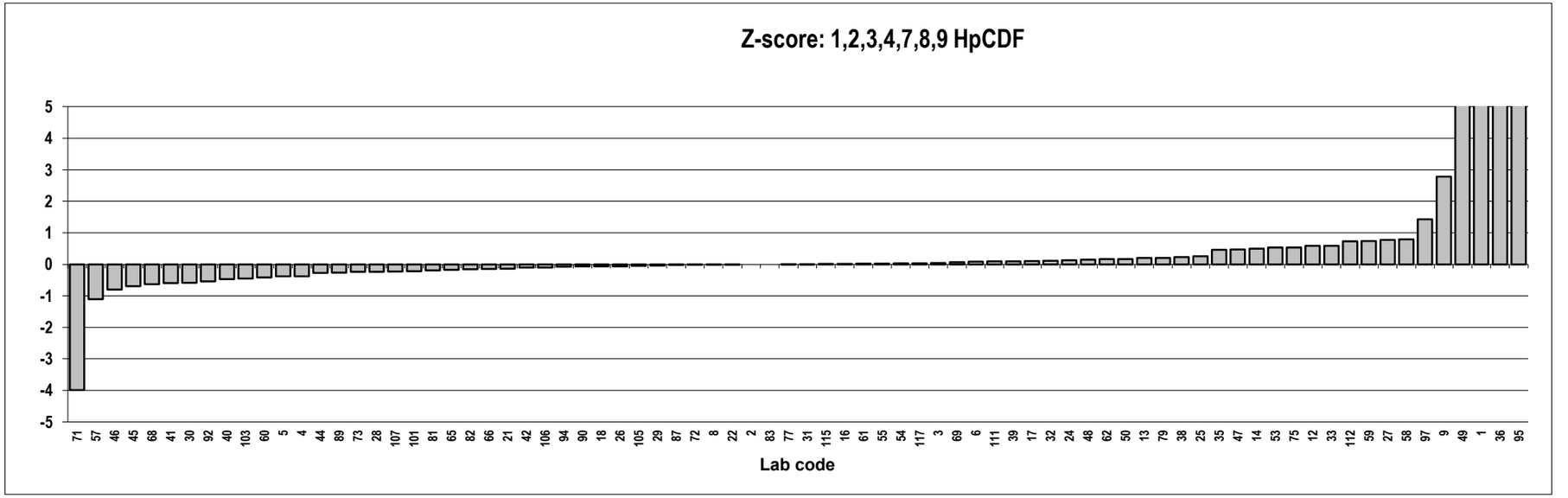
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	49	Outlier	59	5.7	
2	5.0		60	4.6	
3	5.0		61	5.0	
4	4.6		62	5.1	
5	4.6		65	4.8	
6	5.1		66	4.8	
8	5.0		68	4.3	
9	7.7	Outlier	69	5.0	
12	5.6		71	1.0	Outlier
13	5.2		72	5.0	
14	5.5		73	4.7	
16	5.0		75	5.5	
17	5.1		77	5.0	
18	4.9		79	5.2	
21	4.8		81	4.8	
22	5.0		82	4.8	
24	5.1		83	5.0	
25	5.2		87	5.0	
26	4.9		89	4.7	
27	5.7		90	4.9	
28	4.7		92	4.4	
29	4.9		94	4.9	
30	4.4		95	113	Outlier
31	5.0		97	6.4	
32	5.1		101	4.8	
33	5.6		103	4.5	
35	5.4		105	4.9	
36	88	Outlier	106	4.9	
38	5.2		107	4.7	
39	5.1		111	5.1	
40	4.5		112	5.7	
41	4.4		115	5.0	
42	4.9		117	5.0	
44	4.7				
45	4.3				
46	4.2				
47	5.4				
48	5.1				
49	23	Outlier			
50	5.1				
53	5.5				
54	5.0				
55	5.0				
57	3.9				
58	5.8				

Consenus statistics

Consensus median, pg/µL	5.0
Median all values pg/µL	5.0
Consensus mean, pg/µL	5.0
Standard deviation, pg/µL	0.41
Relative standard deviation, %	8.2
No. of values reported	78
No. of values removed	6
No. of reported non-detects	0


1,2,3,4,7,8,9 HpCDF
pg/µL
7.462
6.462
5.462
4.462
3.462
2.462
1.462
0.462
-0.538
Lab code


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

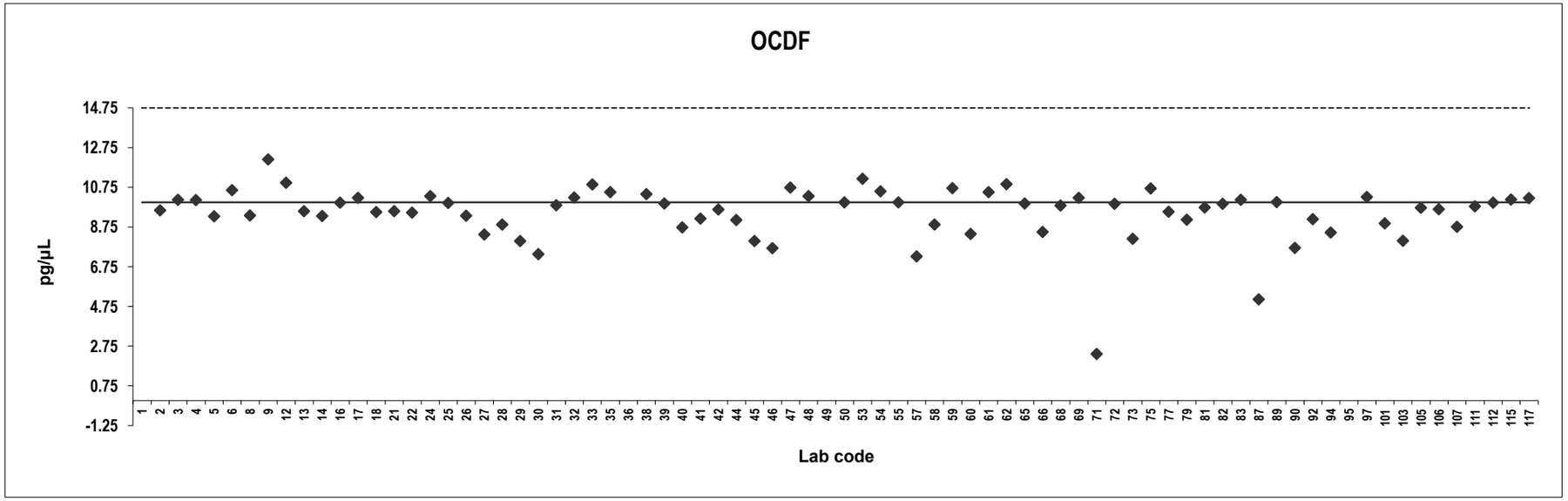
Analyte solution

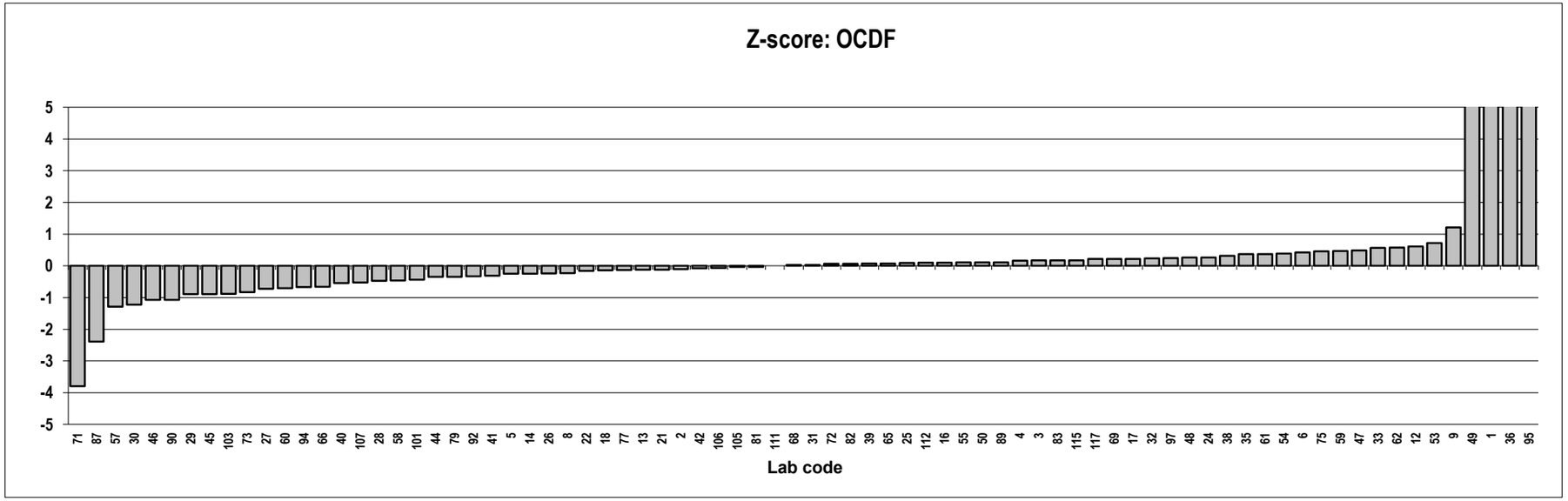
Congener: OCDF

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	99	Outlier	59	11	
2	9.6		60	8.4	
3	10		61	11	
4	10		62	11	
5	9.3		65	9.9	
6	11		66	8.5	
8	9.3		68	9.8	
9	12		69	10	
12	11		71	2.3	Outlier
13	9.5		72	9.9	
14	9.3		73	8.2	
16	10		75	11	
17	10		77	9.5	
18	9.5		79	9.1	
21	9.5		81	9.7	
22	9.5		82	9.9	
24	10		83	10	
25	10		87	5.1	
26	9.3		89	10	
27	8.4		90	7.7	
28	8.9		92	9.1	
29	8.0		94	8.5	
30	7.4		95	211	Outlier
31	9.8		97	10	
32	10		101	8.9	
33	11		103	8.1	
35	11		105	9.7	
36	178	Outlier	106	9.6	
38	10		107	8.8	
39	9.9		111	9.8	
40	8.7		112	10	
41	9.2		115	10	
42	9.6		117	10	
44	9.1				
45	8.0				
46	7.7				
47	11				
48	10				
49	45	Outlier			
50	10				
53	11				
54	11				
55	10				
57	7.3				
58	8.9				

Consenus statistics

Consensus median, pg/µL	9.8
Median all values pg/µL	9.8
Consensus mean, pg/µL	9.5
Standard deviation, pg/µL	1.1
Relative standard deviation, %	11
No. of values reported	78
No. of values removed	5
No. of reported non-detects	0


OCDF
14.75
12.75
10.75
8.75
6.75
4.75
2.75
0.75
-1.25
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
71 87 57 30 46 90 29 45 103 73 27 60 94 66 40 107 28 58 101 44 79 92 41 5 14 26 8 22 18 77 13 21 2 42 106 105 81 111 68 31 72 82 39 65 25 112 16 55 50 89 4 3 83 115 117 69 17 32 97 48 24 38 35 61 54 6 75 59 47 33 62 12 53 9 49 1 36 95
Lab code

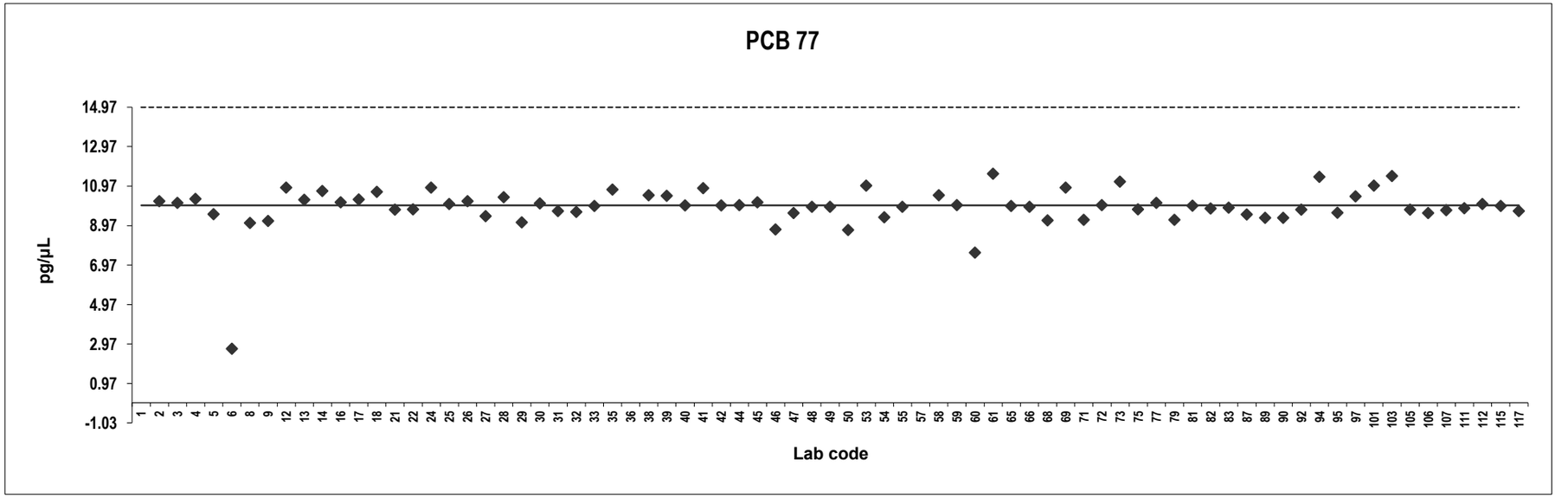
Analyte solution

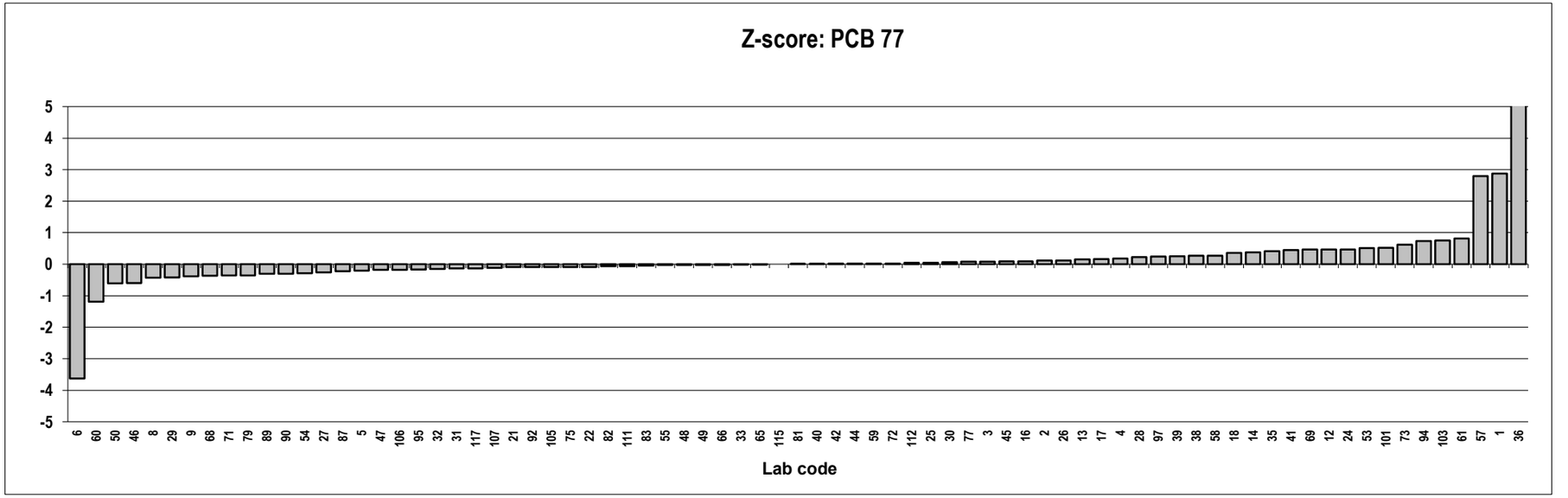
Congener: PCB 77

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	16	Outlier	59	10	
2	10		60	7.6	
3	10		61	12	
4	10		65	10	
5	9.6		66	9.9	
6	2.7	Outlier	68	9.2	
8	9.1		69	11	
9	9.2		71	9.3	
12	11		72	10	
13	10		73	11	
14	11		75	9.8	
16	10		77	10	
17	10		79	9.3	
18	11		81	10	
21	9.8		82	9.8	
22	9.8		83	9.9	
24	11		87	9.5	
25	10		89	9.4	
26	10		90	9.4	
27	9.5		92	9.8	
28	10		94	11	
29	9.1		95	9.6	
30	10		97	10	
31	9.7		101	11	
32	9.7		103	11	
33	10		105	9.8	
35	11		106	9.6	
36	209	Outlier	107	9.7	
38	11		111	9.9	
39	10		112	10	
40	10		115	10	
41	11		117	9.7	
42	10				
44	10				
45	10				
46	8.8				
47	9.6				
48	9.9				
49	9.9				
50	8.8				
53	11				
54	9.4				
55	9.9				
57	16	Outlier			
58	11				

Consenus statistics

Consensus median, pg/µL	10
Median all values pg/µL	10
Consensus mean, pg/µL	10
Standard deviation, pg/µL	0.67
Relative standard deviation, %	6.7
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 77
14.97
12.97
10.97
8.97
6.97
4.97
2.97
0.97
-1.03
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 50 46 8 29 9 68 71 79 89 90 54 27 87 5 47 106 95 32 31 117 107 21 92 105 75 22 82 111 83 55 48 49 66 33 65 115 81 40 42 44 59 72 112 25 30 77 3 45 16 2 26 13 17 4 28 97 39 38 58 18 14 35 41 69 12 24 53 101 73 94 103 61 57 1 36
Lab code

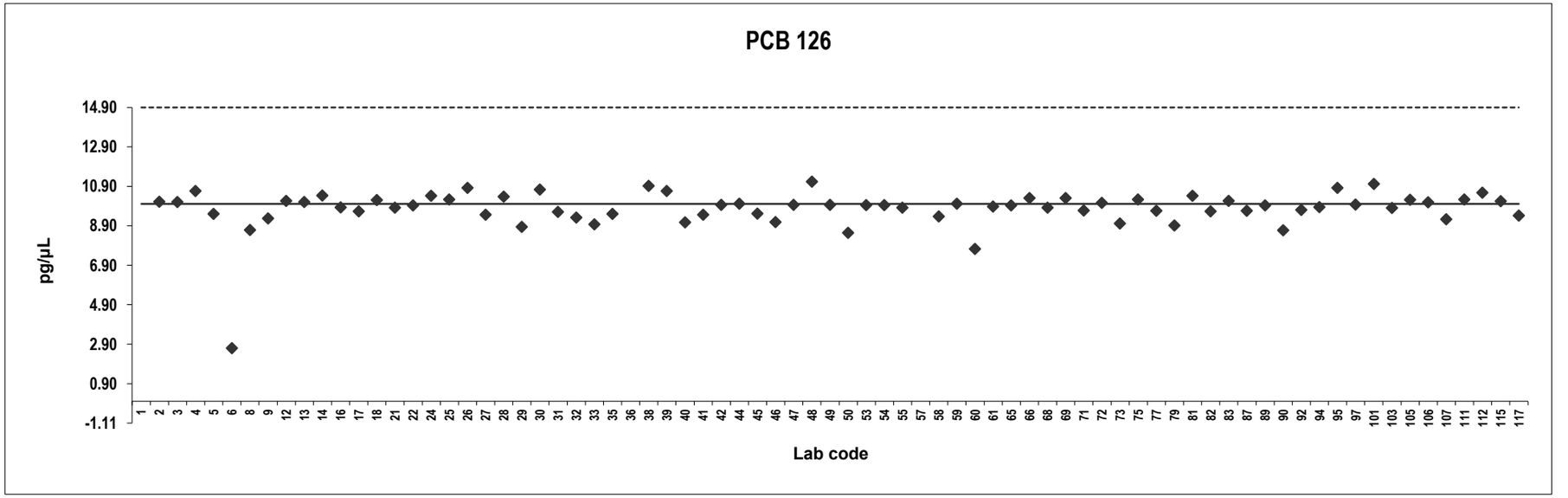
Analyte solution

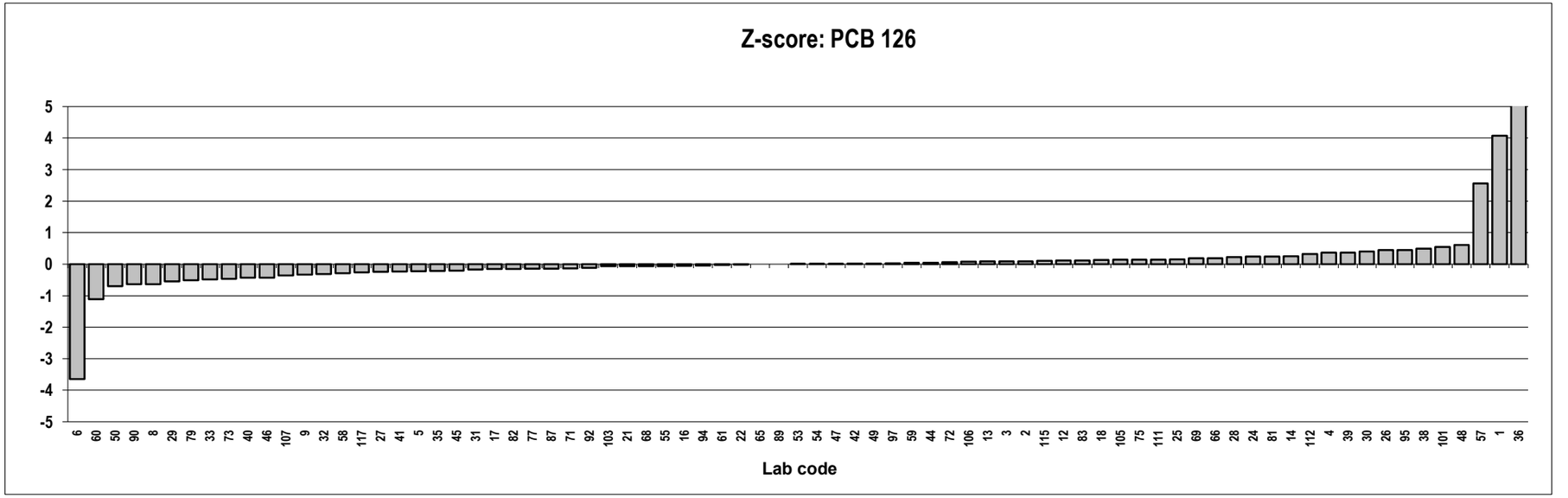
Congener: PCB 126

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	18	Outlier	59	10	
2	10		60	7.7	
3	10		61	9.9	
4	11		65	9.9	
5	9.5		66	10	
6	2.7	Outlier	68	9.8	
8	8.7		69	10	
9	9.3		71	9.7	
12	10		72	10	
13	10		73	9.0	
14	10		75	10	
16	9.8		77	9.6	
17	9.6		79	8.9	
18	10		81	10	
21	9.8		82	9.6	
22	9.9		83	10	
24	10		87	9.6	
25	10		89	9.9	
26	11		90	8.7	
27	9.4		92	9.7	
28	10		94	9.8	
29	8.8		95	11	
30	11		97	10	
31	9.6		101	11	
32	9.3		103	9.8	
33	9.0		105	10	
35	9.5		106	10	
36	196	Outlier	107	9.2	
38	11		111	10	
39	11		112	11	
40	9.1		115	10	
41	9.4		117	9.4	
42	9.9				
44	10				
45	9.5				
46	9.1				
47	9.9				
48	11				
49	10				
50	8.5				
53	9.9				
54	9.9				
55	9.8				
57	15	Outlier			
58	9.4				

Consenus statistics

Consensus median, pg/µL	9.9
Median all values pg/µL	9.9
Consensus mean, pg/µL	9.8
Standard deviation, pg/µL	0.62
Relative standard deviation, %	6.3
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 126
14.90
12.90
10.90
8.90
6.90
4.90
2.90
0.90
-1.11
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 50 90 8 29 79 33 73 40 46 107 9 32 58 117 27 41 5 35 45 31 17 82 77 87 71 92 103 21 68 55 16 94 61 22 65 89 53 54 47 42 49 97 59 44 72 106 13 3 2 115 12 83 18 105 75 111 25 69 66 28 24 81 14 112 4 39 30 26 95 38 101 48 57 1 36
Lab code

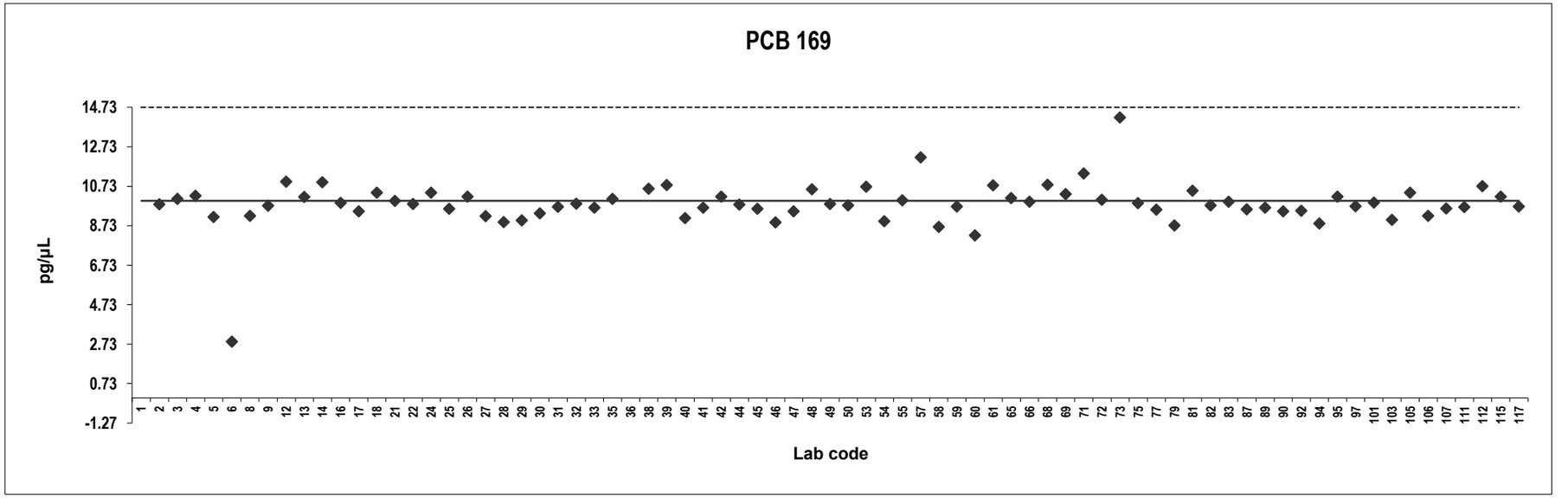
Analyte solution

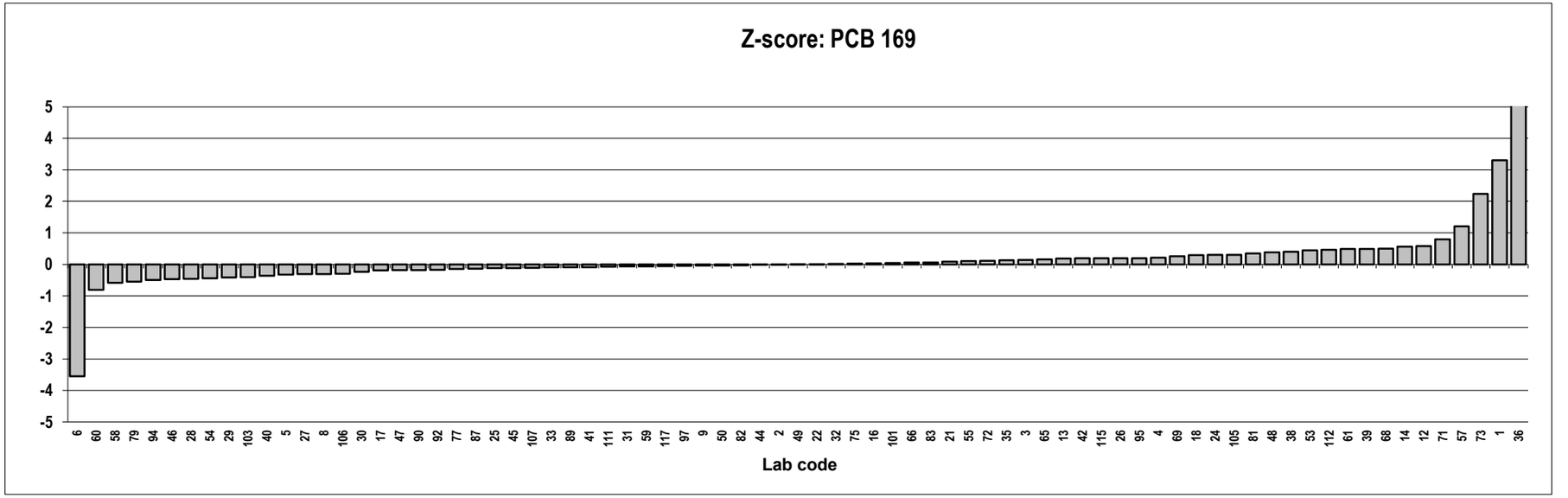
Congener: PCB 169

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	16	Outlier	59	9.7	
2	9.8		60	8.2	
3	10		61	11	
4	10		65	10	
5	9.2		66	9.9	
6	2.8	Outlier	68	11	
8	9.2		69	10	
9	9.7		71	11	
12	11		72	10	
13	10		73	14	
14	11		75	9.9	
16	9.9		77	9.5	
17	9.4		79	8.7	
18	10		81	11	
21	10		82	9.8	
22	9.8		83	9.9	
24	10		87	9.6	
25	9.6		89	9.6	
26	10		90	9.5	
27	9.2		92	9.5	
28	8.9		94	8.8	
29	9.0		95	10	
30	9.4		97	9.7	
31	9.7		101	9.9	
32	9.8		103	9.0	
33	9.6		105	10	
35	10		106	9.2	
36	217	Outlier	107	9.6	
38	11		111	9.7	
39	11		112	11	
40	9.1		115	10	
41	9.6		117	9.7	
42	10				
44	9.8				
45	9.6				
46	8.9				
47	9.5				
48	11				
49	9.8				
50	9.7				
53	11				
54	9.0				
55	10				
57	12				
58	8.7				

Consenus statistics

Consensus median, pg/µL	9.8
Median all values pg/µL	9.8
Consensus mean, pg/µL	9.9
Standard deviation, pg/µL	0.83
Relative standard deviation, %	8.4
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 169
14.73
12.73
10.73
8.73
6.73
4.73
2.73
0.73
-1.27
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 58 79 94 46 28 54 29 103 40 5 27 8 106 30 17 47 90 92 77 87 25 45 107 33 89 41 111 31 59 117 97 9 50 82 44 2 49 22 32 75 16 101 66 83 21 55 72 35 3 65 13 42 115 26 95 4 69 18 24 105 81 48 38 53 112 61 39 68 14 12 71 57 73 1 36
Lab code

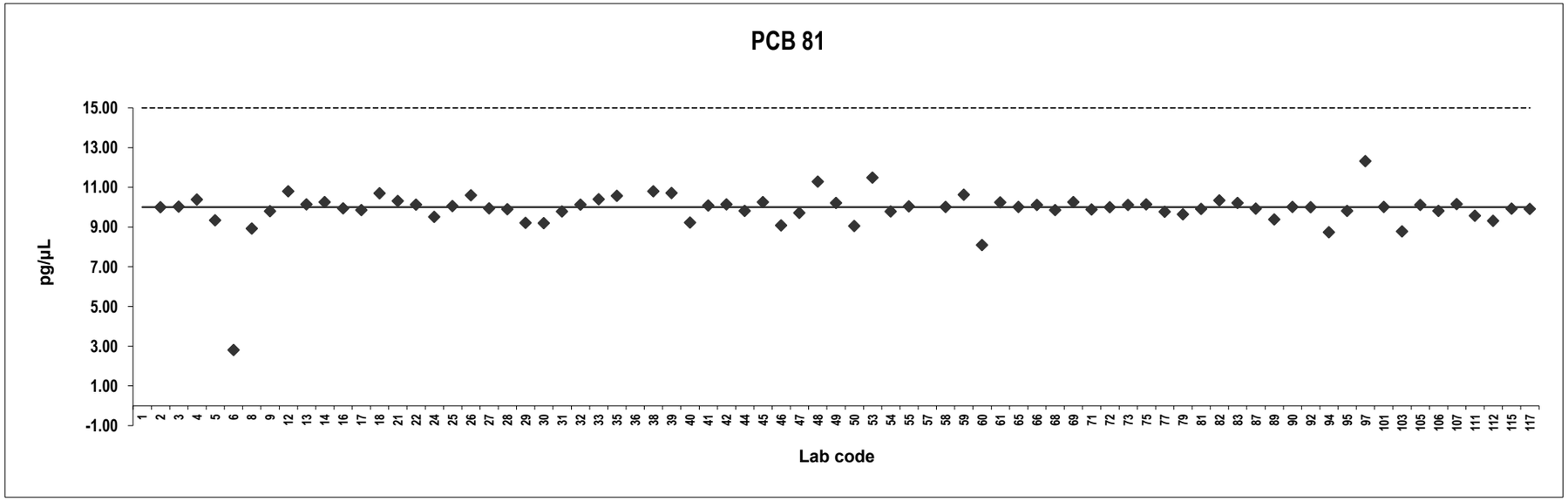
Analyte solution

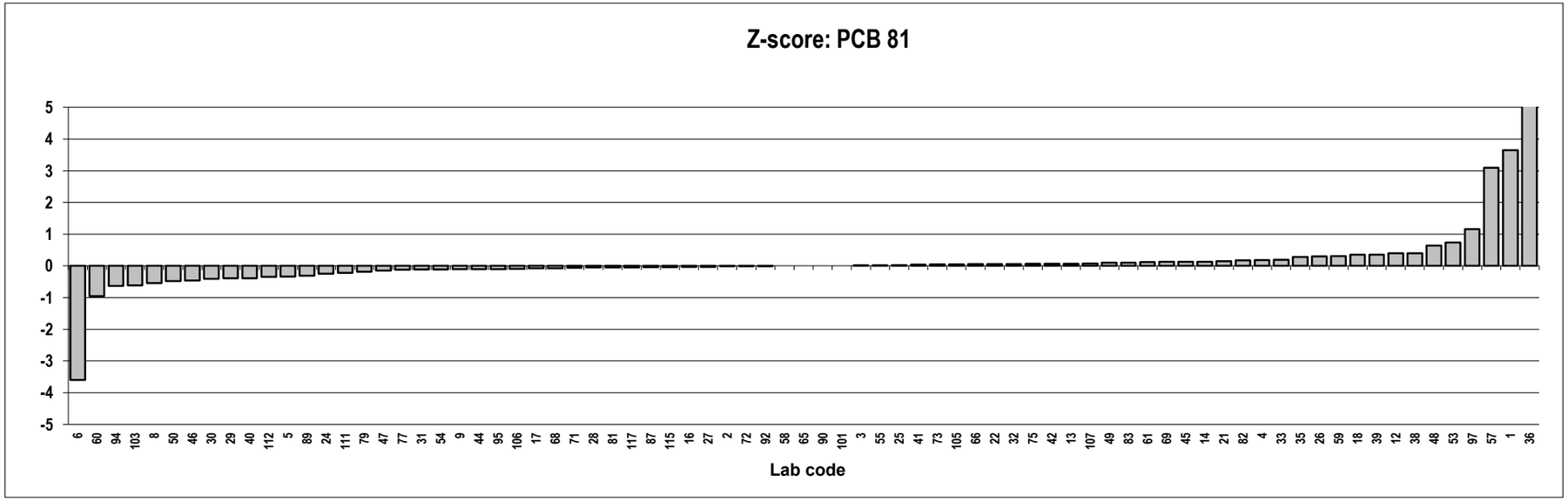
Congener: PCB 81

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	17	Outlier	59	11	
2	10		60	8.1	
3	10		61	10	
4	10		65	10	
5	9.3		66	10	
6	2.8	Outlier	68	9.9	
8	8.9		69	10	
9	9.8		71	9.9	
12	11		72	10	
13	10		73	10	
14	10		75	10	
16	9.9		77	9.8	
17	9.8		79	9.6	
18	11		81	9.9	
21	10		82	10	
22	10		83	10	
24	9.5		87	9.9	
25	10		89	9.4	
26	11		90	10	
27	9.9		92	10	
28	9.9		94	8.7	
29	9.2		95	9.8	
30	9.2		97	12	
31	9.8		101	10	
32	10		103	8.8	
33	10		105	10	
35	11		106	9.8	
36	207	Outlier	107	10	
38	11		111	9.6	
39	11		112	9.3	
40	9.2		115	9.9	
41	10		117	9.9	
42	10				
44	9.8				
45	10				
46	9.1				
47	9.7				
48	11				
49	10				
50	9.0				
53	11				
54	9.8				
55	10				
57	16	Outlier			
58	10				

Consenus statistics

Consensus median, pg/µL	10
Median all values pg/µL	10
Consensus mean, pg/µL	10
Standard deviation, pg/µL	0.62
Relative standard deviation, %	6.2
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 81
15.00
13.00
11.00
9.00
7.00
5.00
3.00
1.00
-1.00
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 94 103 8 50 46 30 29 40 112 5 89 24 111 79 47 77 31 54 9 44 95 106 17 68 71 28 81 117 87 115 16 27 2 72 92 58 65 90 101 3 55 25 41 73 105 66 22 32 75 42 13 107 49 83 61 69 45 14 21 82 4 33 35 26 59 18 39 12 38 48 53 97 57 1 36
Lab code

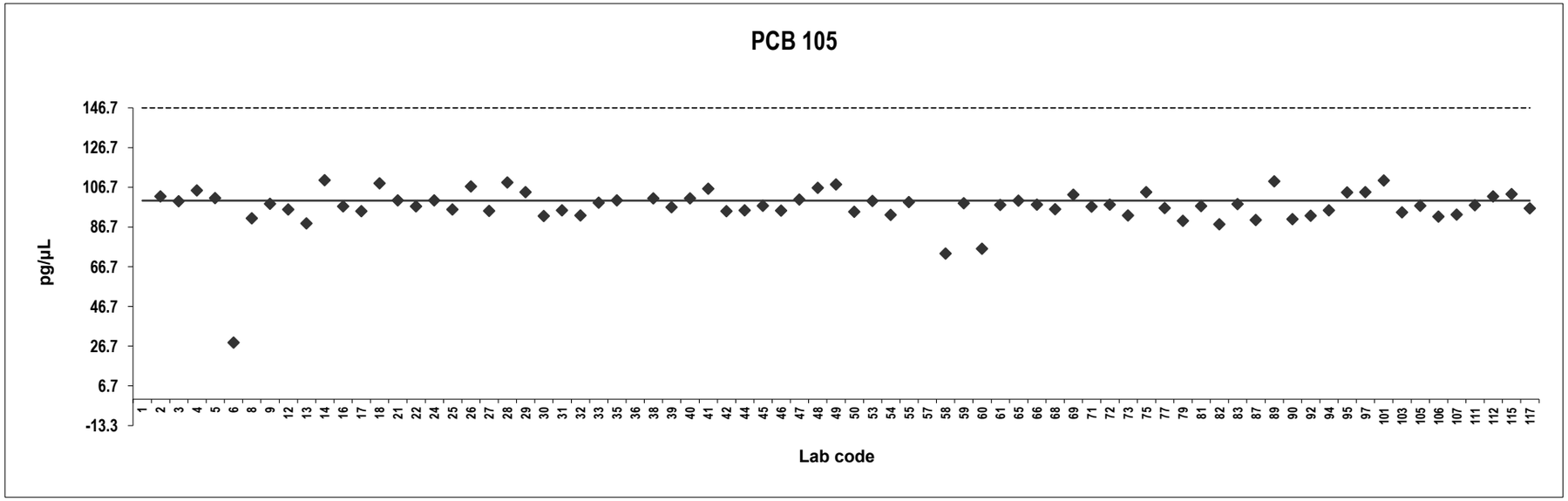
Analyte solution

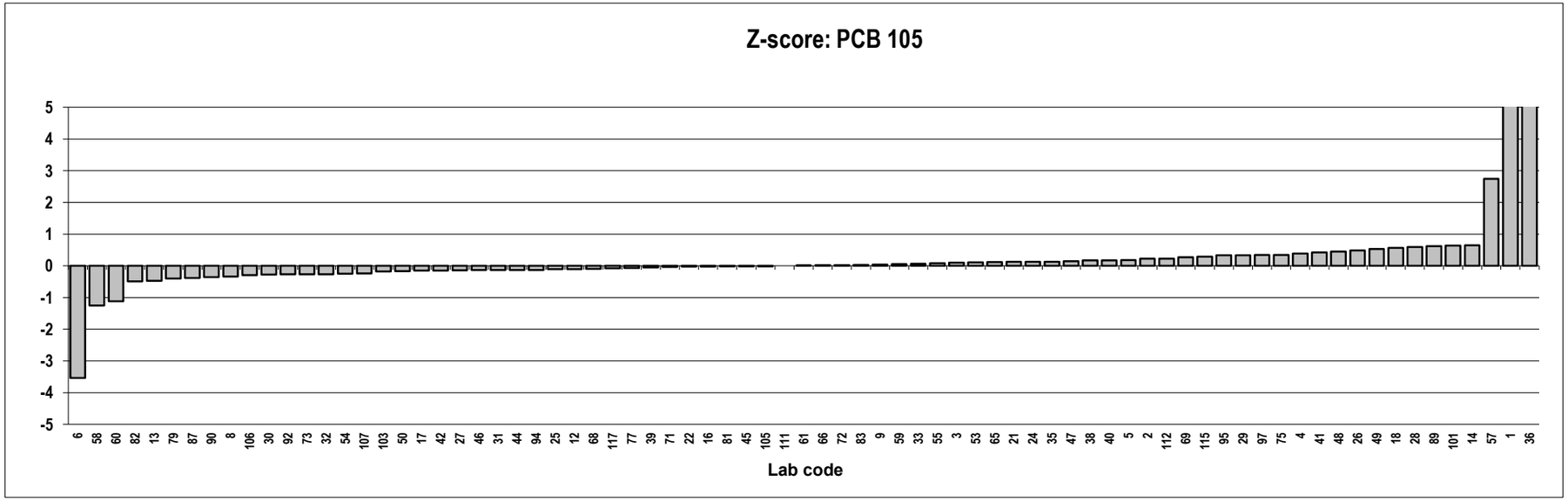
Congener: PCB 105

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	201	Outlier	59	99	
2	102		60	76	
3	100		61	98	
4	105		65	100	
5	101		66	98	
6	28	Outlier	68	96	
8	91		69	103	
9	98		71	97	
12	96		72	98	
13	88		73	92	
14	110		75	104	
16	97		77	96	
17	95		79	90	
18	109		81	97	
21	100		82	88	
22	97		83	98	
24	100		87	90	
25	95		89	110	
26	107		90	91	
27	95		92	92	
28	109		94	95	
29	104		95	104	
30	92		97	104	
31	95		101	110	
32	92		103	94	
33	99		105	97	
35	100		106	92	
36	2100	Outlier	107	93	
38	101		111	98	
39	97		112	102	
40	101		115	103	
41	106		117	96	
42	95				
44	95				
45	97				
46	95				
47	100				
48	106				
49	108				
50	94				
53	100				
54	93				
55	99				
57	151	Outlier			
58	73				

Consenus statistics

Consensus median, pg/µL	98
Median all values pg/µL	98
Consensus mean, pg/µL	98
Standard deviation, pg/µL	6.7
Relative standard deviation, %	6.8
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 105
146.7
126.7
106.7
86.7
66.7
46.7
26.7
6.7
-13.3
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 58 60 82 13 79 87 90 8 106 30 92 73 32 54 107 103 50 17 42 27 46 31 44 94 25 12 68 117 77 39 71 22 16 81 45 105 111 61 66 72 83 9 59 33 55 3 53 65 21 24 35 47 38 40 5 2 112 69 115 95 29 97 75 4 41 48 26 49 18 28 89 101 14 57 1 36
Lab code

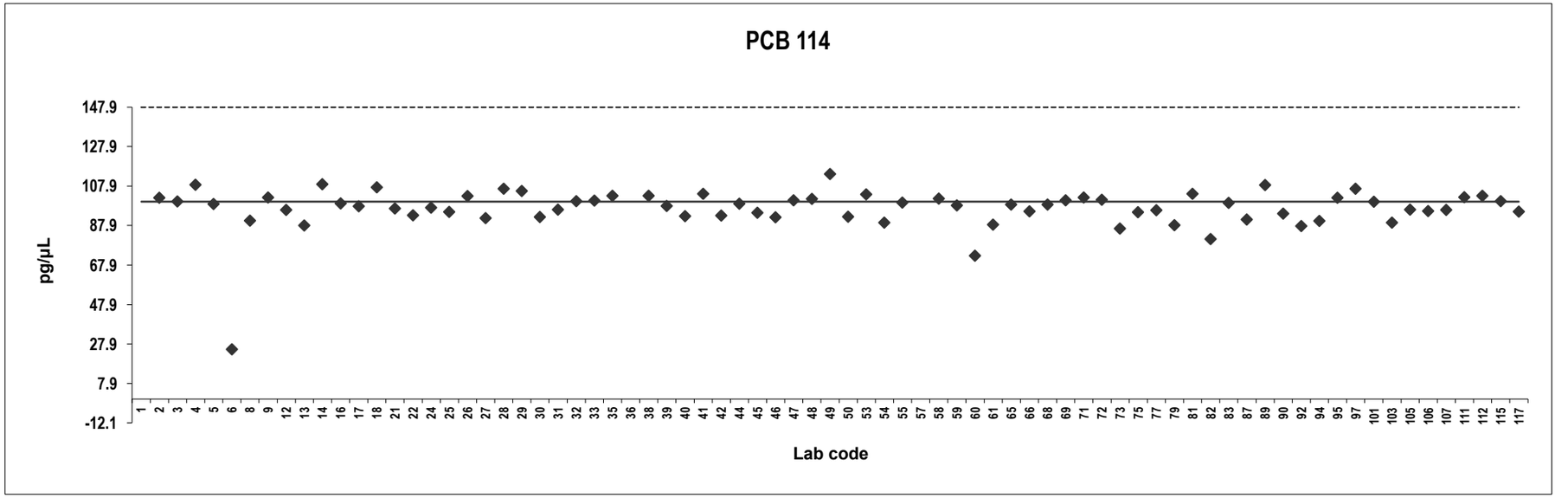
Analyte solution

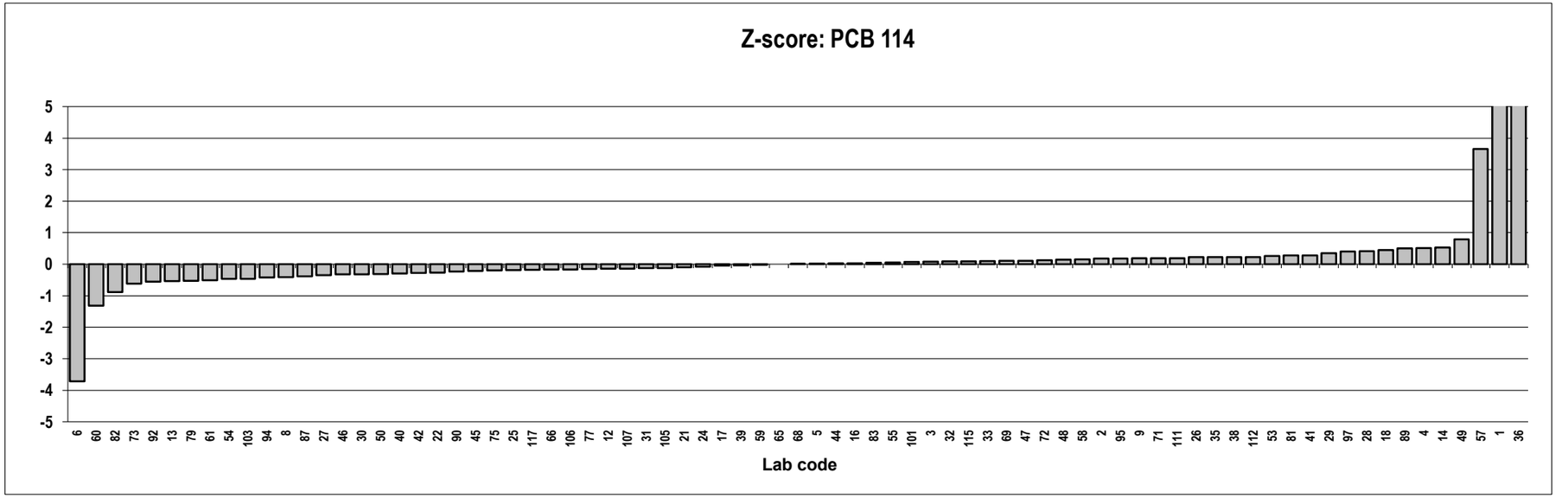
Congener: PCB 114

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	212	Outlier	59	98	
2	102		60	73	
3	100		61	88	
4	109		65	99	
5	99		66	95	
6	25	Outlier	68	99	
8	90		69	101	
9	102		71	102	
12	96		72	101	
13	88		73	86	
14	109		75	95	
16	99		77	96	
17	98		79	88	
18	107		81	104	
21	97		82	81	
22	93		83	99	
24	97		87	91	
25	95		89	108	
26	103		90	94	
27	92		92	88	
28	107		94	90	
29	105		95	102	
30	92		97	107	
31	96		101	100	
32	100		103	89	
33	101		105	96	
35	103		106	95	
36	1980	Outlier	107	96	
38	103		111	102	
39	98		112	103	
40	93		115	100	
41	104		117	95	
42	93				
44	99				
45	94				
46	92				
47	101				
48	101				
49	114				
50	92				
53	104				
54	89				
55	100				
57	171	Outlier			
58	102				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	98
Standard deviation, pg/µL	6.8
Relative standard deviation, %	7.0
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 114
147.9
127.9
107.9
87.9
67.9
47.9
27.9
7.9
-12.1
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 82 73 92 13 79 61 54 103 94 8 87 27 46 30 50 40 42 22 90 45 75 25 117 66 106 77 12 107 31 105 21 24 17 39 59 65 68 5 44 16 83 55 101 3 32 115 33 69 47 72 48 58 2 95 9 71 111 26 35 38 112 53 81 41 29 97 28 18 89 4 14 49 57 1 36
Lab code

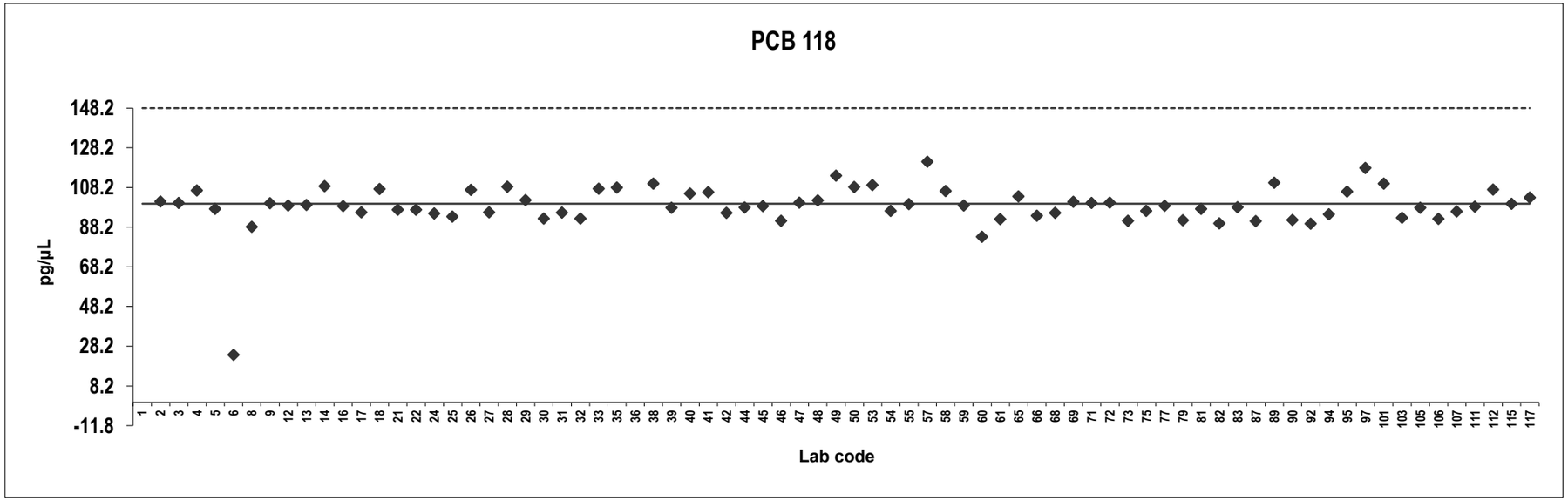
Analyte solution

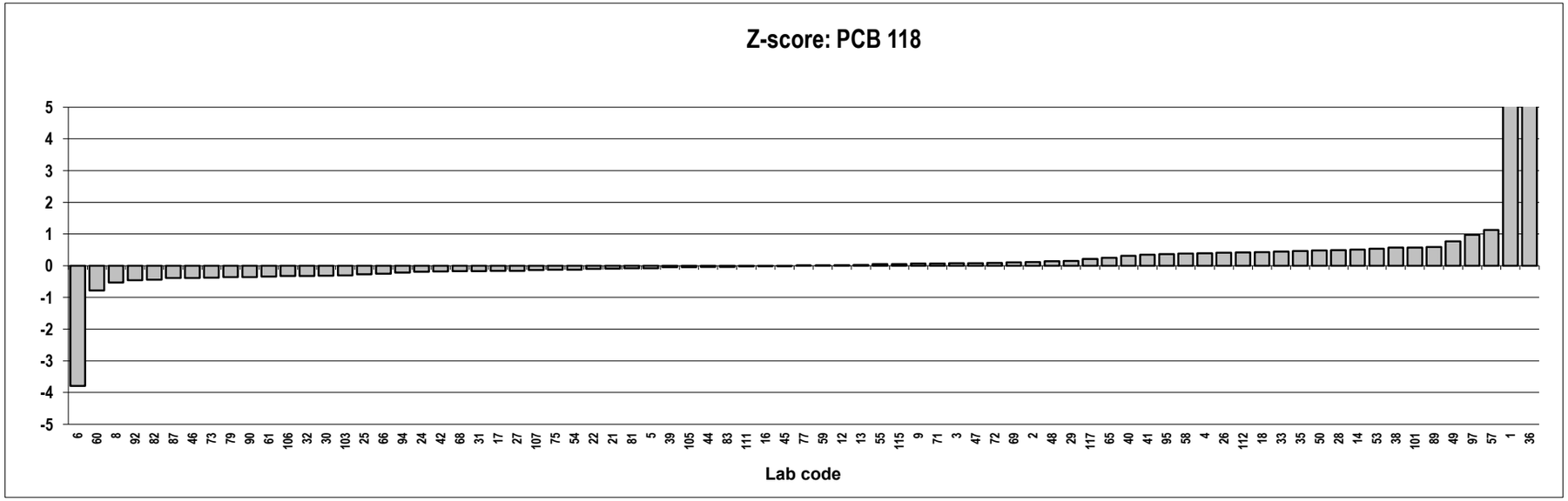
Congener: PCB 118

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	210	Outlier	59	99	
2	101		60	83	
3	100		61	92	
4	107		65	104	
5	97		66	94	
6	24	Outlier	68	95	
8	88		69	101	
9	100		71	100	
12	99		72	100	
13	99		73	91	
14	109		75	96	
16	99		77	99	
17	96		79	92	
18	107		81	97	
21	97		82	90	
22	97		83	98	
24	95		87	91	
25	93		89	110	
26	107		90	92	
27	96		92	90	
28	108		94	94	
29	102		95	106	
30	92		97	118	
31	95		101	110	
32	92		103	93	
33	108		105	98	
35	108		106	92	
36	2180	Outlier	107	96	
38	110		111	98	
39	98		112	107	
40	105		115	100	
41	106		117	103	
42	95				
44	98				
45	99				
46	91				
47	100				
48	102				
49	114				
50	108				
53	109				
54	96				
55	100				
57	121				
58	106				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	100
Standard deviation, pg/µL	7.1
Relative standard deviation, %	7.1
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 118
148.2
128.2
108.2
88.2
68.2
48.2
28.2
8.2
-11.8
pg/µL
Lab code


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

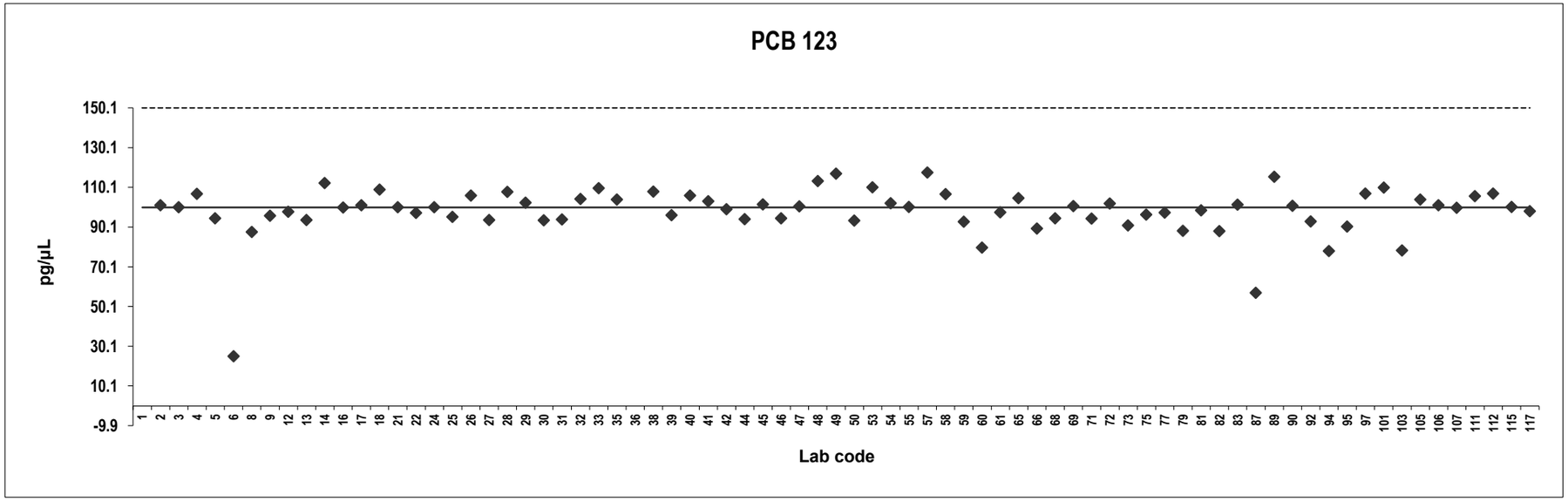
Analyte solution

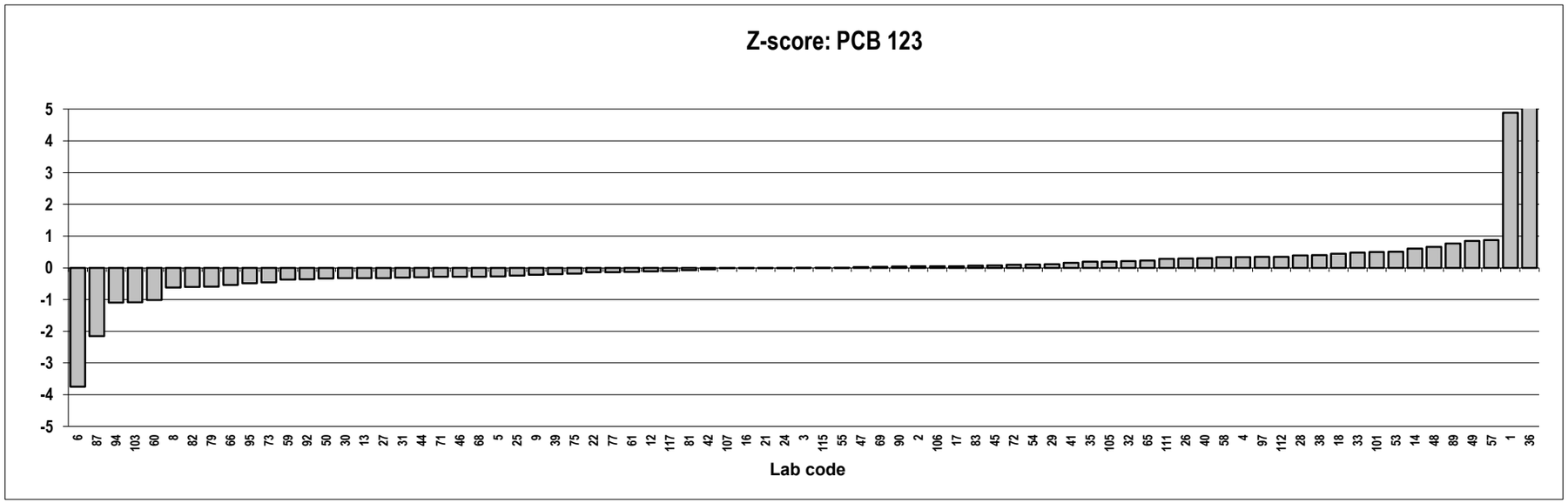
Congener: PCB 123

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	198	Outlier	59	93	
2	101		60	80	
3	100		61	97	
4	107		65	105	
5	95		66	89	
6	25	Outlier	68	95	
8	88		69	101	
9	96		71	94	
12	98		72	102	
13	94		73	91	
14	112		75	96	
16	100		77	97	
17	101		79	88	
18	109		81	99	
21	100		82	88	
22	97		83	101	
24	100		87	57	
25	95		89	115	
26	106		90	101	
27	94		92	93	
28	108		94	78	
29	102		95	90	
30	93		97	107	
31	94		101	110	
32	104		103	78	
33	110		105	104	
35	104		106	101	
36	2090	Outlier	107	100	
38	108		111	106	
39	96		112	107	
40	106		115	100	
41	103		117	98	
42	99				
44	94				
45	101				
46	95				
47	101				
48	113				
49	117				
50	93				
53	110				
54	102				
55	100				
57	118				
58	107				

Consenus statistics

Consensus median, pg/µL	100
Median all values pg/µL	100
Consensus mean, pg/µL	99
Standard deviation, pg/µL	9.4
Relative standard deviation, %	10
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 123
150.1
130.1
110.1
90.1
70.1
50.1
30.1
10.1
-9.9
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 87 94 103 60 8 82 79 66 95 73 59 92 50 30 13 27 31 44 71 46 68 5 25 9 39 75 22 77 61 12 117 81 42 107 16 21 24 3 115 55 47 69 90 2 106 17 83 45 72 54 29 41 35 105 32 65 111 26 40 58 4 97 112 28 38 18 33 101 53 14 48 89 49 57 1 36
Lab code

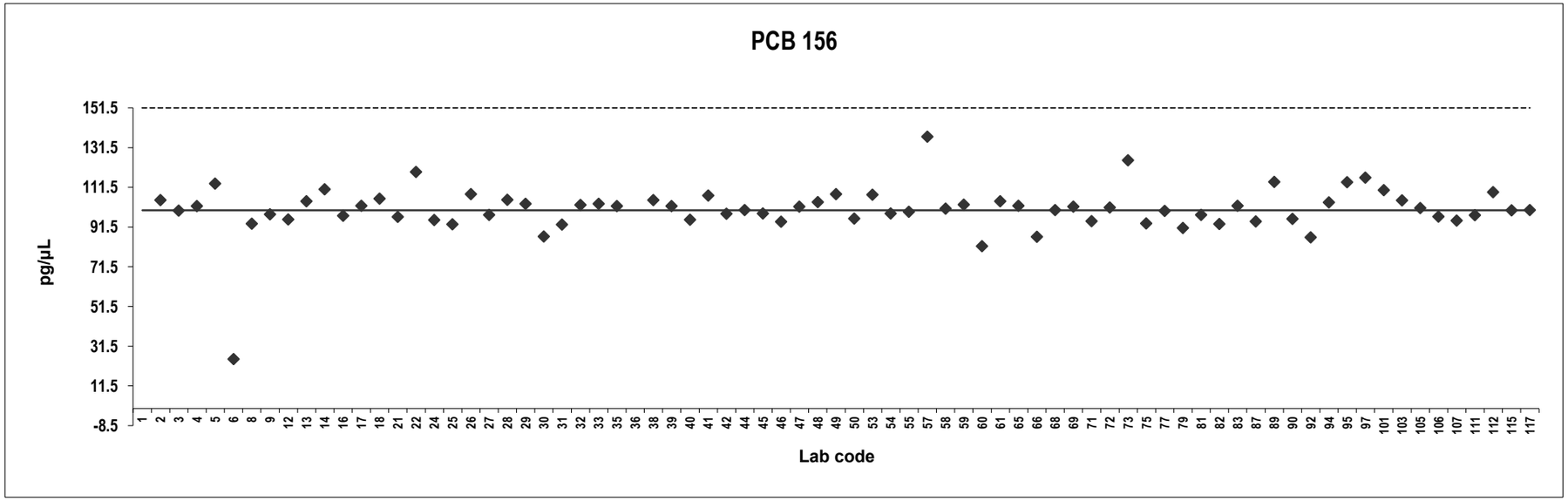
Analyte solution

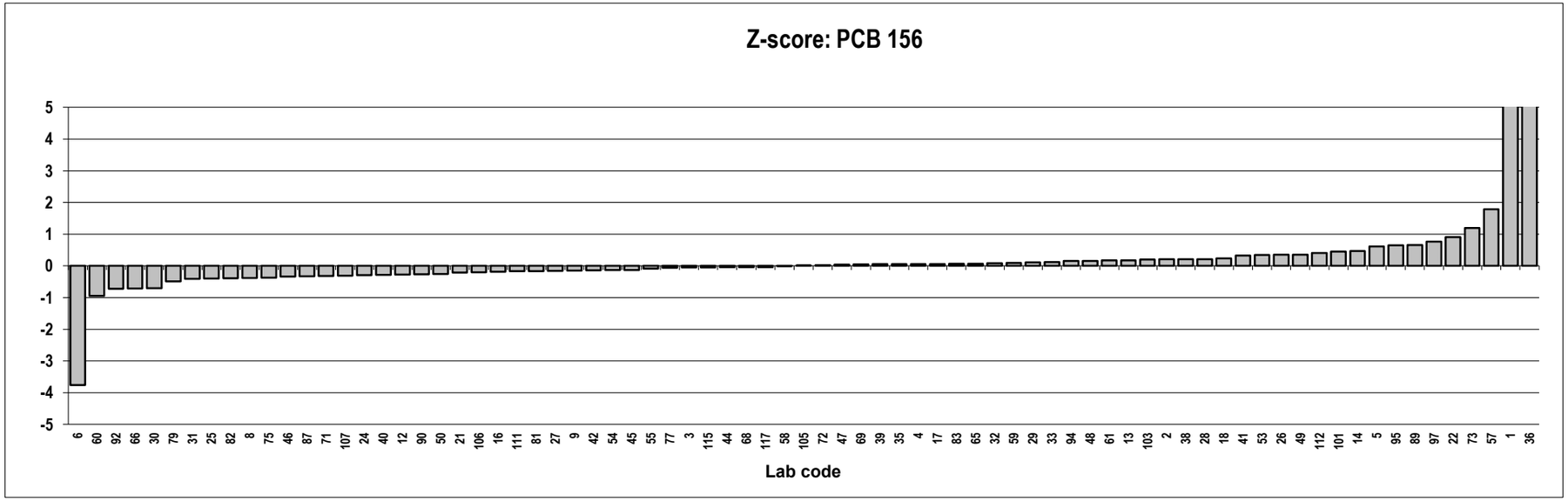
Congener: PCB 156

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	206	Outlier	59	103	
2	105		60	82	
3	100		61	104	
4	102		65	102	
5	113		66	86	
6	25	Outlier	68	100	
8	93		69	102	
9	98		71	94	
12	95		72	101	
13	104		73	125	
14	110		75	93	
16	97		77	100	
17	102		79	91	
18	106		81	98	
21	97		82	93	
22	119		83	102	
24	95		87	94	
25	93		89	114	
26	108		90	96	
27	98		92	86	
28	105		94	104	
29	103		95	114	
30	87		97	116	
31	93		101	110	
32	103		103	105	
33	103		105	101	
35	102		106	97	
36	2100	Outlier	107	95	
38	105		111	97	
39	102		112	109	
40	95		115	100	
41	107		117	100	
42	98				
44	100				
45	98				
46	94				
47	102				
48	104				
49	108				
50	96				
53	108				
54	98				
55	99				
57	137				
58	101				

Consenus statistics

Consensus median, pg/µL	101
Median all values pg/µL	101
Consensus mean, pg/µL	101
Standard deviation, pg/µL	8.6
Relative standard deviation, %	8.5
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 156
151.5
131.5
111.5
91.5
71.5
51.5
31.5
11.5
-8.5
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 92 66 30 79 31 25 82 8 75 46 87 71 107 24 40 12 90 50 21 106 16 111 81 27 9 42 54 45 55 77 3 115 44 68 117 58 105 72 47 69 39 35 4 17 83 65 32 59 29 33 94 48 61 13 103 2 38 28 18 41 53 26 49 112 101 14 5 95 89 97 22 73 57 1 36
Lab code

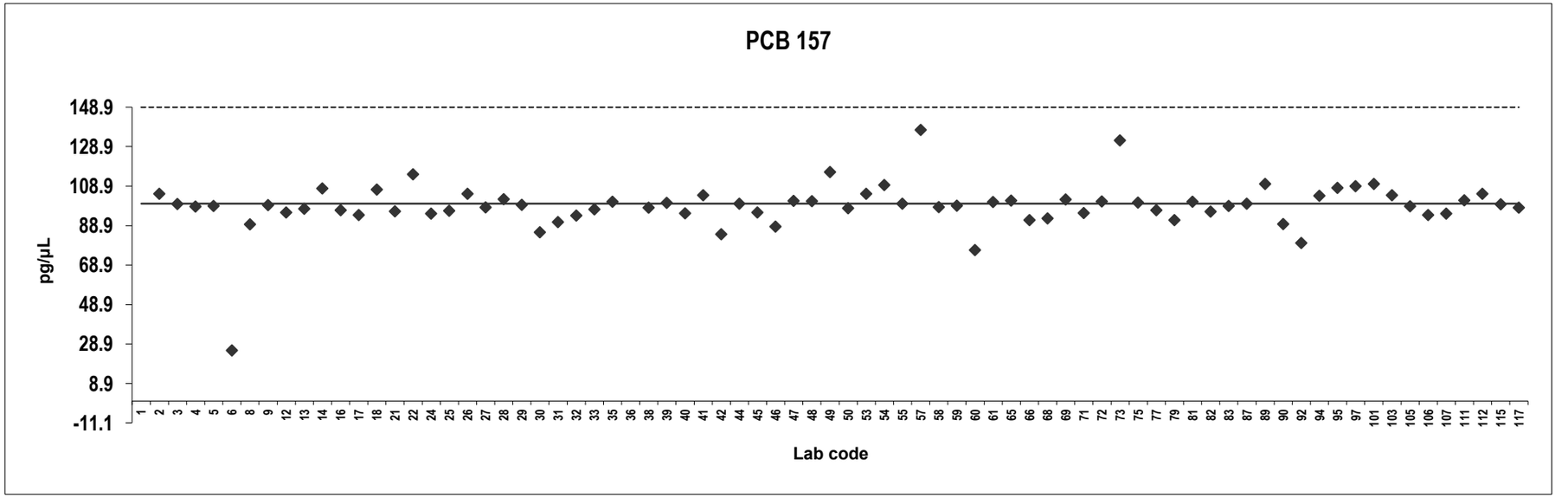
Analyte solution

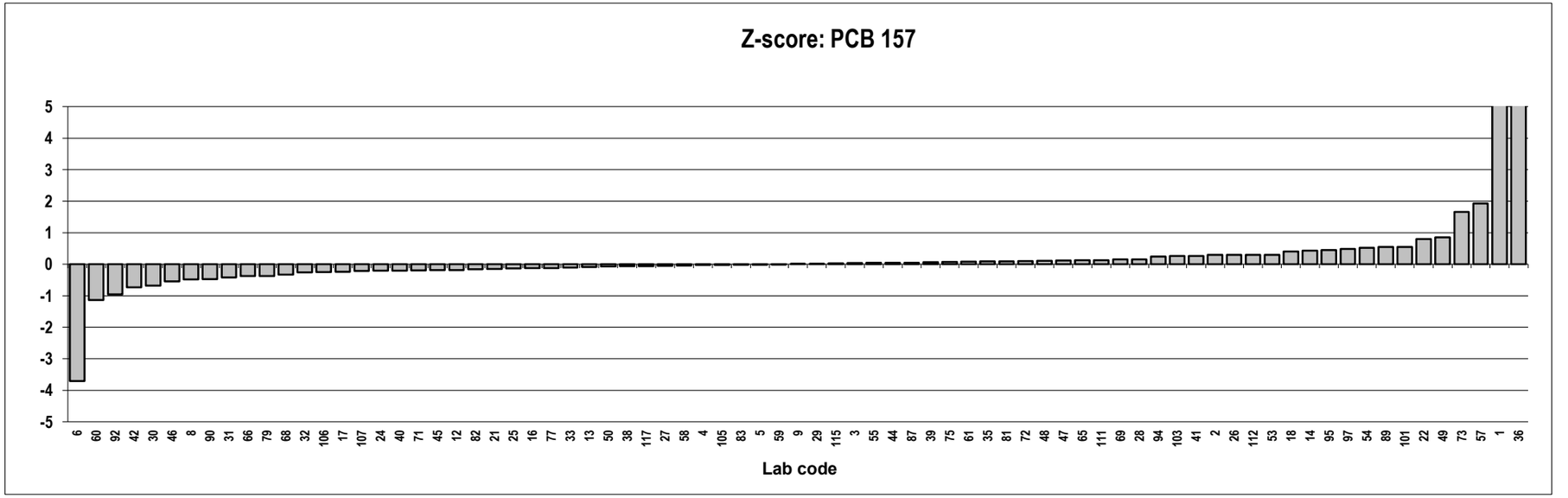
Congener: PCB 157

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	204	Outlier	59	99	
2	105		60	77	
3	100		61	101	
4	99		65	102	
5	99		66	92	
6	26	Outlier	68	93	
8	89		69	102	
9	99		71	95	
12	96		72	101	
13	97		73	132	
14	108		75	101	
16	97		77	97	
17	94		79	92	
18	107		81	101	
21	96		82	96	
22	115		83	99	
24	95		87	100	
25	96		89	110	
26	105		90	90	
27	98		92	80	
28	102		94	104	
29	99		95	108	
30	86		97	109	
31	91		101	110	
32	94		103	104	
33	97		105	99	
35	101		106	94	
36	2140	Outlier	107	95	
38	98		111	102	
39	100		112	105	
40	95		115	100	
41	104		117	98	
42	85				
44	100				
45	95				
46	88				
47	101				
48	101				
49	116				
50	98				
53	105				
54	109				
55	100				
57	137				
58	98				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	100
Standard deviation, pg/µL	9.1
Relative standard deviation, %	9.1
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 157
148.9
128.9
108.9
88.9
68.9
48.9
28.9
8.9
-11.1
pg/µL
Lab code


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

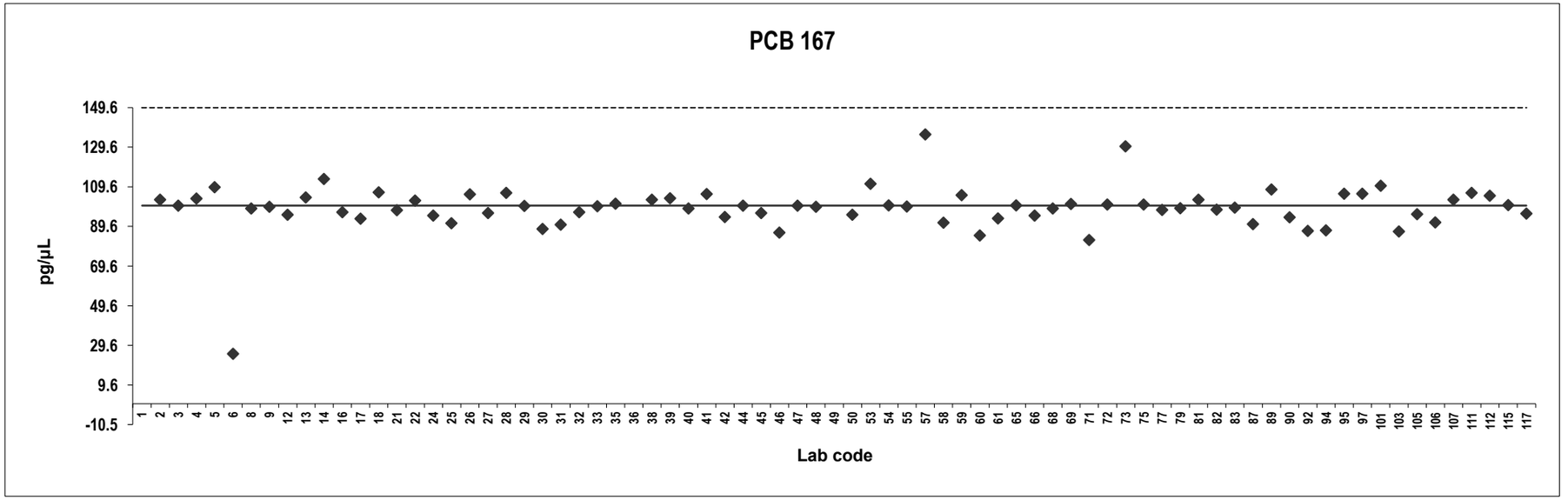
Analyte solution

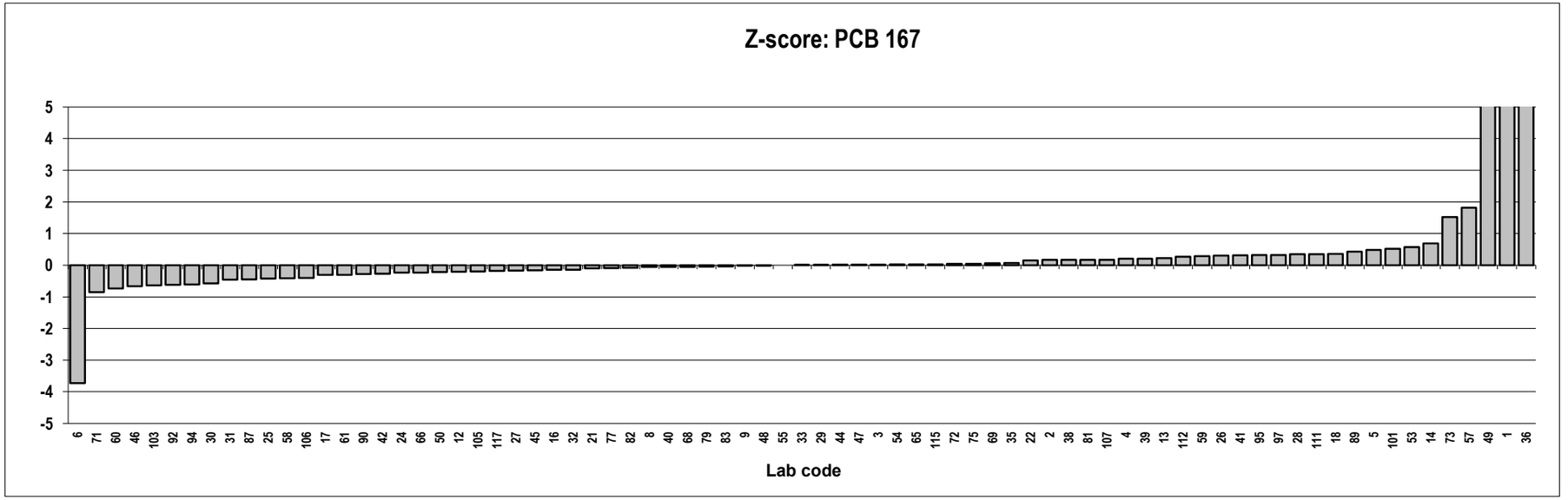
Congener: PCB 167

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	223	Outlier	59	105	
2	103		60	85	
3	100		61	94	
4	104		65	100	
5	109		66	95	
6	25	Outlier	68	99	
8	99		69	101	
9	99		71	83	
12	96		72	101	
13	104		73	130	
14	113		75	101	
16	97		77	98	
17	94		79	99	
18	107		81	103	
21	98		82	98	
22	103		83	99	
24	95		87	91	
25	91		89	108	
26	106		90	94	
27	96		92	87	
28	107		94	88	
29	100		95	106	
30	88		97	106	
31	91		101	110	
32	97		103	87	
33	100		105	96	
35	101		106	92	
36	2200	Outlier	107	103	
38	103		111	107	
39	104		112	105	
40	99		115	100	
41	106		117	96	
42	94				
44	100				
45	96				
46	86				
47	100				
48	100				
49	215	Outlier			
50	95				
53	111				
54	100				
55	100				
57	136				
58	91				

Consenus statistics

Consensus median, pg/µL	100
Median all values pg/µL	100
Consensus mean, pg/µL	100
Standard deviation, pg/µL	8.5
Relative standard deviation, %	8.6
No. of values reported	77
No. of values removed	4
No. of reported non-detects	0


PCB 167
149.6
129.6
109.6
89.6
69.6
49.6
29.6
9.6
-10.5
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 71 60 46 103 92 94 30 31 87 25 58 106 17 61 90 42 24 66 50 12 105 117 27 45 16 32 21 77 82 8 40 68 79 83 9 48 55 33 29 44 47 3 54 65 115 72 75 69 35 22 2 38 81 107 4 39 13 112 59 26 41 95 97 28 111 18 89 5 101 53 14 73 57 49 1 36
Lab code

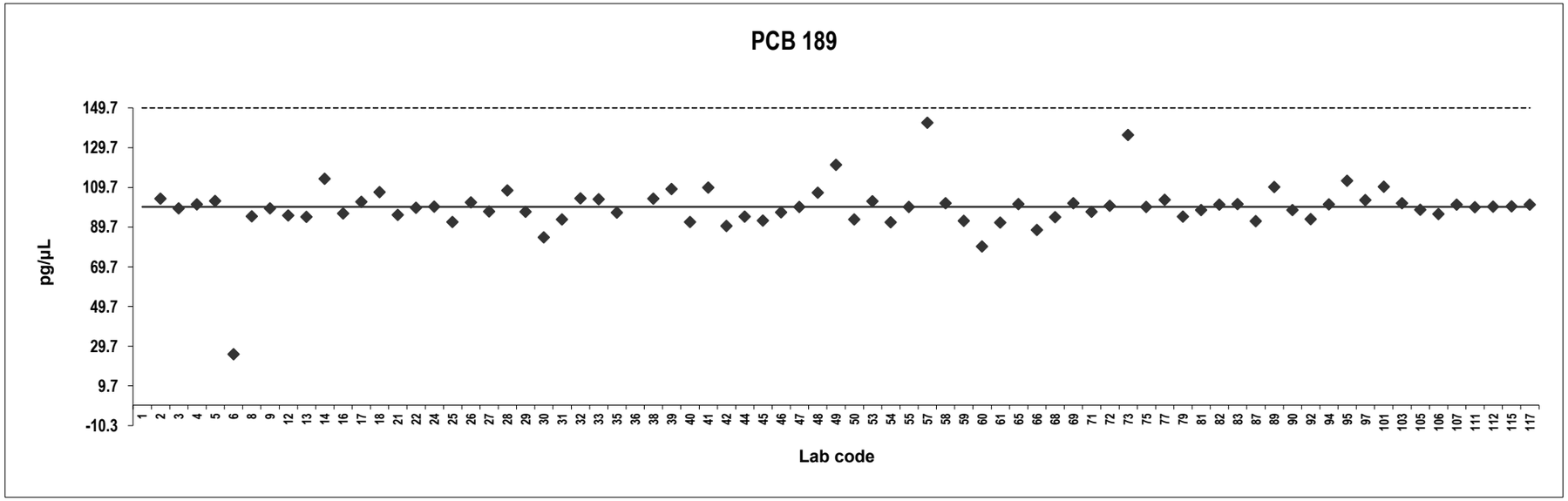
Analyte solution

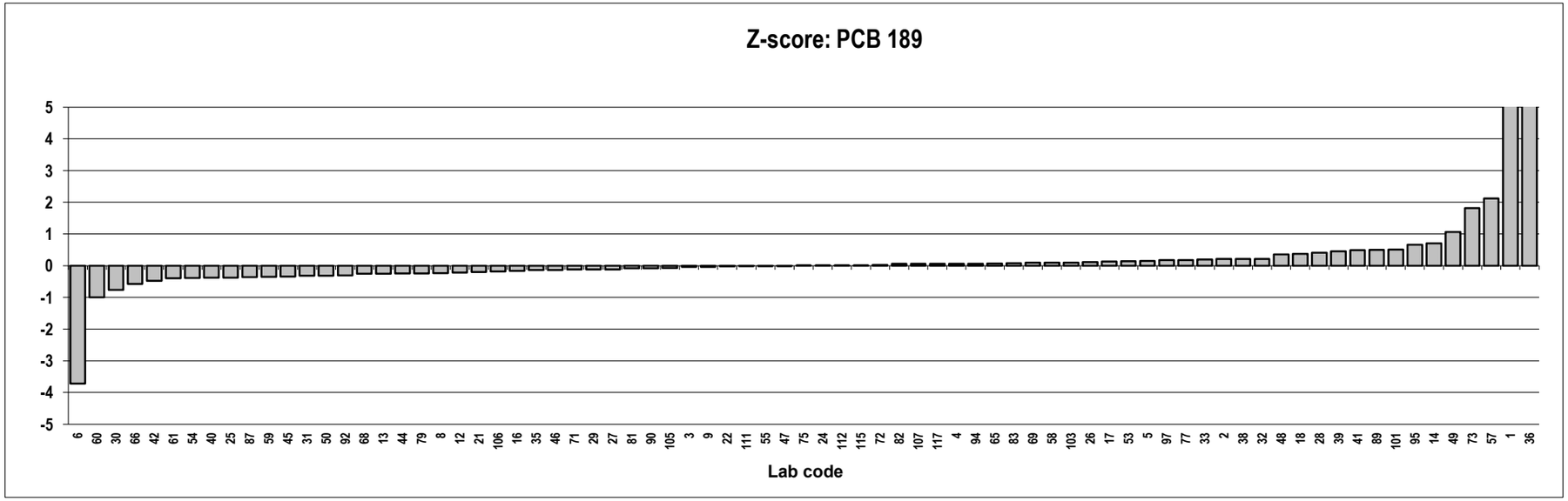
Congener: PCB 189

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	206	Outlier	59	93	
2	104		60	80	
3	99		61	92	
4	101		65	101	
5	103		66	88	
6	26	Outlier	68	95	
8	95		69	102	
9	99		71	97	
12	96		72	100	
13	95		73	136	
14	114		75	100	
16	97		77	103	
17	102		79	95	
18	107		81	98	
21	96		82	101	
22	99		83	101	
24	100		87	93	
25	92		89	110	
26	102		90	98	
27	98		92	94	
28	108		94	101	
29	97		95	113	
30	85		97	103	
31	93		101	110	
32	104		103	102	
33	104		105	98	
35	97		106	96	
36	2140	Outlier	107	101	
38	104		111	100	
39	109		112	100	
40	92		115	100	
41	110		117	101	
42	90				
44	95				
45	93				
46	97				
47	100				
48	107				
49	121				
50	93				
53	103				
54	92				
55	100				
57	142				
58	102				

Consenus statistics

Consensus median, pg/µL	100
Median all values pg/µL	100
Consensus mean, pg/µL	101
Standard deviation, pg/µL	9.2
Relative standard deviation, %	9.1
No. of values reported	77
No. of values removed	3
No. of reported non-detects	0


PCB 189
149.7
129.7
109.7
89.7
69.7
49.7
29.7
9.7
-10.3
pg/µL
1 2 3 4 5 6 8 9 12 13 14 16 17 18 21 22 24 25 26 27 28 29 30 31 32 33 35 36 38 39 40 41 42 44 45 46 47 48 49 50 53 54 55 57 58 59 60 61 65 66 68 69 71 72 73 75 77 79 81 82 83 87 89 90 92 94 95 97 101 103 105 106 107 111 112 115 117
Lab code


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 30 66 42 61 54 40 25 87 59 45 31 50 92 68 13 44 79 8 12 21 106 16 35 46 71 29 27 81 90 105 3 9 22 111 55 47 75 24 112 115 72 82 107 117 4 94 65 83 69 58 103 26 17 53 5 97 77 33 2 38 32 48 18 28 39 41 89 101 95 14 49 73 57 1 36
Lab code

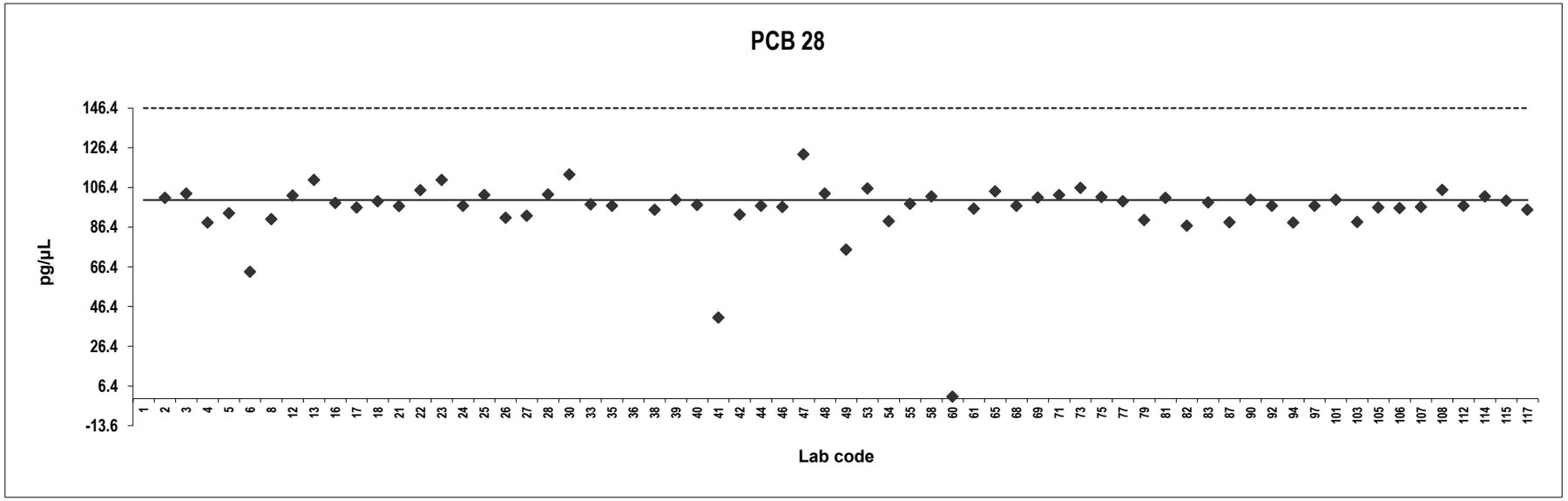
Analyte solution

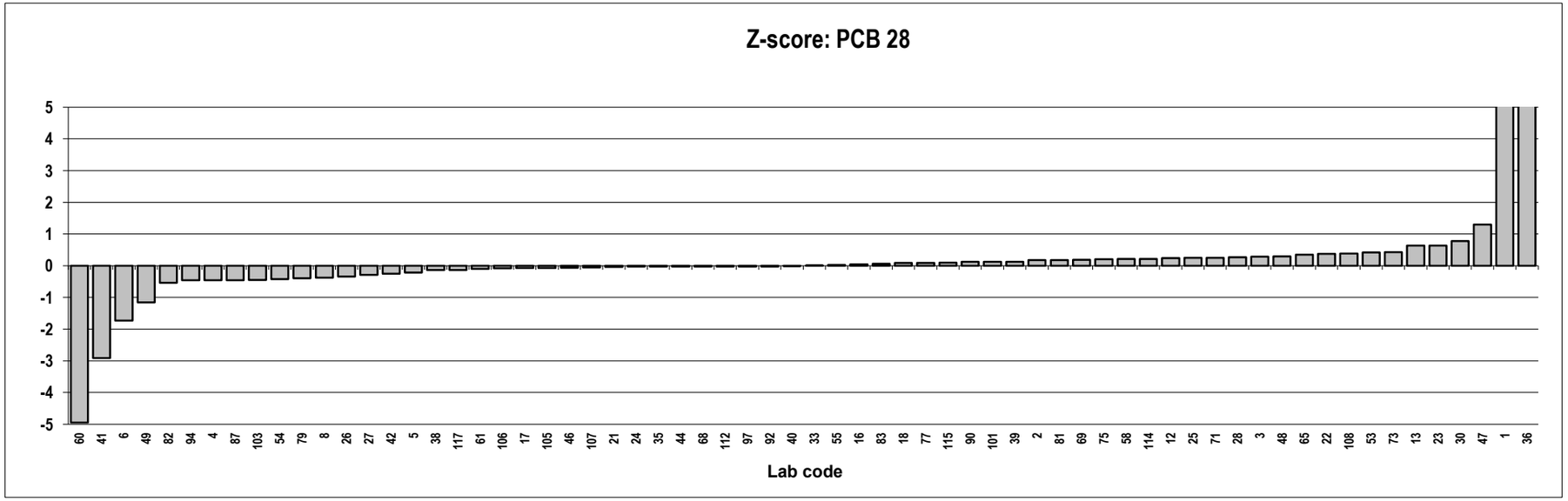
Congener: PCB 28

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	217	Outlier	75	102	
2	101		77	99	
3	103		79	90	
4	89		81	101	
5	93		82	87	
6	64		83	99	
8	90		87	89	
12	102		90	100	
13	110		92	97	
16	98		94	89	
17	96		97	97	
18	99		101	100	
21	97		103	89	
22	105		105	96	
23	110		106	96	
24	97		107	96	
25	103		108	105	
26	91		112	97	
27	92		114	102	
28	103		115	100	
30	113		117	95	
33	98				
35	97				
36	2000	Outlier			
38	95				
39	100				
40	98				
41	41	Outlier			
42	93				
44	97				
46	96				
47	123				
48	103				
49	75				
53	106				
54	89				
55	98				
58	102				
60	0.95	Outlier			
61	96				
65	104				
68	97				
69	101				
71	103				
73	106				

Consenus statistics

Consensus median, pg/µL	98
Median all values pg/µL	98
Consensus mean, pg/µL	98
Standard deviation, pg/µL	8.3
Relative standard deviation, %	8.5
No. of values reported	66
No. of values removed	4
No. of reported non-detects	0


PCB 28
146.4
126.4
106.4
86.4
66.4
46.4
26.4
6.4
-13.6
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 41 6 49 82 94 4 87 103 54 79 8 26 27 42 5 38 117 61 106 17 105 46 107 21 24 35 44 68 112 97 92 40 33 55 16 83 18 77 115 90 101 39 2 81 69 75 58 114 12 25 71 28 3 48 65 22 108 53 73 13 23 30 47 1 36
Lab code

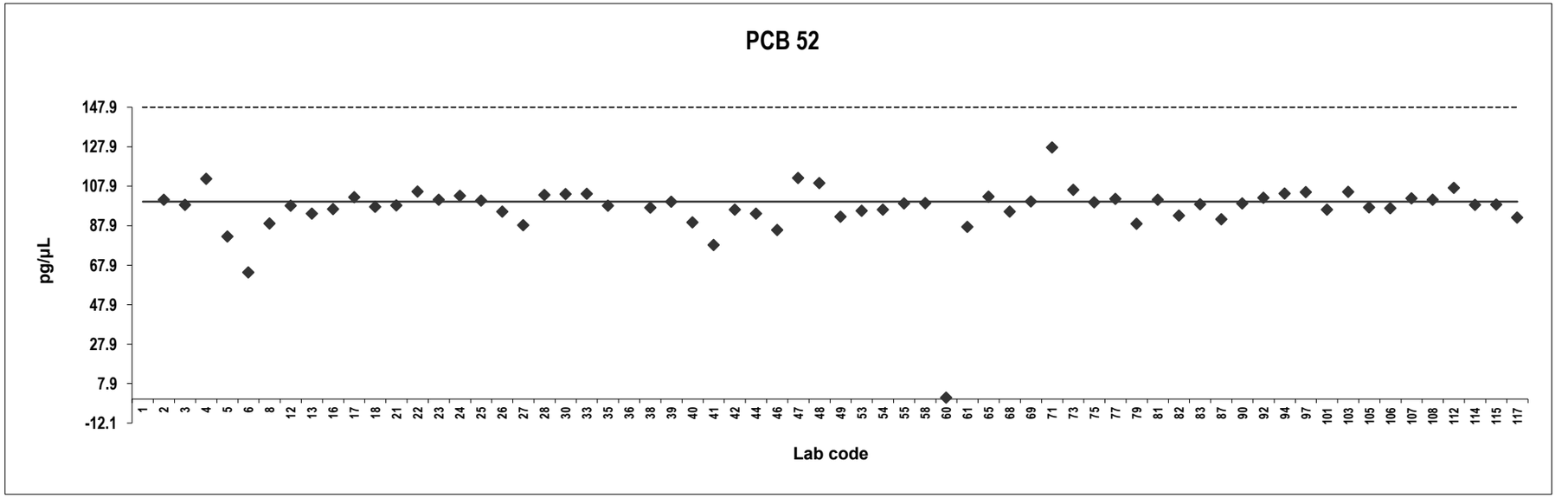
Analyte solution

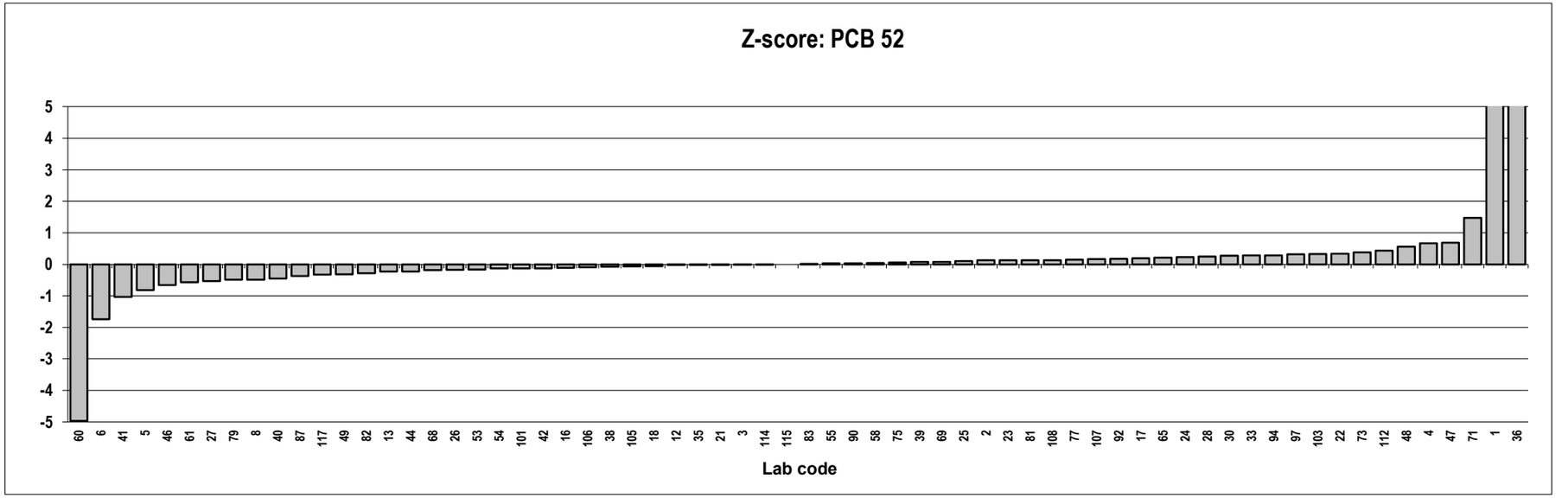
Congener: PCB 52

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	208	Outlier	75	100	
2	101		77	101	
3	98		79	89	
4	112		81	101	
5	82		82	93	
6	64		83	99	
8	89		87	91	
12	98		90	99	
13	94		92	102	
16	96		94	104	
17	102		97	105	
18	97		101	96	
21	98		103	105	
22	105		105	97	
23	101		106	97	
24	103		107	102	
25	101		108	101	
26	95		112	107	
27	88		114	98	
28	103		115	98	
30	104		117	92	
33	104				
35	98				
36	2000	Outlier			
38	97				
39	100				
40	90				
41	78				
42	96				
44	94				
46	86				
47	112				
48	109				
49	92				
53	95				
54	96				
55	99				
58	99				
60	0.63	Outlier			
61	87				
65	103				
68	95				
69	100				
71	127				
73	106				

Consenus statistics

Consensus median, pg/µL	98
Median all values pg/µL	99
Consensus mean, pg/µL	98
Standard deviation, pg/µL	8.6
Relative standard deviation, %	8.8
No. of values reported	66
No. of values removed	3
No. of reported non-detects	0


PCB 52
147.9
127.9
107.9
87.9
67.9
47.9
27.9
7.9
-12.1
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 41 5 46 61 27 79 8 40 87 117 49 82 13 44 68 26 53 54 101 42 16 106 38 105 18 12 35 21 3 114 115 83 55 90 58 75 39 69 25 2 23 81 108 77 107 92 17 65 24 28 30 33 94 97 103 22 73 112 48 4 47 71 1 36
Lab code

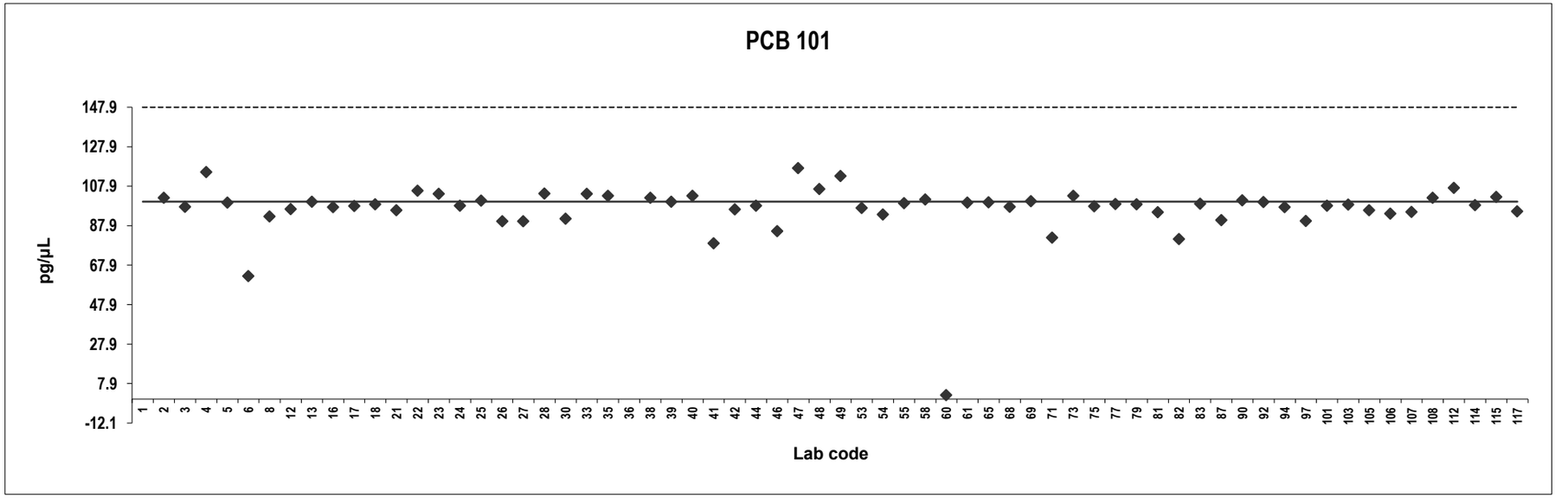
Analyte solution

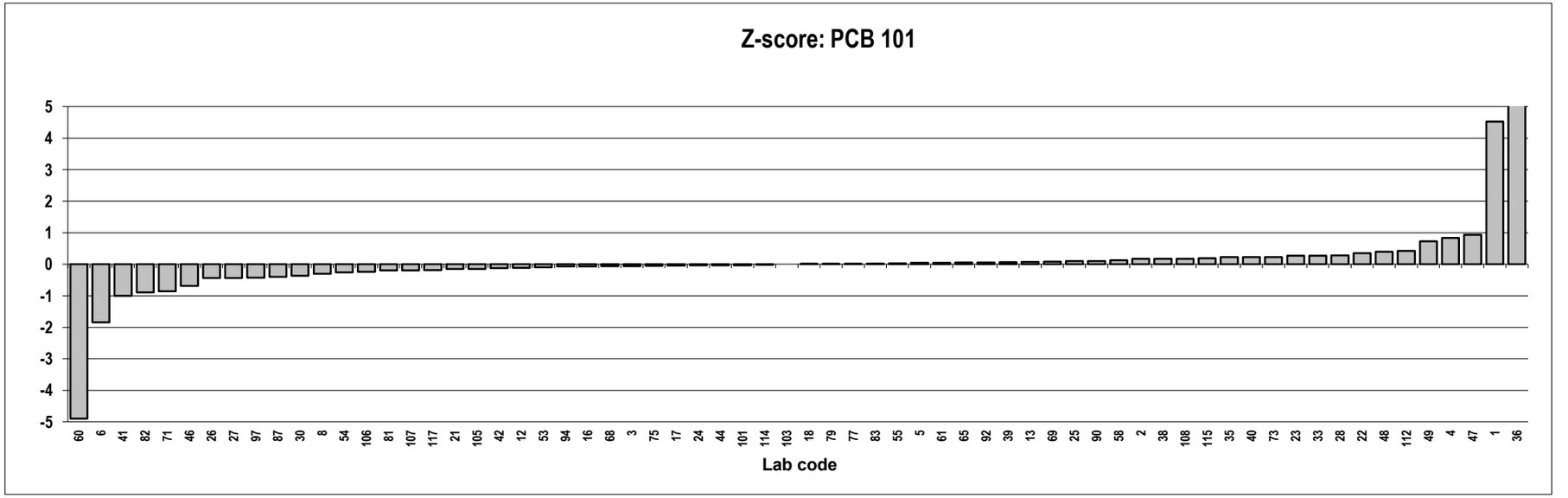
Congener: PCB 101

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	188	Outlier	75	98	
2	102		77	99	
3	97		79	99	
4	115		81	95	
5	99		82	81	
6	62		83	99	
8	93		87	91	
12	96		90	101	
13	100		92	100	
16	97		94	97	
17	98		97	90	
18	99		101	98	
21	96		103	99	
22	106		105	96	
23	104		106	94	
24	98		107	95	
25	101		108	102	
26	90		112	107	
27	90		114	98	
28	104		115	102	
30	91		117	95	
33	104				
35	103				
36	1990	Outlier			
38	102				
39	100				
40	103				
41	79				
42	96				
44	98				
46	85				
47	117				
48	106				
49	113				
53	97				
54	94				
55	99				
58	101				
60	2.0	Outlier			
61	100				
65	100				
68	97				
69	100				
71	82				
73	103				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	98
Standard deviation, pg/µL	8.2
Relative standard deviation, %	8.4
No. of values reported	66
No. of values removed	3
No. of reported non-detects	0


PCB 101
147.9
127.9
107.9
87.9
67.9
47.9
27.9
7.9
-12.1
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 41 82 71 46 26 27 97 87 30 8 54 106 81 107 117 21 105 42 12 53 94 16 68 3 75 17 24 44 101 114 103 18 79 77 83 55 5 61 65 92 39 13 69 25 90 58 2 38 108 115 35 40 73 23 33 28 22 48 112 49 4 47 1 36
Lab code

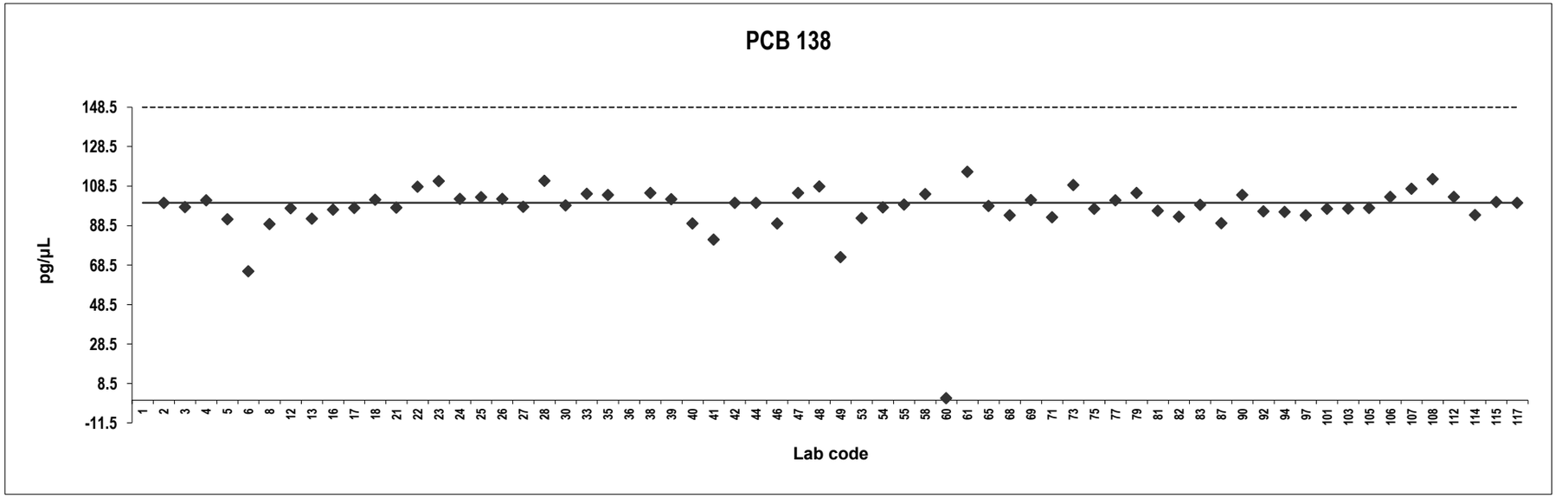
Analyte solution

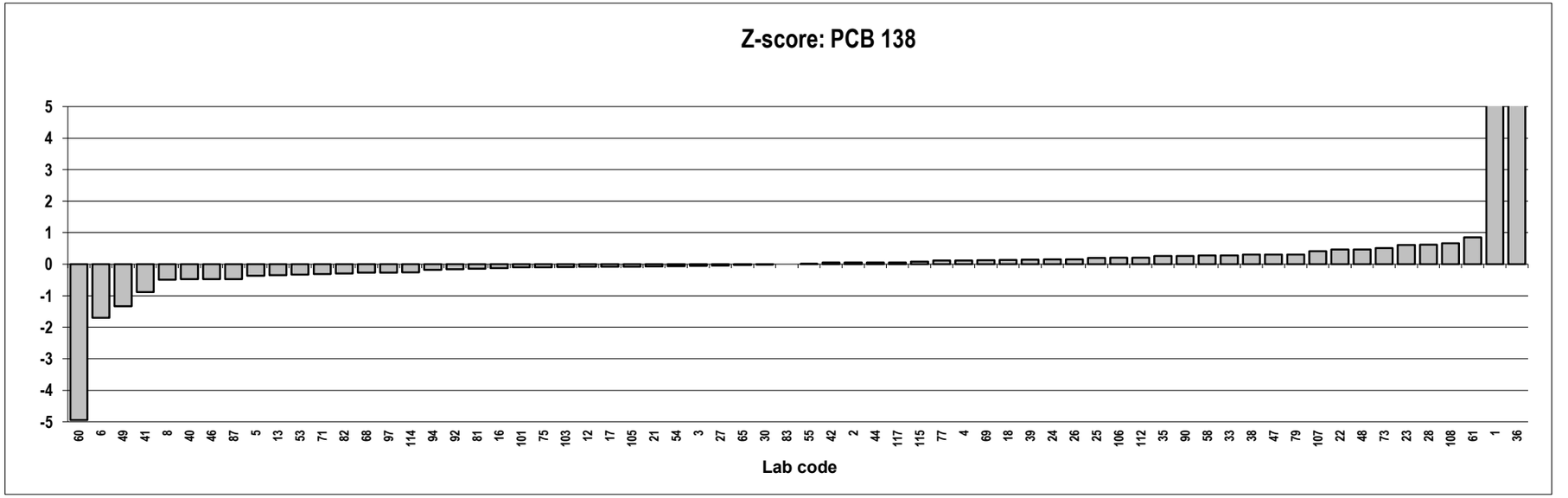
Congener: PCB 138

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	239	Outlier	75	97	
2	100		77	101	
3	98		79	105	
4	101		81	96	
5	92		82	93	
6	65		83	99	
8	89		87	90	
12	97		90	104	
13	92		92	96	
16	96		94	95	
17	97		97	94	
18	102		101	97	
21	98		103	97	
22	108		105	97	
23	111		106	103	
24	102		107	107	
25	103		108	112	
26	102		112	103	
27	98		114	94	
28	111		115	100	
30	99		117	100	
33	105				
35	104				
36	1970	Outlier			
38	105				
39	102				
40	90				
41	81				
42	100				
44	100				
46	90				
47	105				
48	108				
49	73				
53	92				
54	98				
55	99				
58	104				
60	1.0	Outlier			
61	116				
65	98				
68	94				
69	101				
71	93				
73	109				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	99
Standard deviation, pg/µL	8.3
Relative standard deviation, %	8.4
No. of values reported	66
No. of values removed	3
No. of reported non-detects	0


PCB 138
148.5
128.5
108.5
88.5
68.5
48.5
28.5
8.5
-11.5
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 49 41 8 40 46 87 5 13 53 71 82 68 97 114 94 92 81 16 101 75 103 12 17 105 21 54 3 27 65 30 83 55 42 2 44 117 115 77 4 69 18 39 24 26 25 106 112 35 90 58 33 38 47 79 107 22 48 73 23 28 108 61 1 36
Lab code

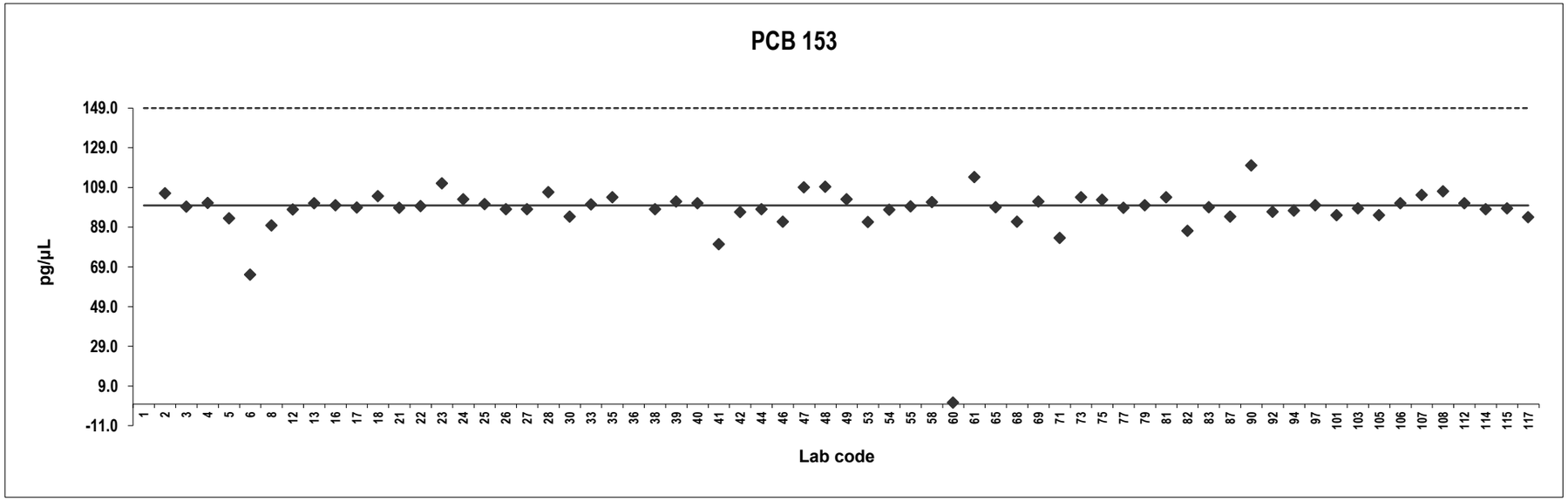
Analyte solution

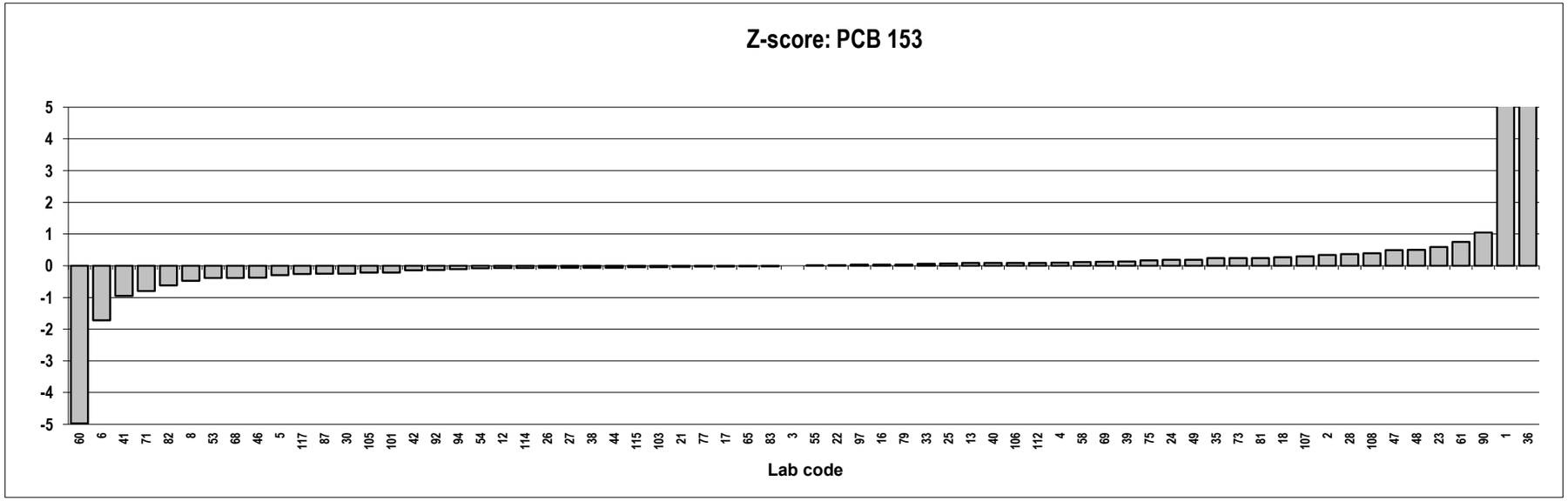
Congener: PCB 153

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	210	Outlier	75	103	
2	106		77	99	
3	99		79	100	
4	101		81	104	
5	93		82	87	
6	65		83	99	
8	90		87	94	
12	98		90	120	
13	101		92	97	
16	100		94	97	
17	99		97	100	
18	105		101	95	
21	99		103	98	
22	100		105	95	
23	111		106	101	
24	103		107	105	
25	101		108	107	
26	98		112	101	
27	98		114	98	
28	107		115	98	
30	94		117	94	
33	100				
35	104				
36	2000	Outlier			
38	98				
39	102				
40	101				
41	80				
42	96				
44	98				
46	92				
47	109				
48	109				
49	103				
53	92				
54	98				
55	99				
58	102				
60	0.61	Outlier			
61	114				
65	99				
68	92				
69	102				
71	83				
73	104				

Consenus statistics

Consensus median, pg/µL	99
Median all values pg/µL	99
Consensus mean, pg/µL	99
Standard deviation, pg/µL	7.7
Relative standard deviation, %	7.8
No. of values reported	66
No. of values removed	3
No. of reported non-detects	0


PCB 153
149.0
129.0
109.0
89.0
69.0
49.0
29.0
9.0
-11.0
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 41 71 82 8 53 68 46 5 117 87 30 105 101 42 92 94 54 12 114 26 27 38 44 115 103 21 77 17 65 83 3 55 22 97 16 79 33 25 13 40 106 112 4 58 69 39 75 24 49 35 73 81 18 107 2 28 108 47 48 23 61 90 1 36
Lab code

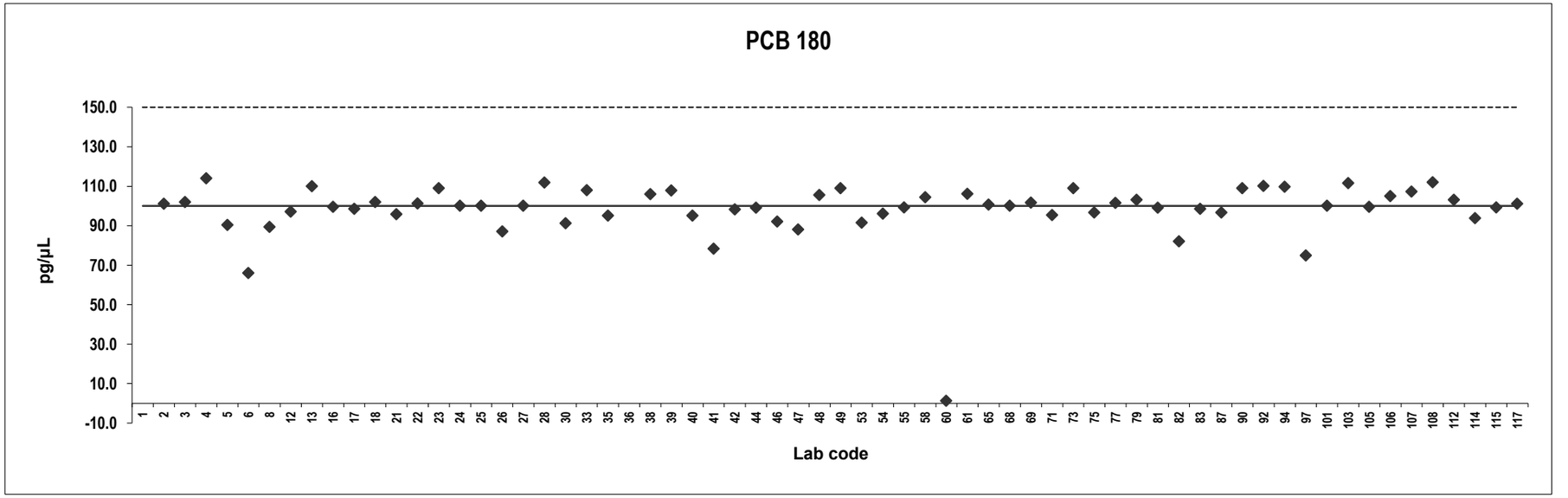
Analyte solution

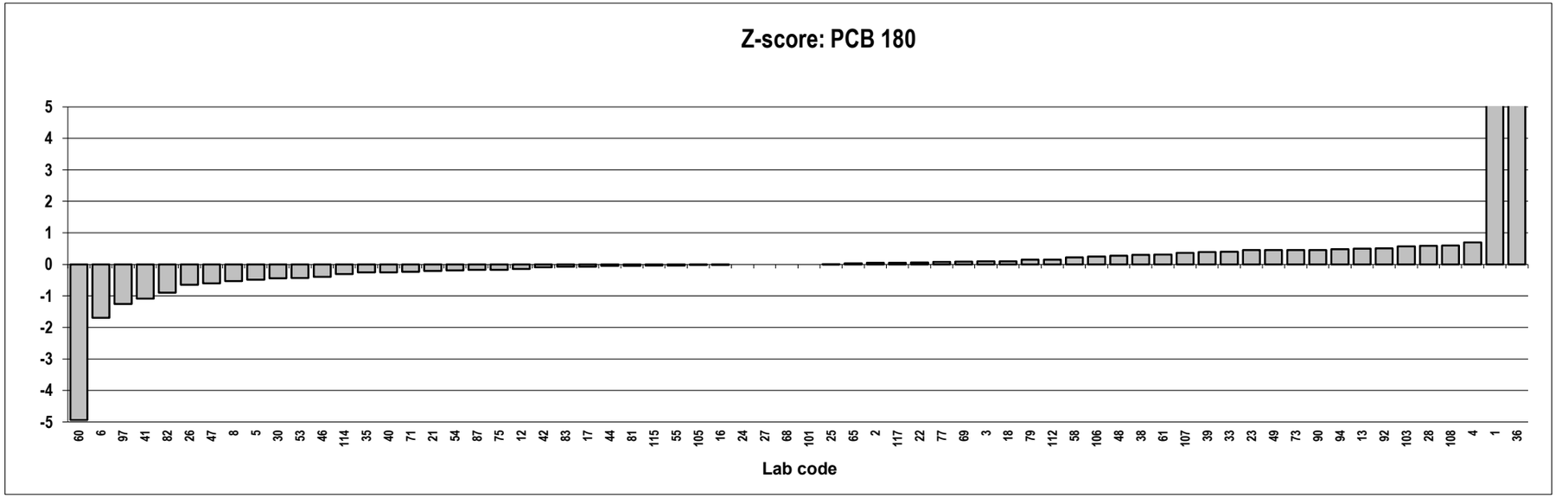
Congener: PCB 180

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
1	238	Outlier	75	97	
2	101		77	101	
3	102		79	103	
4	114		81	99	
5	90		82	82	
6	66		83	99	
8	89		87	97	
12	97		90	109	
13	110		92	110	
16	100		94	110	
17	99		97	75	
18	102		101	100	
21	96		103	111	
22	101		105	100	
23	109		106	105	
24	100		107	107	
25	100		108	112	
26	87		112	103	
27	100		114	94	
28	112		115	99	
30	91		117	101	
33	108				
35	95				
36	1980	Outlier			
38	106				
39	108				
40	95				
41	78				
42	98				
44	99				
46	92				
47	88				
48	105				
49	109				
53	91				
54	96				
55	99				
58	104				
60	1.2	Outlier			
61	106				
65	101				
68	100				
69	102				
71	95				
73	109				

Consenus statistics

Consensus median, pg/µL	100
Median all values pg/µL	100
Consensus mean, pg/µL	99
Standard deviation, pg/µL	9.0
Relative standard deviation, %	9.1
No. of values reported	66
No. of values removed	3
No. of reported non-detects	0


PCB 180
150.0
130.0
110.0
90.0
70.0
50.0
30.0
10.0
-10.0
pg/µL
1 2 3 4 5 6 8 12 13 16 17 18 21 22 23 24 25 26 27 28 30 33 35 36 38 39 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 71 73 75 77 79 81 82 83 87 90 92 94 97 101 103 105 106 107 108 112 114 115 117
Lab code


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 97 41 82 26 47 8 5 30 53 46 114 35 40 71 21 54 87 75 12 42 83 17 44 81 115 55 105 16 24 27 68 101 25 65 2 117 22 77 69 3 18 79 112 58 106 48 38 61 107 39 33 23 49 73 90 94 13 92 103 28 108 4 1 36
Lab code

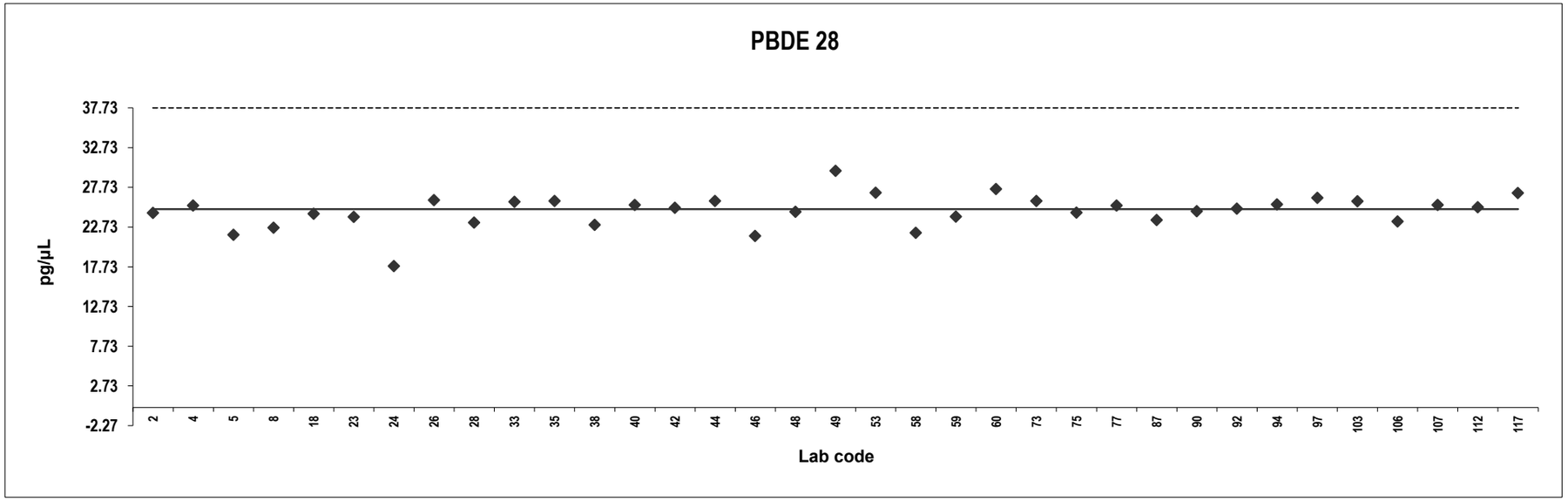
Analyte solution

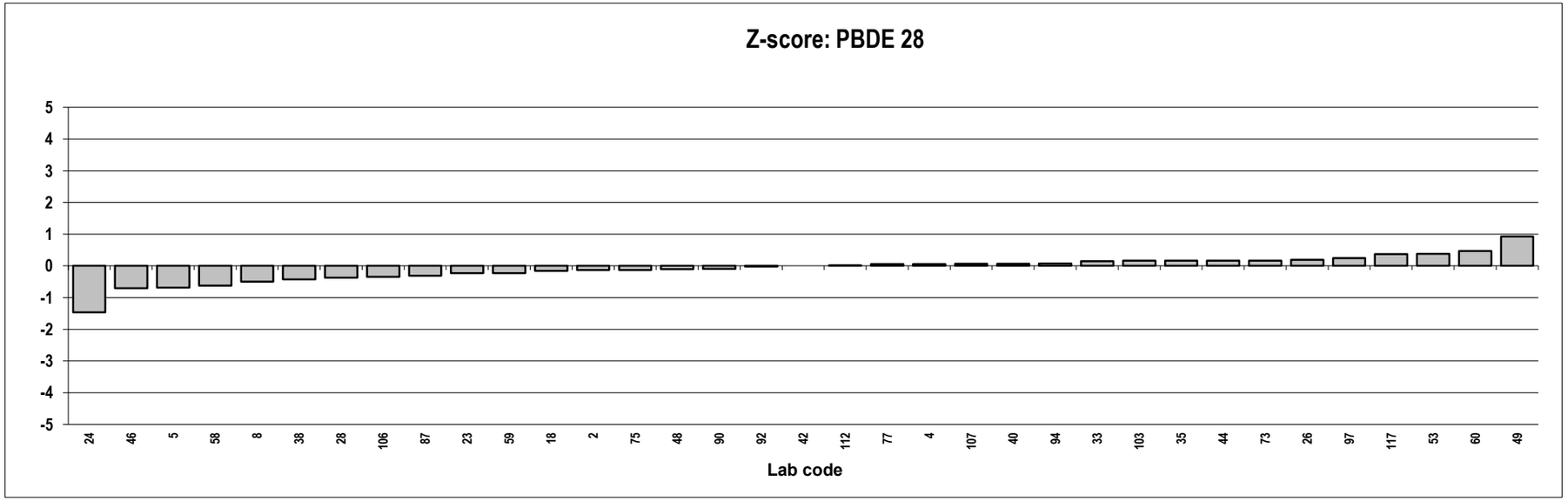
Congener: PBDE 28

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	25				
4	25				
5	22				
8	23				
18	24				
23	24				
24	18				
26	26				
28	23				
33	26				
35	26				
38	23				
40	26				
42	25				
44	26				
46	22				
48	25				
49	30				
53	27				
58	22				
59	24				
60	28				
73	26				
75	25				
77	25				
87	24				
90	25				
92	25				
94	26				
97	26				
103	26				
106	23				
107	25				
112	25				
117	27				

Consenus statistics

Consensus median, pg/µL	25
Median all values pg/µL	25
Consensus mean, pg/µL	25
Standard deviation, pg/µL	2.1
Relative standard deviation, %	8.4
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 28
37.73
32.73
27.73
22.73
17.73
12.73
7.73
2.73
-2.27
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 46 5 58 8 38 28 106 87 23 59 18 2 75 48 90 92 42 112 77 4 107 40 94 33 103 35 44 73 26 97 117 53 60 49
Lab code

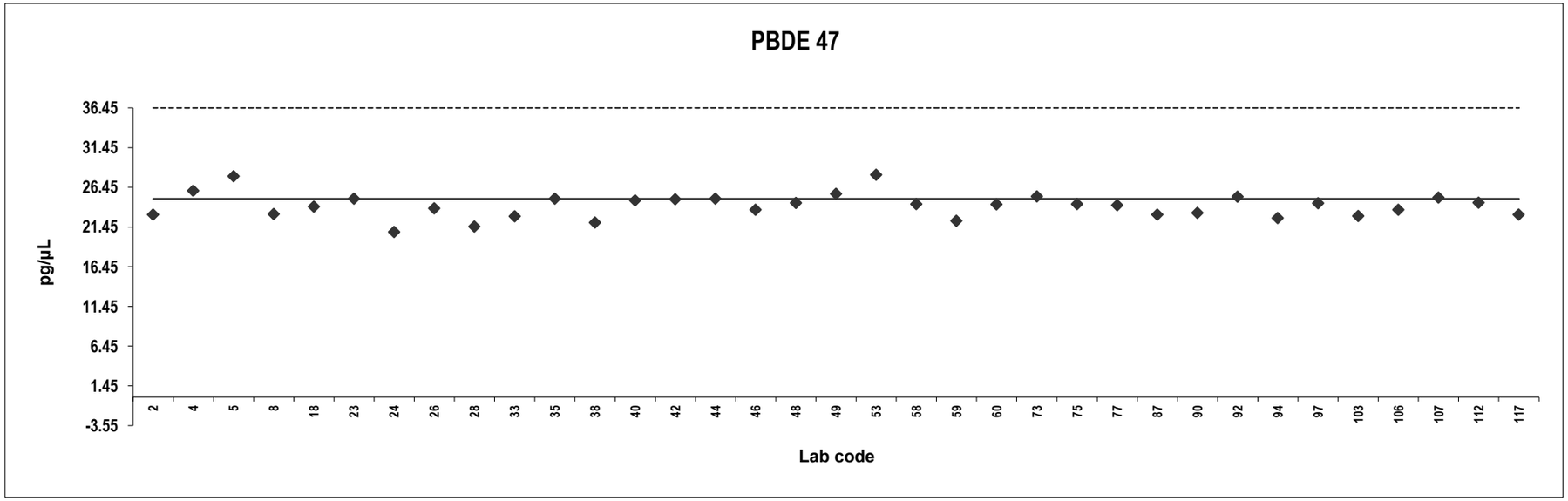
Analyte solution

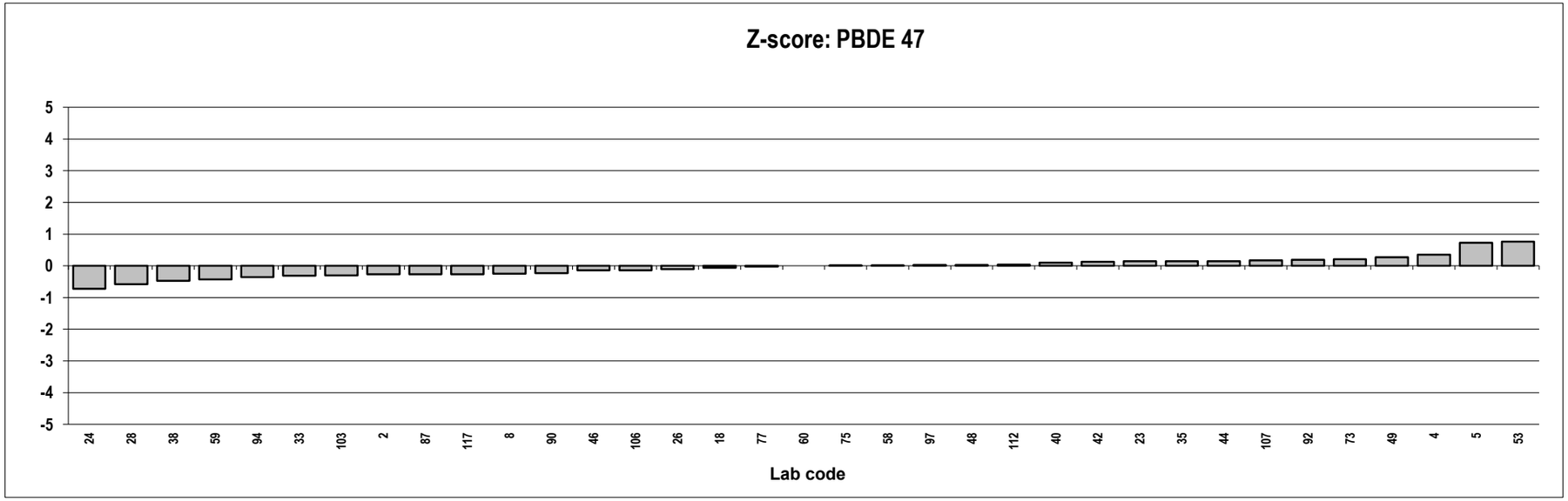
Congener: PBDE 47

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	23				
4	26				
5	28				
8	23				
18	24				
23	25				
24	21				
26	24				
28	22				
33	23				
35	25				
38	22				
40	25				
42	25				
44	25				
46	24				
48	24				
49	26				
53	28				
58	24				
59	22				
60	24				
73	25				
75	24				
77	24				
87	23				
90	23				
92	25				
94	23				
97	24				
103	23				
106	24				
107	25				
112	25				
117	23				

Consenus statistics

Consensus median, pg/µL	24
Median all values pg/µL	24
Consensus mean, pg/µL	24
Standard deviation, pg/µL	1.5
Relative standard deviation, %	6.4
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 47
36.45
31.45
26.45
21.45
16.45
11.45
6.45
1.45
-3.55
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 28 38 59 94 33 103 2 87 117 8 90 46 106 26 18 77 60 75 58 97 48 112 40 42 23 35 44 107 92 73 49 4 5 53
Lab code

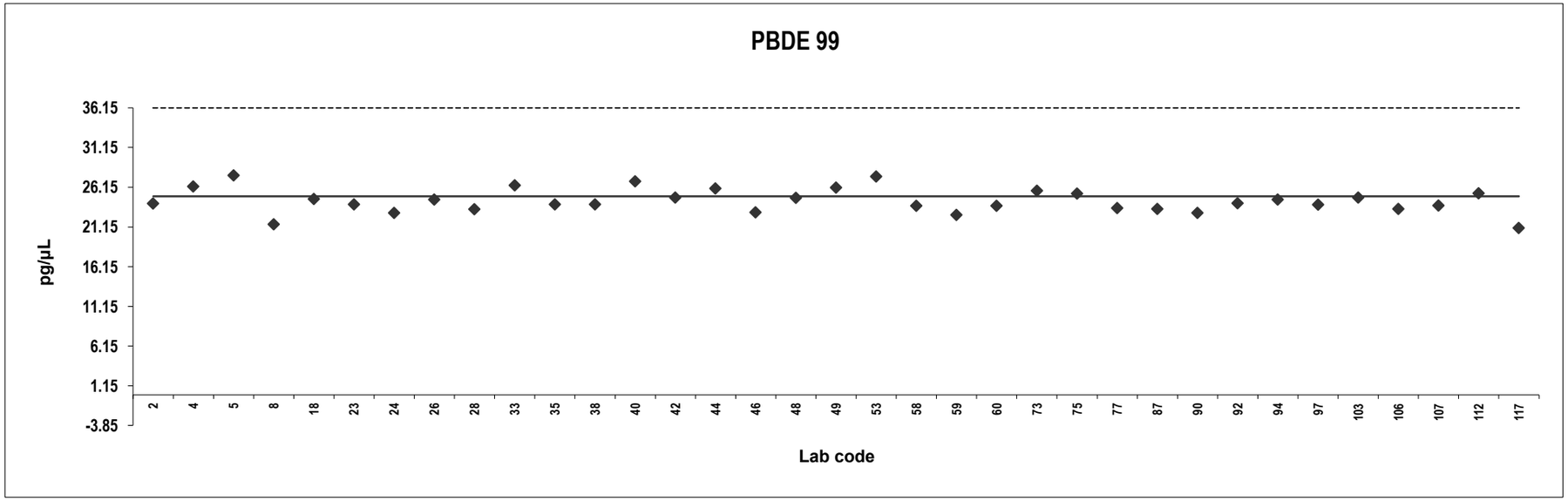
Analyte solution

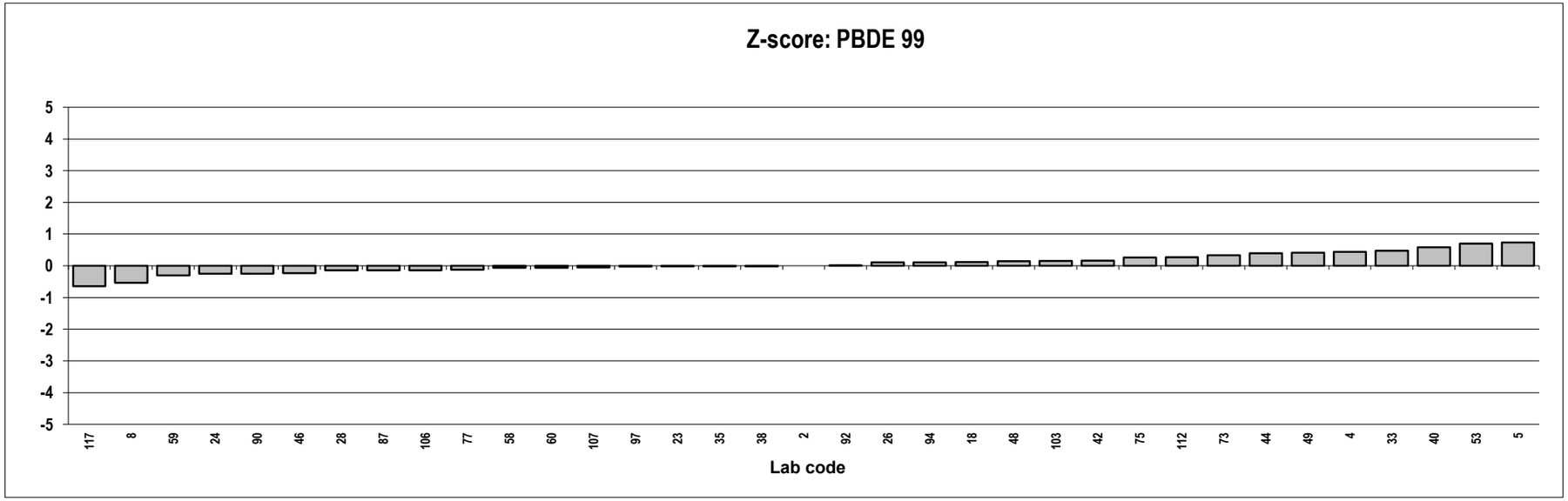
Congener: PBDE 99

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	24				
4	26				
5	28				
8	21				
18	25				
23	24				
24	23				
26	25				
28	23				
33	26				
35	24				
38	24				
40	27				
42	25				
44	26				
46	23				
48	25				
49	26				
53	27				
58	24				
59	23				
60	24				
73	26				
75	25				
77	24				
87	23				
90	23				
92	24				
94	25				
97	24				
103	25				
106	23				
107	24				
112	25				
117	21				

Consenus statistics

Consensus median, pg/µL	24
Median all values pg/µL	24
Consensus mean, pg/µL	24
Standard deviation, pg/µL	1.5
Relative standard deviation, %	6.2
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 99
36.15
31.15
26.15
21.15
16.15
11.15
6.15
1.15
-3.85
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
117 8 59 24 90 46 28 87 106 77 58 60 107 97 23 35 38 2 92 26 94 18 48 103 42 75 112 73 44 49 4 33 40 53 5
Lab code

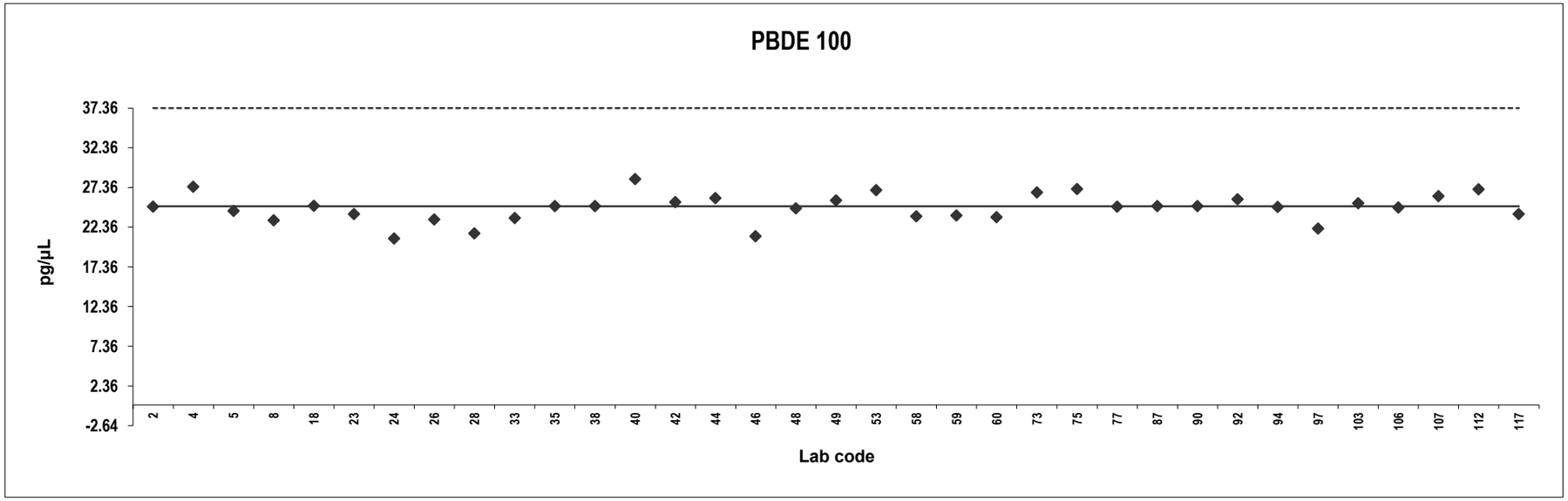
Analyte solution

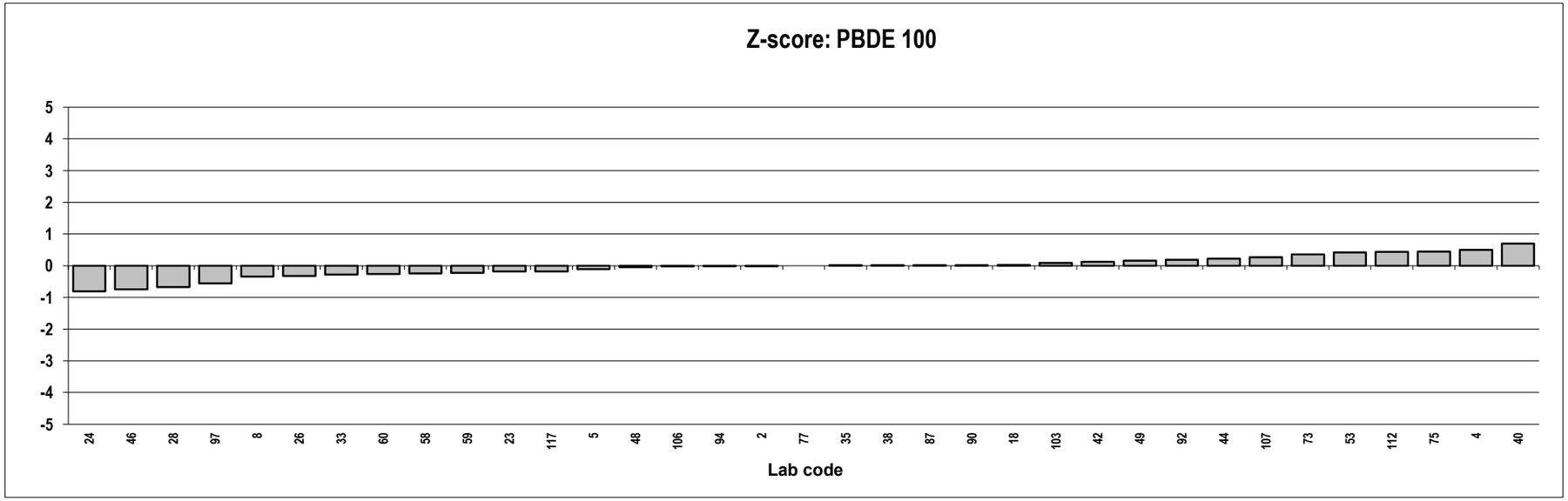
Congener: PBDE 100

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	25				
4	27				
5	24				
8	23				
18	25				
23	24				
24	21				
26	23				
28	22				
33	24				
35	25				
38	25				
40	28				
42	26				
44	26				
46	21				
48	25				
49	26				
53	27				
58	24				
59	24				
60	24				
73	27				
75	27				
77	25				
87	25				
90	25				
92	26				
94	25				
97	22				
103	25				
106	25				
107	26				
112	27				
117	24				

Consenus statistics

Consensus median, pg/µL	25
Median all values pg/µL	25
Consensus mean, pg/µL	25
Standard deviation, pg/µL	1.7
Relative standard deviation, %	7.0
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 100
37.36
32.36
27.36
22.36
17.36
12.36
7.36
2.36
-2.64
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 46 28 97 8 26 33 60 58 59 23 117 5 48 106 94 2 77 35 38 87 90 18 103 42 49 92 44 107 73 53 112 75 4 40
Lab code

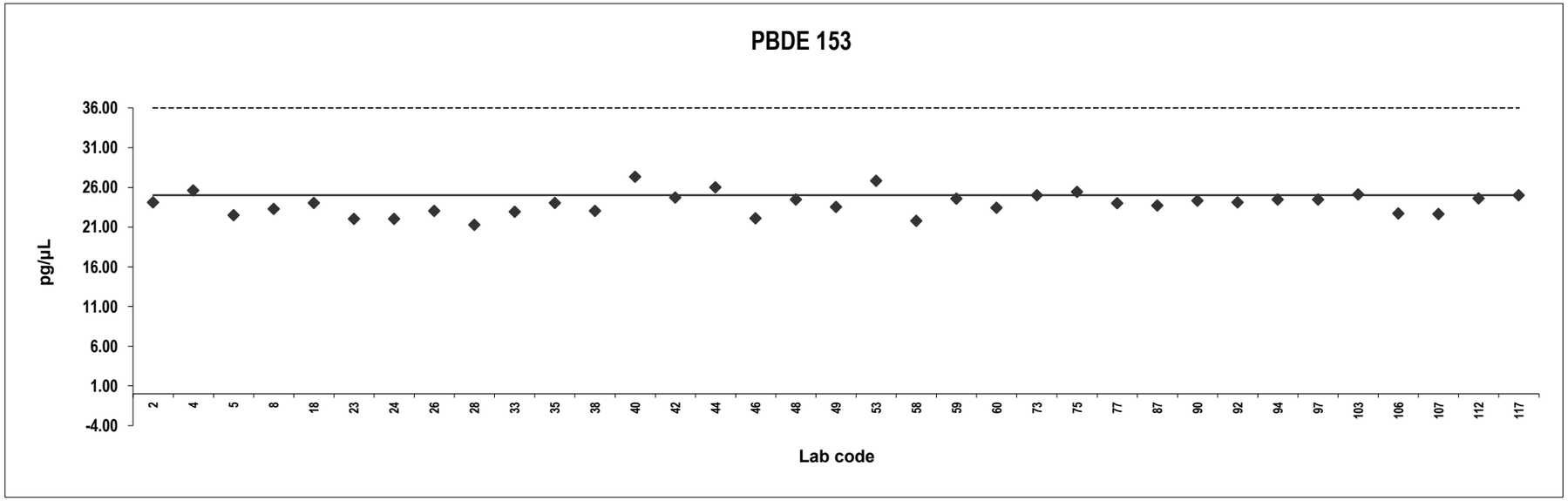
Analyte solution

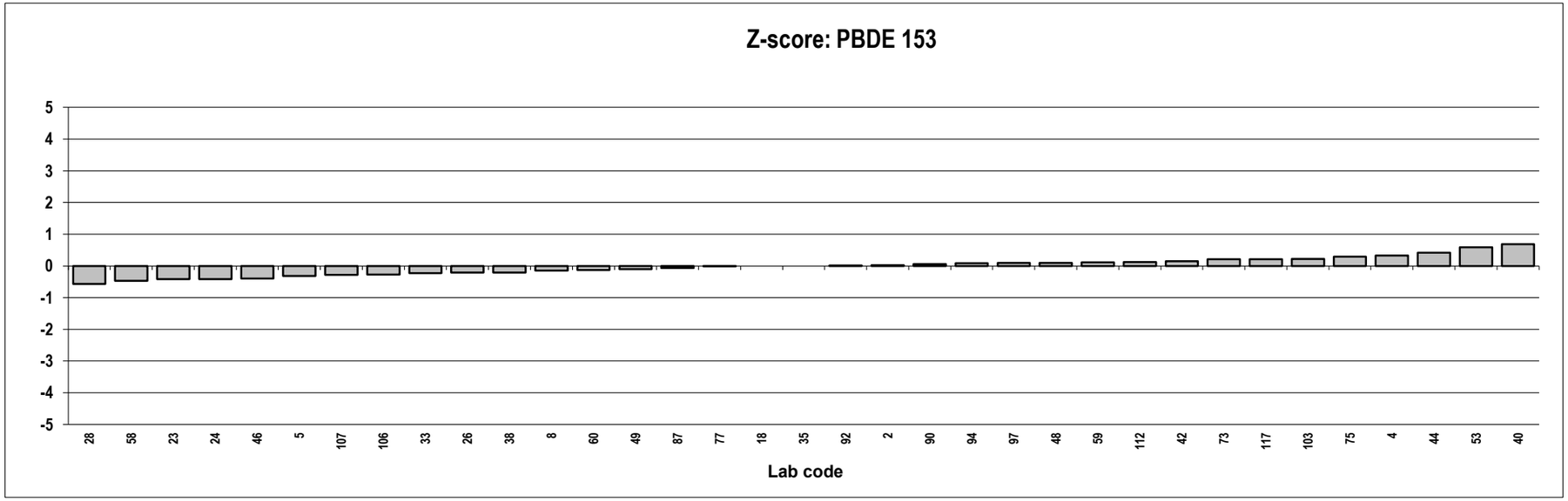
Congener: PBDE 153

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	24				
4	26				
5	22				
8	23				
18	24				
23	22				
24	22				
26	23				
28	21				
33	23				
35	24				
38	23				
40	27				
42	25				
44	26				
46	22				
48	24				
49	24				
53	27				
58	22				
59	25				
60	23				
73	25				
75	25				
77	24				
87	24				
90	24				
92	24				
94	24				
97	24				
103	25				
106	23				
107	23				
112	25				
117	25				

Consenus statistics

Consensus median, pg/µL	24
Median all values pg/µL	24
Consensus mean, pg/µL	24
Standard deviation, pg/µL	1.4
Relative standard deviation, %	5.8
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 153
36.00
31.00
26.00
21.00
16.00
11.00
6.00
1.00
-4.00
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
28 58 23 24 46 5 107 106 33 26 38 8 60 49 87 77 18 35 92 2 90 94 97 48 59 112 42 73 117 103 75 4 44 53 40
Lab code

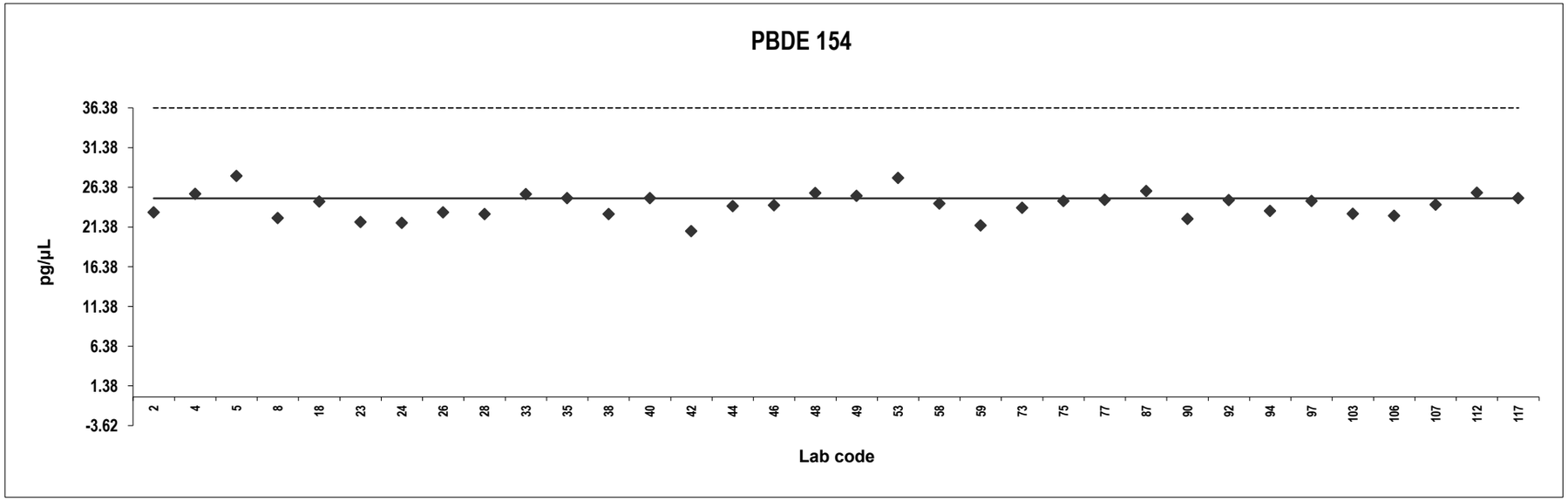
Analyte solution

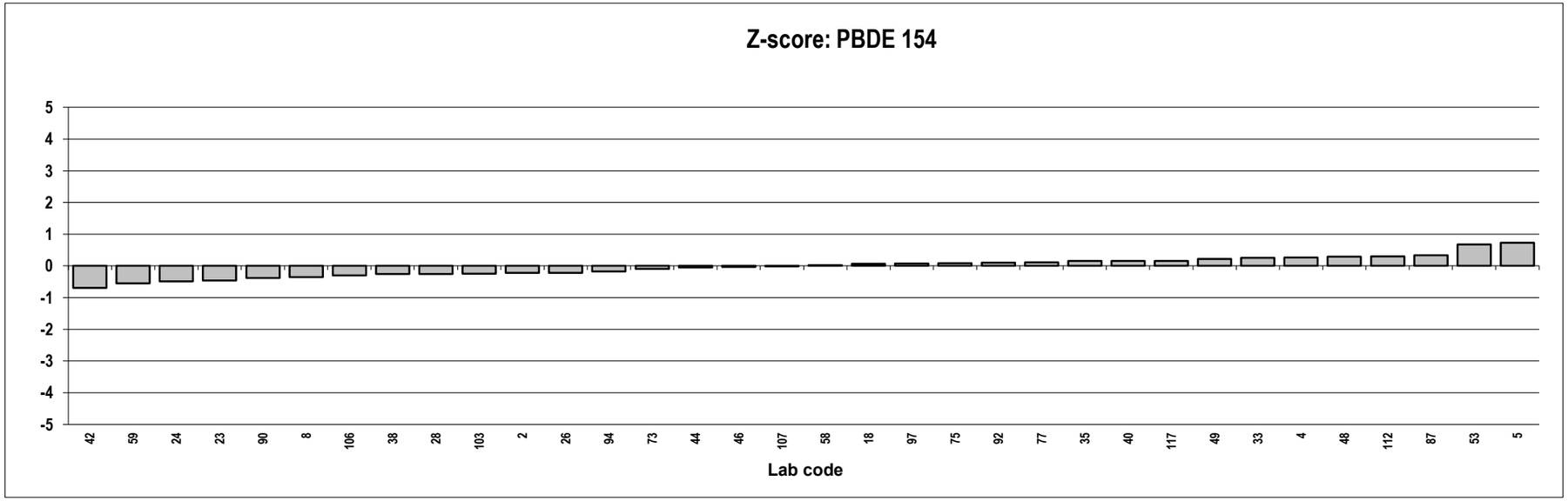
Congener: PBDE 154

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	23				
4	26				
5	28				
8	23				
18	25				
23	22				
24	22				
26	23				
28	23				
33	26				
35	25				
38	23				
40	25				
42	21				
44	24				
46	24				
48	26				
49	25				
53	28				
58	24				
59	22				
73	24				
75	25				
77	25				
87	26				
90	22				
92	25				
94	23				
97	25				
103	23				
106	23				
107	24				
112	26				
117	25				

Consenus statistics

Consensus median, pg/µL	24
Median all values pg/µL	24
Consensus mean, pg/µL	24
Standard deviation, pg/µL	1.6
Relative standard deviation, %	6.5
No. of values reported	34
No. of values removed	0
No. of reported non-detects	0


PBDE 154
36.38
31.38
26.38
21.38
16.38
11.38
6.38
1.38
-3.62
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 59 24 23 90 8 106 38 28 103 2 26 94 73 44 46 107 58 18 97 75 92 77 35 40 117 49 33 4 48 112 87 53 5
Lab code

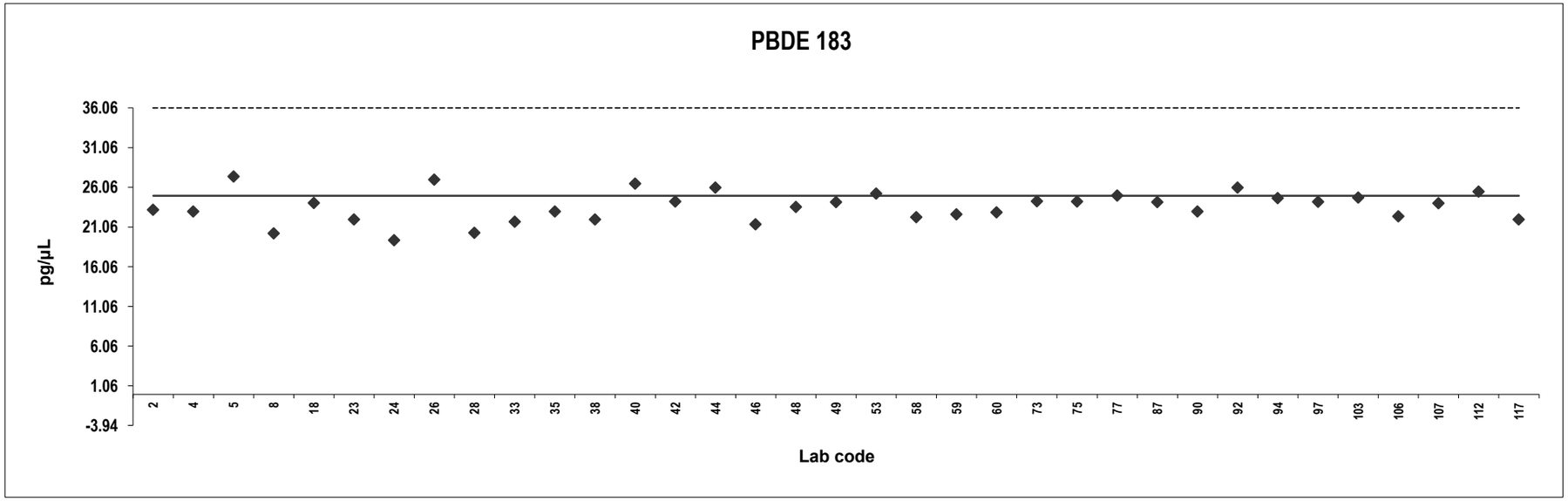
Analyte solution

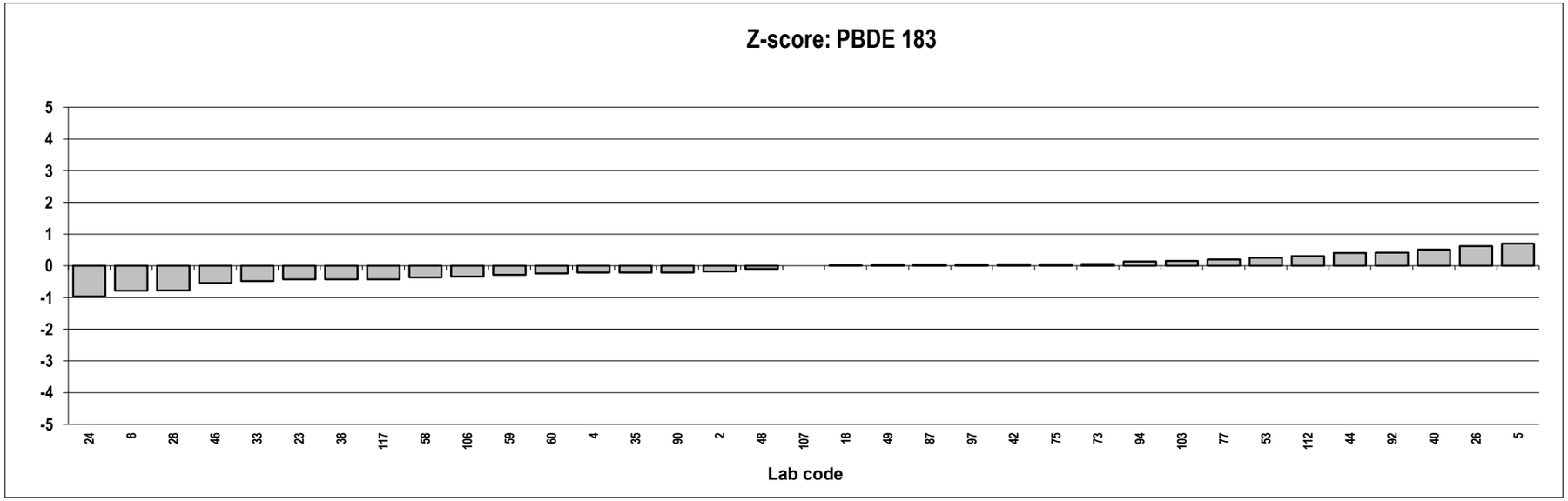
Congener: PBDE 183

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	23				
4	23				
5	27				
8	20				
18	24				
23	22				
24	19				
26	27				
28	20				
33	22				
35	23				
38	22				
40	27				
42	24				
44	26				
46	21				
48	24				
49	24				
53	25				
58	22				
59	23				
60	23				
73	24				
75	24				
77	25				
87	24				
90	23				
92	26				
94	25				
97	24				
103	25				
106	22				
107	24				
112	26				
117	22				

Consenus statistics

Consensus median, pg/µL	24
Median all values pg/µL	24
Consensus mean, pg/µL	24
Standard deviation, pg/µL	1.9
Relative standard deviation, %	8.0
No. of values reported	35
No. of values removed	0
No. of reported non-detects	0


PBDE 183
36.06
31.06
26.06
21.06
16.06
11.06
6.06
1.06
-3.94
pg/µL
2 4 5 8 18 23 24 26 28 33 35 38 40 42 44 46 48 49 53 58 59 60 73 75 77 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 8 28 46 33 23 38 117 58 106 59 60 4 35 90 2 48 107 18 49 87 97 42 75 73 94 103 77 53 112 44 92 40 26 5
Lab code

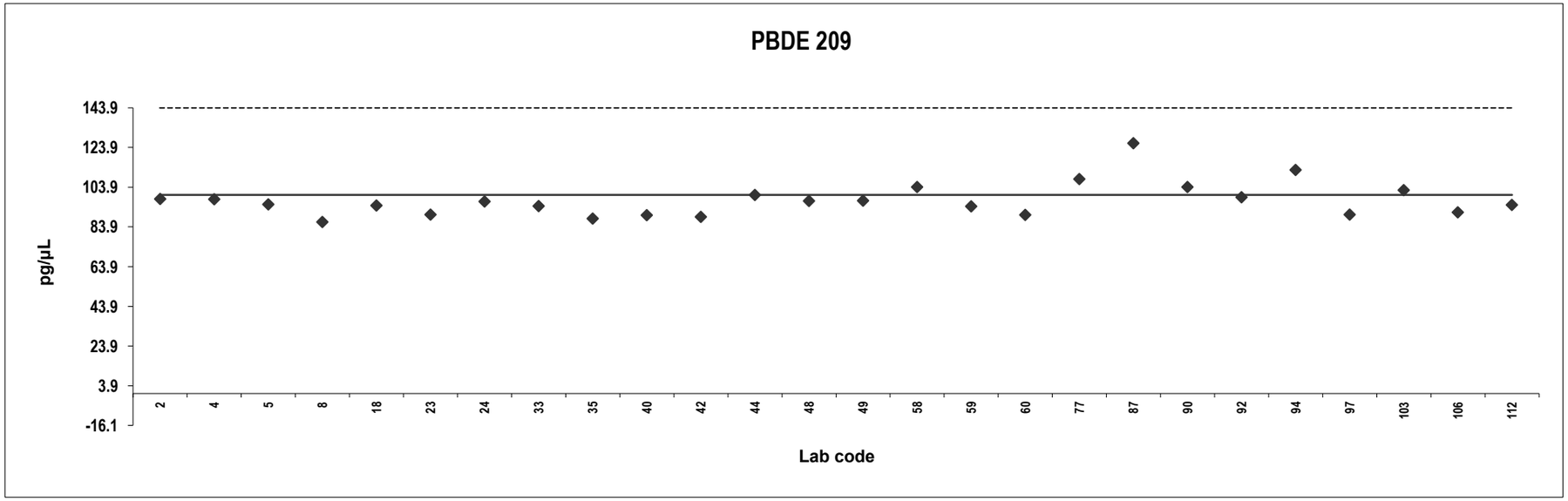
Analyte solution

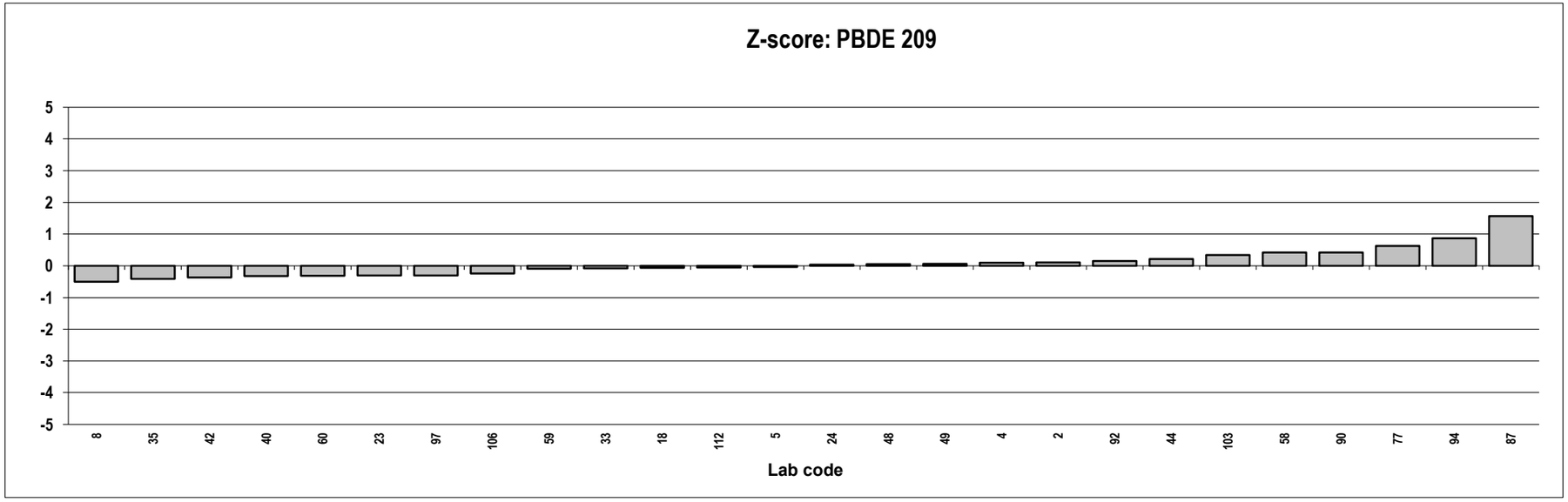
Congener: PBDE 209

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
2	98				
4	98				
5	95				
8	86				
18	95				
23	90				
24	97				
33	94				
35	88				
40	90				
42	89				
44	100				
48	97				
49	97				
58	104				
59	94				
60	90				
77	108				
87	126				
90	104				
92	99				
94	113				
97	90				
103	102				
106	91				
112	95				

Consenus statistics

Consensus median, pg/µL	96
Median all values pg/µL	96
Consensus mean, pg/µL	97
Standard deviation, pg/µL	8.6
Relative standard deviation, %	8.9
No. of values reported	26
No. of values removed	0
No. of reported non-detects	0


PBDE 209
143.9
123.9
103.9
83.9
63.9
43.9
23.9
3.9
-16.1
pg/µL
2
4
5
8
18
23
24
33
35
40
42
44
48
49
58
59
60
77
87
90
92
94
97
103
106
112
Lab code


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
8
35
42
40
60
23
97
106
59
33
18
112
5
24
48
49
4
2
92
44
103
58
90
77
94
87
Lab code

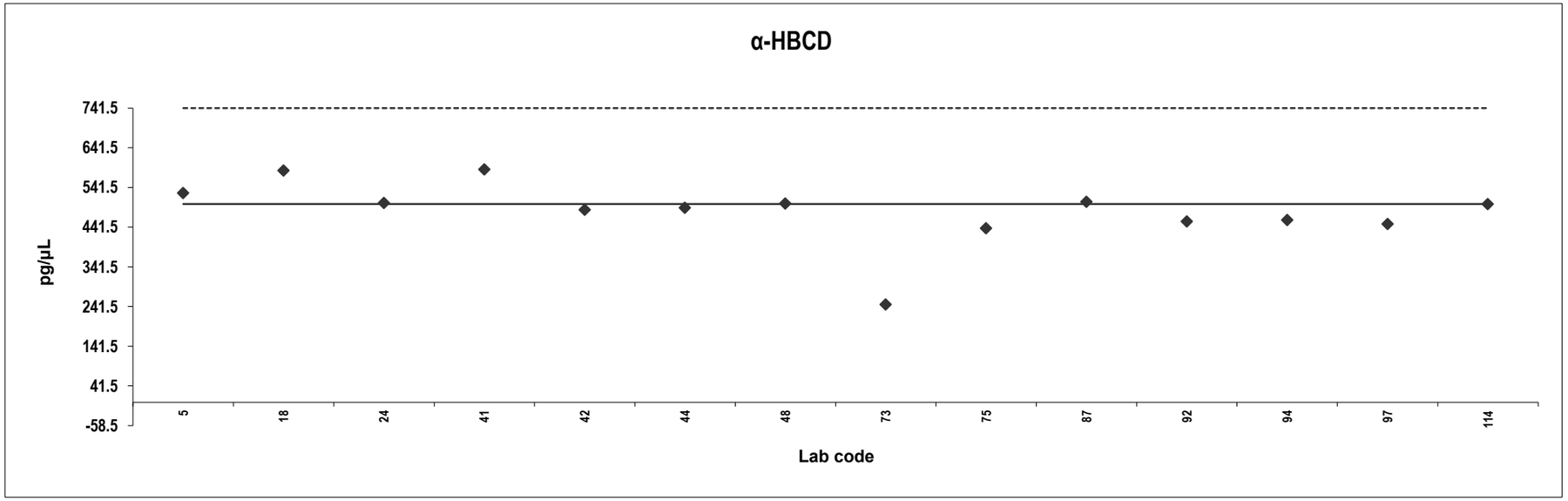
Analyte solution

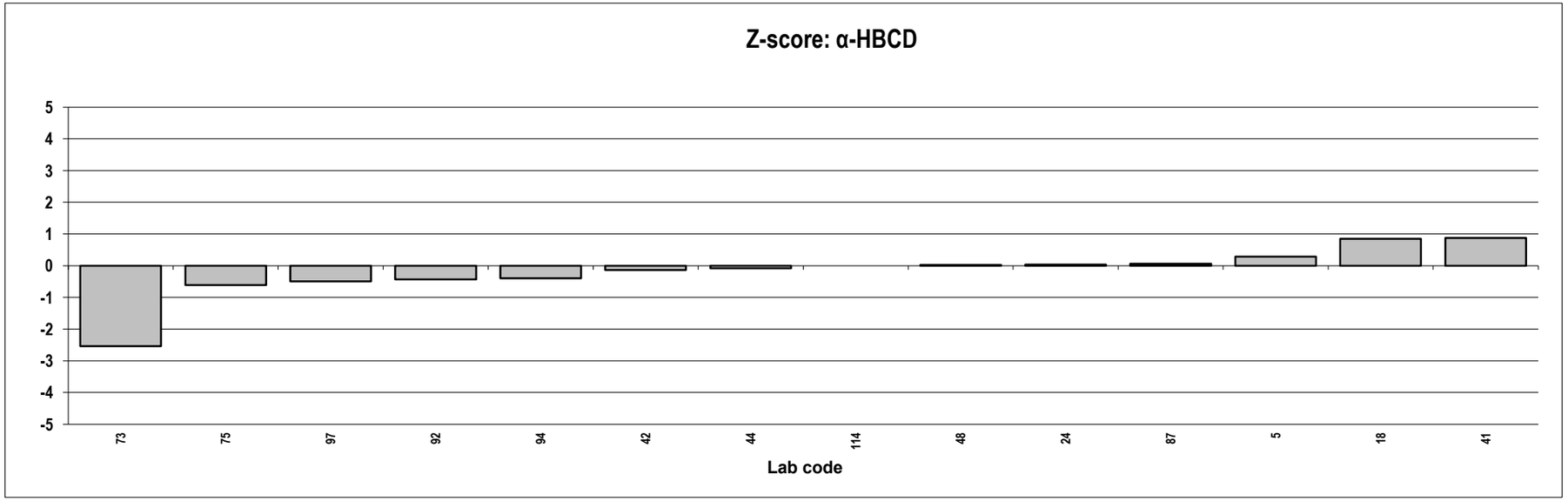
Congener: α-HBCD

Lab code	Conc. pg/µL	Notes	Lab code	Conc. pg/µL	Notes
5	527				
18	584				
24	502				
41	586				
42	485				
44	490				
48	501				
73	246	Outlier			
75	438				
87	505				
92	455				
94	459				
97	449				
114	499				

Consenus statistics

Consensus median, pg/µL	499
Median all values pg/µL	494
Consensus mean, pg/µL	498
Standard deviation, pg/µL	46
Relative standard deviation, %	9.3
No. of values reported	14
No. of values removed	1
No. of reported non-detects	0


α-HBCD
741.5
641.5
541.5
441.5
341.5
241.5
141.5
41.5
-58.5
pg/µL
5
18
24
41
42
44
48
73
75
87
92
94
97
114
Lab code


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
73
75
97
92
94
42
44
114
48
24
87
5
18
41
Lab code

Appendix 2:

Presentation of results
for Sheep liver-2016

Appendix 2: Presentation of results: Sheep liver-2016

Statistic calculations for PCDDs, PCDFs and dioxin-like PCBs

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

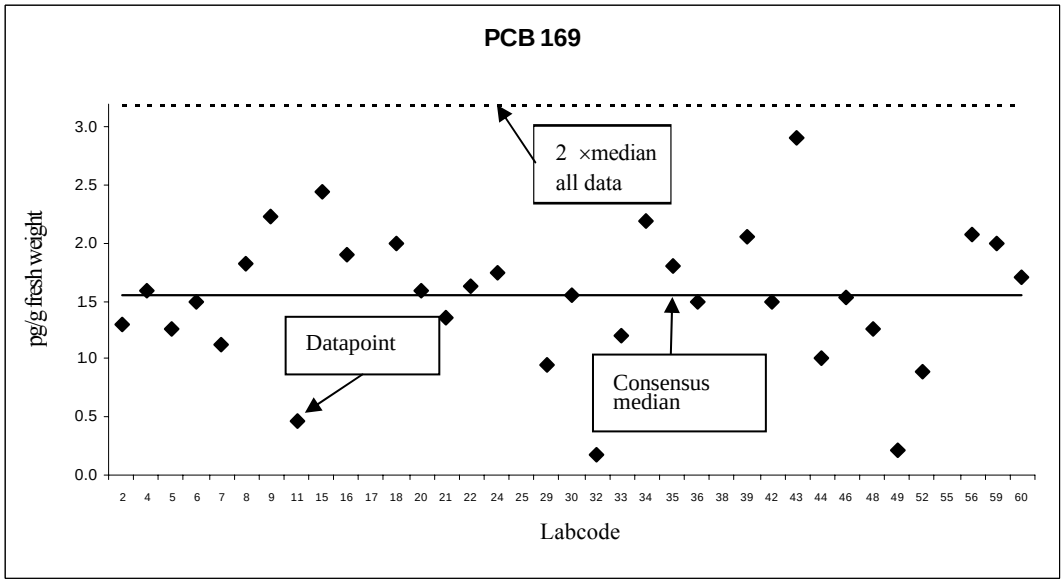
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data.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

Statistic calculations for indicator PCBs, PBDEs and HBCD

For each congener, the outliers were removed and the consensus value 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.

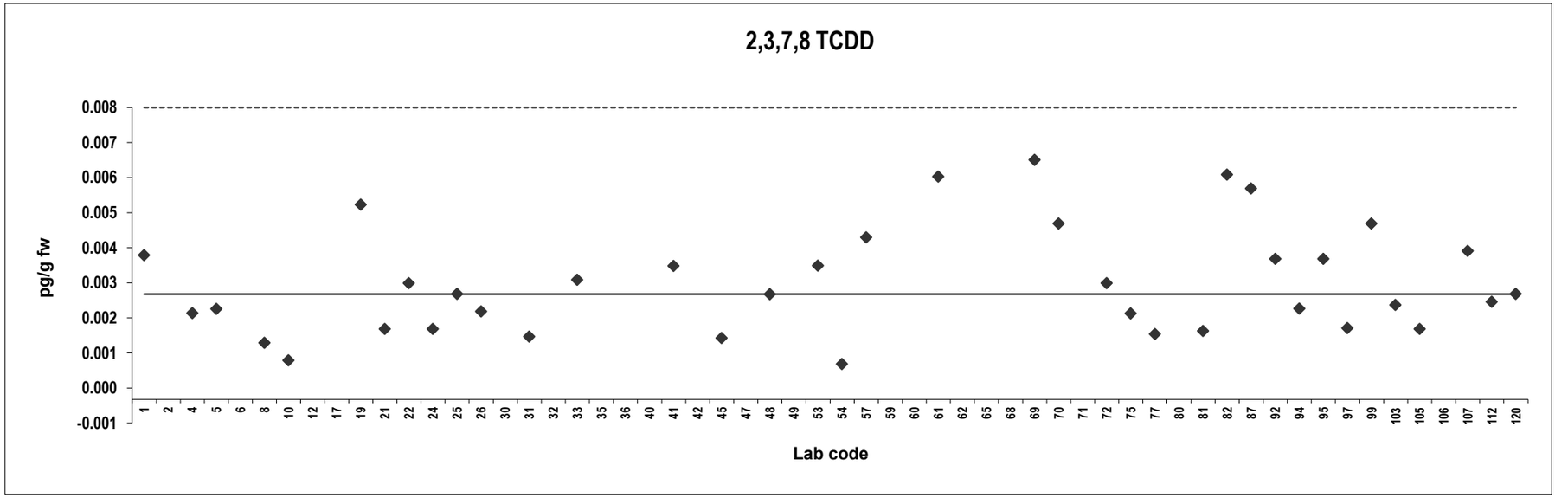
Sheep liver, fresh weight

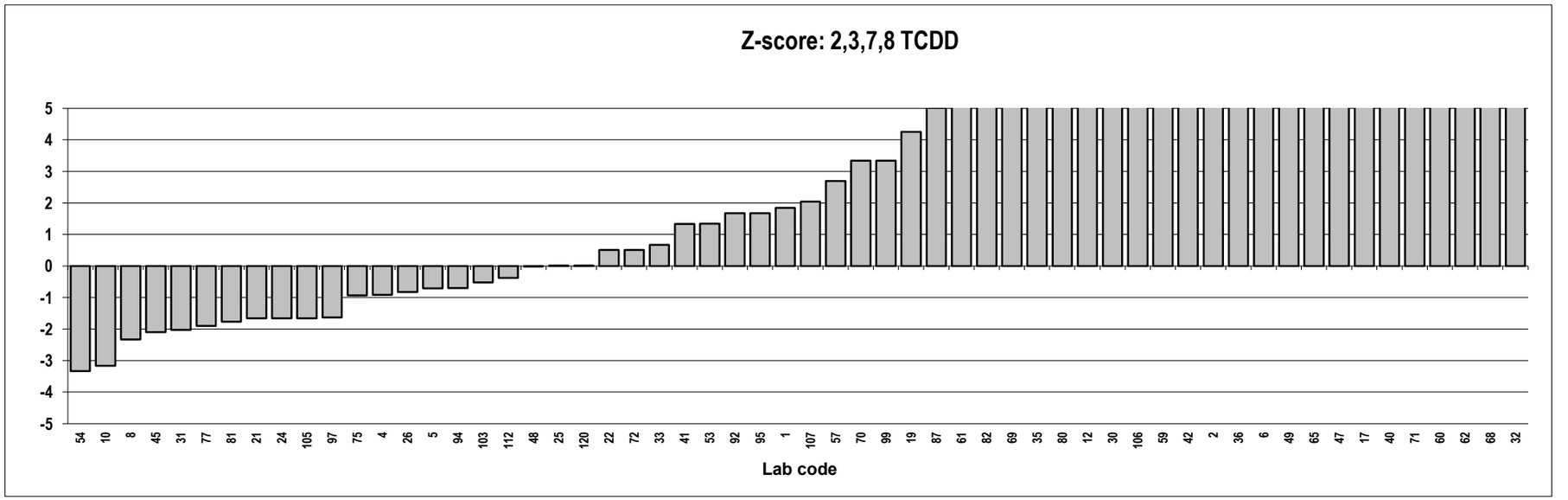
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0041	ND	82	0.0064	ND
2	0.018	Outlier,ND	87	0.0060	ND
4	0.0024		92	0.0040	
5	0.0026		94	0.0026	
6	0.020	Outlier,ND	95	0.0040	
8	0.0016	ND	97	0.0020	
10	0.0011	ND	99	0.0050	ND
12	0.011	Outlier,ND	103	0.0027	
17	0.040	Outlier,ND	105	0.0020	ND
19	0.0055		106	0.012	Outlier,ND
21	0.0020	ND	107	0.0042	ND
22	0.0033	ND	112	0.0028	ND
24	0.0020	ND	120	0.0030	ND
25	0.0030	ND			
26	0.0025				
30	0.012	Outlier,ND			
31	0.0018	ND			
32	0.098	Outlier			
33	0.0034	ND			
35	0.010	Outlier,ND			
36	0.018	Outlier,ND			
40	0.040	Outlier,ND			
41	0.0038	ND			
42	0.017	Outlier,ND			
45	0.0017	ND			
47	0.026	Outlier,ND			
48	0.0030	ND			
49	0.024	Outlier,ND			
53	0.0038				
54	0.0010	ND			
57	0.0046				
59	0.013	Outlier,ND			
60	0.046	Outlier			
61	0.0063	ND			
62	0.050	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.0068				
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0033	ND			
75	0.0024				
77	0.0019				
80	0.010	Outlier,ND			
81	0.0019				

Consenus statistics

Consensus median, pg/g	0.0030
Median all values pg/g	0.0042
Consensus mean, pg/g	0.0033
Standard deviation, pg/g	0.0015
Relative standard deviation, %	46
No. of values reported	58
No. of values removed	20
No. of reported non-detects	41


2,3,7,8 TCDD
pg/g fw
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
54 10 8 45 31 77 81 21 24 105 97 75 4 26 5 94 103 112 48 25 120 22 72 33 41 53 92 95 1 107 57 70 99 19 87 61 82 69 35 80 12 30 106 59 42 2 36 6 49 65 47 17 40 71 60 62 68 32
Lab code

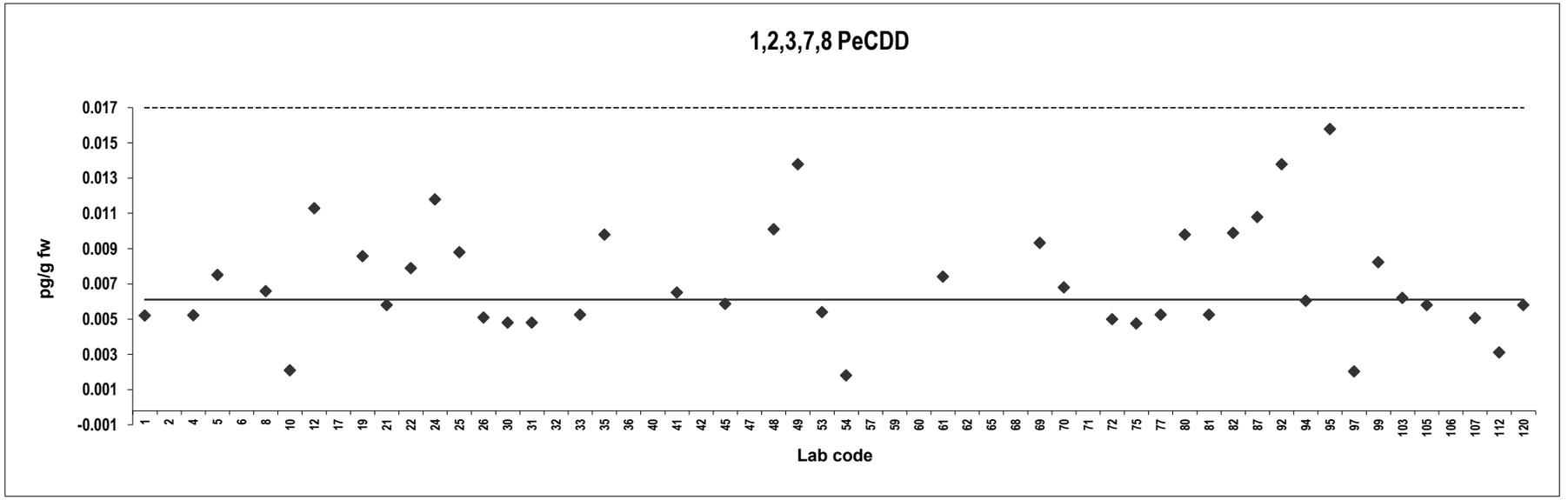
Sheep liver, fresh weight

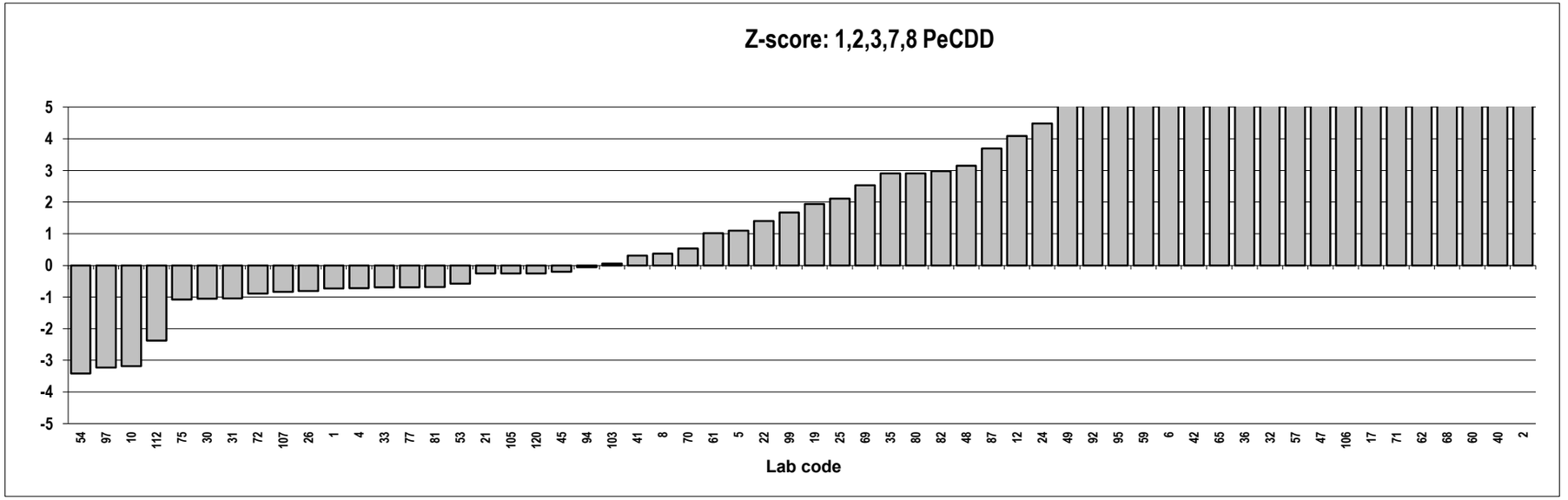
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0054		82	0.010	ND
2	0.090	Outlier	87	0.011	ND
4	0.0054		92	0.014	
5	0.0077		94	0.0063	
6	0.020	Outlier,ND	95	0.016	
8	0.0068		97	0.0022	ND
10	0.0023	ND	99	0.0084	ND
12	0.012	ND	103	0.0064	
17	0.040	Outlier,ND	105	0.0060	
19	0.0088	ND	106	0.035	Outlier,ND
21	0.0060		107	0.0053	ND
22	0.0081		112	0.0033	
24	0.012		120	0.0060	
25	0.0090				
26	0.0053				
30	0.0050				
31	0.0050				
32	0.029	Outlier			
33	0.0055	ND			
35	0.010	ND			
36	0.026	Outlier,ND			
40	0.070	Outlier,ND			
41	0.0067	ND			
42	0.021	Outlier,ND			
45	0.0061				
47	0.031	Outlier			
48	0.010				
49	0.014	ND			
53	0.0056				
54	0.0020				
57	0.030	Outlier			
59	0.018	Outlier,ND			
60	0.053	Outlier			
61	0.0076				
62	0.050	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.0095				
70	0.0070				
71	0.040	Outlier,ND			
72	0.0052				
75	0.0050				
77	0.0055				
80	0.010	ND			
81	0.0055				

Consenus statistics

Consensus median, pg/g	0.0063
Median all values pg/g	0.0086
Consensus mean, pg/g	0.0073
Standard deviation, pg/g	0.0032
Relative standard deviation, %	43
No. of values reported	58
No. of values removed	16
No. of reported non-detects	24


1,2,3,7,8 PeCDD
pg/g fw
0.017
0.015
0.013
0.011
0.009
0.007
0.005
0.003
0.001
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
54 97 10 112 75 30 31 72 107 26 1 4 33 77 81 53 21 105 120 45 94 103 41 8 70 61 5 22 99 19 25 69 35 80 82 48 87 12 24 49 92 95 59 6 42 65 36 32 57 47 106 17 71 62 68 60 40 2
Lab code

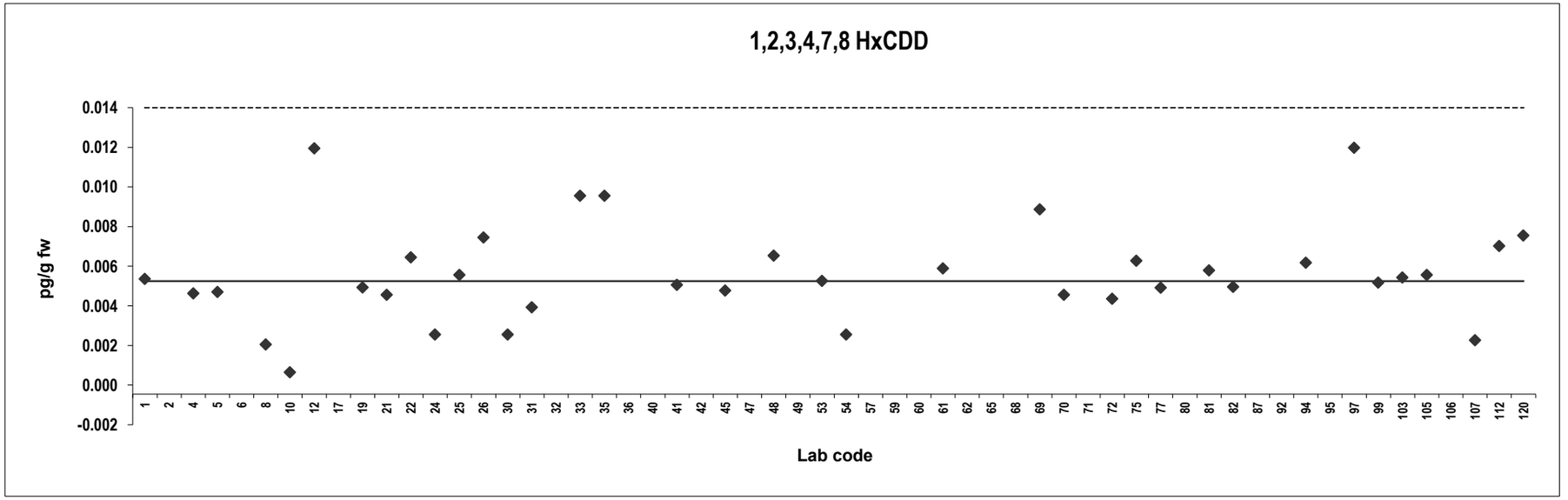
Sheep liver, fresh weight

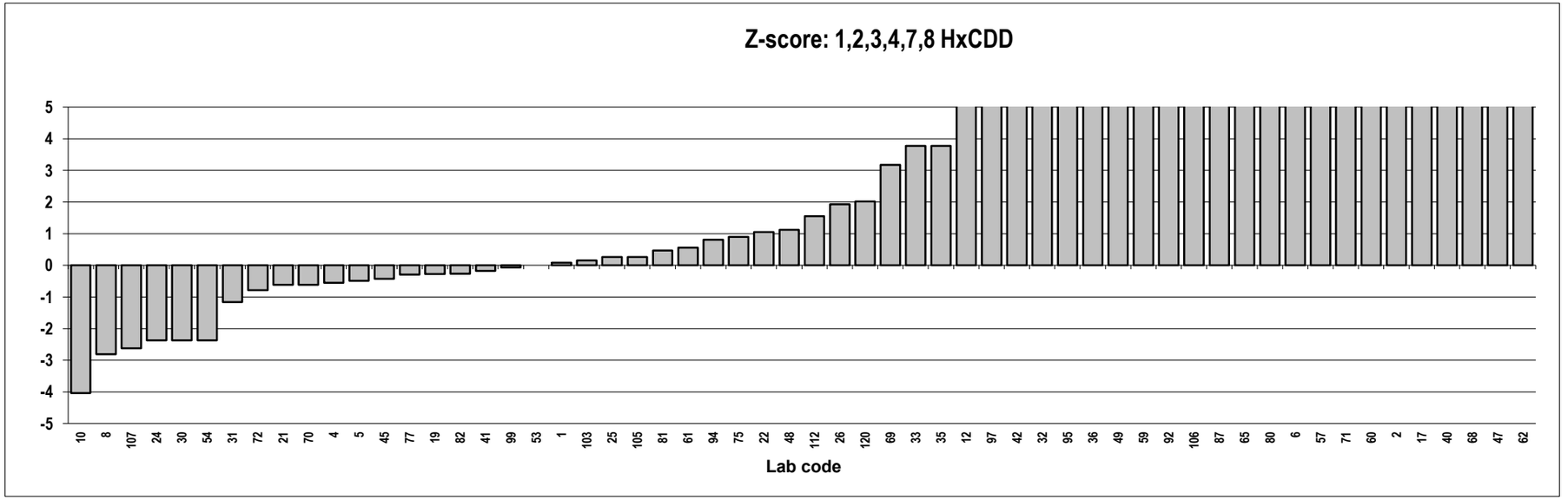
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0058		82	0.0054	
2	0.047	Outlier,ND	87	0.024	Outlier,ND
4	0.0051		92	0.022	Outlier
5	0.0051		94	0.0066	
6	0.030	Outlier,ND	95	0.018	Outlier
8	0.0025	ND	97	0.012	
10	0.0011	ND	99	0.0056	ND
12	0.012	ND	103	0.0059	
17	0.050	Outlier,ND	105	0.0060	
19	0.0054	ND	106	0.022	Outlier,ND
21	0.0050		107	0.0027	ND
22	0.0069		112	0.0075	
24	0.0030	ND	120	0.0080	
25	0.0060	ND			
26	0.0079				
30	0.0030				
31	0.0044				
32	0.018	Outlier			
33	0.010	ND			
35	0.010	ND			
36	0.020	Outlier,ND			
40	0.050	Outlier,ND			
41	0.0055	ND			
42	0.015	Outlier,ND			
45	0.0052	ND			
47	0.087	Outlier			
48	0.0070				
49	0.020	Outlier,ND			
53	0.0057				
54	0.0030				
57	0.032	Outlier			
59	0.021	Outlier,ND			
60	0.044	Outlier			
61	0.0063	ND			
62	0.23	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.0093				
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0048	ND			
75	0.0067				
77	0.0054				
80	0.025	Outlier,ND			
81	0.0062				

Consenus statistics

Consensus median, pg/g	0.0057
Median all values pg/g	0.0072
Consensus mean, pg/g	0.0061
Standard deviation, pg/g	0.0025
Relative standard deviation, %	41
No. of values reported	58
No. of values removed	21
No. of reported non-detects	30


1,2,3,4,7,8 HxCDD
pg/g fw
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
-0.002
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
10 8 107 24 30 54 31 72 21 70 4 5 45 77 19 82 41 99 53 1 103 25 105 81 61 94 75 22 48 112 26 120 69 33 35 12 97 42 32 95 36 49 59 92 106 87 65 80 6 57 71 60 2 17 40 68 47 62
Lab code

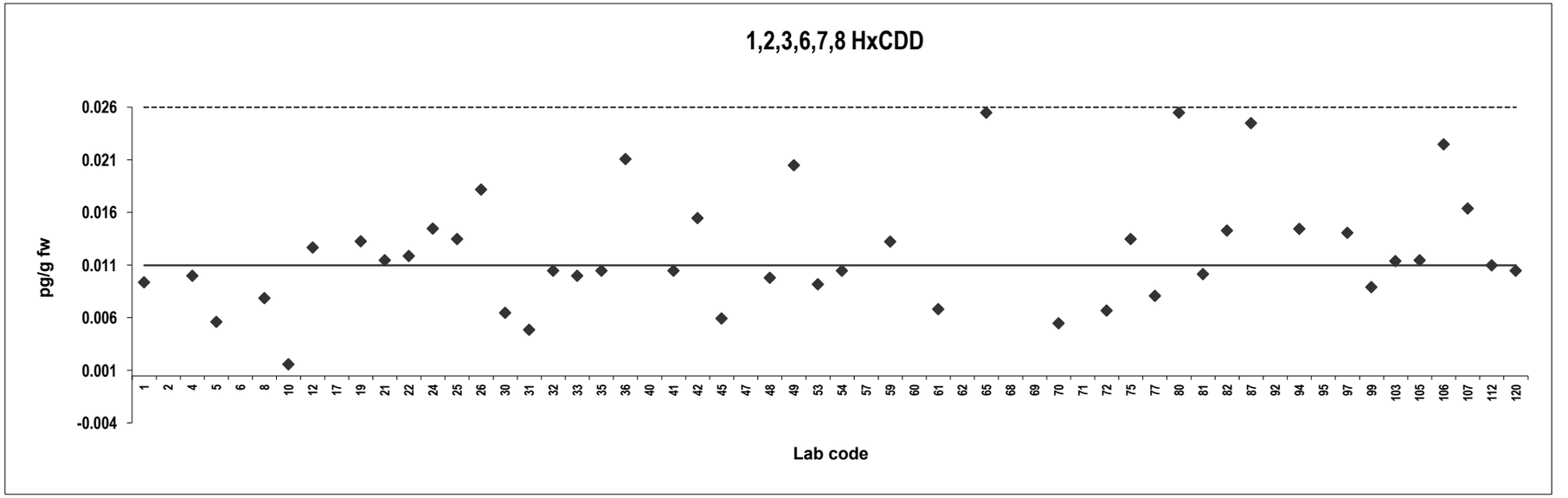
Sheep liver, fresh weight

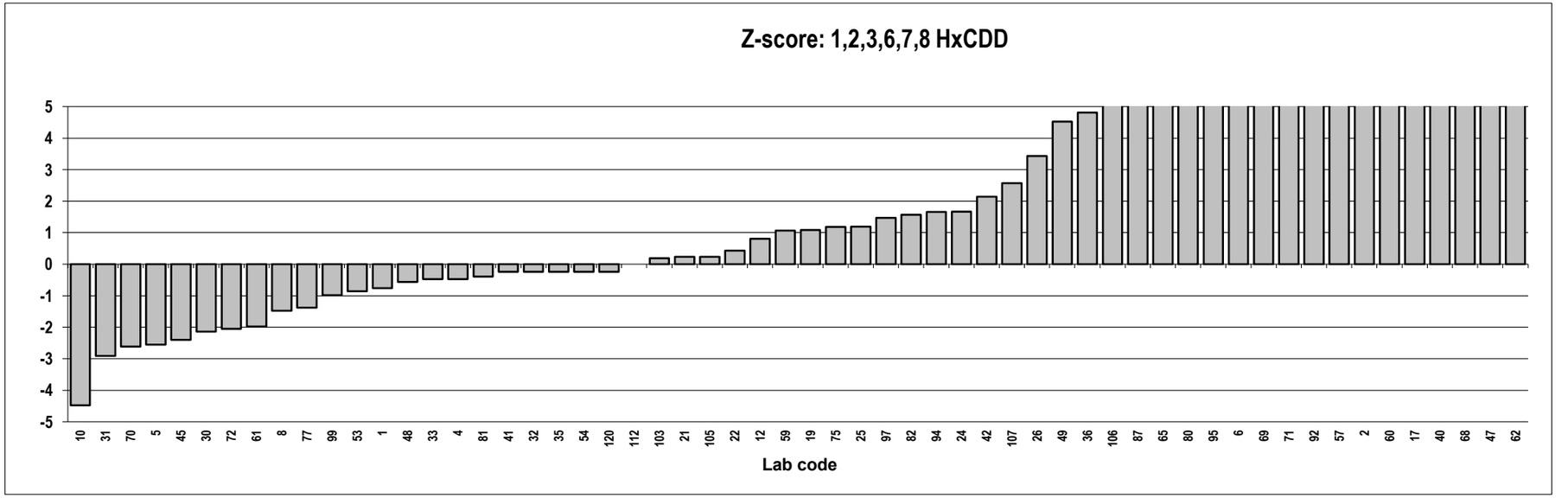
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0089		82	0.014	
2	0.046	Outlier,ND	87	0.024	ND
4	0.0095		92	0.040	Outlier
5	0.0051		94	0.014	
6	0.030	Outlier,ND	95	0.028	Outlier
8	0.0074		97	0.014	
10	0.0011	ND	99	0.0084	ND
12	0.012	ND	103	0.011	
17	0.050	Outlier,ND	105	0.011	
19	0.013		106	0.022	ND
21	0.011		107	0.016	
22	0.011		112	0.011	
24	0.014		120	0.010	
25	0.013				
26	0.018				
30	0.0060				
31	0.0044				
32	0.010	ND			
33	0.0095	ND			
35	0.010	ND			
36	0.021	ND			
40	0.050	Outlier,ND			
41	0.010				
42	0.015	ND			
45	0.0055	ND			
47	0.089	Outlier			
48	0.0093				
49	0.020	ND			
53	0.0087				
54	0.010				
57	0.044	Outlier			
59	0.013	ND			
60	0.046	Outlier			
61	0.0063	ND			
62	0.21	Outlier,ND			
65	0.025	ND			
68	0.050	Outlier,ND			
69	0.034	Outlier			
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0062				
75	0.013				
77	0.0076				
80	0.025	ND			
81	0.0097				

Consenus statistics

Consensus median, pg/g	0.011
Median all values pg/g	0.013
Consensus mean, pg/g	0.012
Standard deviation, pg/g	0.0055
Relative standard deviation, %	47
No. of values reported	58
No. of values removed	13
No. of reported non-detects	24


1,2,3,6,7,8 HxCDD
pg/g fw
0.026
0.021
0.016
0.011
0.006
0.001
-0.004
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
10 31 70 5 45 30 72 61 8 77 99 53 1 48 33 4 81 41 32 35 54 120 112 103 21 105 22 12 59 19 75 25 97 82 94 24 42 107 26 49 36 106 87 65 80 95 6 69 71 92 57 2 60 17 40 68 47 62
Lab code

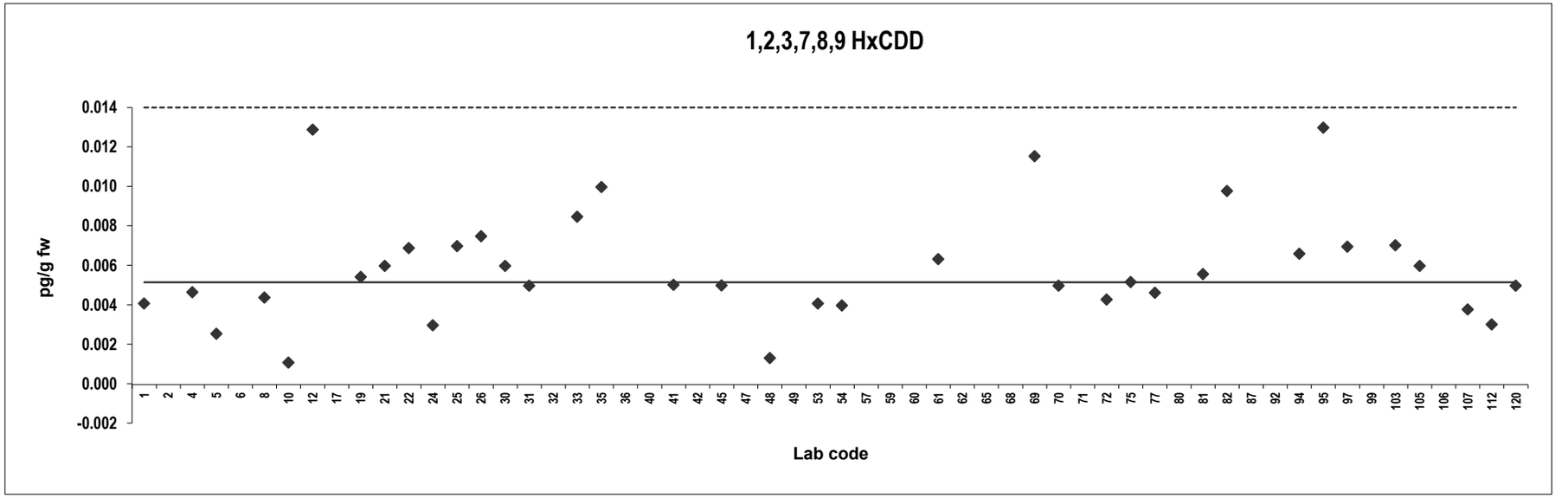
Sheep liver, fresh weight

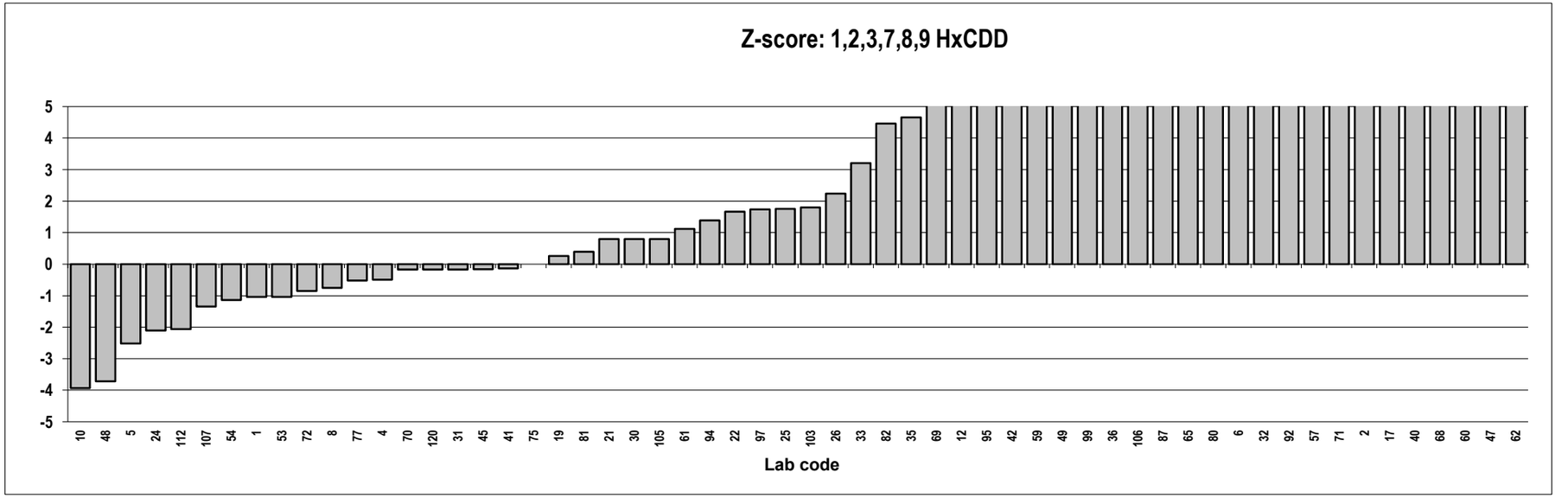
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0041	ND	82	0.0098	
2	0.050	Outlier,ND	87	0.023	Outlier,ND
4	0.0047		92	0.035	Outlier
5	0.0026		94	0.0066	
6	0.030	Outlier,ND	95	0.013	
8	0.0044		97	0.0070	
10	0.0011	ND	99	0.020	Outlier
12	0.013	ND	103	0.0070	
17	0.050	Outlier,ND	105	0.0060	
19	0.0054	ND	106	0.022	Outlier,ND
21	0.0060		107	0.0038	
22	0.0069		112	0.0030	
24	0.0030	ND	120	0.0050	
25	0.0070	ND			
26	0.0075				
30	0.0060				
31	0.0050				
32	0.033	Outlier			
33	0.0085	ND			
35	0.010	ND			
36	0.021	Outlier,ND			
40	0.050	Outlier,ND			
41	0.0050				
42	0.015	Outlier,ND			
45	0.0050	ND			
47	0.098	Outlier			
48	0.0013	ND			
49	0.020	Outlier,ND			
53	0.0041				
54	0.0040				
57	0.040	Outlier			
59	0.019	Outlier,ND			
60	0.050	Outlier			
61	0.0063	ND			
62	0.24	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.012				
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0043	ND			
75	0.0052				
77	0.0046				
80	0.025	Outlier,ND			
81	0.0056				

Consenus statistics

Consensus median, pg/g	0.0052
Median all values pg/g	0.0070
Consensus mean, pg/g	0.0059
Standard deviation, pg/g	0.0028
Relative standard deviation, %	47
No. of values reported	58
No. of values removed	21
No. of reported non-detects	28


1,2,3,7,8,9 HxCDD
pg/g fw
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
-0.002
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
10 48 5 24 112 107 54 1 53 72 8 77 4 70 120 31 45 41 75 19 81 21 30 105 61 94 22 97 25 103 26 33 82 35 69 12 95 42 59 49 99 36 106 87 65 80 6 32 92 57 71 2 17 40 68 60 47 62
Lab code

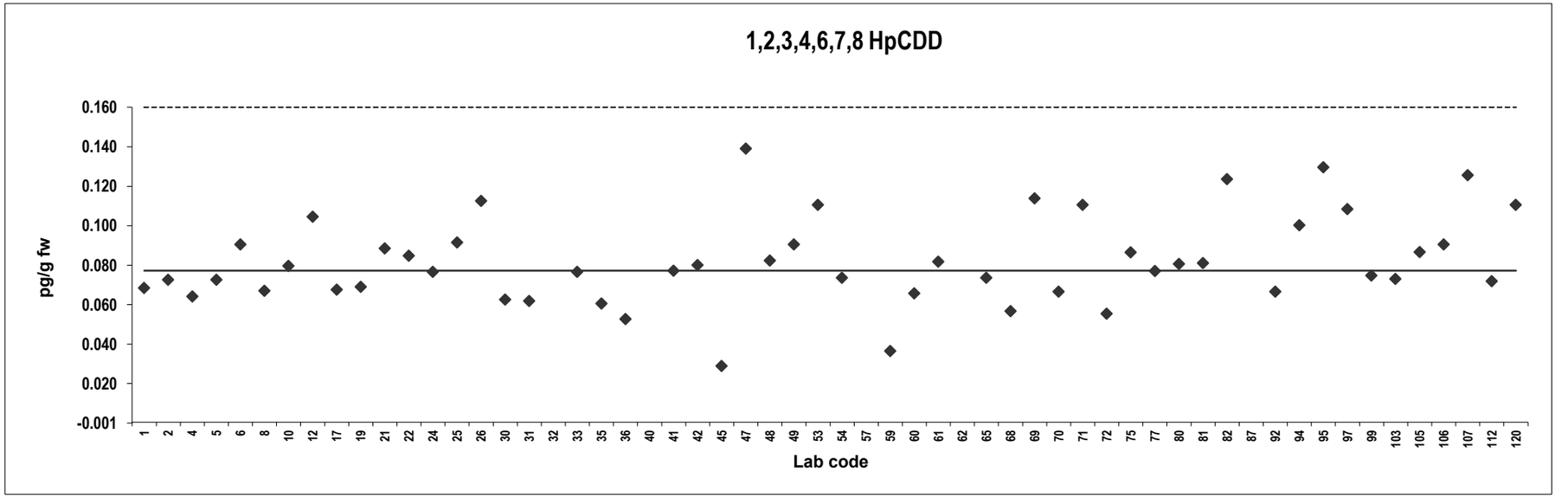
Sheep liver, fresh weight

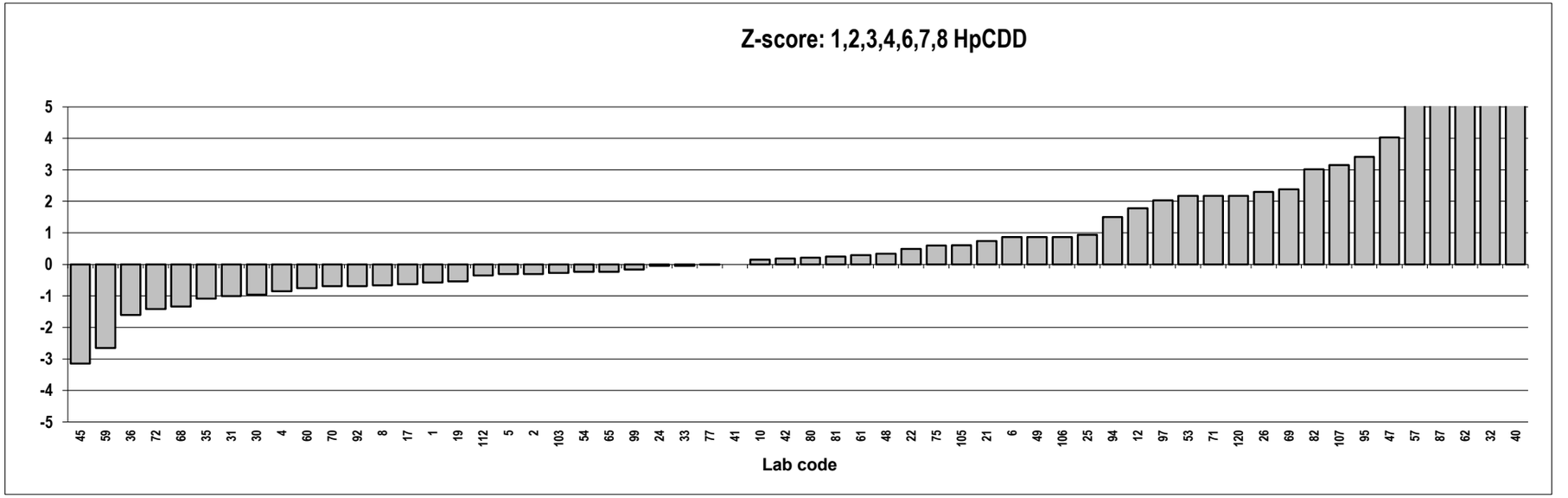
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.068		82	0.12	
2	0.072		87	0.20	Outlier
4	0.064		92	0.066	
5	0.072		94	0.100	
6	0.090		95	0.13	
8	0.067		97	0.11	
10	0.079		99	0.074	
12	0.10		103	0.072	
17	0.067		105	0.086	
19	0.068		106	0.090	
21	0.088		107	0.13	
22	0.084		112	0.071	
24	0.076		120	0.11	
25	0.091				
26	0.11				
30	0.062				
31	0.061				
32	0.22	Outlier			
33	0.076				
35	0.060				
36	0.052				
40	0.40	Outlier,ND			
41	0.077				
42	0.080				
45	0.028				
47	0.14				
48	0.082				
49	0.090	ND			
53	0.11				
54	0.073				
57	0.20	Outlier			
59	0.036				
60	0.065				
61	0.081				
62	0.21	Outlier,ND			
65	0.073				
68	0.056				
69	0.11				
70	0.066				
71	0.11				
72	0.055				
75	0.086				
77	0.076				
80	0.080				
81	0.081				

Consenus statistics

Consensus median, pg/g	0.077
Median all values pg/g	0.080
Consensus mean, pg/g	0.082
Standard deviation, pg/g	0.023
Relative standard deviation, %	28
No. of values reported	58
No. of values removed	5
No. of reported non-detects	3


1,2,3,4,6,7,8 HpCDD
pg/g fw
0.160
0.140
0.120
0.100
0.080
0.060
0.040
0.020
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 59 36 72 68 35 31 30 4 60 70 92 8 17 1 19 112 5 2 103 54 65 99 24 33 77 41 10 42 80 81 61 48 22 75 105 21 6 49 106 25 94 12 97 53 71 120 26 69 82 107 95 47 57 87 62 32 40
Lab code

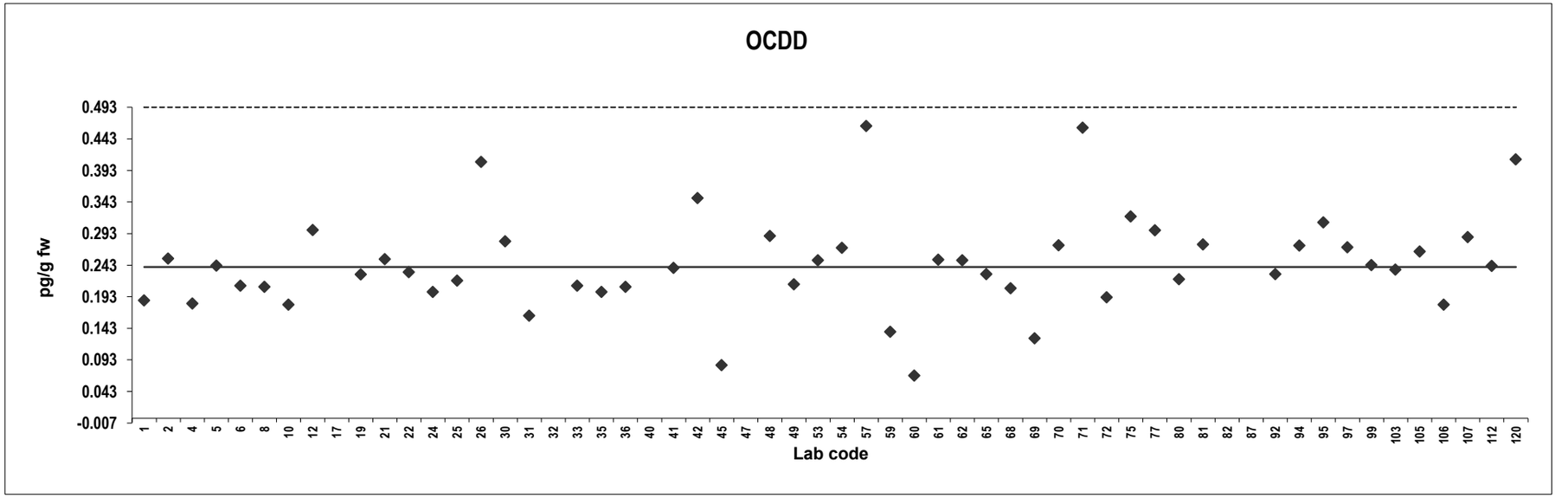
Sheep liver, fresh weight

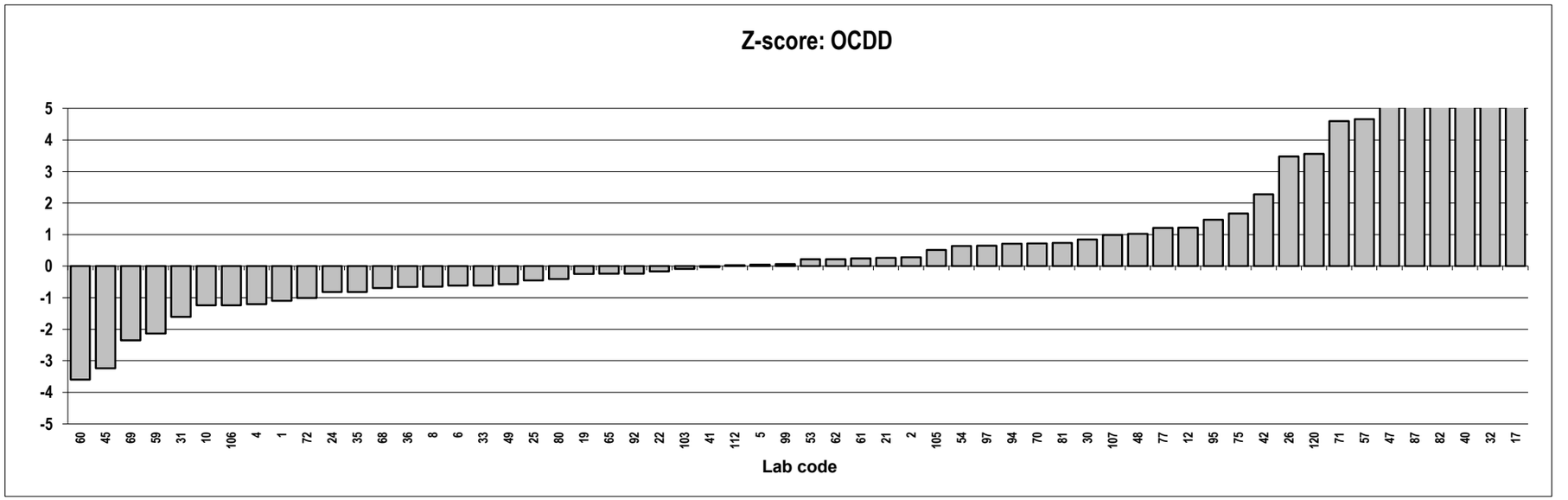
Congener: OCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.19		82	0.78	Outlier
2	0.25		87	0.68	Outlier
4	0.18		92	0.23	
5	0.24		94	0.27	
6	0.21		95	0.31	
8	0.21		97	0.27	
10	0.18		99	0.24	
12	0.30		103	0.24	
17	2.0	Outlier,ND	105	0.26	
19	0.23		106	0.18	
21	0.25		107	0.29	
22	0.23		112	0.24	
24	0.20		120	0.41	
25	0.22				
26	0.41				
30	0.28				
31	0.16				
32	1.3	Outlier			
33	0.21				
35	0.20				
36	0.21				
40	1.0	Outlier,ND			
41	0.24				
42	0.35				
45	0.084				
47	0.52	Outlier			
48	0.29				
49	0.21				
53	0.25				
54	0.27				
57	0.46				
59	0.14				
60	0.067				
61	0.25				
62	0.25	ND			
65	0.23				
68	0.21				
69	0.13				
70	0.27				
71	0.46				
72	0.19				
75	0.32				
77	0.30				
80	0.22				
81	0.28				

Consenus statistics

Consensus median, pg/g	0.24
Median all values pg/g	0.25
Consensus mean, pg/g	0.25
Standard deviation, pg/g	0.077
Relative standard deviation, %	32
No. of values reported	58
No. of values removed	6
No. of reported non-detects	3


OCDD
pg/g fw
0.493
0.443
0.393
0.343
0.293
0.243
0.193
0.143
0.093
0.043
-0.007
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 45 69 59 31 10 106 4 1 72 24 35 68 36 8 6 33 49 25 80 19 65 92 22 103 41 112 5 99 53 62 61 21 2 105 54 97 94 70 81 30 107 48 77 12 95 75 42 26 120 71 57 47 87 82 40 32 17
Lab code

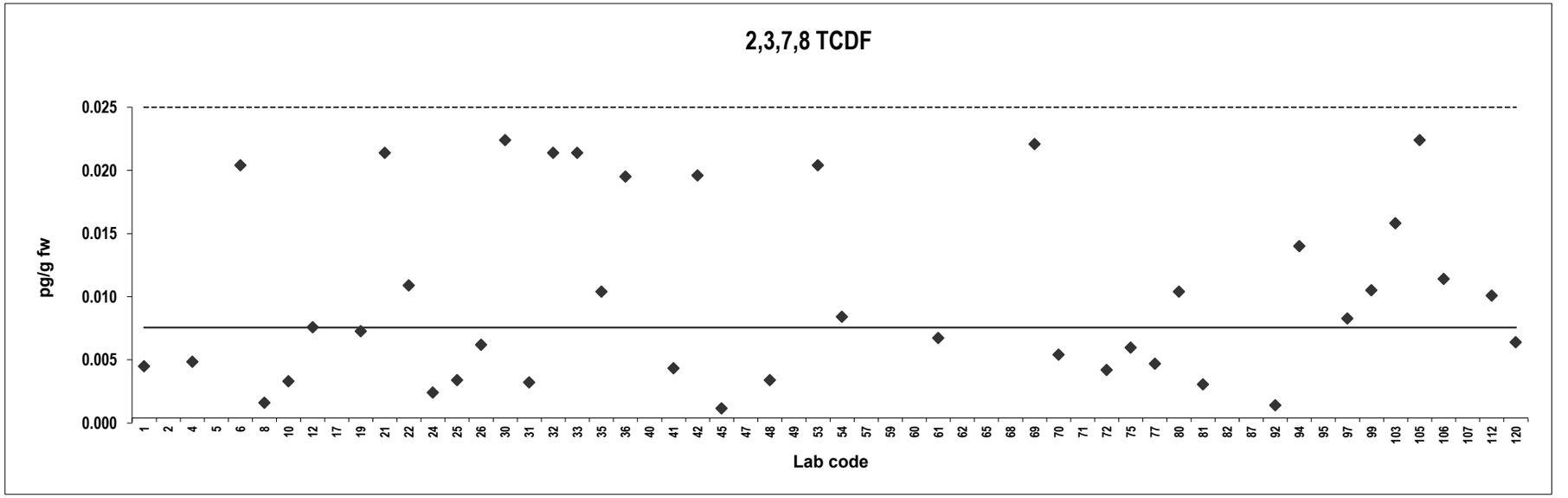
Sheep liver, fresh weight

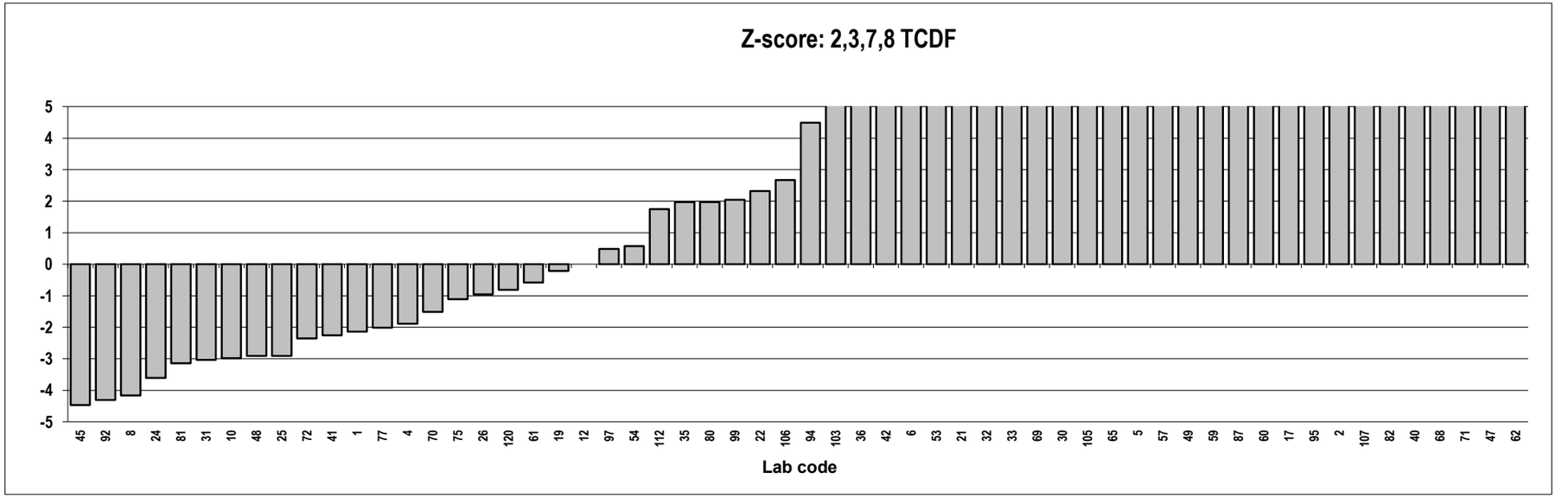
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0041	ND	82	0.049	Outlier
2	0.045	Outlier,ND	87	0.033	Outlier,ND
4	0.0045		92	0.0010	
5	0.026	Outlier	94	0.014	
6	0.020	ND	95	0.042	Outlier
8	0.0012	ND	97	0.0079	
10	0.0029		99	0.010	
12	0.0072	ND	103	0.015	
17	0.040	Outlier,ND	105	0.022	
19	0.0069		106	0.011	ND
21	0.021		107	0.046	Outlier
22	0.011		112	0.0097	
24	0.0020	ND	120	0.0060	
25	0.0030				
26	0.0058				
30	0.022				
31	0.0028				
32	0.021				
33	0.021				
35	0.010	ND			
36	0.019	ND			
40	0.050	Outlier,ND			
41	0.0039	ND			
42	0.019				
45	0.00077	ND			
47	0.093	Outlier			
48	0.0030				
49	0.030	Outlier,ND			
53	0.020				
54	0.0080				
57	0.026	Outlier			
59	0.032	Outlier,ND			
60	0.039	Outlier			
61	0.0063	ND			
62	0.22	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.022				
70	0.0050	ND			
71	0.050	Outlier			
72	0.0038	ND			
75	0.0056				
77	0.0043				
80	0.010	ND			
81	0.0027				

Consenus statistics

Consensus median, pg/g	0.0072
Median all values pg/g	0.012
Consensus mean, pg/g	0.010
Standard deviation, pg/g	0.0072
Relative standard deviation, %	74
No. of values reported	58
No. of values removed	17
No. of reported non-detects	23


2,3,7,8 TCDF
pg/g fw
0.025
0.020
0.015
0.010
0.005
0.000
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 92 8 24 81 31 10 48 25 72 41 1 77 4 70 75 26 120 61 19 12 97 54 112 35 80 99 22 106 94 103 36 42 6 53 21 32 33 69 30 105 65 5 57 49 59 87 60 17 95 2 107 82 40 68 71 47 62
Lab code

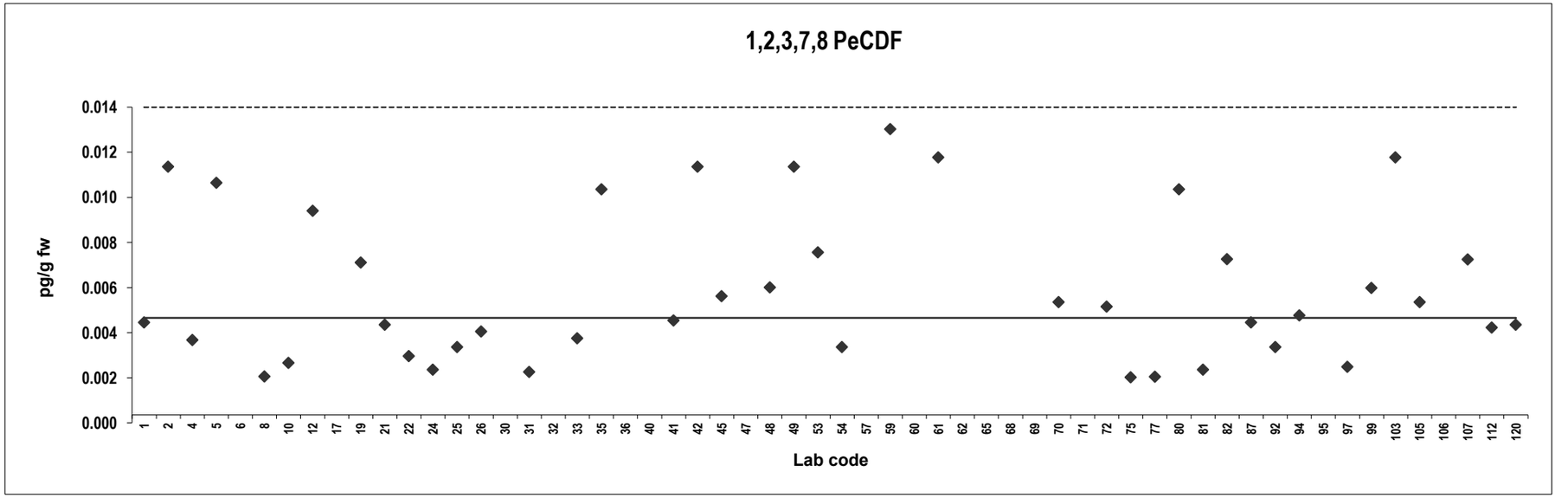
Sheep liver, fresh weight

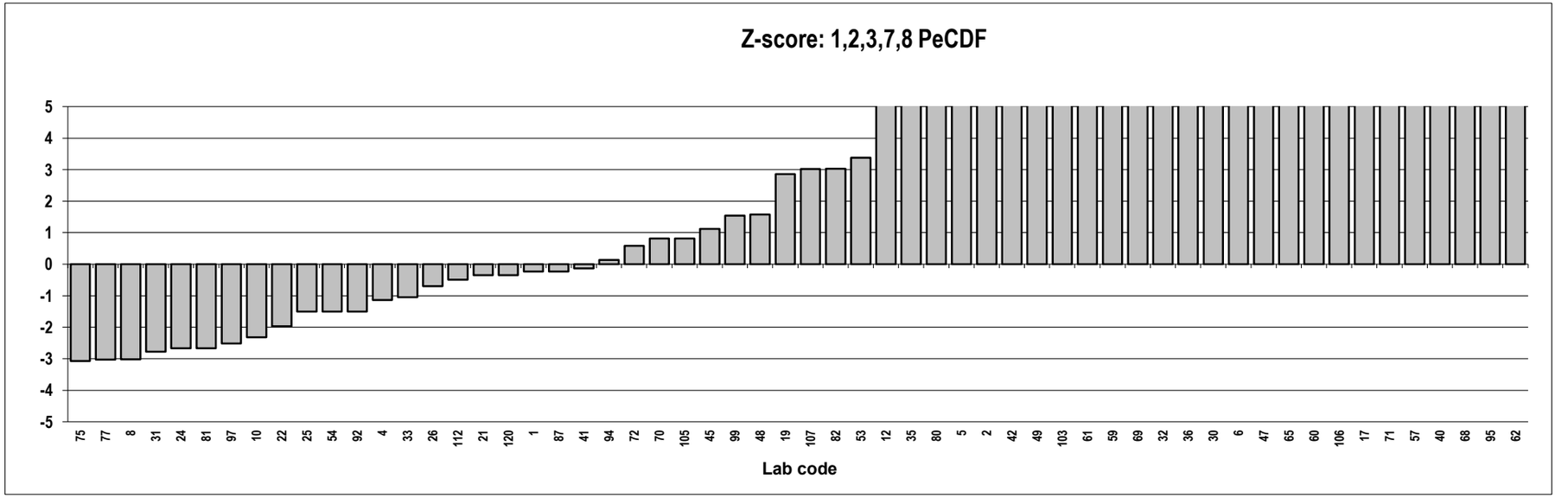
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0041	ND	82	0.0069	ND
2	0.011	ND	87	0.0041	ND
4	0.0033		92	0.0030	
5	0.010		94	0.0044	
6	0.020	Outlier,ND	95	0.064	Outlier
8	0.0017	ND	97	0.0021	ND
10	0.0023		99	0.0056	ND
12	0.0091	ND	103	0.011	
17	0.040	Outlier,ND	105	0.0050	
19	0.0068		106	0.027	Outlier,ND
21	0.0040		107	0.0069	ND
22	0.0026	ND	112	0.0039	
24	0.0020	ND	120	0.0040	ND
25	0.0030	ND			
26	0.0037				
30	0.018	Outlier			
31	0.0019	ND			
32	0.016	Outlier			
33	0.0034	ND			
35	0.010	ND			
36	0.016	Outlier,ND			
40	0.050	Outlier,ND			
41	0.0042	ND			
42	0.011	ND			
45	0.0053	ND			
47	0.024	Outlier,ND			
48	0.0057	ND			
49	0.011	ND			
53	0.0072				
54	0.0030				
57	0.043	Outlier			
59	0.013	ND			
60	0.026	Outlier			
61	0.011				
62	0.090	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.014	Outlier			
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0048	ND			
75	0.0017	ND			
77	0.0017				
80	0.010	ND			
81	0.0020	ND			

Consenus statistics

Consensus median, pg/g	0.0043
Median all values pg/g	0.0068
Consensus mean, pg/g	0.0055
Standard deviation, pg/g	0.0033
Relative standard deviation, %	60
No. of values reported	58
No. of values removed	16
No. of reported non-detects	37


1,2,3,7,8 PeCDF
pg/g fw
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
75 77 8 31 24 81 97 10 22 25 54 92 4 33 26 112 21 120 1 87 41 94 72 70 105 45 99 48 19 107 82 53 12 35 80 5 2 42 49 103 61 59 69 32 36 30 6 47 65 60 106 17 71 57 40 68 95 62
Lab code

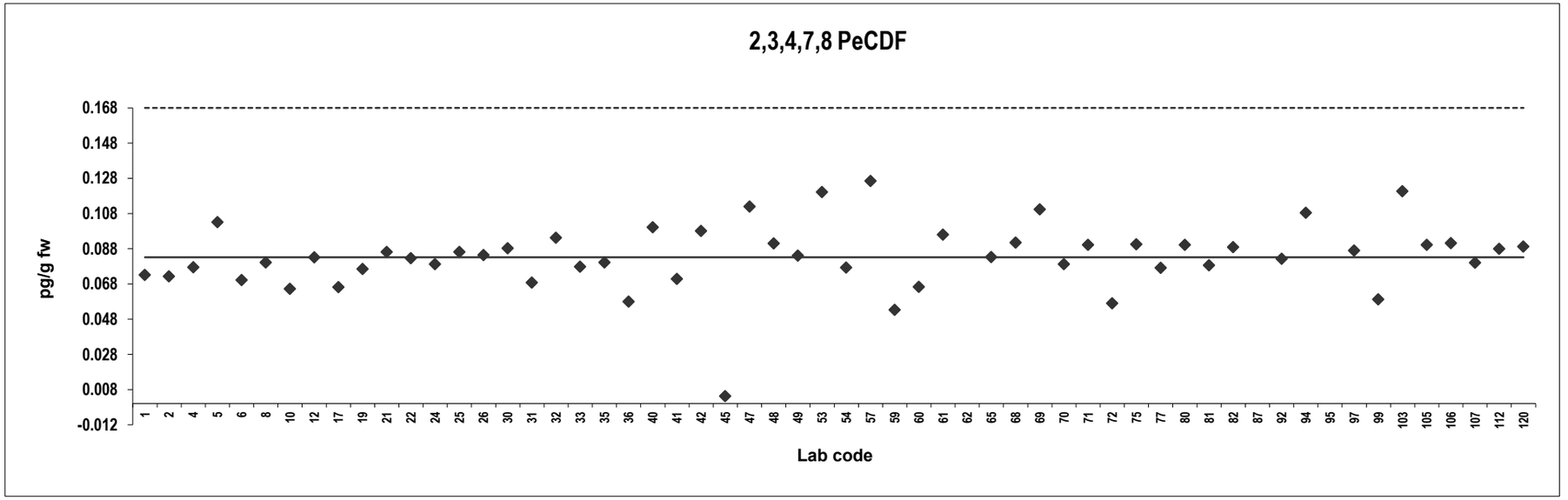
Sheep liver, fresh weight

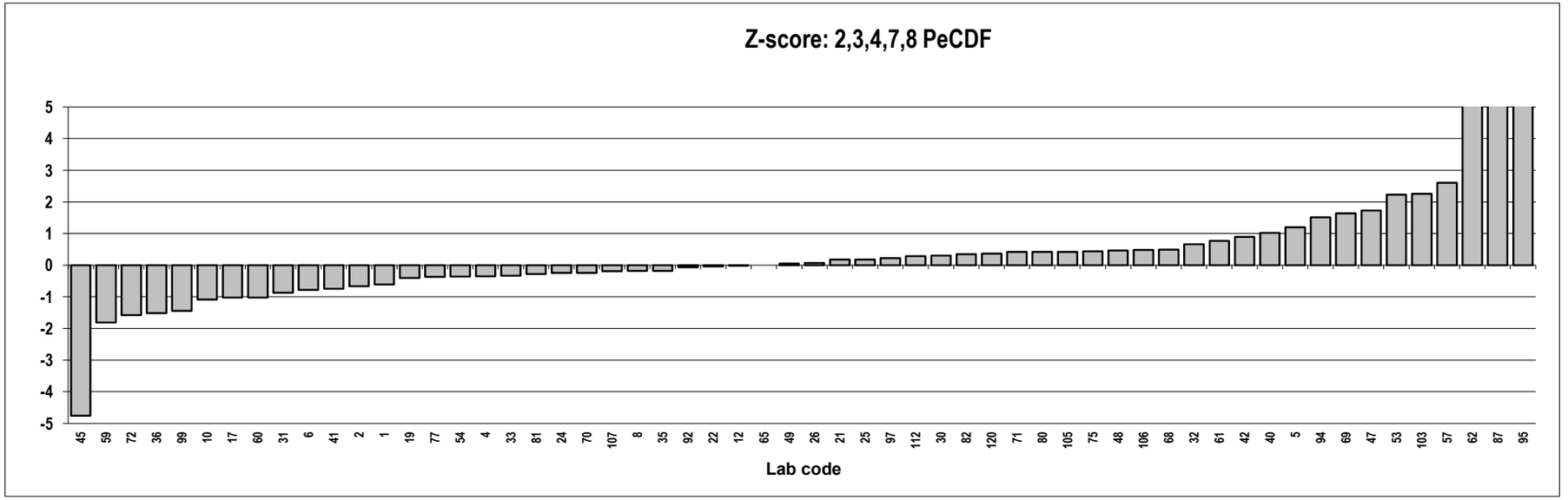
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.073		82	0.089	
2	0.072		87	0.22	Outlier
4	0.077		92	0.082	
5	0.10		94	0.11	
6	0.070		95	0.28	Outlier
8	0.080		97	0.087	
10	0.065		99	0.059	
12	0.083		103	0.12	
17	0.066		105	0.090	
19	0.076		106	0.091	
21	0.086		107	0.080	
22	0.082		112	0.088	
24	0.079		120	0.089	
25	0.086				
26	0.084				
30	0.088				
31	0.069				
32	0.094				
33	0.078				
35	0.080				
36	0.058				
40	0.10	ND			
41	0.071				
42	0.098				
45	0.0040	ND			
47	0.11				
48	0.091				
49	0.084				
53	0.12				
54	0.077				
57	0.13				
59	0.053				
60	0.066				
61	0.096				
62	0.17	Outlier,ND			
65	0.083				
68	0.091				
69	0.11				
70	0.079				
71	0.090				
72	0.057				
75	0.090				
77	0.077				
80	0.090				
81	0.078				

Consenus statistics

Consensus median, pg/g	0.083
Median all values pg/g	0.084
Consensus mean, pg/g	0.083
Standard deviation, pg/g	0.019
Relative standard deviation, %	23
No. of values reported	58
No. of values removed	3
No. of reported non-detects	3


2,3,4,7,8 PeCDF
pg/g fw
0.168
0.148
0.128
0.108
0.088
0.068
0.048
0.028
0.008
-0.012
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 59 72 36 99 10 17 60 31 6 41 2 1 19 77 54 4 33 81 24 70 107 8 35 92 22 12 65 49 26 21 25 97 112 30 82 120 71 80 105 75 48 106 68 32 61 42 40 5 94 69 47 53 103 57 62 87 95
Lab code

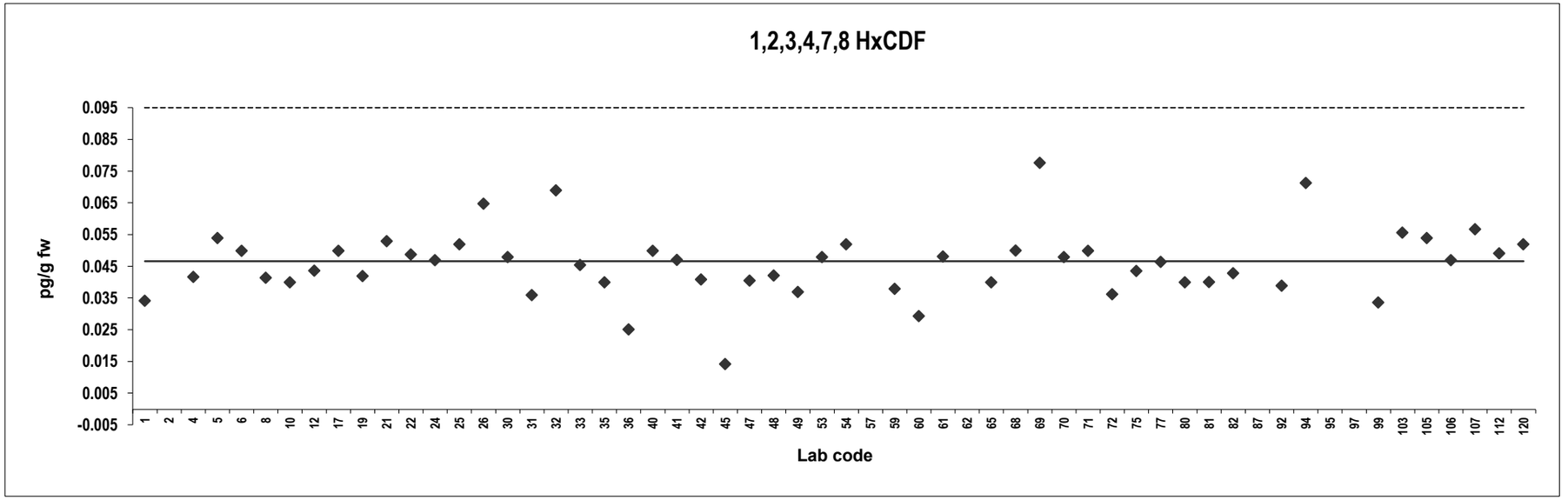
Sheep liver, fresh weight

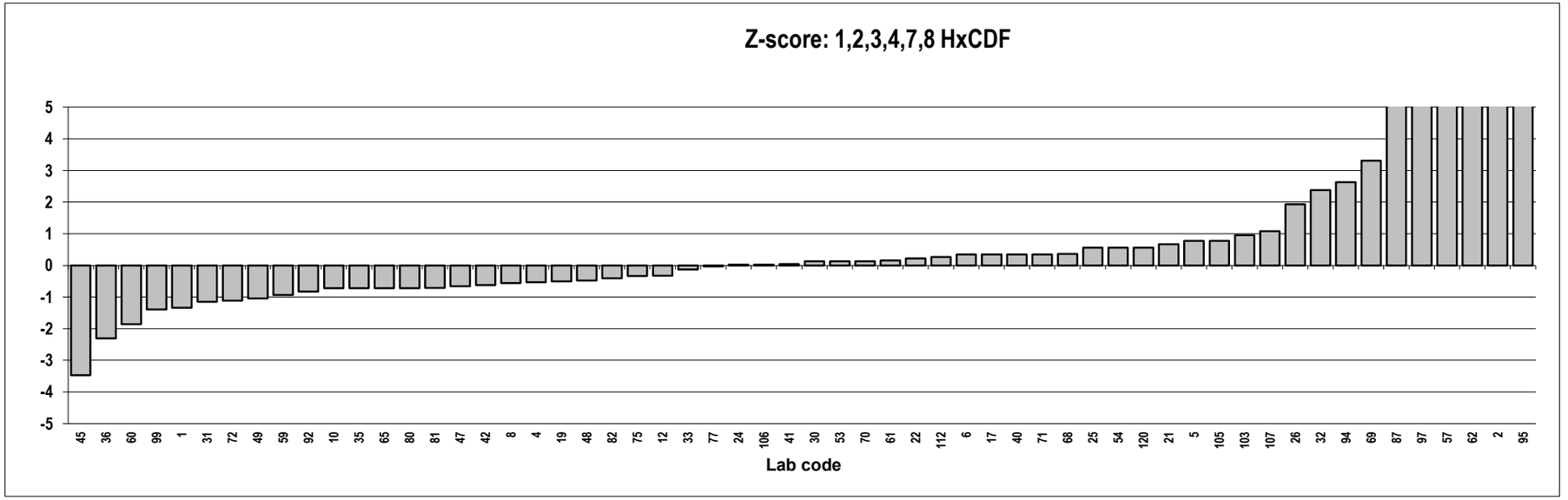
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.034		82	0.043	
2	0.22	Outlier	87	0.12	Outlier
4	0.042		92	0.039	
5	0.054		94	0.071	
6	0.050		95	0.39	Outlier
8	0.042		97	0.12	Outlier
10	0.040		99	0.034	
12	0.044		103	0.056	
17	0.050	ND	105	0.054	
19	0.042		106	0.047	
21	0.053		107	0.057	
22	0.049		112	0.049	
24	0.047		120	0.052	
25	0.052				
26	0.065				
30	0.048				
31	0.036				
32	0.069				
33	0.046				
35	0.040				
36	0.025				
40	0.050	ND			
41	0.047				
42	0.041				
45	0.014				
47	0.041				
48	0.042				
49	0.037	ND			
53	0.048				
54	0.052				
57	0.14	Outlier			
59	0.038				
60	0.029				
61	0.048				
62	0.15	Outlier,ND			
65	0.040				
68	0.050				
69	0.078				
70	0.048				
71	0.050				
72	0.036				
75	0.044				
77	0.046				
80	0.040				
81	0.040				

Consenus statistics

Consensus median, pg/g	0.047
Median all values pg/g	0.048
Consensus mean, pg/g	0.046
Standard deviation, pg/g	0.011
Relative standard deviation, %	23
No. of values reported	58
No. of values removed	6
No. of reported non-detects	4


1,2,3,4,7,8 HxCDF
pg/g fw
0.095
0.085
0.075
0.065
0.055
0.045
0.035
0.025
0.015
0.005
-0.005
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 36 60 99 1 31 72 49 59 92 10 35 65 80 81 47 42 8 4 19 48 82 75 12 33 77 24 106 41 30 53 70 61 22 112 6 17 40 71 68 25 54 120 21 5 105 103 107 26 32 94 69 87 97 57 62 2 95
Lab code

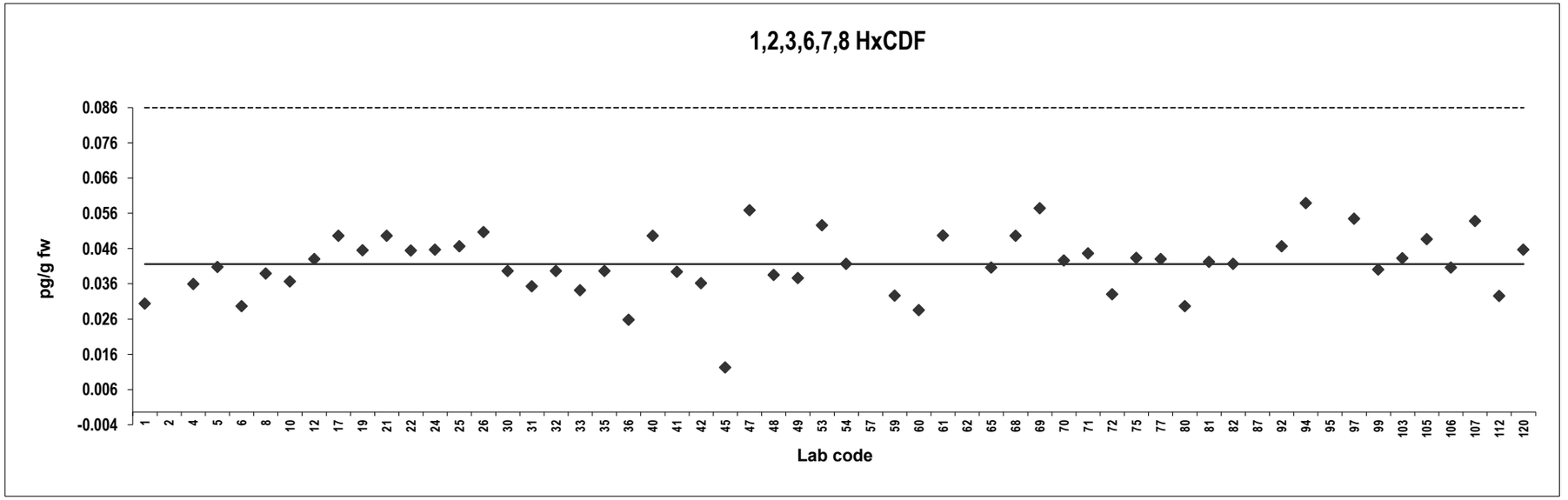
Sheep liver, fresh weight

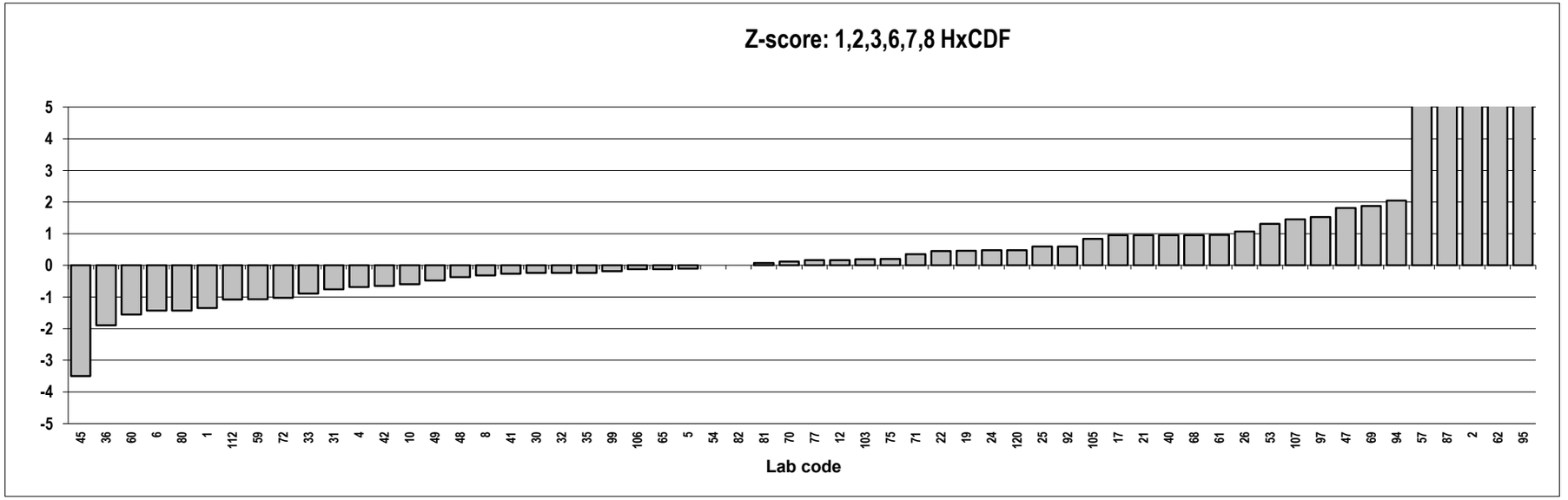
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.031		82	0.042	
2	0.13	Outlier	87	0.11	Outlier
4	0.036		92	0.047	
5	0.041		94	0.059	
6	0.030	ND	95	0.21	Outlier
8	0.039		97	0.055	
10	0.037		99	0.040	
12	0.043		103	0.044	
17	0.050	ND	105	0.049	
19	0.046		106	0.041	
21	0.050		107	0.054	
22	0.046		112	0.033	
24	0.046		120	0.046	
25	0.047				
26	0.051				
30	0.040				
31	0.036				
32	0.040				
33	0.035				
35	0.040				
36	0.026				
40	0.050	ND			
41	0.040				
42	0.037				
45	0.013				
47	0.057				
48	0.039				
49	0.038	ND			
53	0.053				
54	0.042				
57	0.095	Outlier			
59	0.033				
60	0.029				
61	0.050				
62	0.16	Outlier,ND			
65	0.041				
68	0.050	ND			
69	0.058				
70	0.043				
71	0.045				
72	0.033				
75	0.044				
77	0.043				
80	0.030				
81	0.043				

Consenus statistics

Consensus median, pg/g	0.042
Median all values pg/g	0.043
Consensus mean, pg/g	0.042
Standard deviation, pg/g	0.0087
Relative standard deviation, %	21
No. of values reported	58
No. of values removed	5
No. of reported non-detects	6


1,2,3,6,7,8 HxCDF
pg/g fw
0.086
0.076
0.066
0.056
0.046
0.036
0.026
0.016
0.006
-0.004
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 36 60 6 80 1 112 59 72 33 31 4 42 10 49 48 8 41 30 32 35 99 106 65 5 54 82 81 70 77 12 103 75 71 22 19 24 120 25 92 105 17 21 40 68 61 26 53 107 97 47 69 94 57 87 2 62 95
Lab code

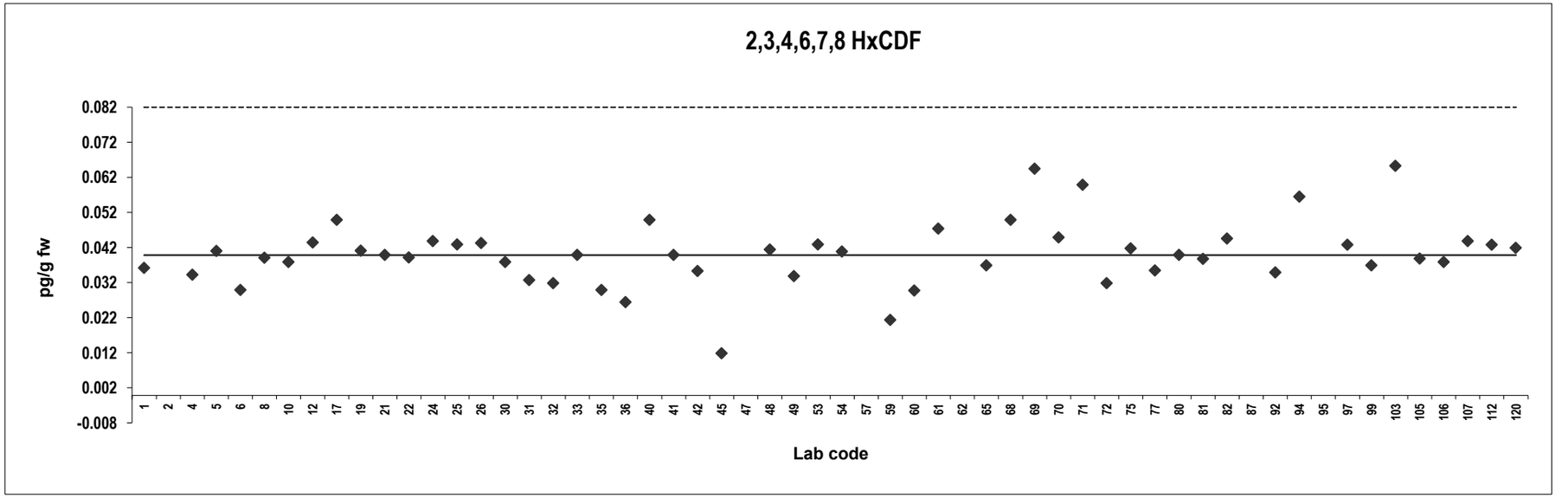
Sheep liver, fresh weight

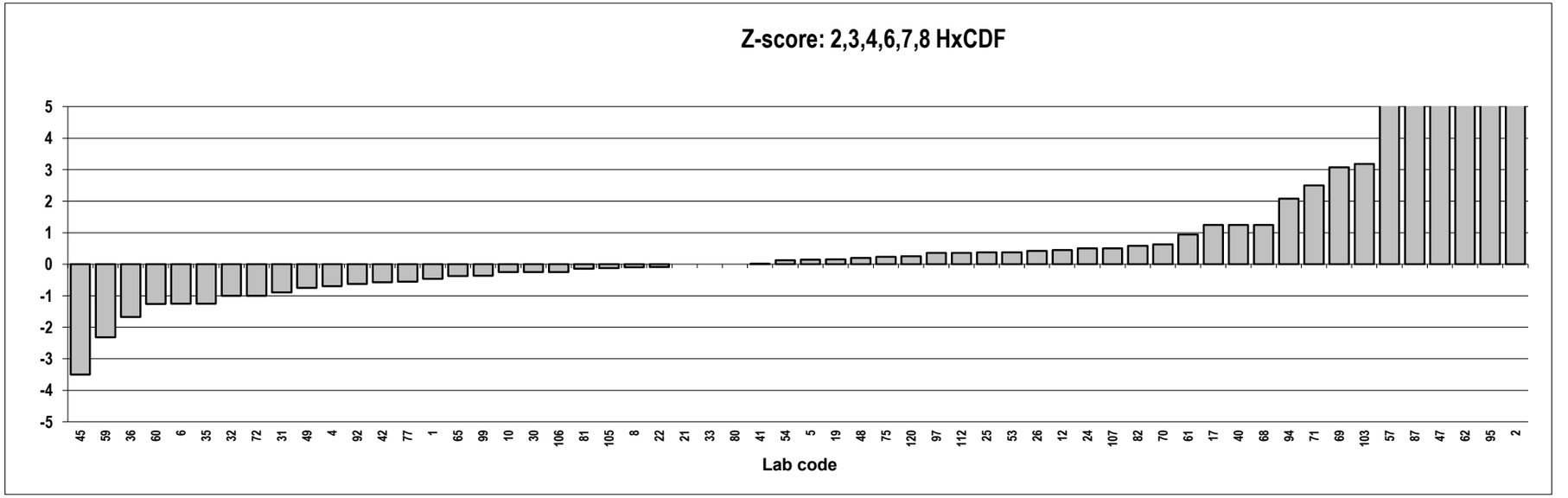
Congener: 2,3,4,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.036		82	0.045	
2	0.24	Outlier	87	0.10	Outlier
4	0.034		92	0.035	
5	0.041		94	0.057	
6	0.030	ND	95	0.23	Outlier
8	0.039		97	0.043	
10	0.038		99	0.037	
12	0.044		103	0.065	
17	0.050	ND	105	0.039	
19	0.041		106	0.038	
21	0.040		107	0.044	
22	0.039		112	0.043	
24	0.044		120	0.042	
25	0.043				
26	0.043				
30	0.038				
31	0.033				
32	0.032				
33	0.040				
35	0.030				
36	0.027				
40	0.050	ND			
41	0.040				
42	0.035				
45	0.012				
47	0.11	Outlier			
48	0.042				
49	0.034	ND			
53	0.043				
54	0.041				
57	0.096	Outlier			
59	0.021	ND			
60	0.030				
61	0.048				
62	0.14	Outlier,ND			
65	0.037				
68	0.050	ND			
69	0.065				
70	0.045				
71	0.060				
72	0.032				
75	0.042				
77	0.036				
80	0.040				
81	0.039				

Consenus statistics

Consensus median, pg/g	0.040
Median all values pg/g	0.041
Consensus mean, pg/g	0.040
Standard deviation, pg/g	0.0093
Relative standard deviation, %	23
No. of values reported	58
No. of values removed	6
No. of reported non-detects	7


2,3,4,6,7,8 HxCDF
pg/g fw
0.082
0.072
0.062
0.052
0.042
0.032
0.022
0.012
0.002
-0.008
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 59 36 60 6 35 32 72 31 49 4 92 42 77 1 65 99 10 30 106 81 105 8 22 21 33 80 41 54 5 19 48 75 120 97 112 25 53 26 12 24 107 82 70 61 17 40 68 94 71 69 103 57 87 47 62 95 2
Lab code

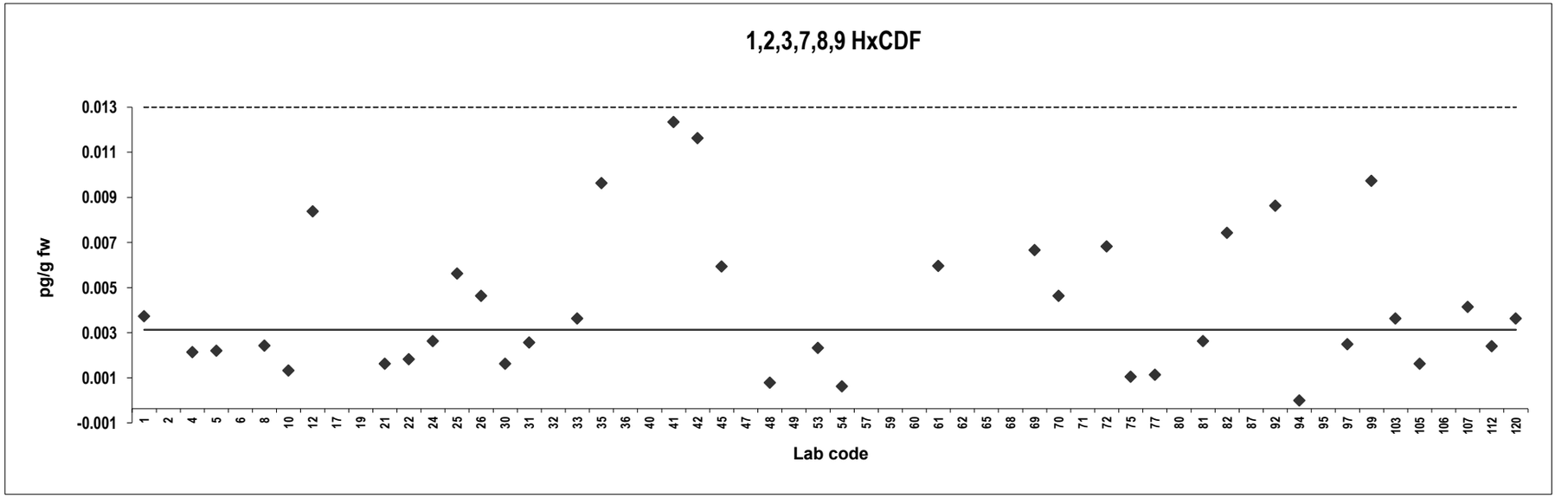
Sheep liver, fresh weight

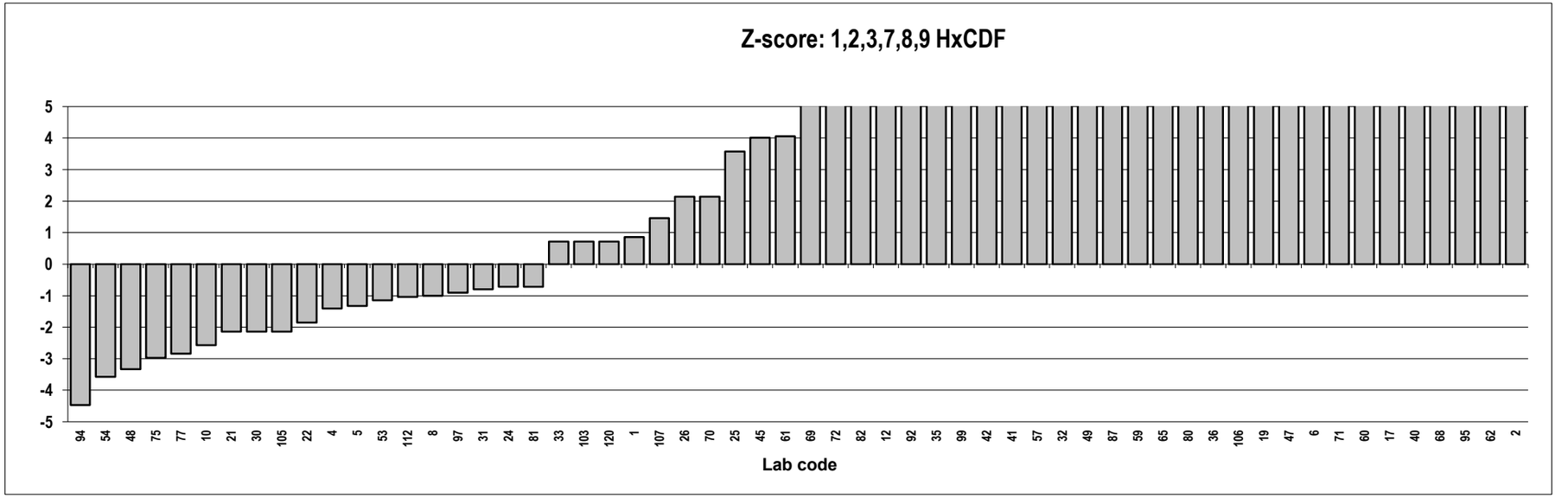
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0041	ND	82	0.0078	ND
2	0.18	Outlier	87	0.021	Outlier,ND
4	0.0025		92	0.0090	
5	0.0026		94	0.00037	ND
6	0.040	Outlier	95	0.14	Outlier
8	0.0028	ND	97	0.0029	ND
10	0.0017	ND	99	0.010	
12	0.0088	ND	103	0.0040	ND
17	0.050	Outlier,ND	105	0.0020	ND
19	0.029	Outlier,ND	106	0.029	Outlier,ND
21	0.0020	ND	107	0.0045	
22	0.0022	ND	112	0.0028	ND
24	0.0030	ND	120	0.0040	ND
25	0.0060	ND			
26	0.0050	ND			
30	0.0020				
31	0.0029	ND			
32	0.015	Outlier			
33	0.0040	ND			
35	0.010	ND			
36	0.025	Outlier,ND			
40	0.050	Outlier,ND			
41	0.013	ND			
42	0.012	ND			
45	0.0063	ND			
47	0.035	Outlier,ND			
48	0.0012				
49	0.015	Outlier,ND			
53	0.0027				
54	0.0010	ND			
57	0.014	Outlier			
59	0.021	Outlier,ND			
60	0.044	Outlier			
61	0.0063	ND			
62	0.14	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.0070				
70	0.0050	ND			
71	0.040	Outlier,ND			
72	0.0072	ND			
75	0.0014	ND			
77	0.0015	ND			
80	0.025	Outlier,ND			
81	0.0030	ND			

Consenus statistics

Consensus median, pg/g	0.0035
Median all values pg/g	0.0067
Consensus mean, pg/g	0.0046
Standard deviation, pg/g	0.0032
Relative standard deviation, %	69
No. of values reported	58
No. of values removed	20
No. of reported non-detects	43


1,2,3,7,8,9 HxCDF
pg/g fw
0.013
0.011
0.009
0.007
0.005
0.003
0.001
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
94 54 48 75 77 10 21 30 105 22 4 5 53 112 8 97 31 24 81 33 103 120 1 107 26 70 25 45 61 69 72 82 12 92 35 99 42 41 57 32 49 87 59 65 80 36 106 19 47 6 71 60 17 40 68 95 62 2
Lab code

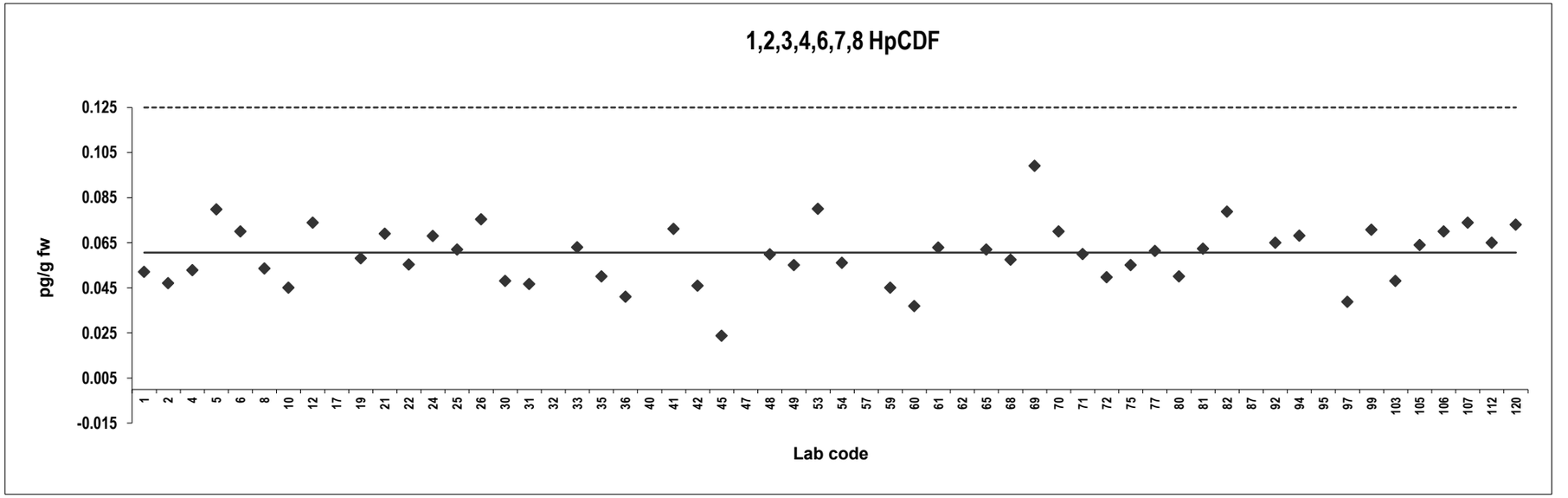
Sheep liver, fresh weight

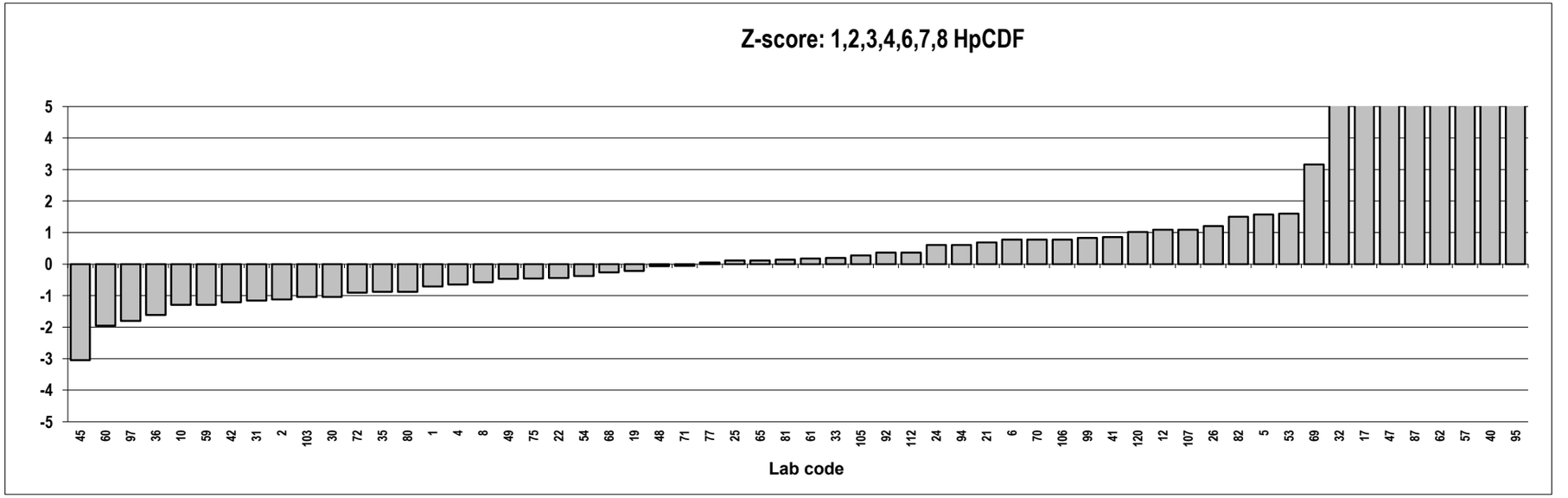
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.052		82	0.079	
2	0.047		87	0.16	Outlier
4	0.053		92	0.065	
5	0.080		94	0.068	
6	0.070	ND	95	1.0	Outlier
8	0.054		97	0.039	
10	0.045		99	0.071	
12	0.074		103	0.048	
17	0.15	Outlier,ND	105	0.064	
19	0.058		106	0.070	
21	0.069		107	0.074	
22	0.055		112	0.065	
24	0.068		120	0.073	
25	0.062				
26	0.075				
30	0.048				
31	0.047				
32	0.13	Outlier			
33	0.063				
35	0.050				
36	0.041				
40	0.50	Outlier,ND			
41	0.071				
42	0.046				
45	0.024				
47	0.15	Outlier			
48	0.060				
49	0.055				
53	0.080				
54	0.056				
57	0.29	Outlier			
59	0.045				
60	0.037				
61	0.063				
62	0.18	Outlier,ND			
65	0.062				
68	0.057				
69	0.099				
70	0.070				
71	0.060				
72	0.050				
75	0.055				
77	0.061				
80	0.050				
81	0.062				

Consenus statistics

Consensus median, pg/g	0.061
Median all values pg/g	0.063
Consensus mean, pg/g	0.060
Standard deviation, pg/g	0.013
Relative standard deviation, %	22
No. of values reported	58
No. of values removed	8
No. of reported non-detects	4


1,2,3,4,6,7,8 HpCDF
pg/g fw
0.125
0.105
0.085
0.065
0.045
0.025
0.005
-0.015
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
45 60 97 36 10 59 42 31 2 103 30 72 35 80 1 4 8 49 75 22 54 68 19 48 71 77 25 65 81 61 33 105 92 112 24 94 21 6 70 106 99 41 120 12 107 26 82 5 53 69 32 17 47 87 62 57 40 95
Lab code

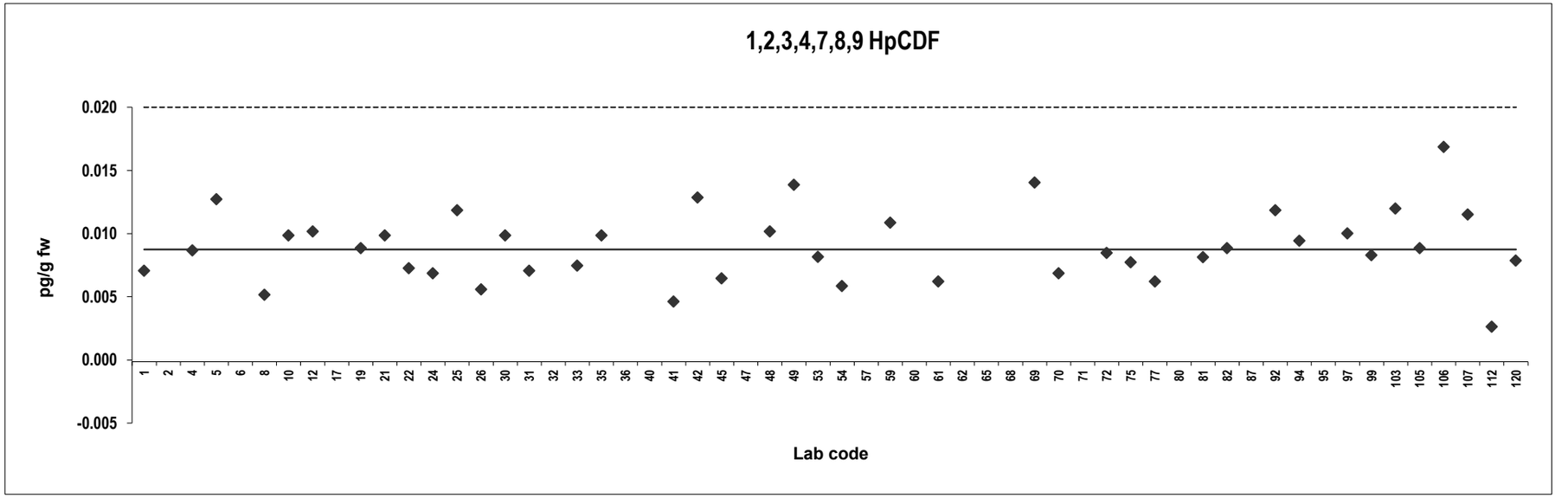
Sheep liver, fresh weight

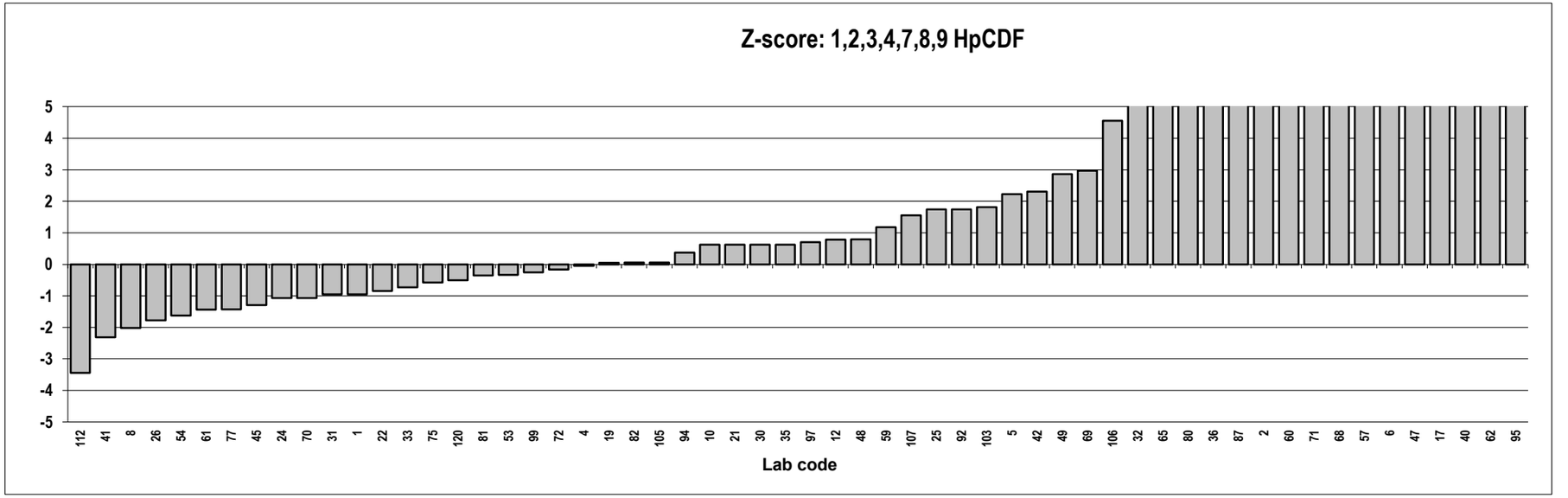
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0072		82	0.0090	
2	0.035	Outlier	87	0.031	Outlier,ND
4	0.0088		92	0.012	
5	0.013		94	0.0096	
6	0.070	Outlier,ND	95	0.44	Outlier
8	0.0053		97	0.010	
10	0.010		99	0.0084	ND
12	0.010		103	0.012	
17	0.15	Outlier,ND	105	0.0090	
19	0.0090		106	0.017	ND
21	0.010		107	0.012	
22	0.0074		112	0.0028	ND
24	0.0070		120	0.0080	
25	0.012	ND			
26	0.0057				
30	0.010				
31	0.0072				
32	0.023	Outlier			
33	0.0076				
35	0.010				
36	0.030	Outlier,ND			
40	0.20	Outlier,ND			
41	0.0048	ND			
42	0.013	ND			
45	0.0066	ND			
47	0.099	Outlier			
48	0.010				
49	0.014	ND			
53	0.0083				
54	0.0060				
57	0.067	Outlier			
59	0.011				
60	0.035	Outlier			
61	0.0063				
62	0.23	Outlier,ND			
65	0.025	Outlier,ND			
68	0.050	Outlier,ND			
69	0.014				
70	0.0070				
71	0.040	Outlier,ND			
72	0.0086				
75	0.0079				
77	0.0064				
80	0.025	Outlier,ND			
81	0.0083				

Consenus statistics

Consensus median, pg/g	0.0089
Median all values pg/g	0.010
Consensus mean, pg/g	0.0091
Standard deviation, pg/g	0.0028
Relative standard deviation, %	31
No. of values reported	58
No. of values removed	16
No. of reported non-detects	18


1,2,3,4,7,8,9 HpCDF
pg/g fw
0.020
0.015
0.010
0.005
0.000
-0.005
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
112 41 8 26 54 61 77 45 24 70 31 1 22 33 75 120 81 53 99 72 4 19 82 105 94 10 21 30 35 97 12 48 59 107 25 92 103 5 42 49 69 106 32 65 80 36 87 2 60 71 68 57 6 47 17 40 62 95
Lab code

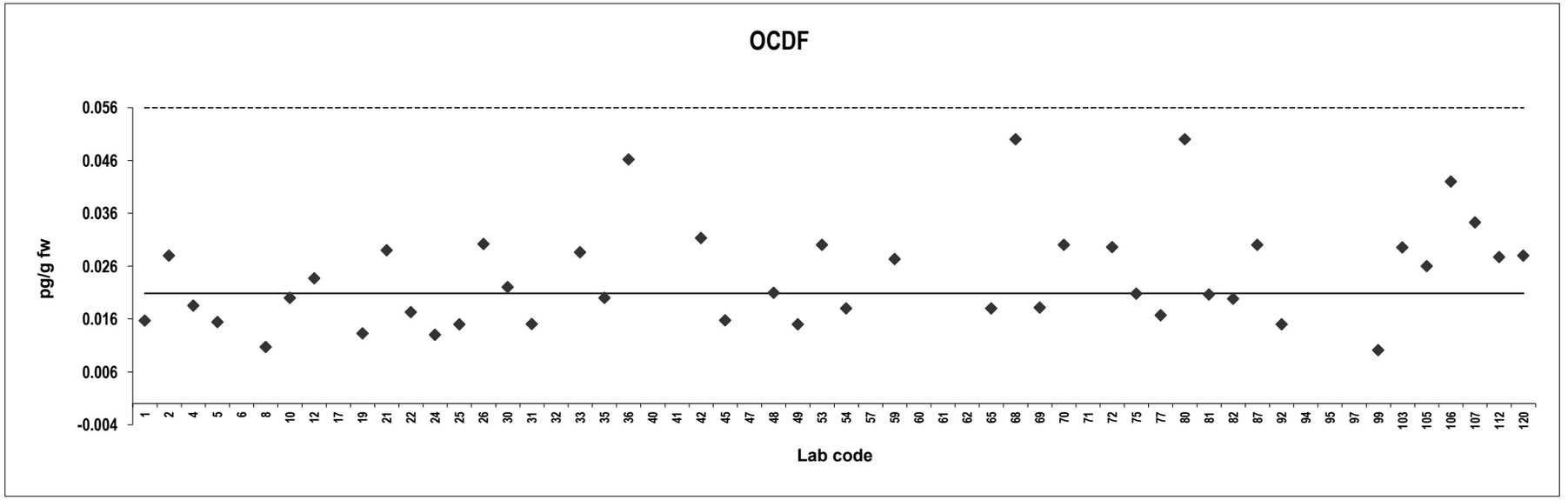
Sheep liver, fresh weight

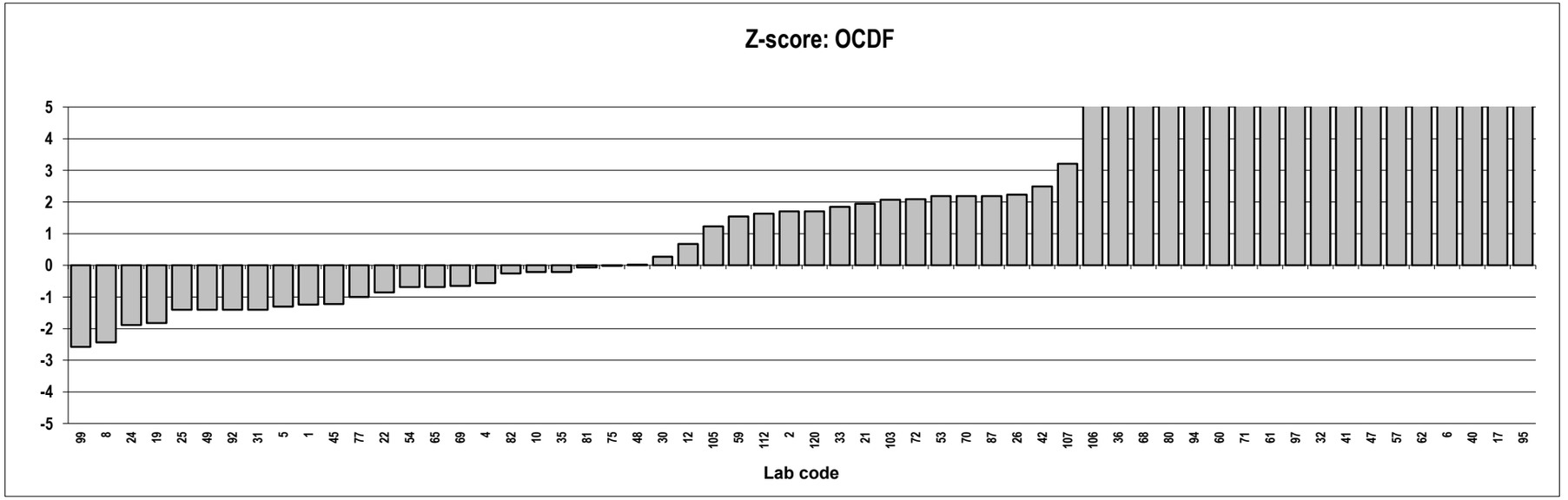
Congener: OCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.016		82	0.020	
2	0.028	ND	87	0.030	ND
4	0.019		92	0.015	
5	0.015		94	0.066	Outlier
6	0.50	Outlier,ND	95	2.6	Outlier
8	0.011		97	0.097	Outlier
10	0.020		99	0.010	
12	0.024		103	0.030	
17	2.0	Outlier,ND	105	0.026	
19	0.013		106	0.042	
21	0.029		107	0.034	
22	0.017		112	0.028	ND
24	0.013		120	0.028	
25	0.015	ND			
26	0.030				
30	0.022				
31	0.015				
32	0.11	Outlier			
33	0.029	ND			
35	0.020				
36	0.046	ND			
40	1.0	Outlier,ND			
41	0.16	Outlier			
42	0.031				
45	0.016				
47	0.33	Outlier			
48	0.021				
49	0.015	ND			
53	0.030				
54	0.018				
57	0.37	Outlier			
59	0.027	ND			
60	0.084	Outlier			
61	0.097	Outlier			
62	0.40	Outlier,ND			
65	0.018				
68	0.050	ND			
69	0.018				
70	0.030				
71	0.090	Outlier			
72	0.030				
75	0.021				
77	0.017				
80	0.050	ND			
81	0.021				

Consenus statistics

Consensus median, pg/g	0.021
Median all values pg/g	0.028
Consensus mean, pg/g	0.024
Standard deviation, pg/g	0.0098
Relative standard deviation, %	41
No. of values reported	58
No. of values removed	14
No. of reported non-detects	14


OCDF
pg/g fw
0.056
0.046
0.036
0.026
0.016
0.006
-0.004
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 45 47 48 49 53 54 57 59 60 61 62 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
99 8 24 19 25 49 92 31 5 1 45 77 22 54 65 69 4 82 10 35 81 75 48 30 12 105 59 112 2 120 33 21 103 72 53 70 87 26 42 107 106 36 68 80 94 60 71 61 97 32 41 47 57 62 6 40 17 95
Lab code

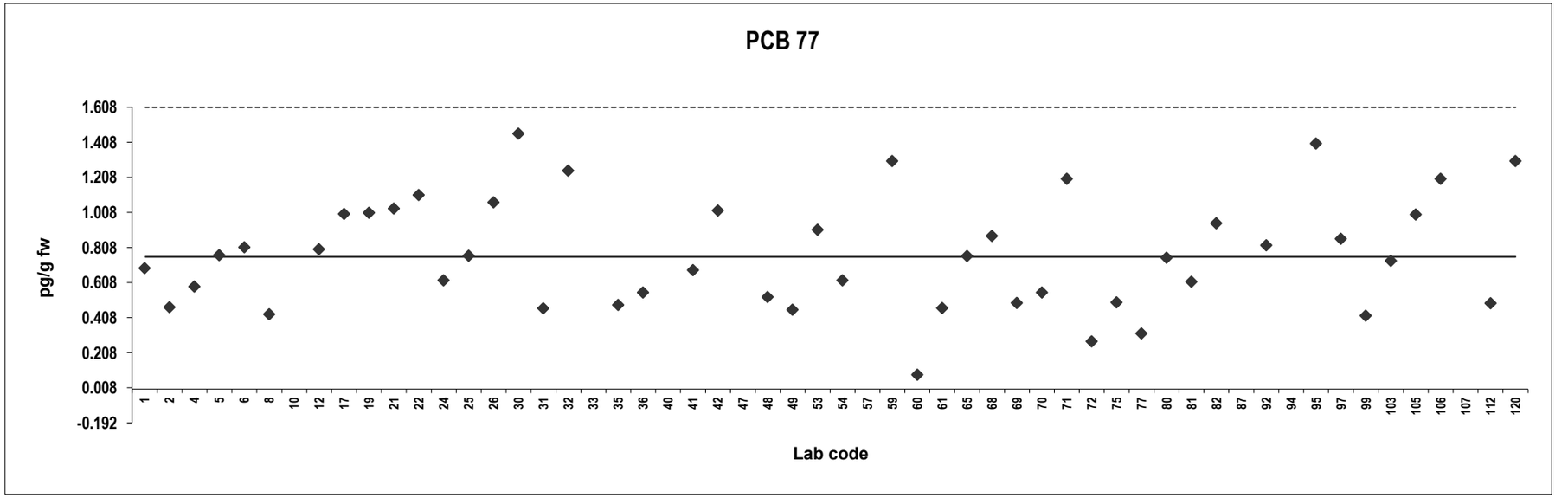
Sheep liver, fresh weight

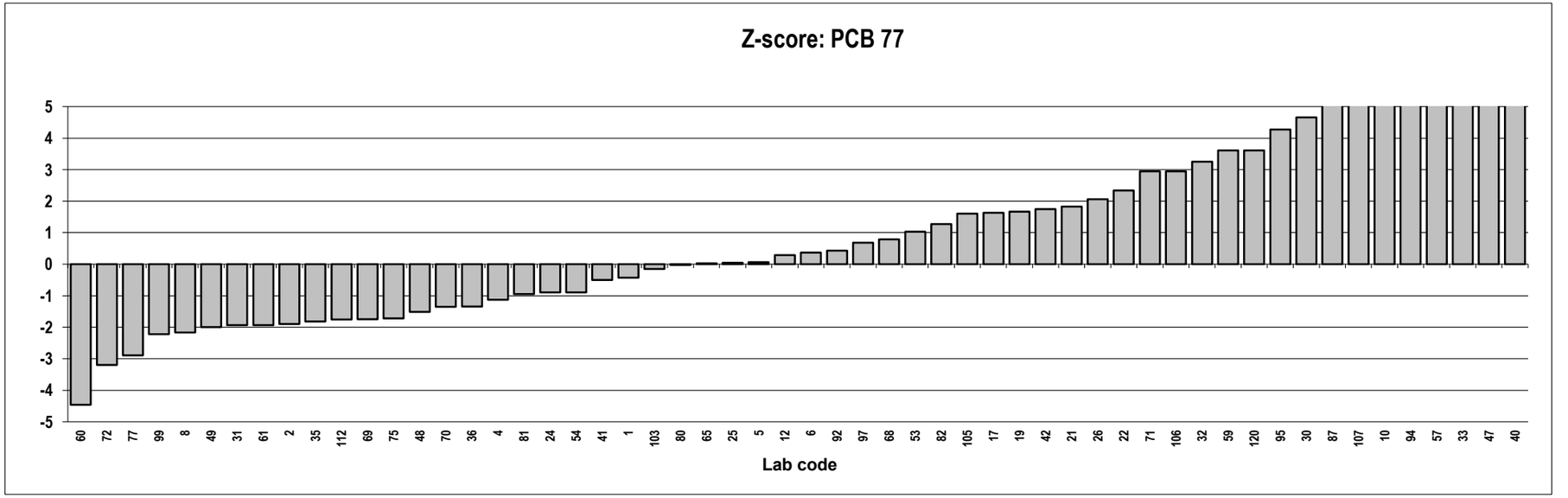
Congener: PCB 77

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.69		92	0.82	
2	0.47		94	1.7	Outlier
4	0.58		95	1.4	
5	0.76		97	0.86	
6	0.81		99	0.42	
8	0.43		103	0.73	
10	1.7	Outlier	105	0.050	
12	0.80		106	1.2	
17	1.0	ND	107	1.6	Outlier
19	1.0		112	0.49	
21	1.0		120	1.3	
22	1.1				
24	0.62				
25	0.76				
26	1.1				
30	1.5				
31	0.46				
32	1.2				
33	1.9	Outlier			
35	0.48				
36	0.55				
40	7.0	Outlier,ND			
41	0.68				
42	1.0				
47	2.4	Outlier			
48	0.53				
49	0.45				
53	0.91				
54	0.62				
57	1.9	Outlier			
59	1.3				
60	0.082				
61	0.46				
65	0.76				
68	0.87				
69	0.49				
70	0.55				
71	1.2				
72	0.27				
75	0.49				
77	0.32				
80	0.75				
81	0.61				
82	0.95				
87	1.6	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.75
Median all values pg/g	0.80
Consensus mean, pg/g	0.77
Standard deviation, pg/g	0.32
Relative standard deviation, %	41
No. of values reported	56
No. of values removed	8
No. of reported non-detects	3


PCB 77
pg/g fw
1.608
1.408
1.208
1.008
0.808
0.608
0.408
0.208
0.008
-0.192
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 72 77 99 8 49 31 61 2 35 112 69 75 48 70 36 4 81 24 54 41 1 103 80 65 25 5 12 6 92 97 68 53 82 105 17 19 42 21 26 22 71 106 32 59 120 95 30 87 107 10 94 57 33 47 40
Lab code

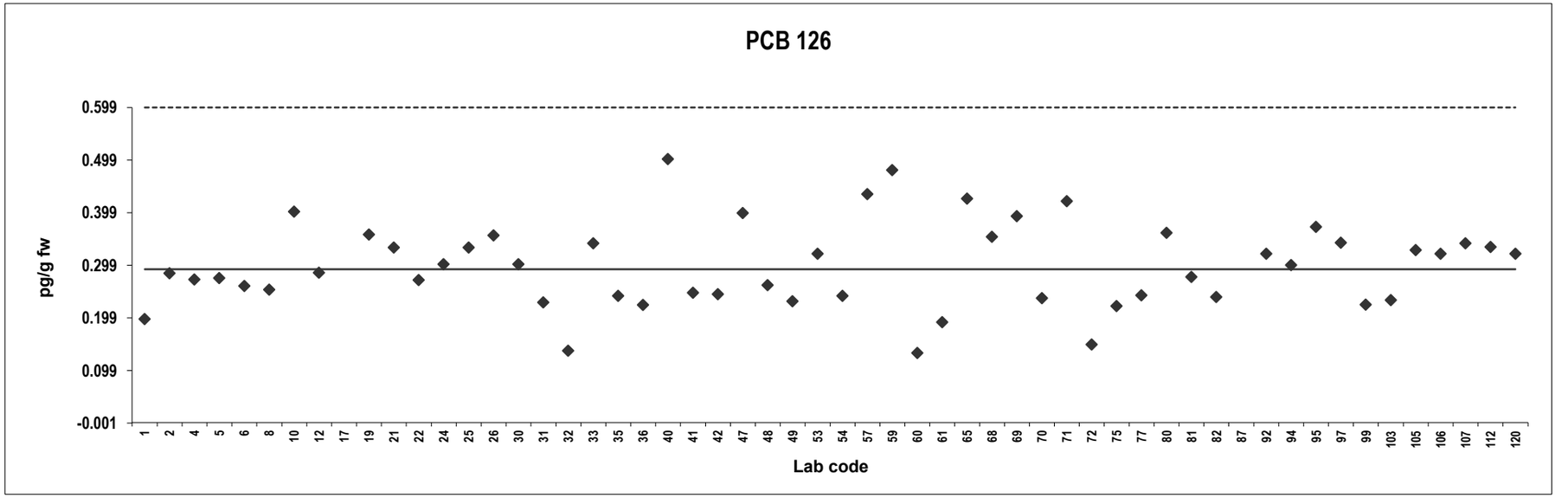
Sheep liver, fresh weight

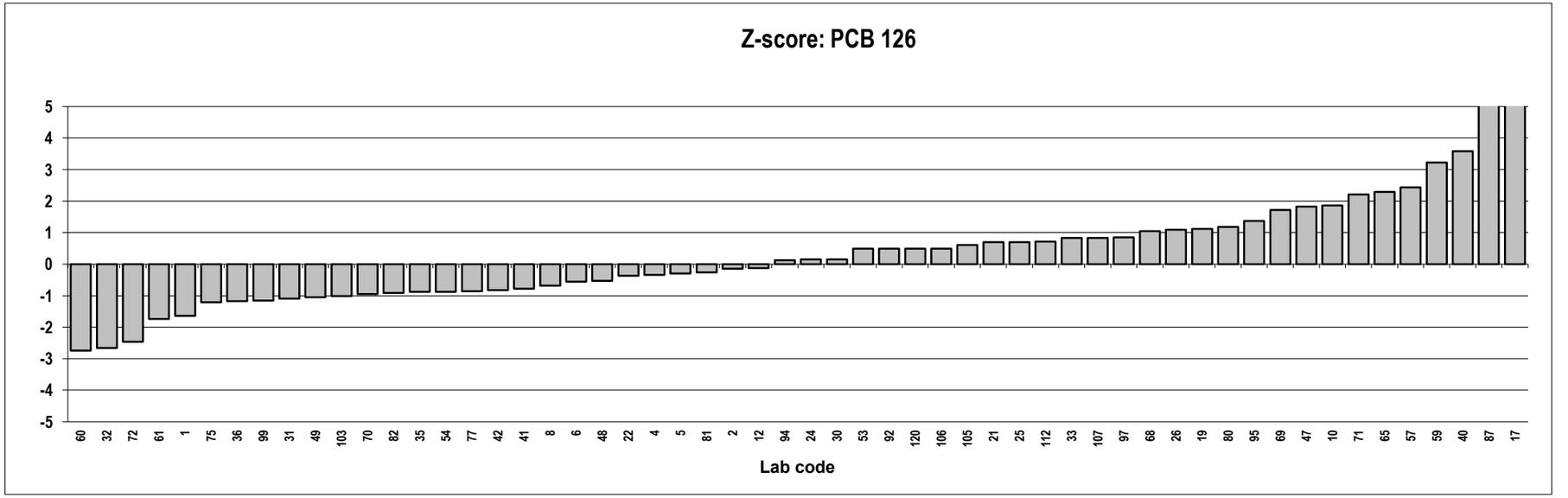
Congener: PCB 126

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.20		92	0.32	
2	0.28		94	0.30	
4	0.27		95	0.37	
5	0.27		97	0.34	
6	0.26		99	0.22	
8	0.25		103	0.23	
10	0.40		105	0.33	
12	0.28		106	0.32	
17	1.0	Outlier,ND	107	0.34	
19	0.36		112	0.33	
21	0.33		120	0.32	
22	0.27				
24	0.30				
25	0.33				
26	0.36				
30	0.30				
31	0.23				
32	0.14				
33	0.34				
35	0.24				
36	0.22				
40	0.50	ND			
41	0.25				
42	0.24				
47	0.40				
48	0.26				
49	0.23				
53	0.32				
54	0.24				
57	0.43				
59	0.48				
60	0.13				
61	0.19				
65	0.43				
68	0.35				
69	0.39				
70	0.24				
71	0.42				
72	0.15				
75	0.22				
77	0.24				
80	0.36				
81	0.28				
82	0.24				
87	0.74	Outlier			

Consenus statistics

Consensus median, pg/g	0.29
Median all values pg/g	0.30
Consensus mean, pg/g	0.30
Standard deviation, pg/g	0.080
Relative standard deviation, %	27
No. of values reported	56
No. of values removed	2
No. of reported non-detects	2


PCB 126
pg/g fw
0.599
0.499
0.399
0.299
0.199
0.099
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 32 72 61 1 75 36 99 31 49 103 70 82 35 54 77 42 41 8 6 48 22 4 5 81 2 12 94 24 30 53 92 120 106 105 21 25 112 33 107 97 68 26 19 80 95 69 47 10 71 65 57 59 40 87 17
Lab code

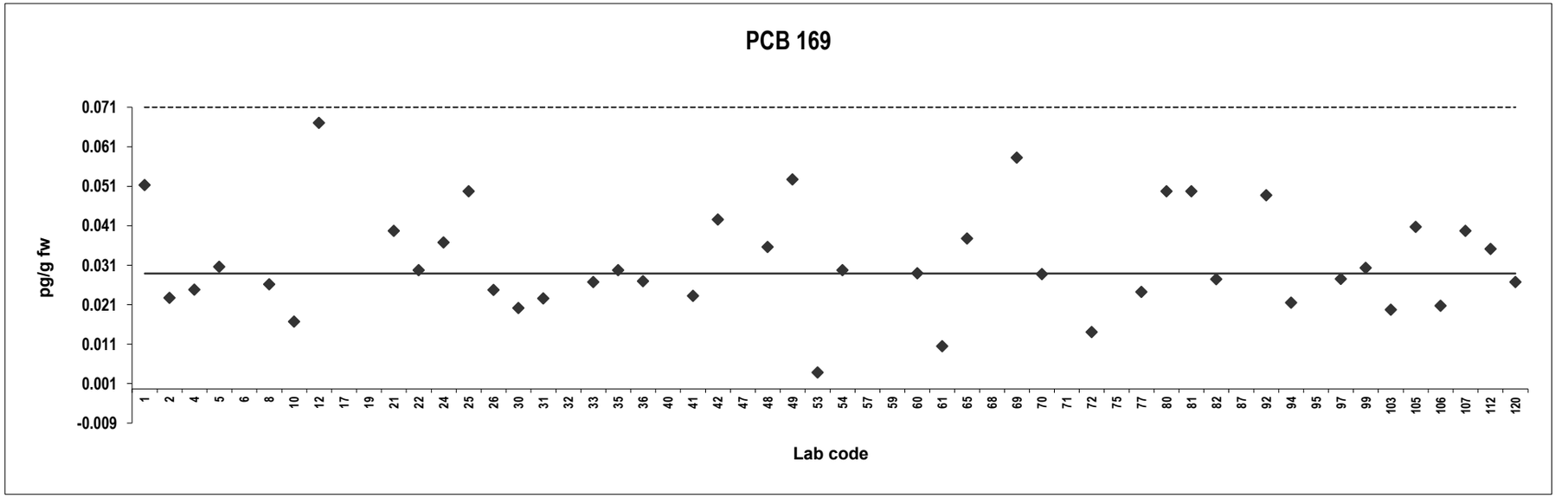
Sheep liver, fresh weight

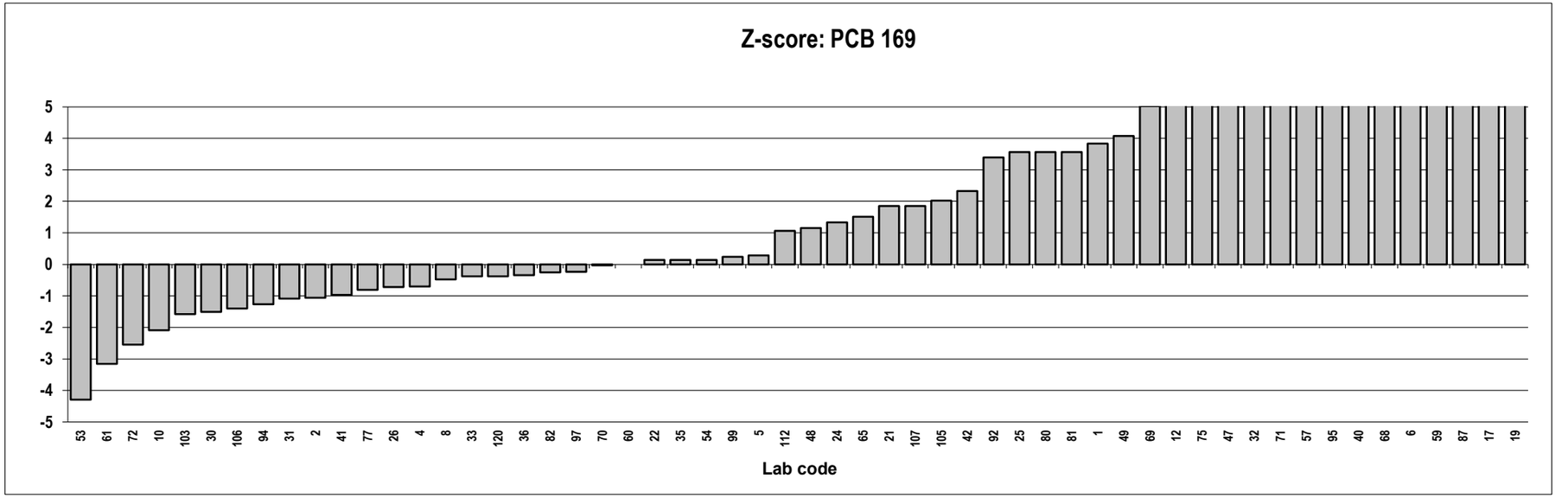
Congener: PCB 169

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.052	ND	92	0.049	
2	0.023		94	0.022	ND
4	0.025		95	0.10	Outlier
5	0.031		97	0.028	
6	0.20	Outlier,ND	99	0.031	
8	0.026		103	0.020	ND
10	0.017	ND	105	0.041	
12	0.067		106	0.021	
17	1.0	Outlier,ND	107	0.040	
19	1.1	Outlier,ND	112	0.035	
21	0.040		120	0.027	
22	0.030				
24	0.037				
25	0.050				
26	0.025				
30	0.020	ND			
31	0.023				
32	0.10	Outlier,ND			
33	0.027				
35	0.030				
36	0.027	ND			
40	0.15	Outlier,ND			
41	0.024	ND			
42	0.043				
47	0.099	Outlier			
48	0.036				
49	0.053	ND			
53	0.0041	ND			
54	0.030				
57	0.10	Outlier			
59	0.21	Outlier,ND			
60	0.029				
61	0.011				
65	0.038				
68	0.16	Outlier			
69	0.059				
70	0.029				
71	0.10	Outlier,ND			
72	0.014				
75	0.098	Outlier			
77	0.024				
80	0.050	ND			
81	0.050	ND			
82	0.028				
87	0.36	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.029
Median all values pg/g	0.036
Consensus mean, pg/g	0.032
Standard deviation, pg/g	0.013
Relative standard deviation, %	41
No. of values reported	56
No. of values removed	13
No. of reported non-detects	19


PCB 169
pg/g fw
0.071
0.061
0.051
0.041
0.031
0.021
0.011
0.001
-0.009
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
53 61 72 10 103 30 106 94 31 2 41 77 26 4 8 33 120 36 82 97 70 60 22 35 54 99 5 112 48 24 65 21 107 105 42 92 25 80 81 1 49 69 12 75 47 32 71 57 95 40 68 6 59 87 17 19
Lab code

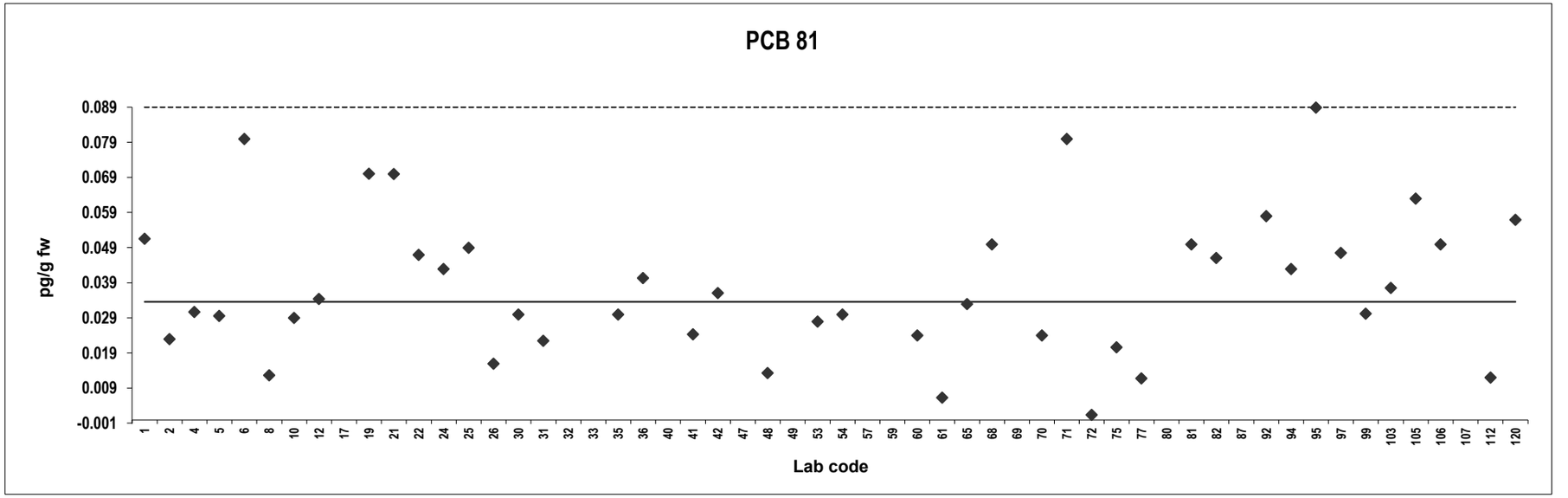
Sheep liver, fresh weight

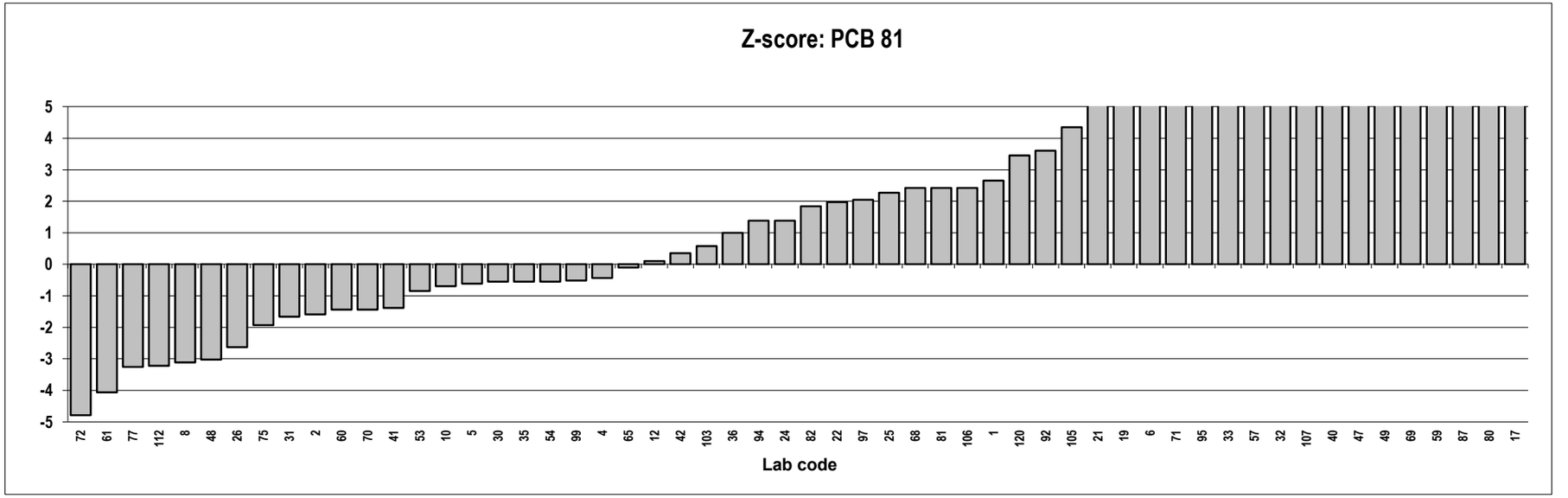
Congener: PCB 81

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.052	ND	92	0.058	
2	0.023		94	0.043	
4	0.031		95	0.089	
5	0.030		97	0.048	
6	0.080	ND	99	0.030	
8	0.013	ND	103	0.038	
10	0.029		105	0.063	
12	0.034		106	0.050	
17	1.0	Outlier,ND	107	0.10	Outlier
19	0.070	ND	112	0.012	
21	0.070		120	0.057	
22	0.047				
24	0.043				
25	0.049				
26	0.016				
30	0.030				
31	0.023				
32	0.10	Outlier,ND			
33	0.094	Outlier			
35	0.030				
36	0.040	ND			
40	0.14	Outlier,ND			
41	0.024				
42	0.036				
47	0.14	Outlier			
48	0.013				
49	0.15	Outlier,ND			
53	0.028				
54	0.030				
57	0.098	Outlier			
59	0.20	Outlier,ND			
60	0.024				
61	0.0063	ND			
65	0.033				
68	0.050	ND			
69	0.15	Outlier			
70	0.024				
71	0.080				
72	0.0014	ND			
75	0.021	ND			
77	0.012				
80	0.50	Outlier,ND			
81	0.050	ND			
82	0.046				
87	0.23	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.034
Median all values pg/g	0.045
Consensus mean, pg/g	0.038
Standard deviation, pg/g	0.020
Relative standard deviation, %	54
No. of values reported	56
No. of values removed	12
No. of reported non-detects	17


PCB 81
pg/g fw
0.089
0.079
0.069
0.059
0.049
0.039
0.029
0.019
0.009
-0.001
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code

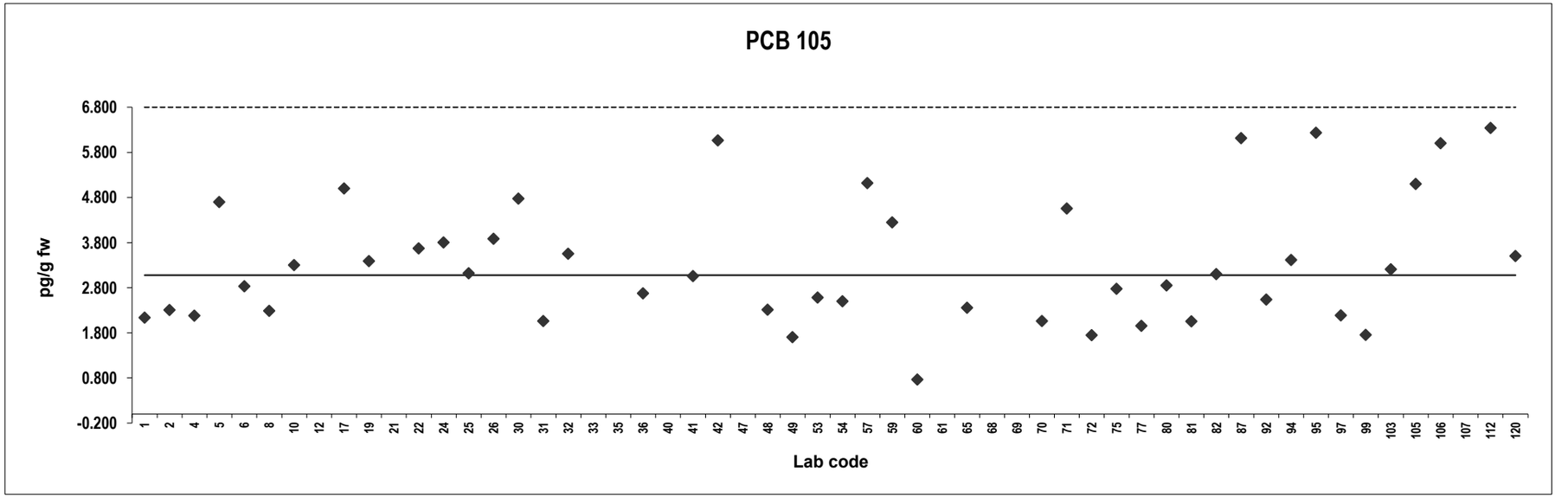

Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
72 61 77 112 8 48 26 75 31 2 60 70 41 53 10 5 30 35 54 99 4 65 12 42 103 36 94 24 82 22 97 25 68 81 106 1 120 92 105 21 19 6 71 95 33 57 32 107 40 47 49 69 59 87 80 17
Lab code

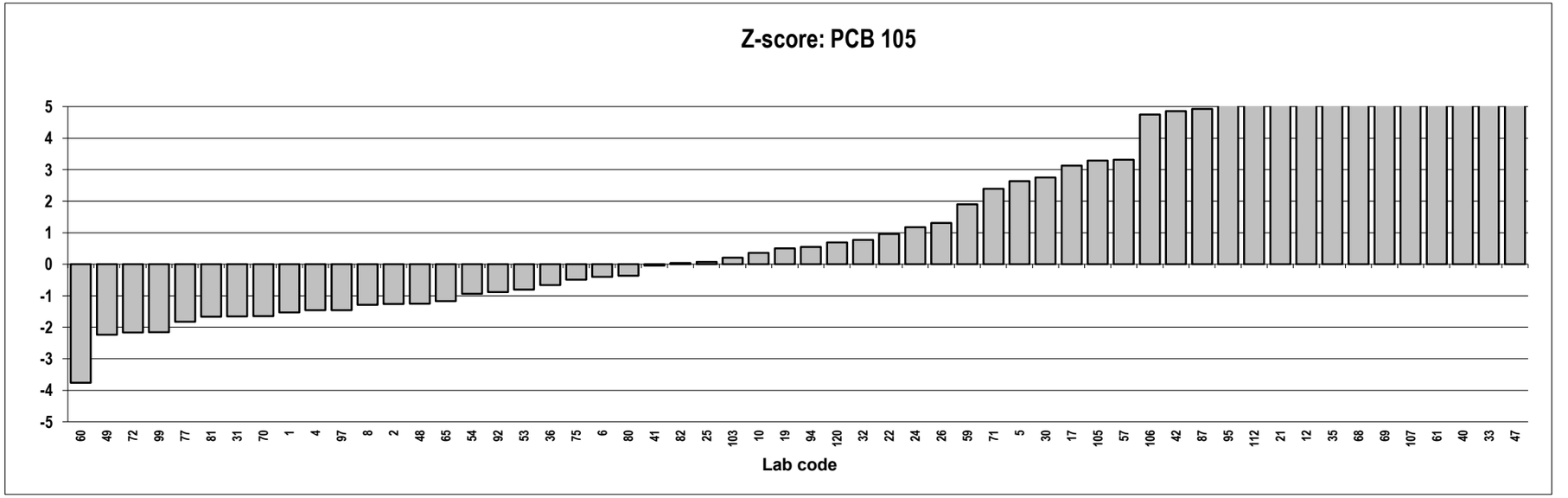
Sheep liver, fresh weight

Congener: PCB 105

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	2.1		92	2.5	
2	2.3		94	3.4	
4	2.2		95	6.2	
5	4.7		97	2.2	
6	2.8		99	1.7	
8	2.3		103	3.2	
10	3.3		105	5.1	
12	9.1	Outlier	106	6.0	
17	5.0	ND	107	12	Outlier
19	3.4		112	6.3	
21	6.8	Outlier	120	3.5	
22	3.7				
24	3.8				
25	3.1				
26	3.9				
30	4.8				
31	2.1				
32	3.6				
33	23	Outlier			
35	10	Outlier,ND			
36	2.7				
40	20	Outlier,ND			
41	3.1				
42	6.1				
47	55	Outlier			
48	2.3				
49	1.7				
53	2.6				
54	2.5				
57	5.1				
59	4.2				
60	0.76				
61	12	Outlier			
65	2.4				
68	10	Outlier,ND			
69	10	Outlier			
70	2.1				
71	4.6				
72	1.7				
75	2.8				
77	2.0				
80	2.9				
81	2.1				
82	3.1				
87	6.1				

Consenus statistics	
Consensus median, pg/g	3.1
Median all values pg/g	3.4
Consensus mean, pg/g	3.3
Standard deviation, pg/g	1.4
Relative standard deviation, %	42
No. of values reported	56
No. of values removed	10
No. of reported non-detects	4


PCB 105
pg/g fw
6.800
5.800
4.800
3.800
2.800
1.800
0.800
-0.200
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 49 72 99 77 81 31 70 1 4 97 8 2 48 65 54 92 53 36 75 6 80 41 82 25 103 10 19 94 120 32 22 24 26 59 71 5 30 17 105 57 106 42 87 95 112 21 12 35 68 69 107 61 40 33 47
Lab code

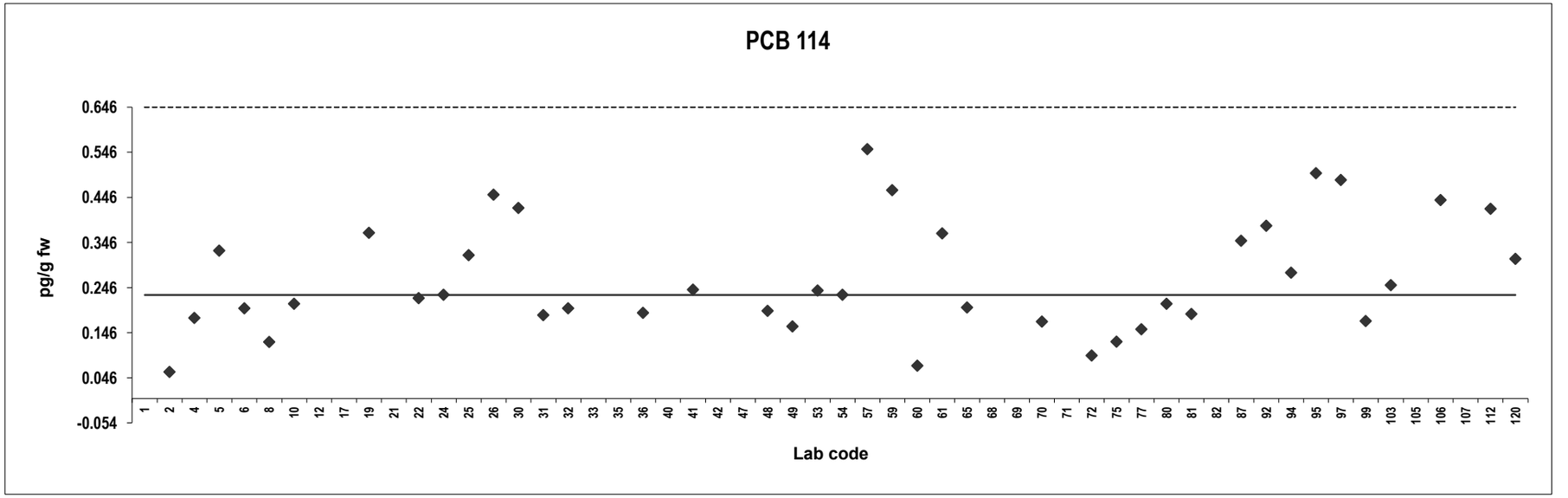
Sheep liver, fresh weight

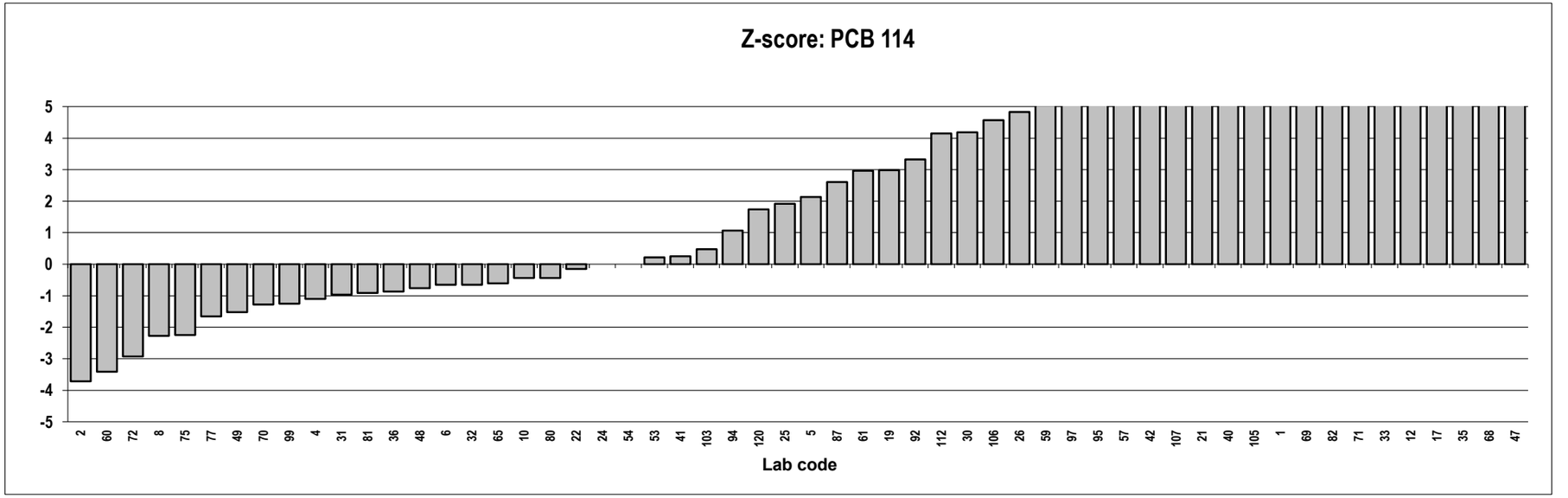
Congener: PCB 114

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	Outlier,ND	92	0.38	
2	0.059		94	0.28	
4	0.18		95	0.50	
5	0.33		97	0.49	ND
6	0.20	ND	99	0.17	
8	0.13		103	0.25	
10	0.21		105	1.0	Outlier,ND
12	2.4	Outlier,ND	106	0.44	
17	10	Outlier,ND	107	0.85	Outlier
19	0.37		112	0.42	
21	1.0	Outlier,ND	120	0.31	
22	0.22				
24	0.23	ND			
25	0.32				
26	0.45				
30	0.42				
31	0.19				
32	0.20				
33	2.1	Outlier			
35	10	Outlier,ND			
36	0.19				
40	1.0	Outlier,ND			
41	0.24				
42	0.75	Outlier			
47	21	Outlier,ND			
48	0.19				
49	0.16	ND			
53	0.24				
54	0.23				
57	0.55				
59	0.46				
60	0.073				
61	0.37				
65	0.20				
68	10	Outlier,ND			
69	1.1	Outlier			
70	0.17				
71	2.1	Outlier			
72	0.095				
75	0.13	ND			
77	0.15				
80	0.21				
81	0.19				
82	1.9	Outlier,ND			
87	0.35	ND			

Consenus statistics

Consensus median, pg/g	0.23
Median all values pg/g	0.32
Consensus mean, pg/g	0.27
Standard deviation, pg/g	0.13
Relative standard deviation, %	47
No. of values reported	56
No. of values removed	15
No. of reported non-detects	16


PCB 114
pg/g fw
0.646
0.546
0.446
0.346
0.246
0.146
0.046
-0.054
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code

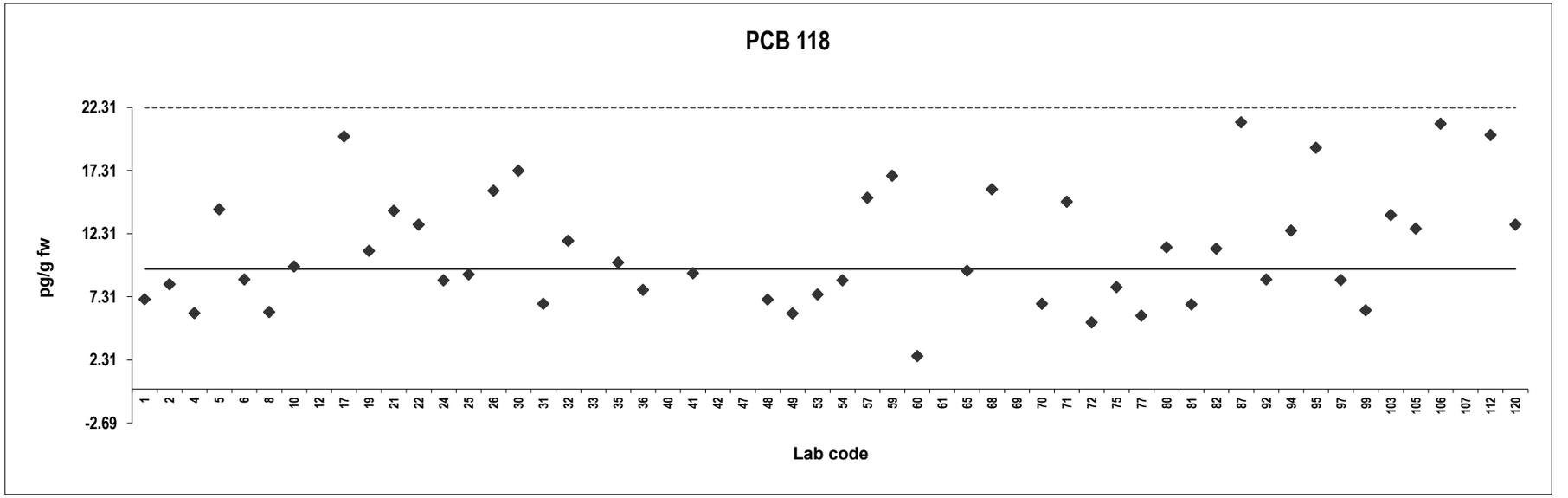

Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
2 60 72 8 75 77 49 70 99 4 31 81 36 48 6 32 65 10 80 22 24 54 53 41 103 94 120 25 5 87 61 19 92 112 30 106 26 59 97 95 57 42 107 21 40 105 1 69 82 71 33 12 17 35 68 47
Lab code

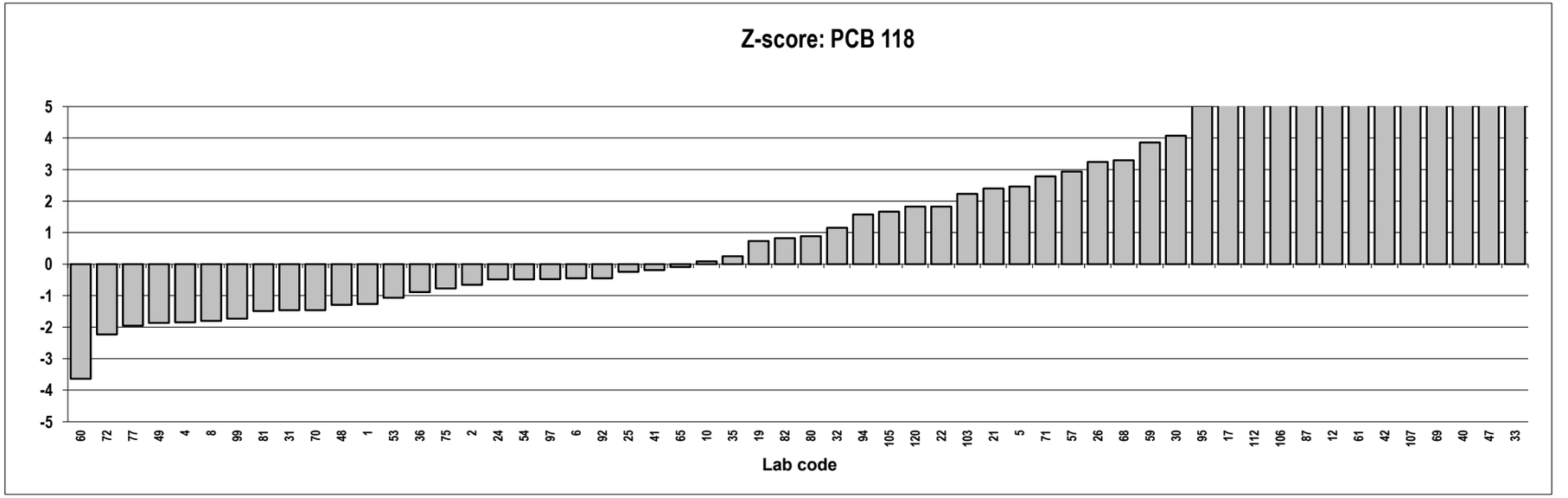
Sheep liver, fresh weight

Congener: PCB 118

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	7.1		92	8.7	
2	8.3		94	13	
4	6.0		95	19	
5	14		97	8.6	
6	8.7		99	6.2	
8	6.1		103	14	
10	9.7		105	13	
12	23	Outlier	106	21	
17	20	ND	107	37	Outlier
19	11		112	20	
21	14		120	13	
22	13				
24	8.6				
25	9.1				
26	16				
30	17				
31	6.7				
32	12				
33	110	Outlier			
35	10	ND			
36	7.8				
40	55	Outlier,ND			
41	9.2				
42	33	Outlier			
47	73	Outlier			
48	7.1				
49	6.0				
53	7.5				
54	8.6				
57	15				
59	17				
60	2.6				
61	28	Outlier			
65	9.4				
68	16				
69	44	Outlier			
70	6.7				
71	15				
72	5.3				
75	8.1				
77	5.8				
80	11				
81	6.7				
82	11				
87	21				

Consenus statistics	
Consensus median, pg/g	9.5
Median all values pg/g	11
Consensus mean, pg/g	11
Standard deviation, pg/g	4.6
Relative standard deviation, %	42
No. of values reported	56
No. of values removed	8
No. of reported non-detects	3


PCB 118
22.31
17.31
12.31
7.31
2.31
-2.69
pg/g fw
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 72 77 49 4 8 99 81 31 70 48 1 53 36 75 2 24 54 97 6 92 25 41 65 10 35 19 82 80 32 94 105 120 22 103 21 5 71 57 26 68 59 30 95 17 112 106 87 12 61 42 107 69 40 47 33
Lab code

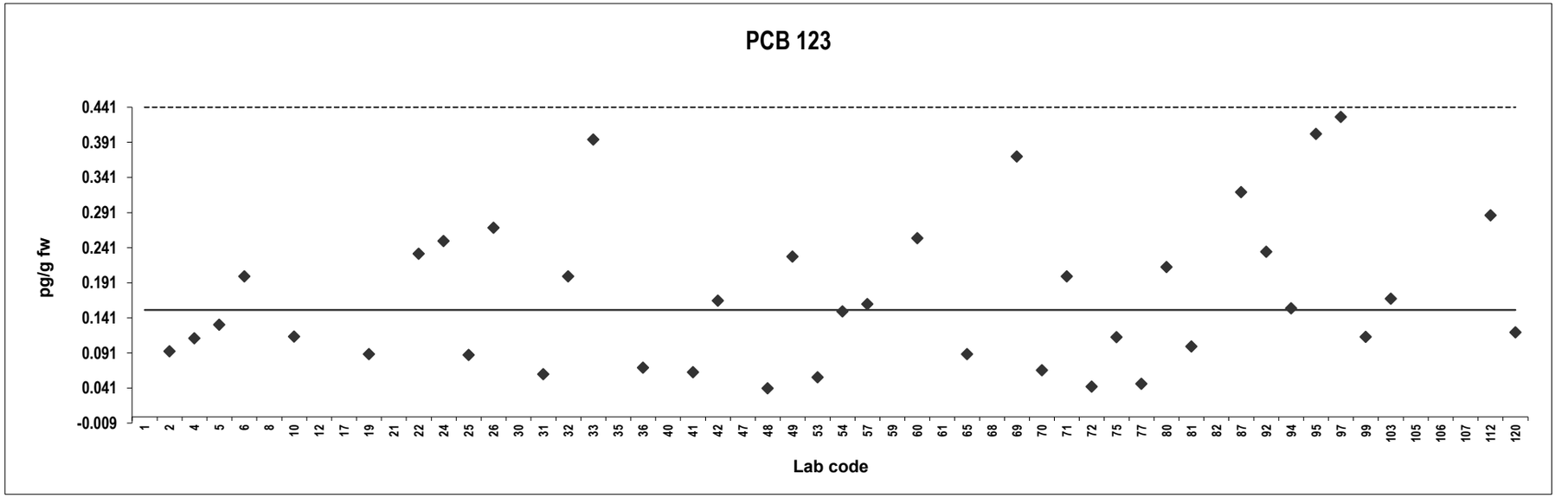
Sheep liver, fresh weight

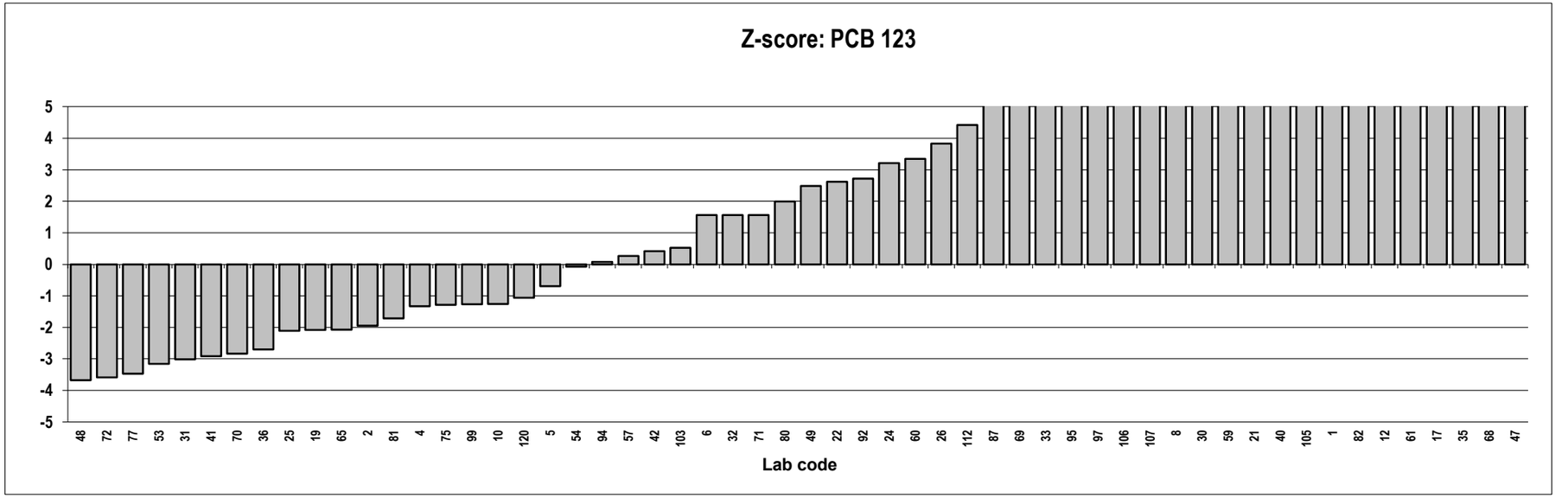
Congener: PCB 123

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	Outlier,ND	92	0.24	
2	0.093		94	0.15	
4	0.11		95	0.40	
5	0.13		97	0.43	ND
6	0.20	ND	99	0.11	
8	0.51	Outlier	103	0.17	
10	0.11	ND	105	1.0	Outlier,ND
12	2.6	Outlier,ND	106	0.47	Outlier
17	5.0	Outlier,ND	107	0.49	Outlier
19	0.089	ND	112	0.29	
21	1.0	Outlier,ND	120	0.12	
22	0.23				
24	0.25	ND			
25	0.088				
26	0.27				
30	0.61	Outlier			
31	0.060				
32	0.20	ND			
33	0.40				
35	10	Outlier,ND			
36	0.070	ND			
40	1.0	Outlier,ND			
41	0.063				
42	0.17				
47	21	Outlier,ND			
48	0.040				
49	0.23				
53	0.056				
54	0.15				
57	0.16				
59	0.86	Outlier			
60	0.25				
61	4.2	Outlier			
65	0.089				
68	10	Outlier,ND			
69	0.37				
70	0.066				
71	0.20				
72	0.043				
75	0.11	ND			
77	0.047				
80	0.21				
81	0.10	ND			
82	2.0	Outlier,ND			
87	0.32	ND			

Consenus statistics

Consensus median, pg/g	0.15
Median all values pg/g	0.22
Consensus mean, pg/g	0.17
Standard deviation, pg/g	0.11
Relative standard deviation, %	62
No. of values reported	56
No. of values removed	16
No. of reported non-detects	20


PCB 123
pg/g fw
0.441
0.391
0.341
0.291
0.241
0.191
0.141
0.091
0.041
-0.009
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code

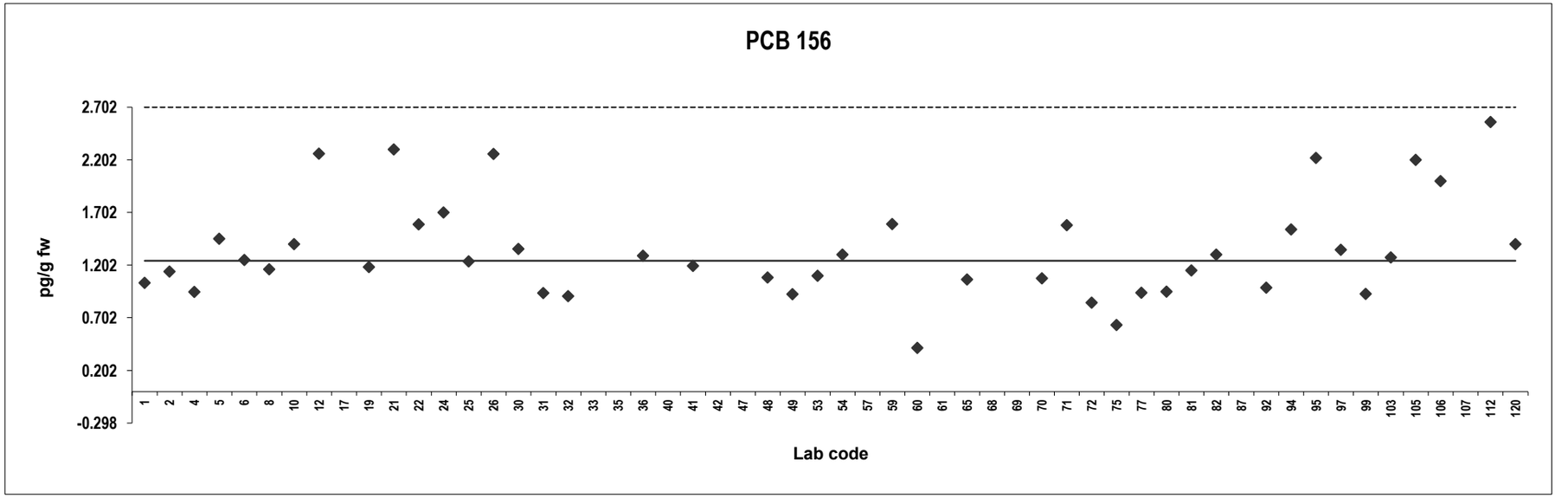

Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
48 72 77 53 31 41 70 36 25 19 65 2 81 4 75 99 10 120 5 54 94 57 42 103 6 32 71 80 49 22 92 24 60 26 112 87 69 33 95 97 106 107 8 30 59 21 40 105 1 82 12 61 17 35 68 47
Lab code

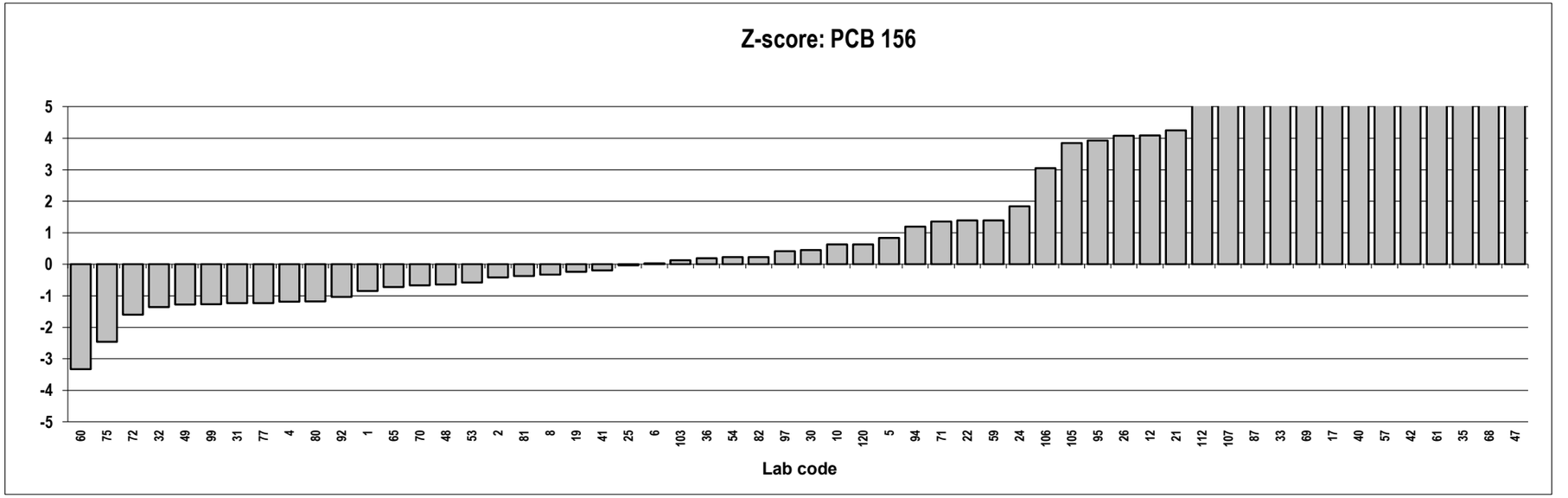
Sheep liver, fresh weight

Congener: PCB 156

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	ND	92	0.99	
2	1.1		94	1.5	
4	0.95		95	2.2	
5	1.5		97	1.3	
6	1.3		99	0.93	
8	1.2		103	1.3	
10	1.4		105	2.2	
12	2.3		106	2.0	
17	5.0	Outlier,ND	107	2.7	Outlier
19	1.2		112	2.6	
21	2.3		120	1.4	
22	1.6				
24	1.7				
25	1.2				
26	2.3				
30	1.4				
31	0.94				
32	0.91				
33	3.1	Outlier			
35	10	Outlier,ND			
36	1.3				
40	5.0	Outlier,ND			
41	1.2				
42	6.1	Outlier			
47	24	Outlier			
48	1.1				
49	0.93				
53	1.1				
54	1.3				
57	5.6	Outlier			
59	1.6				
60	0.41				
61	6.5	Outlier			
65	1.1				
68	10	Outlier,ND			
69	3.9	Outlier			
70	1.1				
71	1.6				
72	0.84				
75	0.63				
77	0.94				
80	0.95				
81	1.2				
82	1.3				
87	2.9	Outlier			

Consenus statistics	
Consensus median, pg/g	1.2
Median all values pg/g	1.4
Consensus mean, pg/g	1.3
Standard deviation, pg/g	0.48
Relative standard deviation, %	36
No. of values reported	56
No. of values removed	12
No. of reported non-detects	5


PCB 156
2.702
2.202
1.702
1.202
0.702
0.202
-0.298
pg/g fw
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 75 72 32 49 99 31 77 4 80 92 1 65 70 48 53 2 81 8 19 41 25 6 103 36 54 82 97 30 10 120 5 94 71 22 59 24 106 105 95 26 12 21 112 107 87 33 69 17 40 57 42 61 35 68 47
Lab code

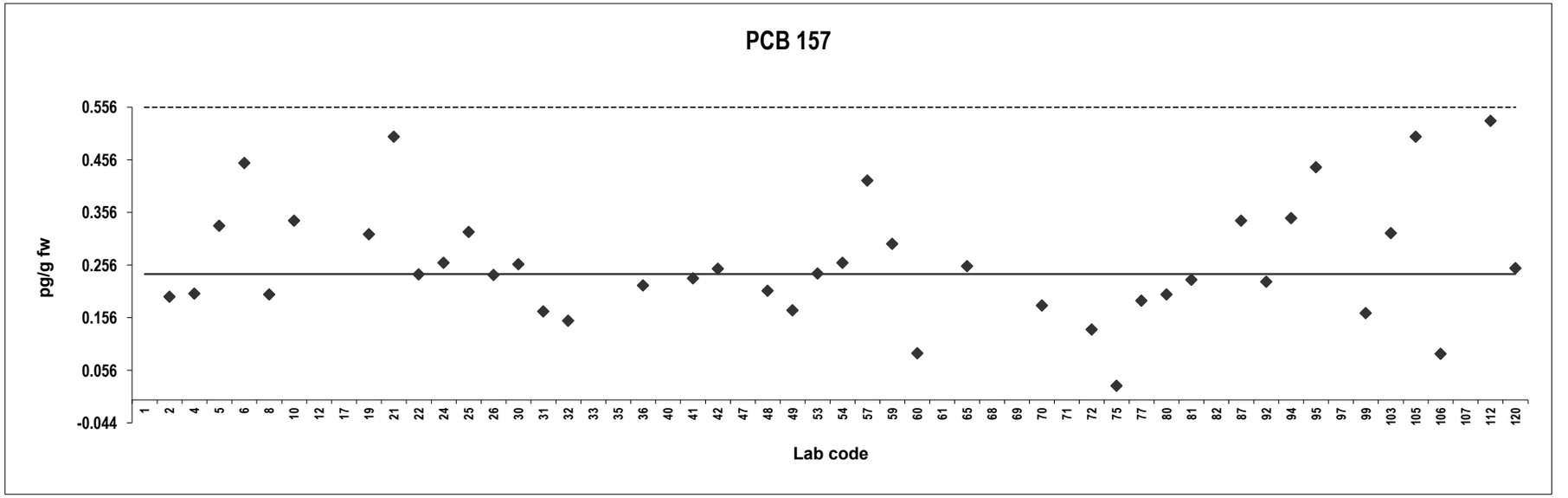
Sheep liver, fresh weight

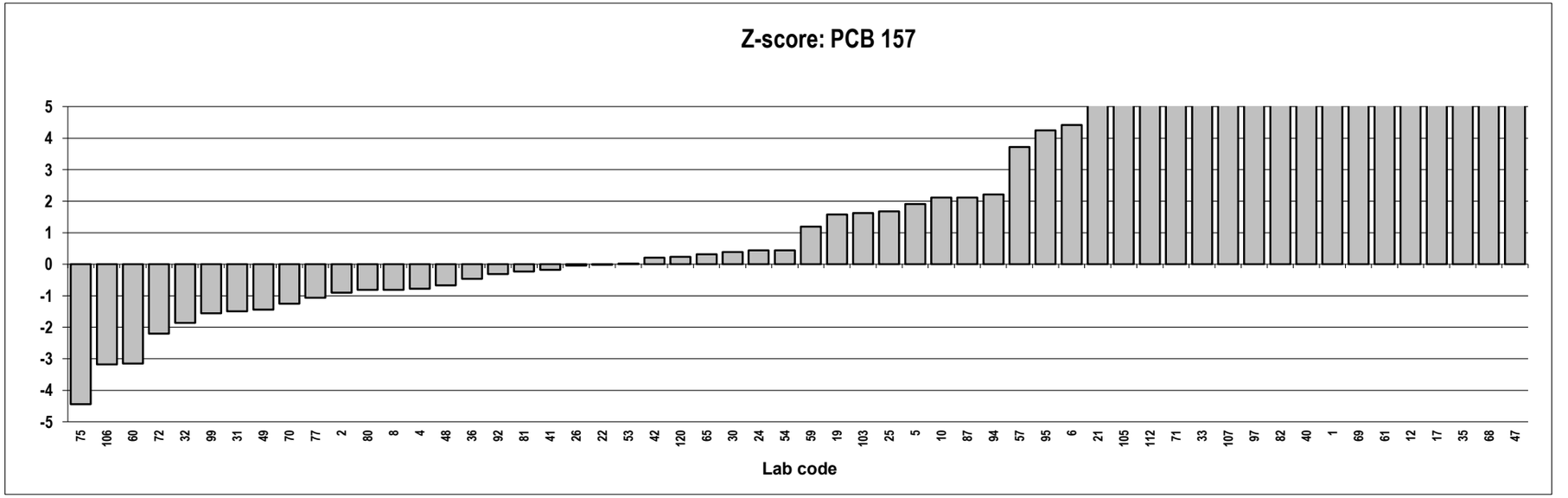
Congener: PCB 157

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	Outlier,ND	92	0.22	
2	0.20		94	0.34	
4	0.20		95	0.44	
5	0.33		97	0.60	Outlier,ND
6	0.45		99	0.16	
8	0.20		103	0.32	
10	0.34		105	0.50	ND
12	1.7	Outlier,ND	106	0.087	ND
17	5.0	Outlier,ND	107	0.58	Outlier
19	0.31	ND	112	0.53	
21	0.50	ND	120	0.25	
22	0.24				
24	0.26				
25	0.32				
26	0.24				
30	0.26				
31	0.17				
32	0.15				
33	0.58	Outlier			
35	10	Outlier,ND			
36	0.22				
40	1.0	Outlier,ND			
41	0.23				
42	0.25				
47	21	Outlier,ND			
48	0.21				
49	0.17	ND			
53	0.24				
54	0.26				
57	0.42				
59	0.30				
60	0.088				
61	1.3	Outlier			
65	0.25				
68	10	Outlier,ND			
69	1.3	Outlier			
70	0.18				
71	0.57	Outlier			
72	0.13				
75	0.027	ND			
77	0.19				
80	0.20				
81	0.23				
82	0.90	Outlier,ND			
87	0.34	ND			

Consenus statistics

Consensus median, pg/g	0.24
Median all values pg/g	0.28
Consensus mean, pg/g	0.26
Standard deviation, pg/g	0.11
Relative standard deviation, %	43
No. of values reported	56
No. of values removed	14
No. of reported non-detects	16


PCB 157
pg/g fw
0.556
0.456
0.356
0.256
0.156
0.056
-0.044
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
75 106 60 72 32 99 31 49 70 77 2 80 8 4 48 36 92 81 41 26 22 53 42 120 65 30 24 54 59 19 103 25 5 10 87 94 57 95 6 21 105 112 71 33 107 97 82 40 1 69 61 12 17 35 68 47
Lab code

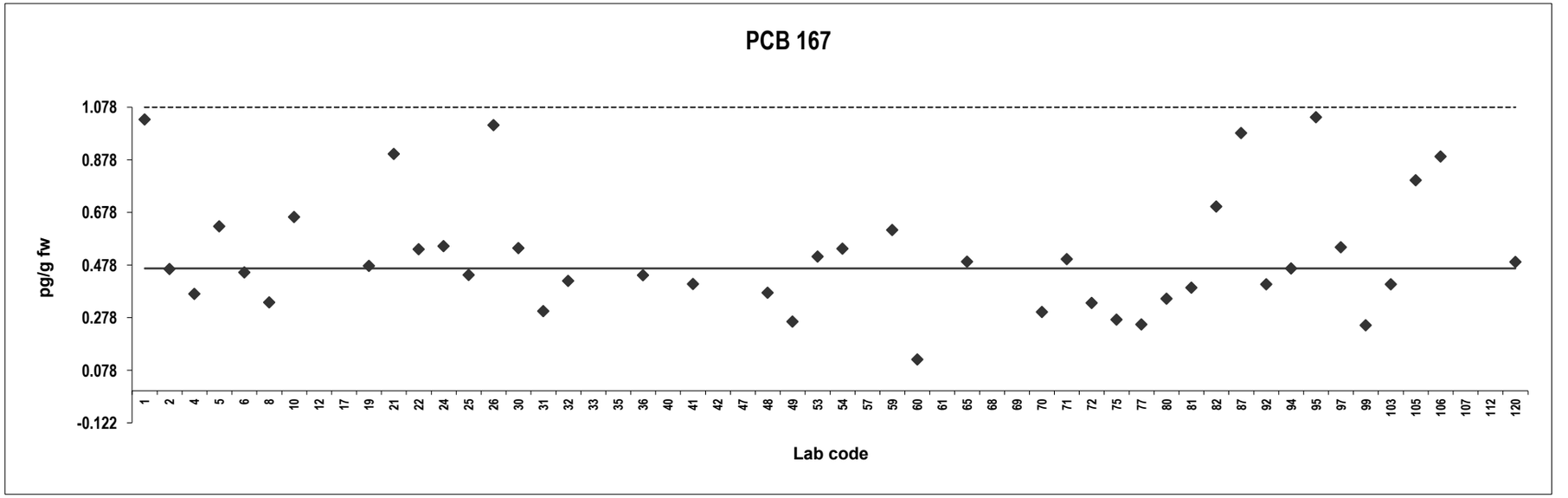
Sheep liver, fresh weight

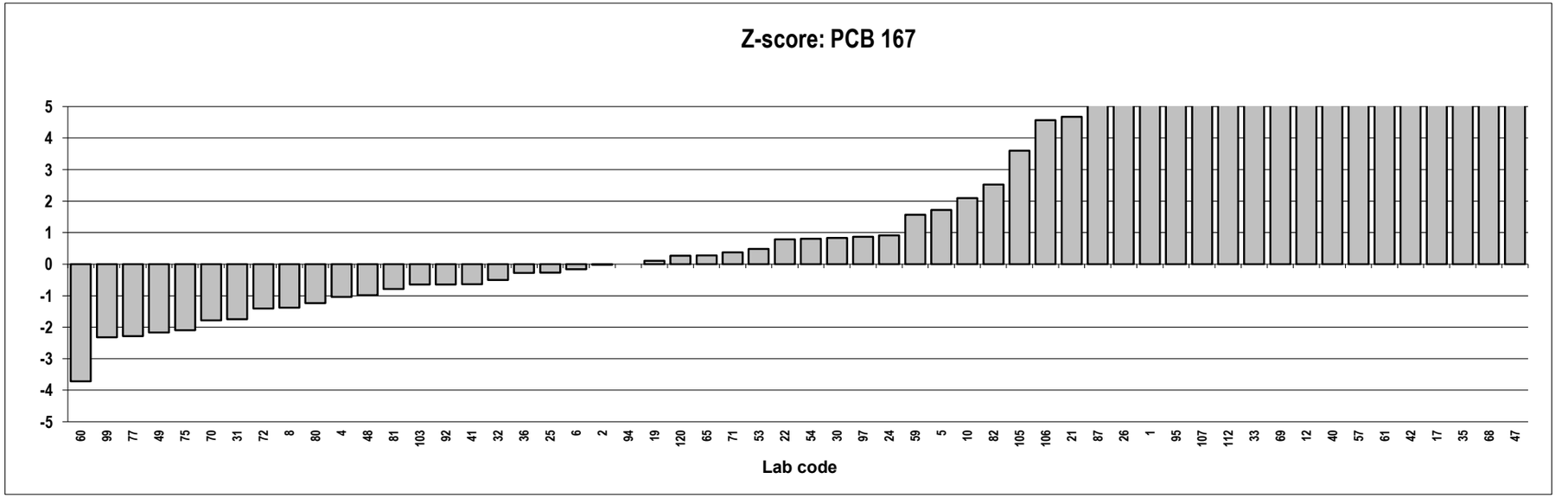
Congener: PCB 167

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	ND	92	0.41	
2	0.46		94	0.47	
4	0.37		95	1.0	
5	0.63		97	0.55	
6	0.45		99	0.25	
8	0.34		103	0.40	
10	0.66		105	0.80	
12	1.8	Outlier,ND	106	0.89	
17	5.0	Outlier,ND	107	1.1	Outlier
19	0.48		112	1.1	Outlier
21	0.90		120	0.49	
22	0.54				
24	0.55				
25	0.44				
26	1.0				
30	0.54				
31	0.30				
32	0.42				
33	1.7	Outlier			
35	10	Outlier,ND			
36	0.44				
40	2.0	Outlier,ND			
41	0.41				
42	2.9	Outlier			
47	21	Outlier,ND			
48	0.37				
49	0.26				
53	0.51				
54	0.54				
57	2.3	Outlier			
59	0.61				
60	0.12				
61	2.4	Outlier			
65	0.49				
68	10	Outlier,ND			
69	1.8	Outlier			
70	0.30				
71	0.50	ND			
72	0.33				
75	0.27				
77	0.25				
80	0.35				
81	0.39				
82	0.70	ND			
87	0.98	ND			

Consenus statistics

Consensus median, pg/g	0.47
Median all values pg/g	0.54
Consensus mean, pg/g	0.52
Standard deviation, pg/g	0.23
Relative standard deviation, %	44
No. of values reported	56
No. of values removed	13
No. of reported non-detects	10


PCB 167
1.078
0.878
0.678
0.478
0.278
0.078
-0.122
pg/g fw
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 99 77 49 75 70 31 72 8 80 4 48 81 103 92 41 32 36 25 6 2 94 19 120 65 71 53 22 54 30 97 24 59 5 10 82 105 106 21 87 26 1 95 107 112 33 69 12 40 57 61 42 17 35 68 47
Lab code

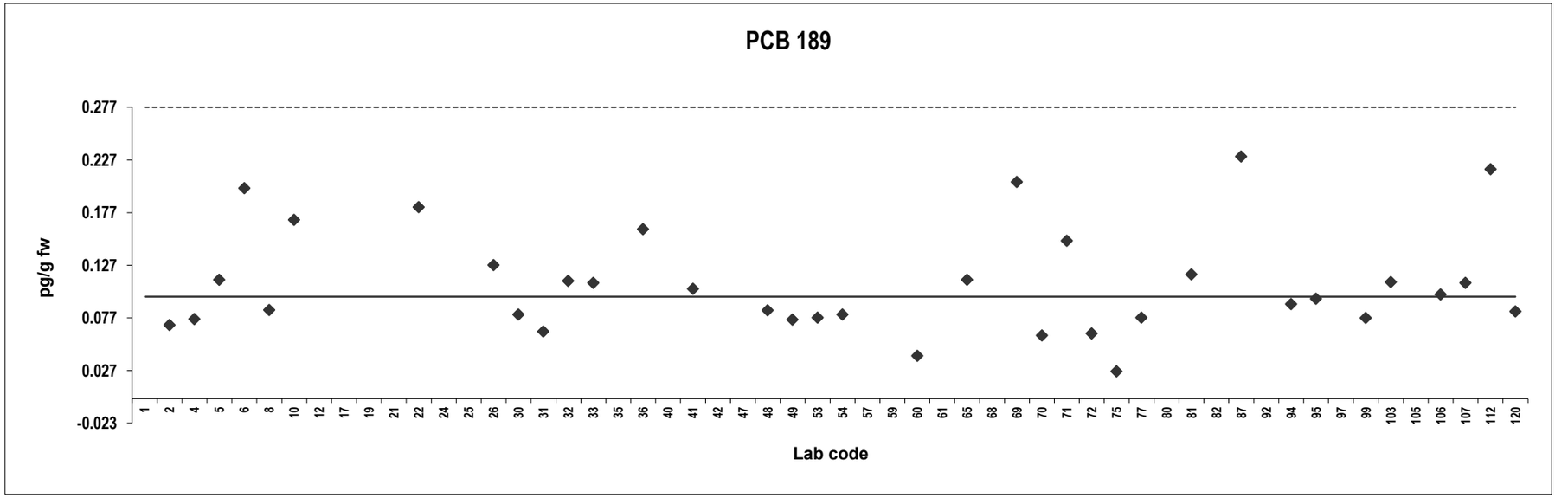
Sheep liver, fresh weight

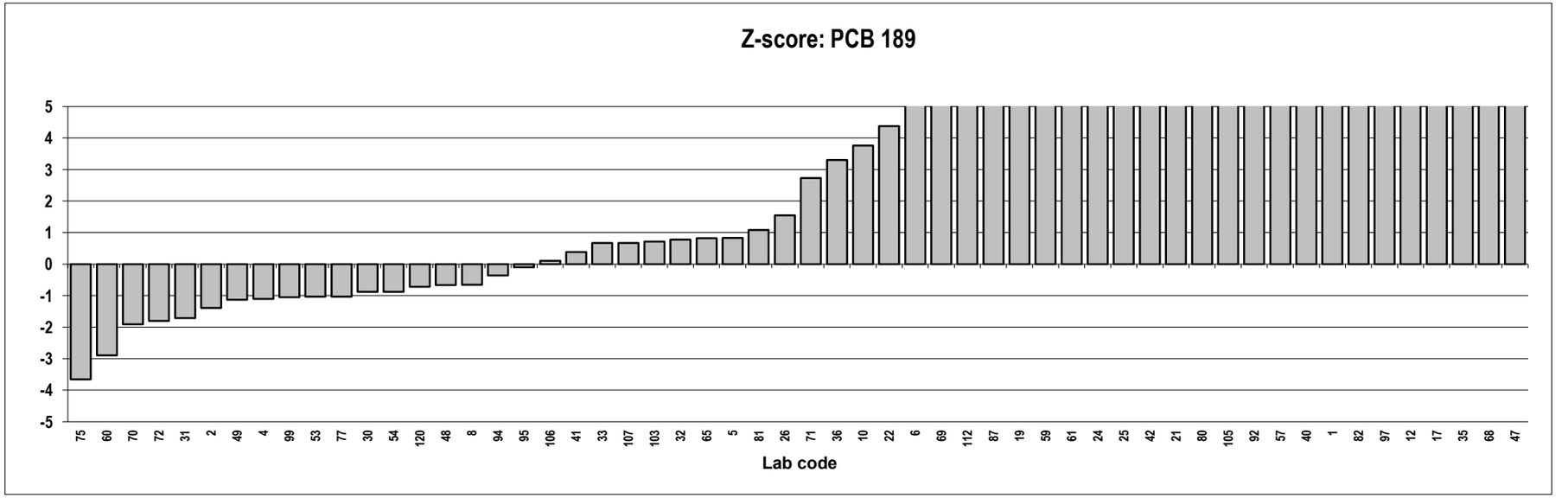
Congener: PCB 189

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.0	Outlier,ND	92	0.60	Outlier
2	0.070		94	0.090	
4	0.076		95	0.095	
5	0.11		97	1.3	Outlier,ND
6	0.20	ND	99	0.077	
8	0.084		103	0.11	
10	0.17		105	0.50	Outlier,ND
12	1.7	Outlier,ND	106	0.099	
17	5.0	Outlier,ND	107	0.11	
19	0.33	Outlier,ND	112	0.22	
21	0.50	Outlier,ND	120	0.083	
22	0.18	ND			
24	0.37	Outlier,ND			
25	0.38	Outlier,ND			
26	0.13				
30	0.080				
31	0.064				
32	0.11				
33	0.11				
35	10	Outlier,ND			
36	0.16				
40	1.0	Outlier,ND			
41	0.10				
42	0.45	Outlier			
47	21	Outlier,ND			
48	0.084				
49	0.075	ND			
53	0.077				
54	0.080				
57	0.66	Outlier			
59	0.35	Outlier			
60	0.041				
61	0.36	Outlier			
65	0.11				
68	10	Outlier,ND			
69	0.21				
70	0.060				
71	0.15				
72	0.062				
75	0.026	ND			
77	0.077				
80	0.50	Outlier,ND			
81	0.12				
82	1.2	Outlier,ND			
87	0.23	ND			

Consenus statistics

Consensus median, pg/g	0.097
Median all values pg/g	0.14
Consensus mean, pg/g	0.11
Standard deviation, pg/g	0.050
Relative standard deviation, %	46
No. of values reported	56
No. of values removed	20
No. of reported non-detects	20


PCB 189
pg/g fw
0.277
0.227
0.177
0.127
0.077
0.027
-0.023
1 2 4 5 6 8 10 12 17 19 21 22 24 25 26 30 31 32 33 35 36 40 41 42 47 48 49 53 54 57 59 60 61 65 68 69 70 71 72 75 77 80 81 82 87 92 94 95 97 99 103 105 106 107 112 120
Lab code


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
75 60 70 72 31 2 49 4 99 53 77 30 54 120 48 8 94 95 106 41 33 107 103 32 65 5 81 26 71 36 10 22 6 69 112 87 19 59 61 24 25 42 21 80 105 92 57 40 1 82 97 12 17 35 68 47
Lab code

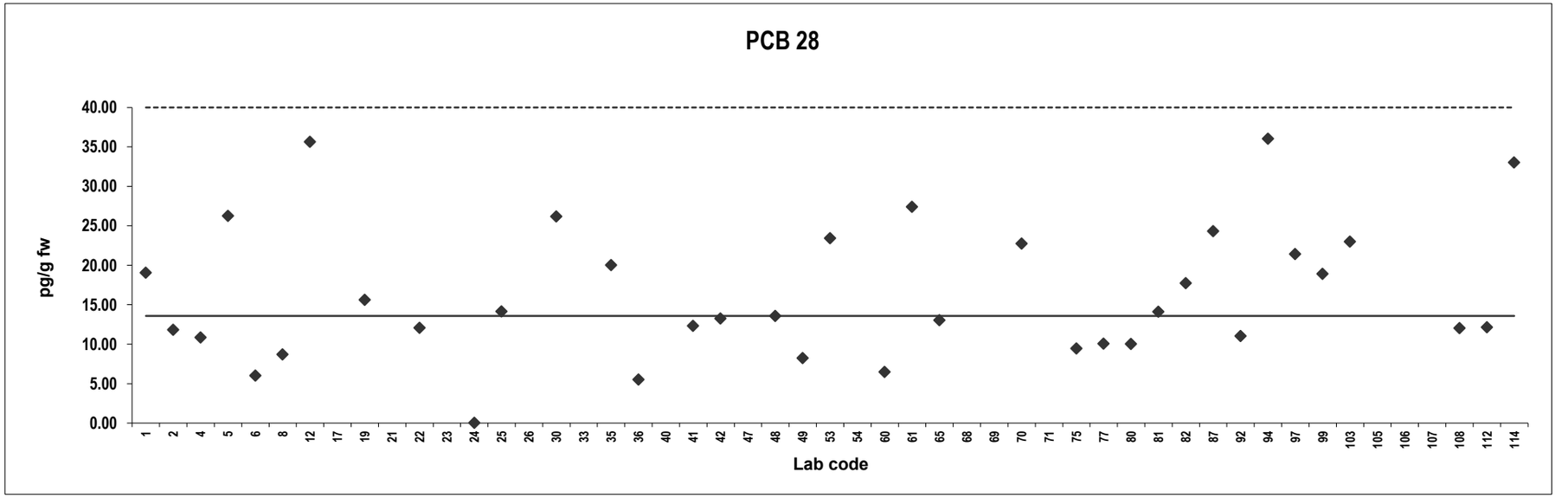
Sheep liver, fresh weight

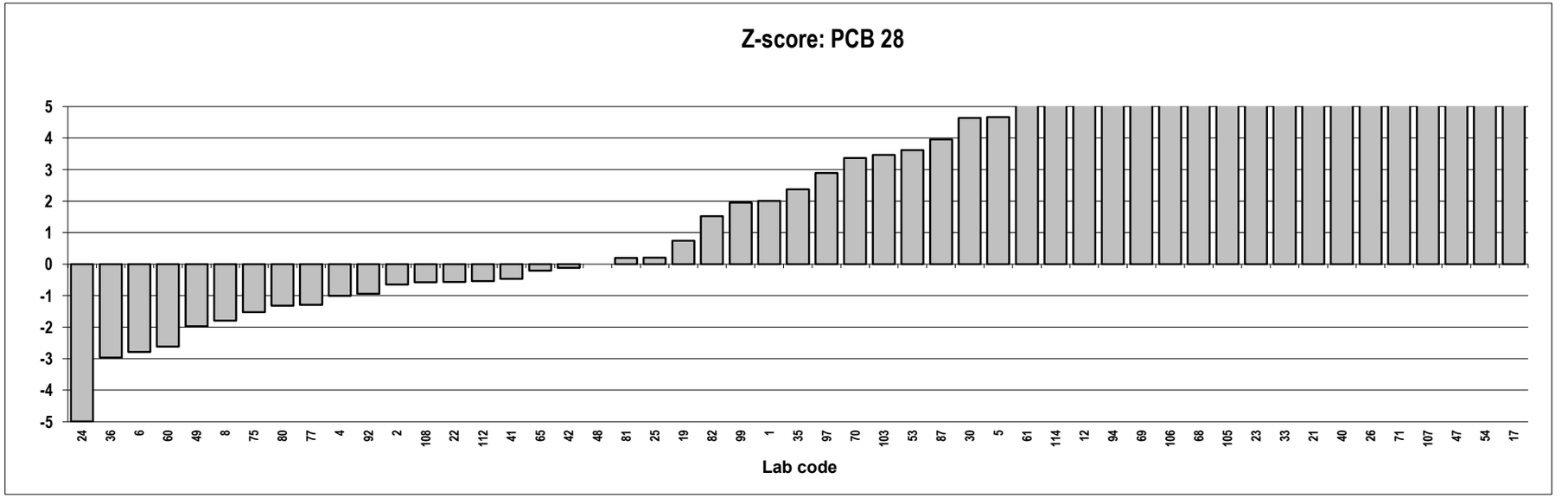
Congener: PCB 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	19		105	51	Outlier
2	12		106	47	Outlier
4	11		107	115	Outlier
5	26		108	12	
6	6.0		112	12	
8	8.7		114	33	
12	36	ND			
17	1000	Outlier,ND			
19	16				
21	68	Outlier			
22	12				
23	53	Outlier			
24	0.015				
25	14				
26	82	Outlier			
30	26				
33	56	Outlier			
35	20				
36	5.5	ND			
40	80	Outlier,ND			
41	12				
42	13				
47	201	Outlier			
48	14				
49	8.2				
53	23				
54	357	Outlier			
60	6.5				
61	27				
65	13				
68	50	Outlier,ND			
69	41	Outlier			
70	23				
71	100	Outlier,ND			
75	9.4				
77	10				
80	10	ND			
81	14				
82	18				
87	24	ND			
92	11				
94	36				
97	21				
99	19				
103	23				

Consenus statistics

Consensus median, pg/g	14
Median all values pg/g	20
Consensus mean, pg/g	16
Standard deviation, pg/g	8.6
Relative standard deviation, %	52
No. of values reported	51
No. of values removed	14
No. of reported non-detects	8


PCB 28
pg/g fw
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 36 6 60 49 8 75 80 77 4 92 2 108 22 112 41 65 42 48 81 25 19 82 99 1 35 97 70 103 53 87 30 5 61 114 12 94 69 106 68 105 23 33 21 40 26 71 107 47 54 17
Lab code

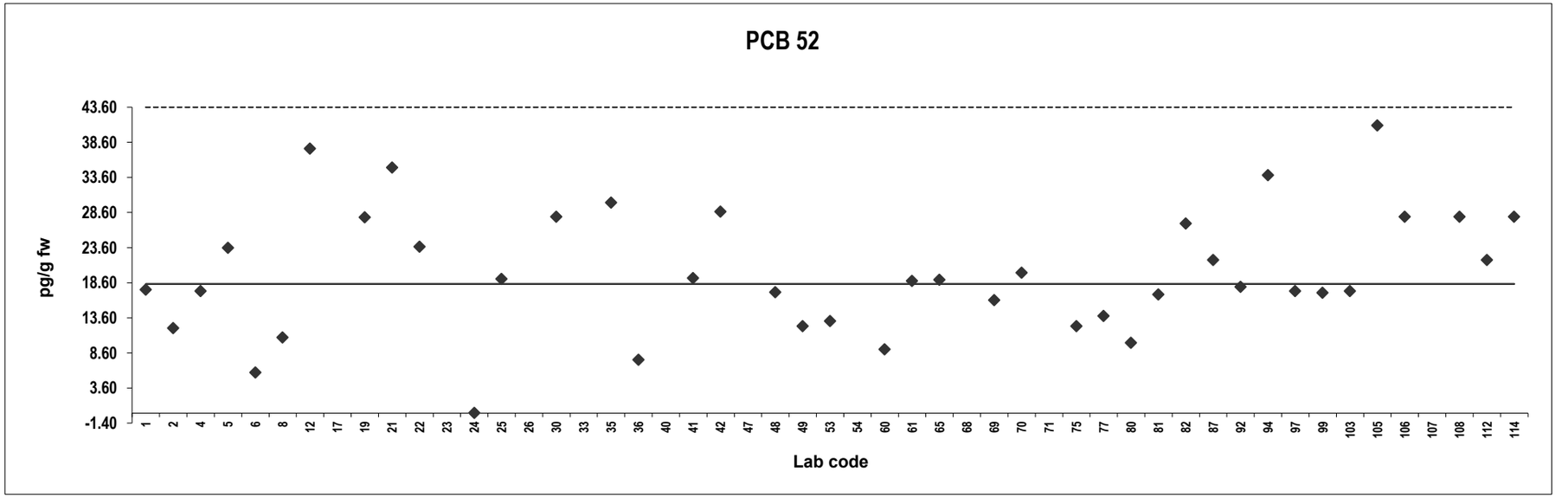
Sheep liver, fresh weight

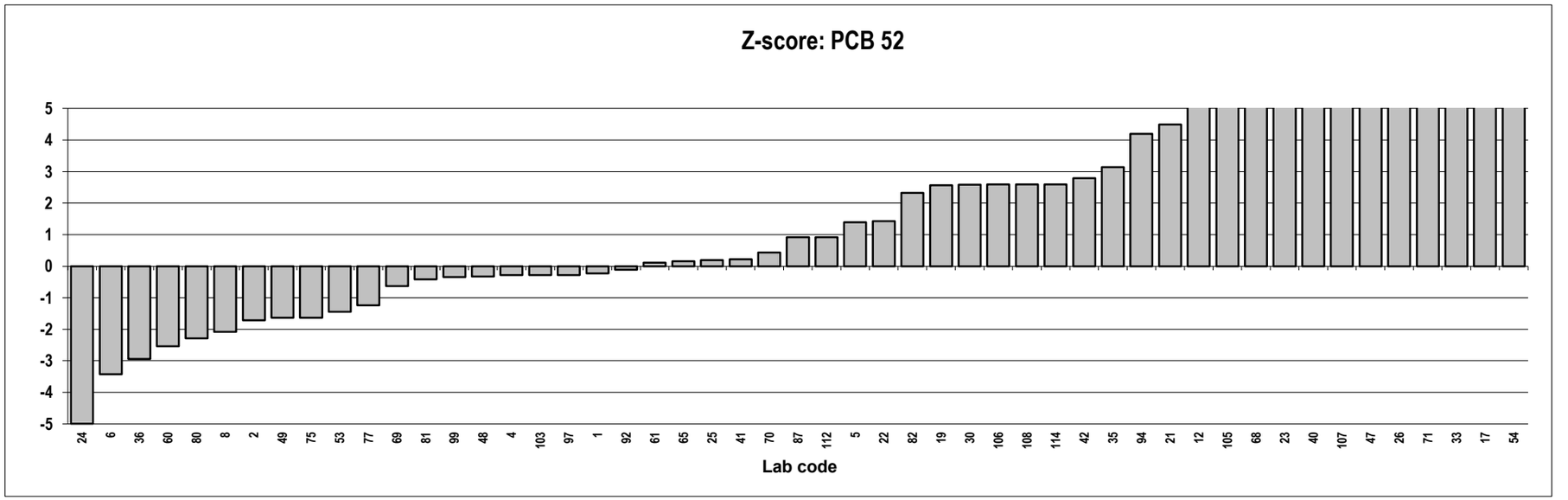
Congener: PCB 52

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	18		105	41	
2	12		106	28	
4	17		107	66	Outlier
5	24		108	28	
6	5.8		112	22	
8	11		114	28	
12	38	ND			
17	1000	Outlier,ND			
19	28				
21	35				
22	24				
23	54	Outlier			
24	0.024				
25	19				
26	99	Outlier			
30	28				
33	180	Outlier			
35	30				
36	7.6	ND			
40	60	Outlier,ND			
41	19				
42	29				
47	80	Outlier			
48	17				
49	12				
53	13				
54	6700	Outlier			
60	9.1				
61	19				
65	19				
68	50	Outlier,ND			
69	16				
70	20				
71	100	Outlier,ND			
75	12				
77	14				
80	10				
81	17				
82	27				
87	22	ND			
92	18				
94	34				
97	17				
99	17				
103	17				

Consenus statistics

Consensus median, pg/g	18
Median all values pg/g	22
Consensus mean, pg/g	20
Standard deviation, pg/g	8.9
Relative standard deviation, %	44
No. of values reported	51
No. of values removed	10
No. of reported non-detects	7


PCB 52
pg/g fw
43.60
38.60
33.60
28.60
23.60
18.60
13.60
8.60
3.60
-1.40
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 6 36 60 80 8 2 49 75 53 77 69 81 99 48 4 103 97 1 92 61 65 25 41 70 87 112 5 22 82 19 30 106 108 114 42 35 94 21 12 105 68 23 40 107 47 26 71 33 17 54
Lab code

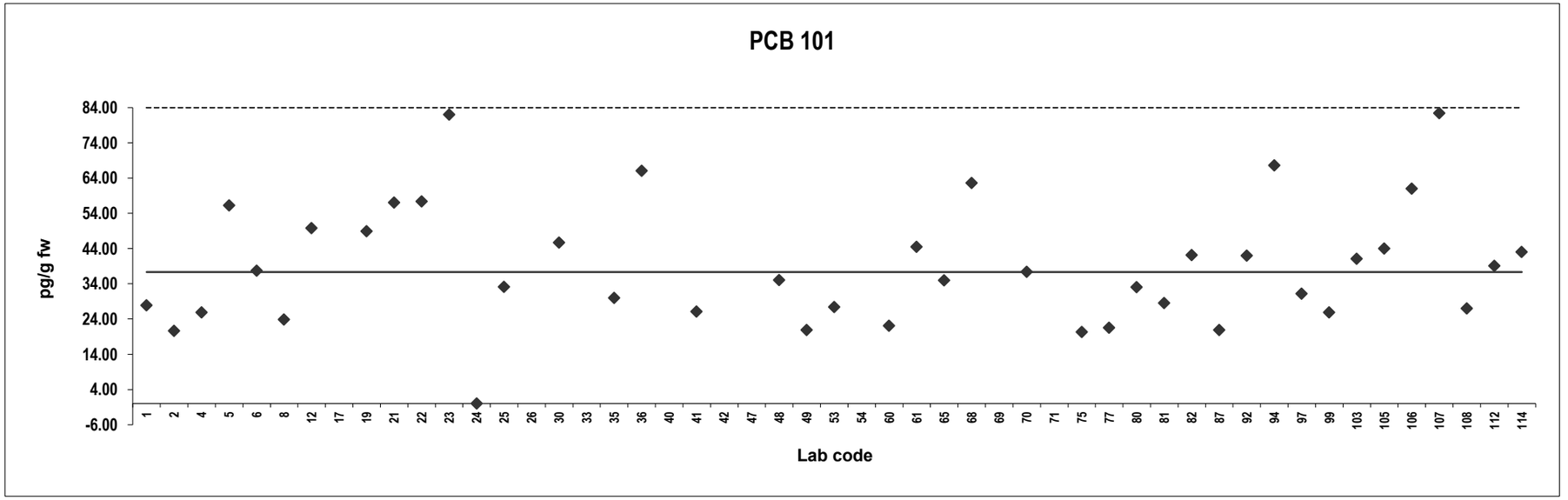
Sheep liver, fresh weight

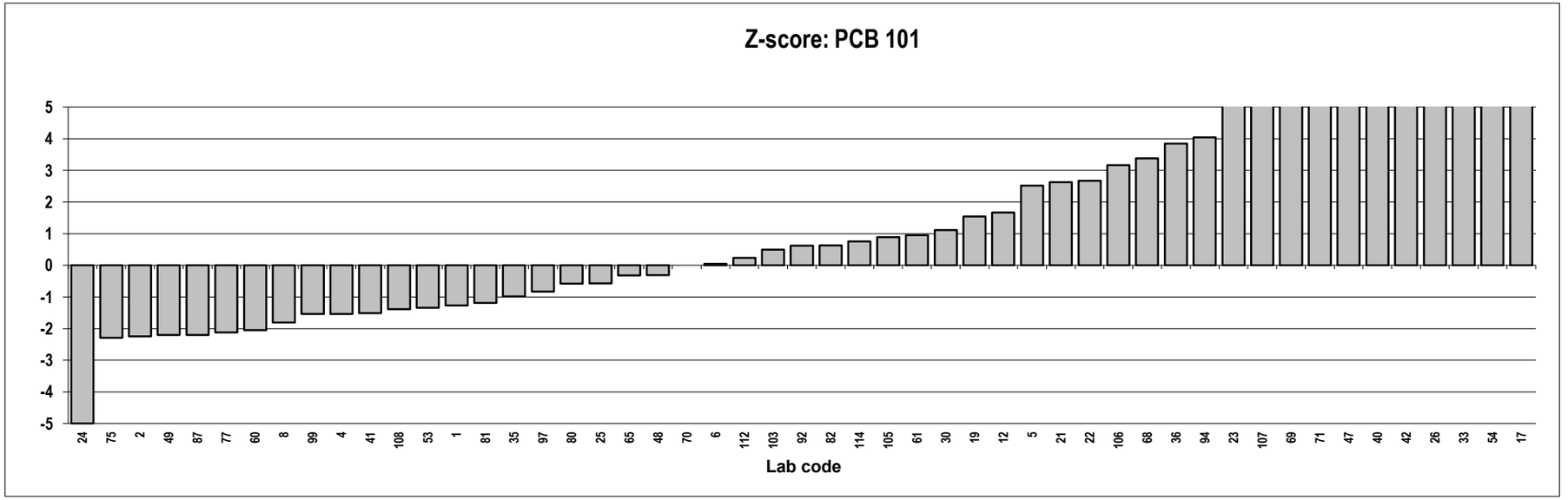
Congener: PCB 101

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	28		105	44	
2	21		106	61	
4	26		107	82	
5	56		108	27	
6	38		112	39	
8	24		114	43	
12	50				
17	1000	Outlier,ND			
19	49				
21	57				
22	57				
23	82				
24	0.025				
25	33				
26	209	Outlier			
30	46				
33	215	Outlier			
35	30				
36	66				
40	120	Outlier,ND			
41	26				
42	129	Outlier			
47	113	Outlier			
48	35				
49	21				
53	27				
54	737	Outlier			
60	22				
61	44				
65	35				
68	63				
69	98	Outlier			
70	37				
71	100	Outlier,ND			
75	20				
77	22				
80	33				
81	29				
82	42				
87	21	ND			
92	42				
94	68				
97	31				
99	26				
103	41				

Consenus statistics

Consensus median, pg/g	37
Median all values pg/g	42
Consensus mean, pg/g	39
Standard deviation, pg/g	18
Relative standard deviation, %	45
No. of values reported	51
No. of values removed	9
No. of reported non-detects	4


PCB 101
pg/g fw
84.00
74.00
64.00
54.00
44.00
34.00
24.00
14.00
4.00
-6.00
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 75 2 49 87 77 60 8 99 4 41 108 53 1 81 35 97 80 25 65 48 70 6 112 103 92 82 114 105 61 30 19 12 5 21 22 106 68 36 94 23 107 69 71 47 40 42 26 33 54 17
Lab code

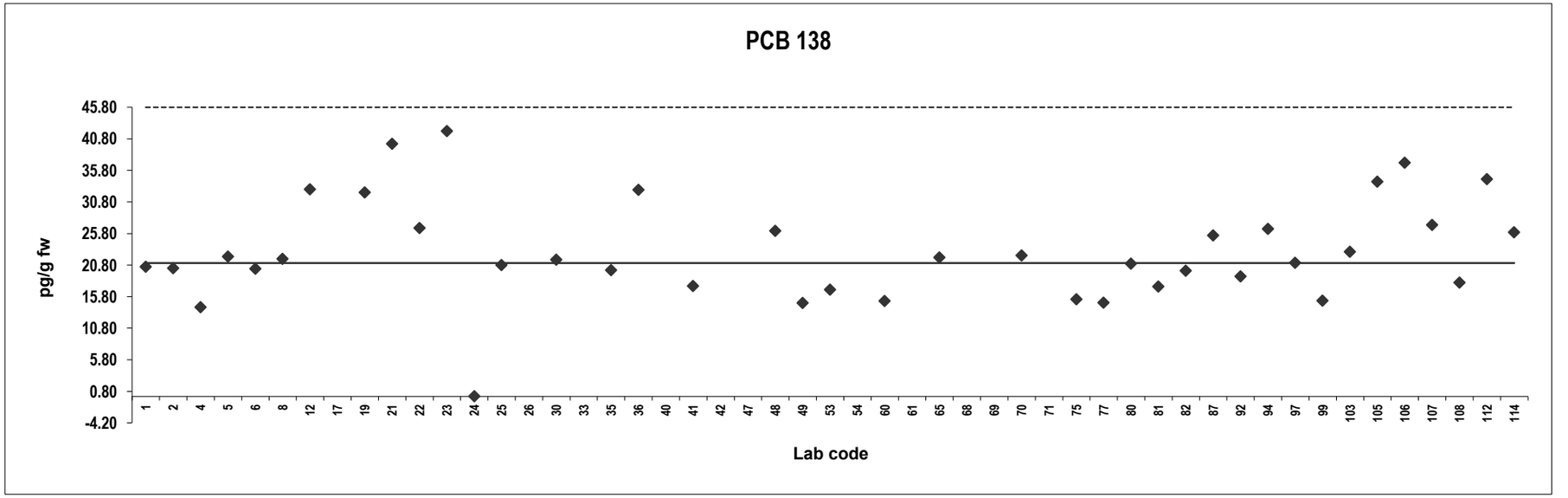
Sheep liver, fresh weight

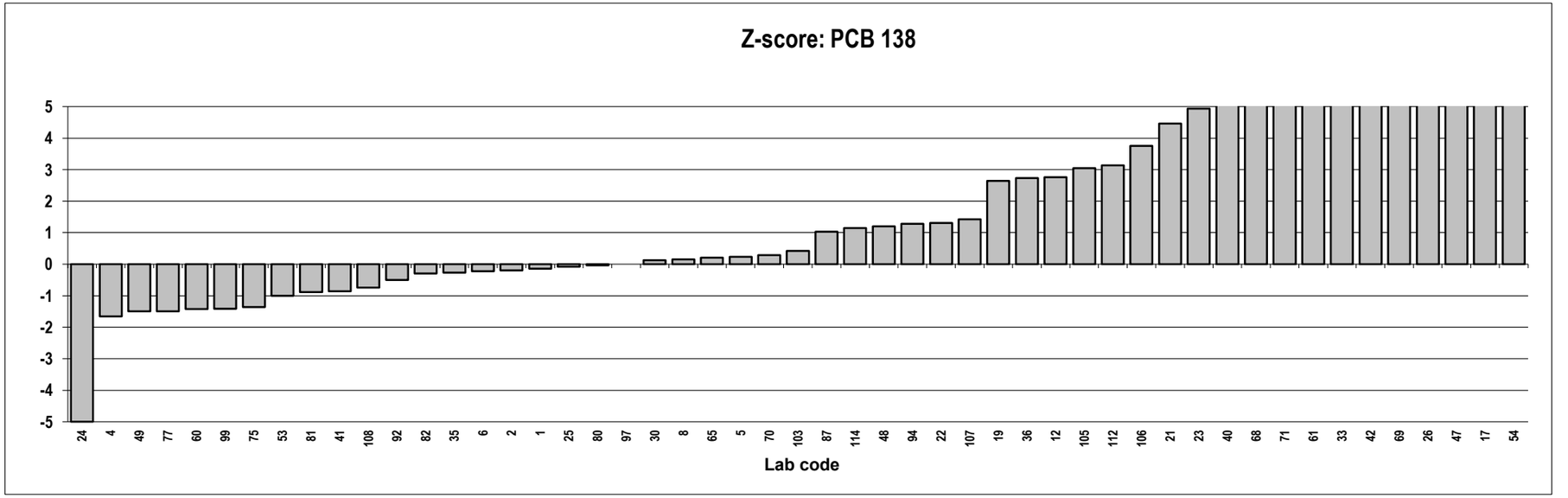
Congener: PCB 138

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	21		105	34	
2	20		106	37	
4	14		107	27	
5	22		108	18	
6	20		112	34	
8	22		114	26	
12	33				
17	1000	Outlier,ND			
19	32				
21	40				
22	27				
23	42				
24	0.019				
25	21				
26	127	Outlier			
30	22				
33	87	Outlier			
35	20				
36	33				
40	50	Outlier,ND			
41	17				
42	96	Outlier			
47	222	Outlier			
48	26				
49	15				
53	17				
54	2749	Outlier			
60	15				
61	79	Outlier			
65	22				
68	50	Outlier,ND			
69	118	Outlier			
70	22				
71	50	Outlier,ND			
75	15				
77	15				
80	21				
81	17				
82	20				
87	26	ND			
92	19				
94	27				
97	21				
99	15				
103	23				

Consenus statistics

Consensus median, pg/g	21
Median all values pg/g	23
Consensus mean, pg/g	23
Standard deviation, pg/g	8.1
Relative standard deviation, %	35
No. of values reported	51
No. of values removed	11
No. of reported non-detects	5


PCB 138
pg/g fw
45.80
40.80
35.80
30.80
25.80
20.80
15.80
10.80
5.80
0.80
-4.20
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code

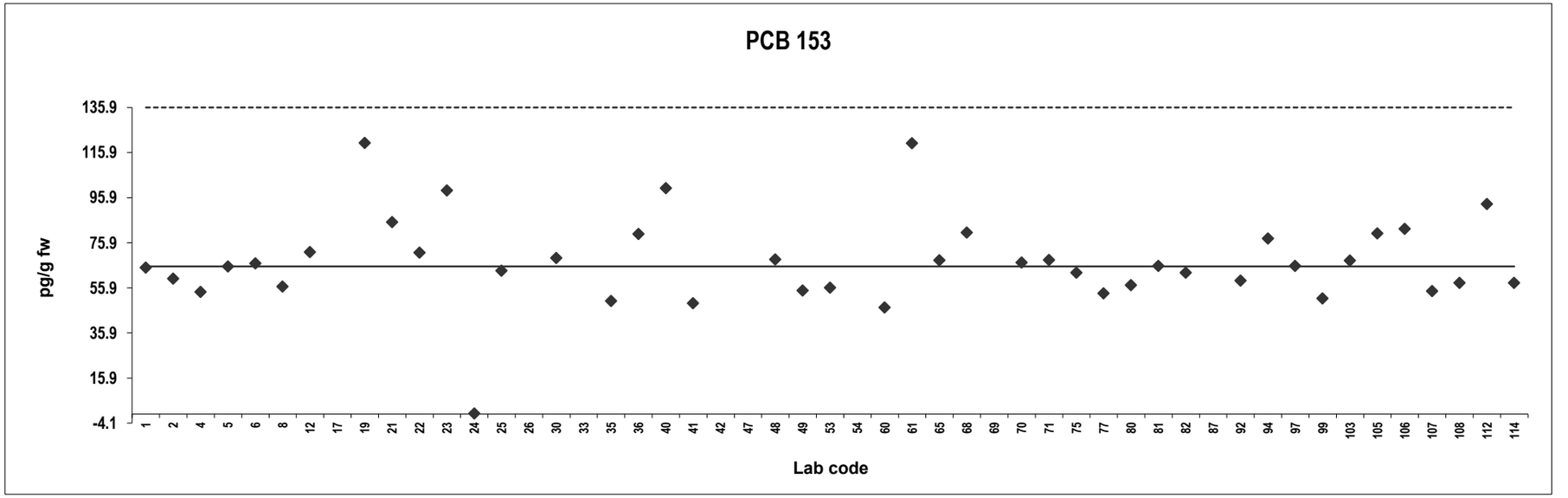

Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 4 49 77 60 99 75 53 81 41 108 92 82 35 6 2 1 25 80 97 30 8 65 5 70 103 87 114 48 94 22 107 19 36 12 105 112 106 21 23 40 68 71 61 33 42 69 26 47 17 54
Lab code

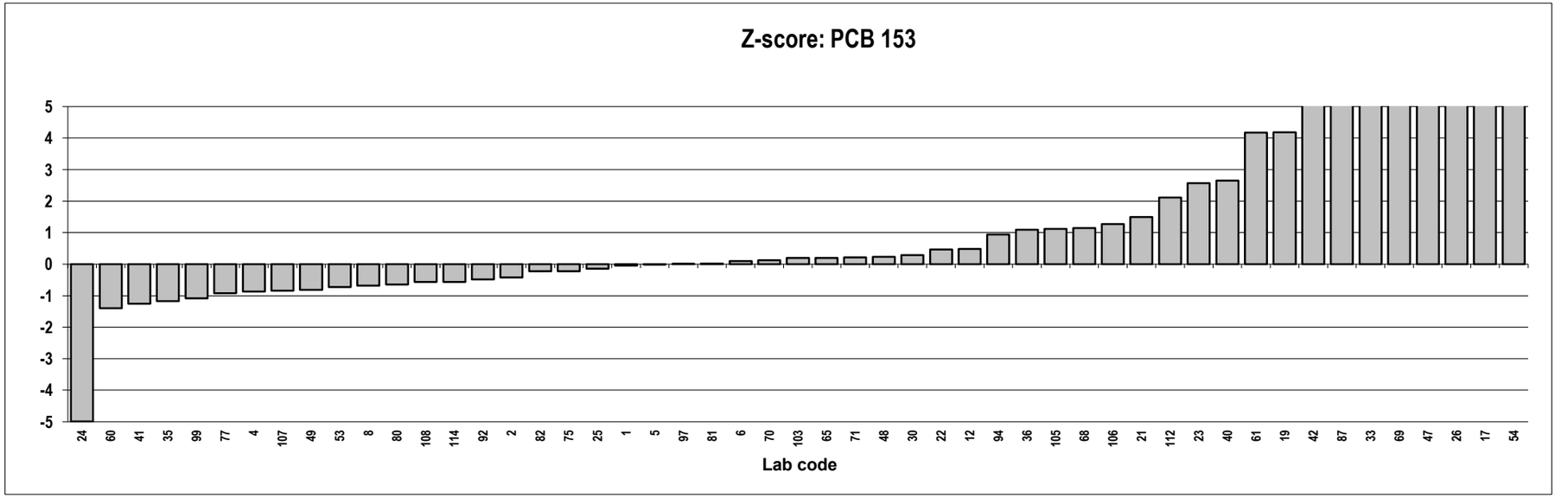
Sheep liver, fresh weight

Congener: PCB 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	65		105	80	
2	60		106	82	
4	54		107	54	
5	65		108	58	
6	67		112	93	
8	56		114	58	
12	72				
17	1000	Outlier,ND			
19	120				
21	85				
22	71				
23	99				
24	0.068				
25	63				
26	303	Outlier			
30	69				
33	180	Outlier			
35	50				
36	80				
40	100	ND			
41	49				
42	169	Outlier			
47	281	Outlier			
48	68				
49	55				
53	56				
54	15500	Outlier			
60	47				
61	120				
65	68				
68	80				
69	189	Outlier			
70	67				
71	68				
75	63				
77	53				
80	57				
81	66				
82	63				
87	179	Outlier			
92	59				
94	78				
97	66				
99	51				
103	68				

Consenus statistics	
Consensus median, pg/g	65
Median all values pg/g	68
Consensus mean, pg/g	68
Standard deviation, pg/g	20
Relative standard deviation, %	30
No. of values reported	51
No. of values removed	8
No. of reported non-detects	2


PCB 153
pg/g fw
135.9
115.9
95.9
75.9
55.9
35.9
15.9
-4.1
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 60 41 35 99 77 4 107 49 53 8 80 108 114 92 2 82 75 25 1 5 97 81 6 70 103 65 71 48 30 22 12 94 36 105 68 106 21 112 23 40 61 19 42 87 33 69 47 26 17 54
Lab code

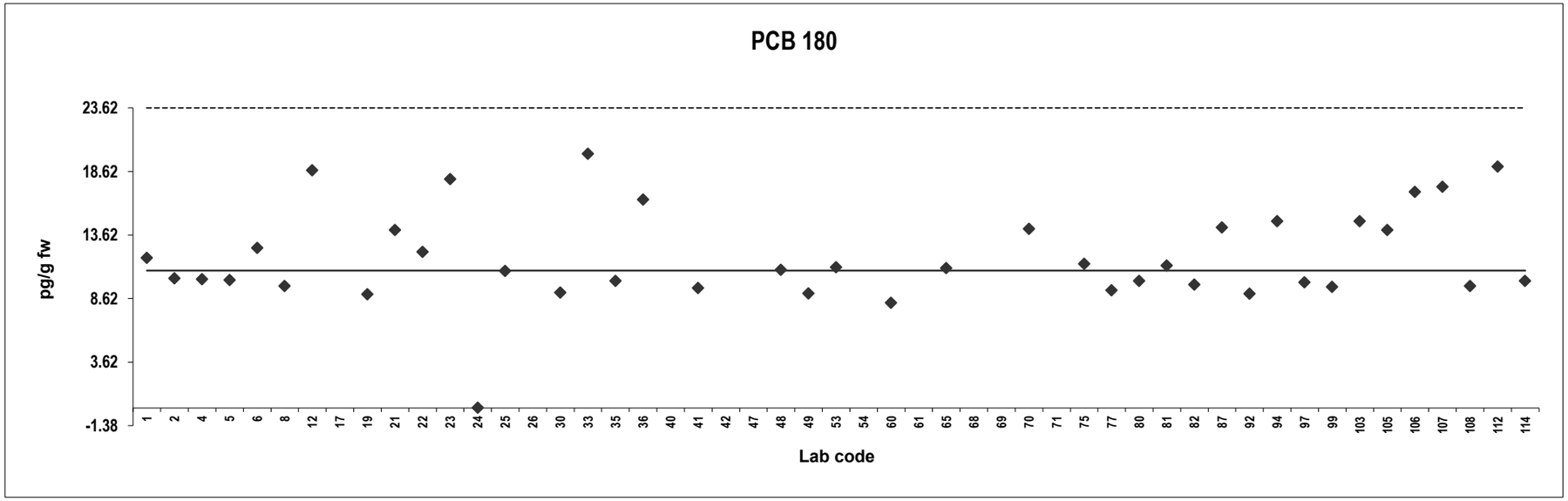
Sheep liver, fresh weight

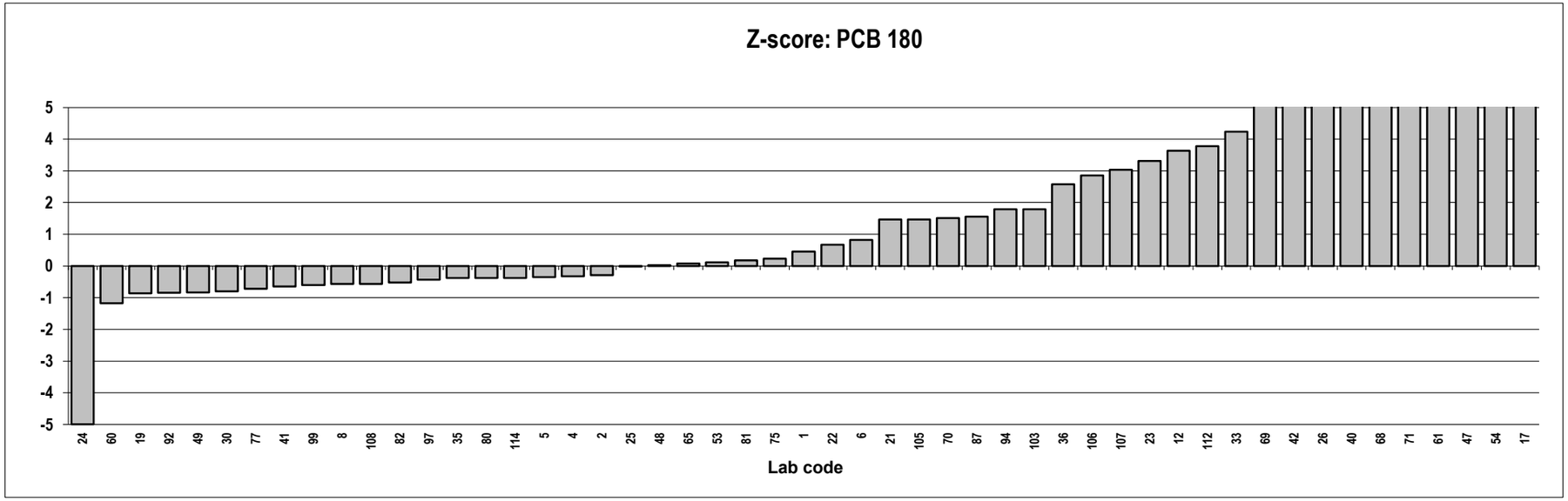
Congener: PCB 180

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	12		105	14	
2	10		106	17	
4	10		107	17	
5	10		108	9.6	
6	13		112	19	
8	9.6		114	10	
12	19	ND			
17	1000	Outlier,ND			
19	9.0				
21	14				
22	12				
23	18				
24	0.013				
25	11				
26	50	Outlier			
30	9.1				
33	20				
35	10	ND			
36	16	ND			
40	50	Outlier,ND			
41	9.4				
42	37	Outlier			
47	106	Outlier			
48	11				
49	9.0				
53	11				
54	649	Outlier			
60	8.3				
61	65	Outlier			
65	11				
68	50	Outlier,ND			
69	24	Outlier			
70	14				
71	50	Outlier,ND			
75	11				
77	9.3				
80	10	ND			
81	11				
82	9.7				
87	14	ND			
92	9.0				
94	15				
97	9.9				
99	9.5				
103	15				

Consenus statistics

Consensus median, pg/g	11
Median all values pg/g	12
Consensus mean, pg/g	12
Standard deviation, pg/g	3.7
Relative standard deviation, %	32
No. of values reported	51
No. of values removed	10
No. of reported non-detects	9


PCB 180
23.62
18.62
13.62
8.62
3.62
-1.38
pg/g fw
1 2 4 5 6 8 12 17 19 21 22 23 24 25 26 30 33 35 36 40 41 42 47 48 49 53 54 60 61 65 68 69 70 71 75 77 80 81 82 87 92 94 97 99 103 105 106 107 108 112 114
Lab code


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 60 19 92 49 30 77 41 99 8 108 82 97 35 80 114 5 4 2 25 48 65 53 81 75 1 22 6 21 105 70 87 94 103 36 106 107 23 12 112 33 69 42 26 40 68 71 61 47 54 17
Lab code

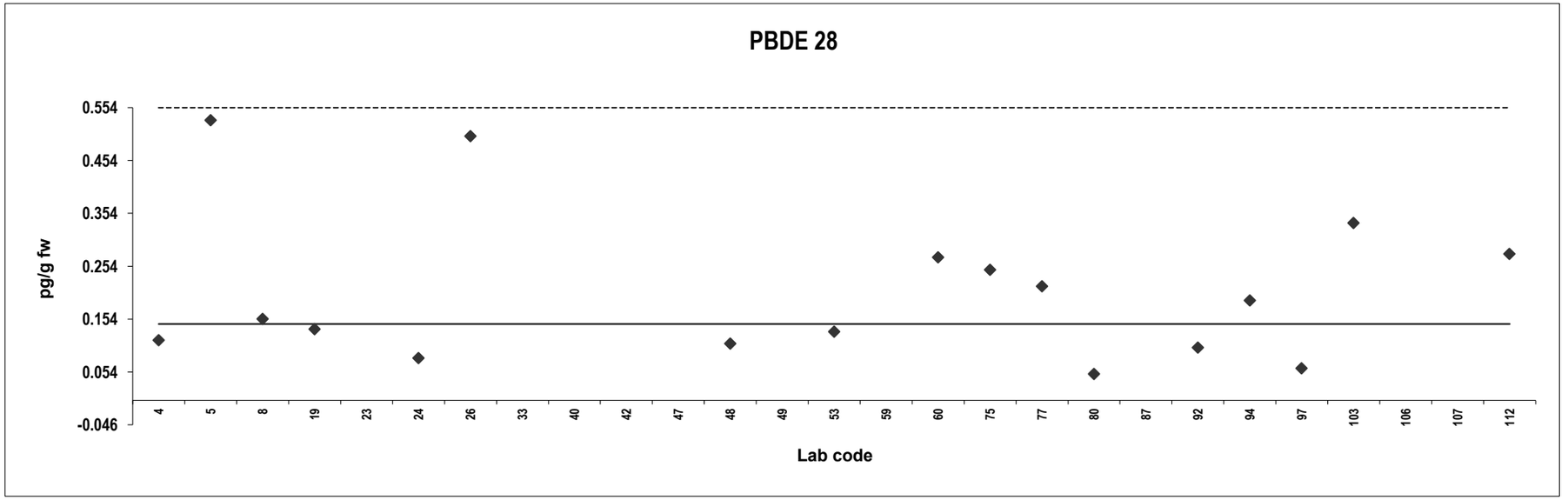
Sheep liver, fresh weight

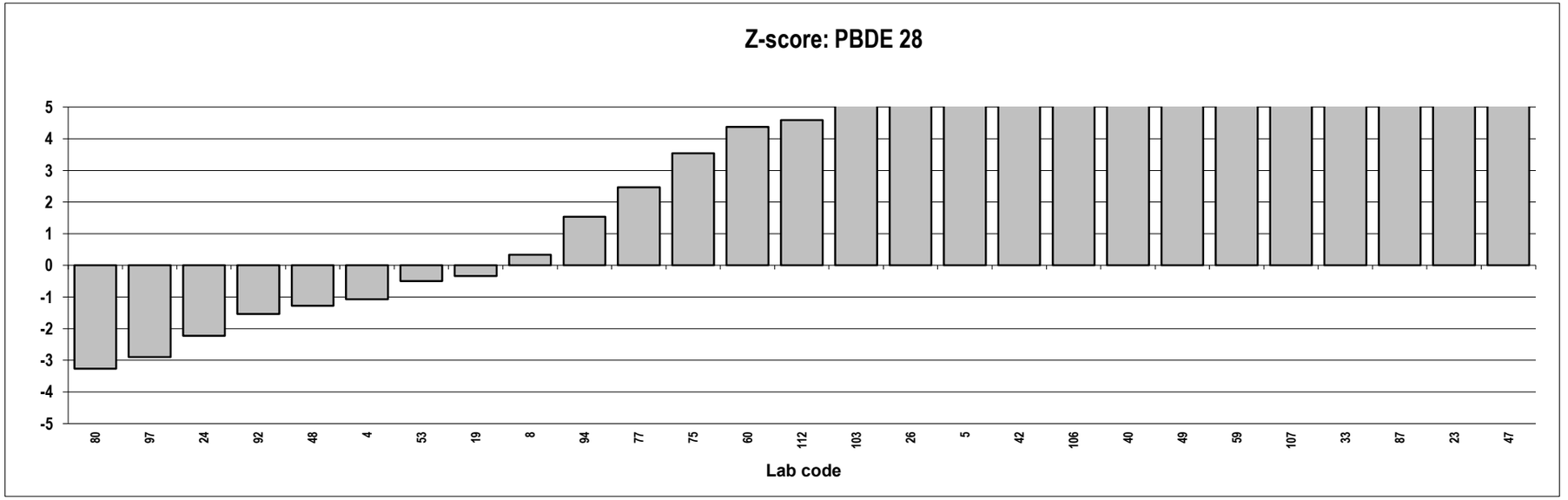
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.11				
5	0.53				
8	0.15				
19	0.13				
23	3.0	Outlier,ND			
24	0.080				
26	0.50	ND			
33	1.3	Outlier			
40	1.0	Outlier,ND			
42	0.56	Outlier,ND			
47	12	Outlier,ND			
48	0.11				
49	1.1	Outlier			
53	0.13				
59	1.2	Outlier			
60	0.27				
75	0.25				
77	0.22				
80	0.050	ND			
87	1.6	Outlier,ND			
92	0.10				
94	0.19				
97	0.061				
103	0.34				
106	0.62	Outlier,ND			
107	1.2	Outlier			
112	0.28	ND			

Consenus statistics

Consensus median, pg/g	0.14
Median all values pg/g	0.28
Consensus mean, pg/g	0.21
Standard deviation, pg/g	0.14
Relative standard deviation, %	69
No. of values reported	27
No. of values removed	10
No. of reported non-detects	9


PBDE 28
0.554
0.454
0.354
0.254
0.154
0.054
-0.046
pg/g fw
4 5 8 19 23 24 26 33 40 42 47 48 49 53 59 60 75 77 80 87 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 97 24 92 48 4 53 19 8 94 77 75 60 112 103 26 5 42 106 40 49 59 107 33 87 23 47
Lab code

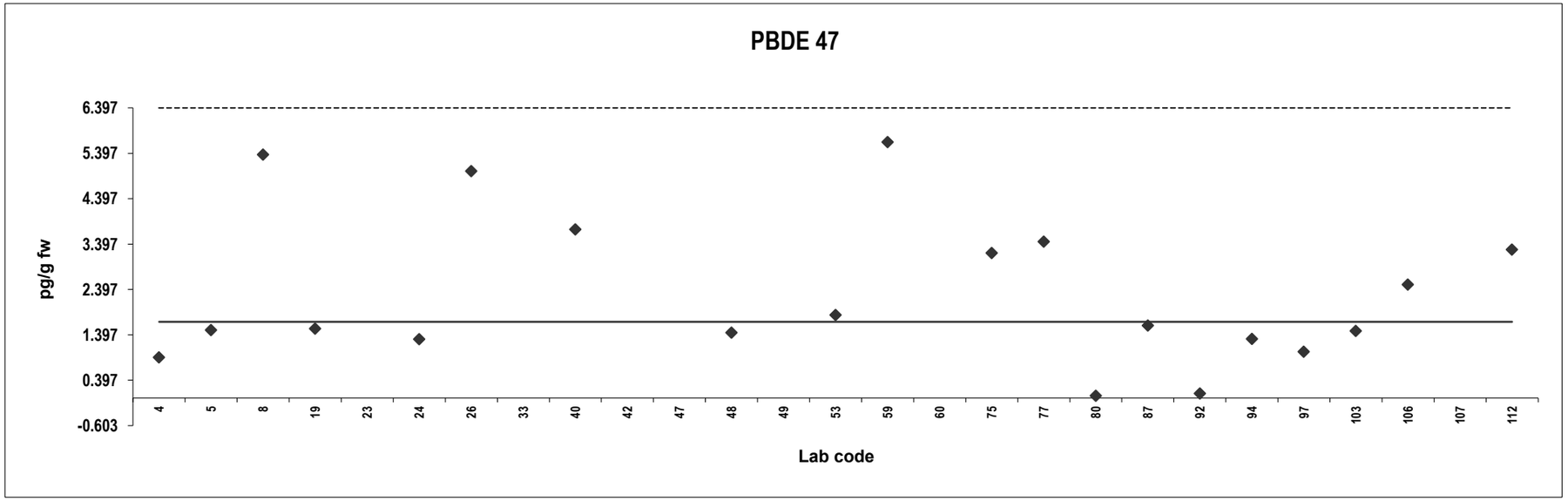
Sheep liver, fresh weight

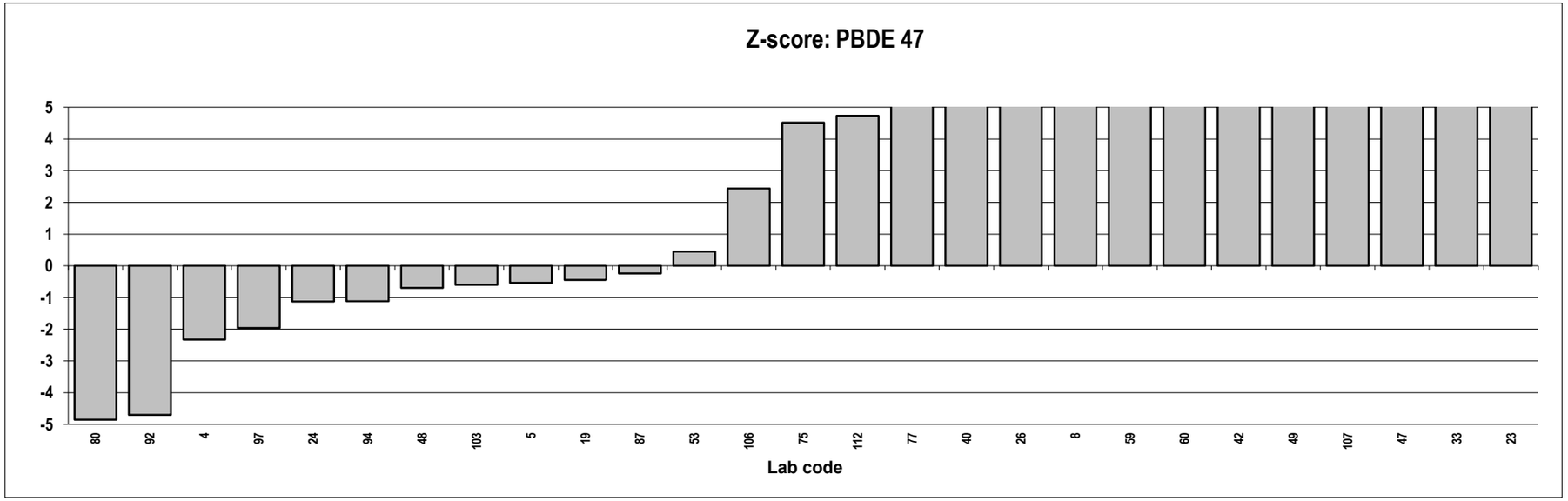
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.90				
5	1.5				
8	5.4				
19	1.5				
23	60	Outlier,ND			
24	1.3				
26	5.0				
33	25	Outlier			
40	3.7				
42	8.3	Outlier			
47	23	Outlier,ND			
48	1.4				
49	9.6	Outlier			
53	1.8				
59	5.6				
60	8.1	Outlier			
75	3.2				
77	3.4				
80	0.050	ND			
87	1.6	ND			
92	0.10				
94	1.3				
97	1.0				
103	1.5				
106	2.5				
107	23	Outlier			
112	3.3				

Consenus statistics

Consensus median, pg/g	1.7
Median all values pg/g	3.2
Consensus mean, pg/g	2.3
Standard deviation, pg/g	1.7
Relative standard deviation, %	71
No. of values reported	27
No. of values removed	7
No. of reported non-detects	4


PBDE 47
6.397
5.397
4.397
3.397
2.397
1.397
0.397
-0.603
pg/g fw
4
5
8
19
23
24
26
33
40
42
47
48
49
53
59
60
75
77
80
87
92
94
97
103
106
107
112
Lab code


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
92
4
97
24
94
48
103
5
19
87
53
106
75
112
77
40
26
8
59
60
42
49
107
47
33
23
Lab code

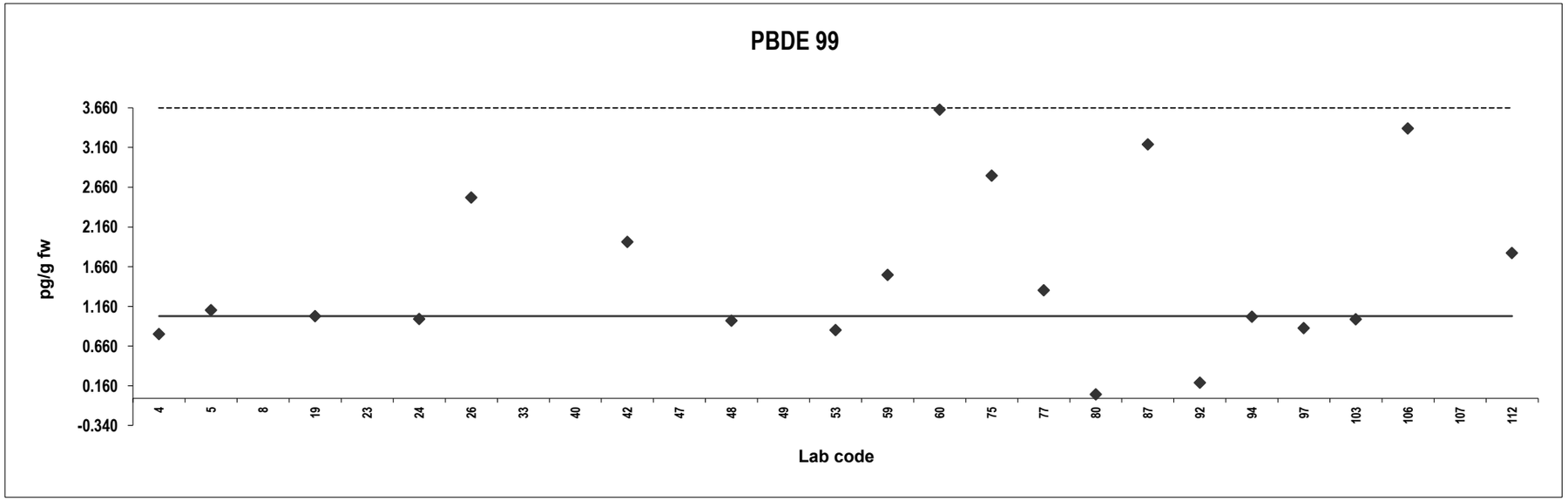
Sheep liver, fresh weight

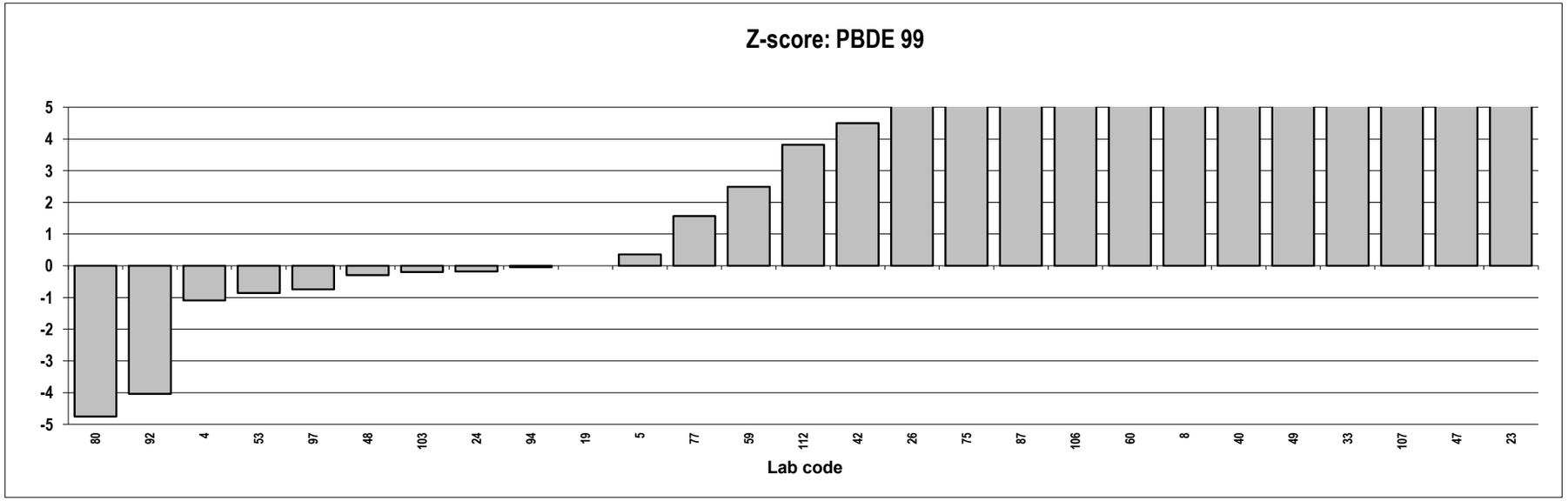
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.81				
5	1.1				
8	4.4	Outlier			
19	1.0				
23	30	Outlier,ND			
24	1.0				
26	2.5				
33	11	Outlier			
40	5.0	Outlier,ND			
42	2.0	ND			
47	23	Outlier,ND			
48	0.98				
49	6.3	Outlier			
53	0.86				
59	1.6				
60	3.6				
75	2.8				
77	1.4				
80	0.050	ND			
87	3.2	ND			
92	0.20				
94	1.0				
97	0.88				
103	1.0				
106	3.4				
107	16	Outlier			
112	1.8				

Consenus statistics

Consensus median, pg/g	1.0
Median all values pg/g	1.8
Consensus mean, pg/g	1.6
Standard deviation, pg/g	1.0
Relative standard deviation, %	67
No. of values reported	27
No. of values removed	7
No. of reported non-detects	6


PBDE 99
3.660
3.160
2.660
2.160
1.660
1.160
0.660
0.160
-0.340
pg/g fw
4
5
8
19
23
24
26
33
40
42
47
48
49
53
59
60
75
77
80
87
92
94
97
103
106
107
112
Lab code


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
92
4
53
97
48
103
24
94
19
5
77
59
112
42
26
75
87
106
60
8
40
49
33
107
47
23
Lab code

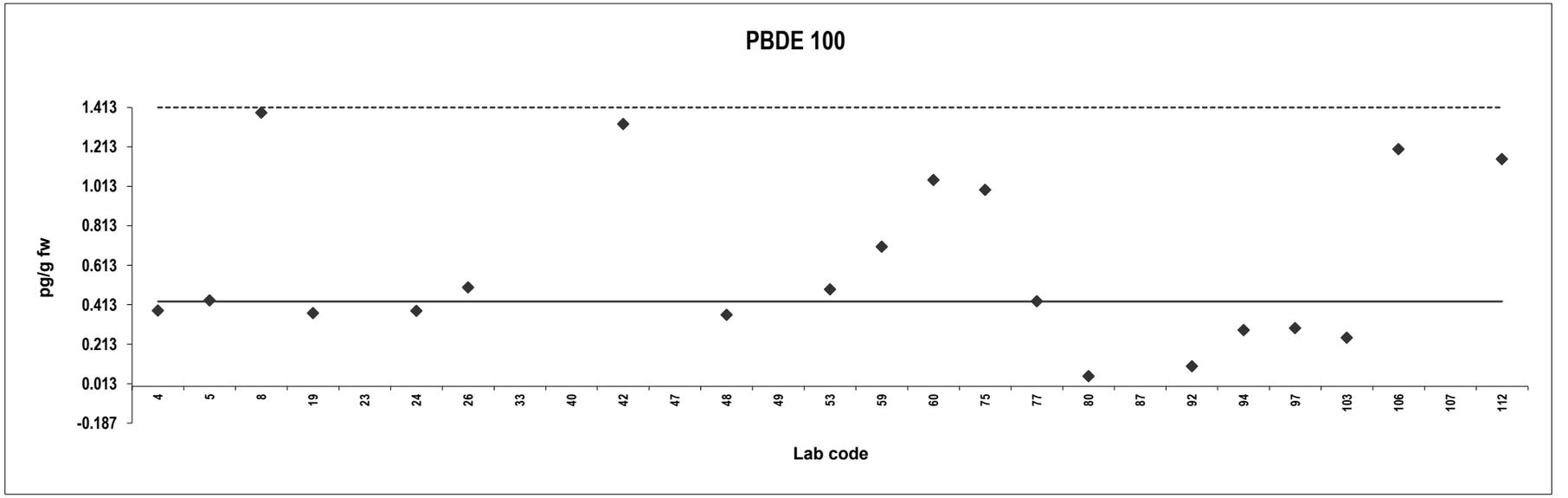
Sheep liver, fresh weight

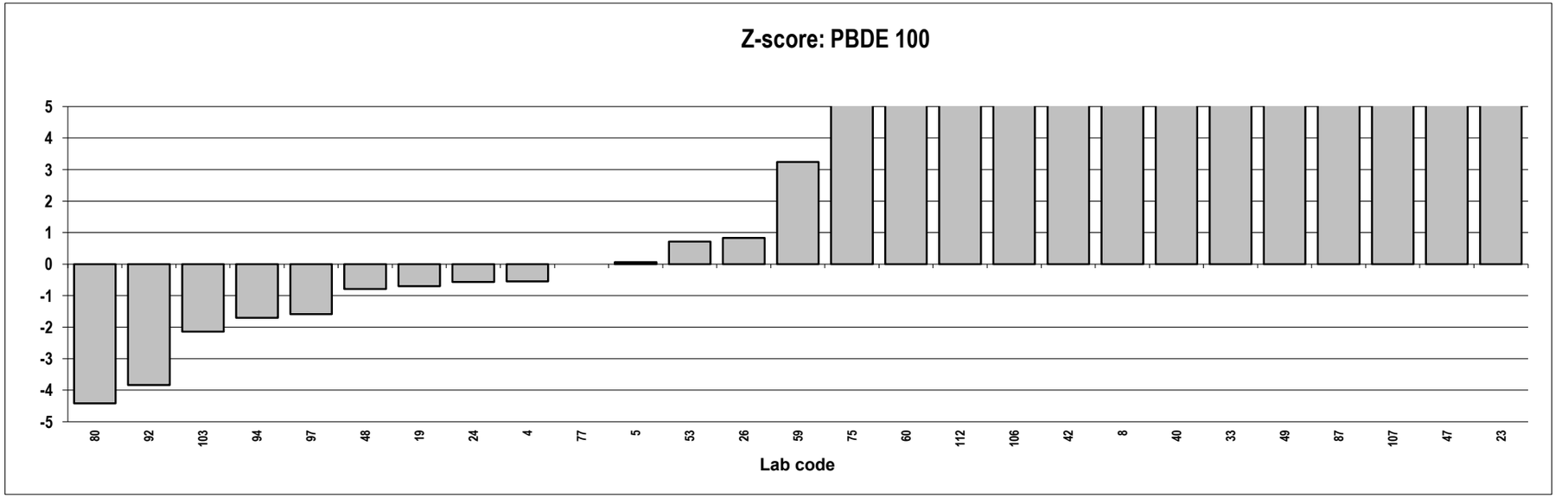
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.38				
5	0.43				
8	1.4				
19	0.37				
23	15	Outlier,ND			
24	0.38				
26	0.50				
33	1.6	Outlier			
40	1.5	Outlier,ND			
42	1.3	ND			
47	12	Outlier,ND			
48	0.36				
49	1.7	Outlier			
53	0.49				
59	0.71	ND			
60	1.0				
75	0.99				
77	0.43				
80	0.050	ND			
87	3.2	Outlier,ND			
92	0.10	ND			
94	0.28				
97	0.29				
103	0.24				
106	1.2	ND			
107	4.2	Outlier			
112	1.2				

Consenus statistics

Consensus median, pg/g	0.43
Median all values pg/g	0.71
Consensus mean, pg/g	0.61
Standard deviation, pg/g	0.42
Relative standard deviation, %	69
No. of values reported	27
No. of values removed	7
No. of reported non-detects	9


PBDE 100
pg/g fw
1.413
1.213
1.013
0.813
0.613
0.413
0.213
0.013
-0.187
4 5 8 19 23 24 26 33 40 42 47 48 49 53 59 60 75 77 80 87 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 92 103 94 97 48 19 24 4 77 5 53 26 59 75 60 112 106 42 8 40 33 49 87 107 47 23
Lab code

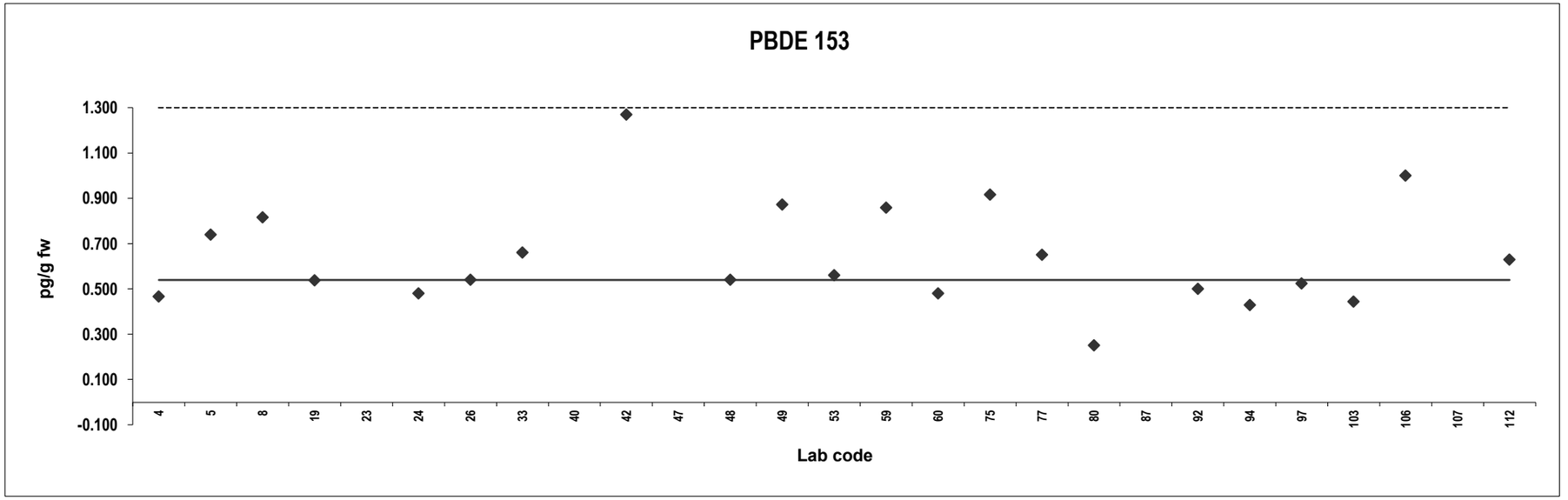
Sheep liver, fresh weight

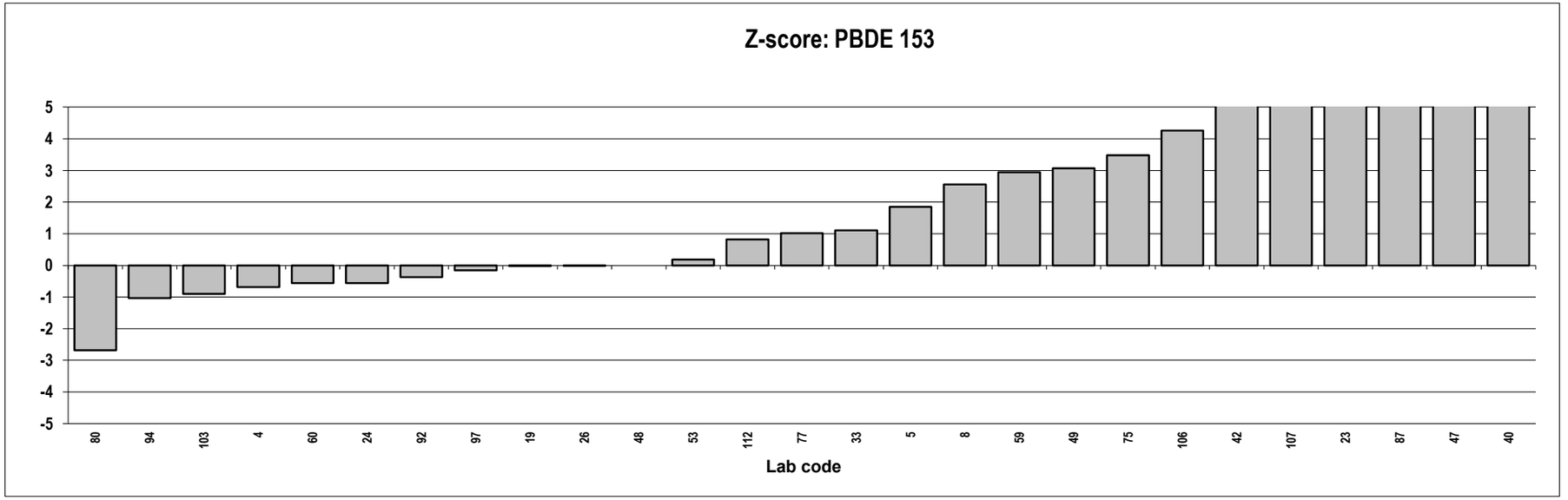
Congener: PBDE 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.47				
5	0.74				
8	0.82				
19	0.54				
23	3.0	Outlier,ND			
24	0.48				
26	0.54				
33	0.66				
40	34	Outlier			
42	1.3	ND			
47	12	Outlier,ND			
48	0.54				
49	0.87				
53	0.56				
59	0.86				
60	0.48				
75	0.92				
77	0.65				
80	0.25				
87	4.8	Outlier,ND			
92	0.50				
94	0.43				
97	0.52				
103	0.44				
106	1.0				
107	1.7	Outlier			
112	0.63				

Consenus statistics

Consensus median, pg/g	0.54
Median all values pg/g	0.65
Consensus mean, pg/g	0.64
Standard deviation, pg/g	0.23
Relative standard deviation, %	36
No. of values reported	27
No. of values removed	5
No. of reported non-detects	4


PBDE 153
pg/g fw
1.300
1.100
0.900
0.700
0.500
0.300
0.100
-0.100
4
5
8
19
23
24
26
33
40
42
47
48
49
53
59
60
75
77
80
87
92
94
97
103
106
107
112
Lab code


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
94
103
4
60
24
92
97
19
26
48
53
112
77
33
5
8
59
49
75
106
42
107
23
87
47
40
Lab code

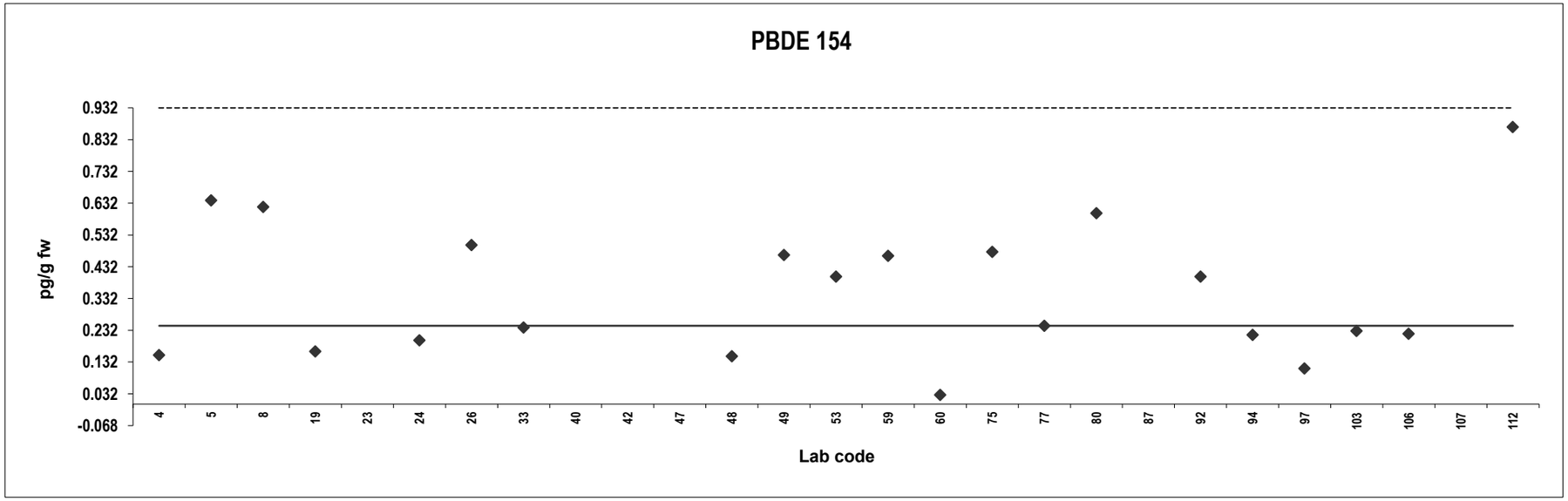
Sheep liver, fresh weight

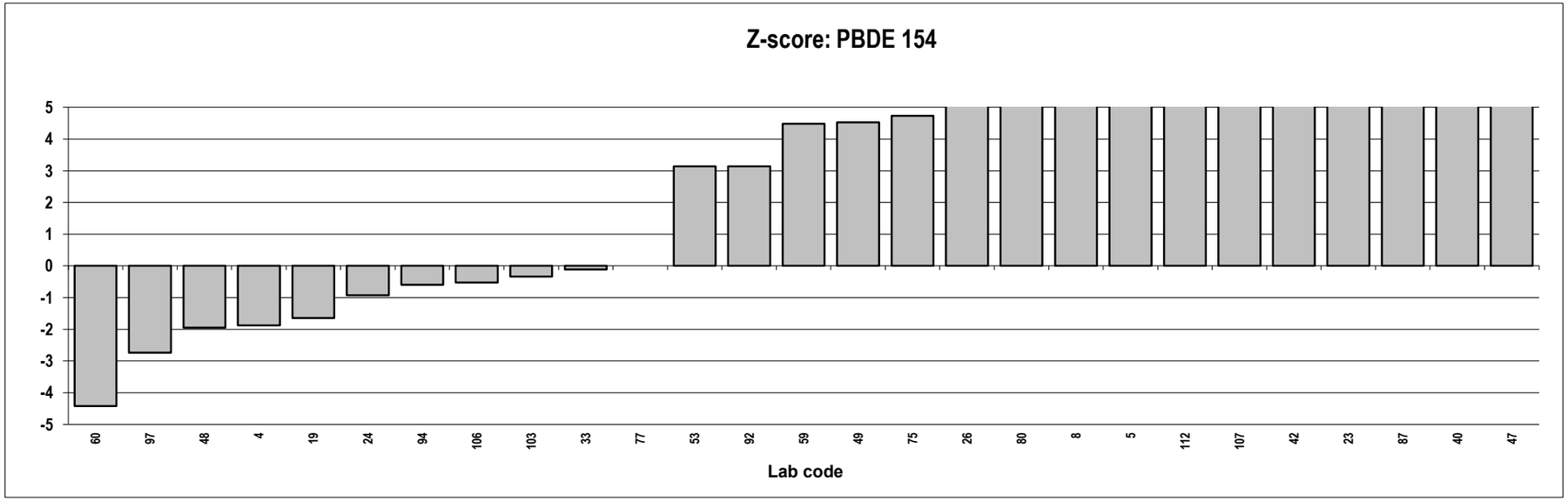
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.15				
5	0.64				
8	0.62				
19	0.17				
23	3.0	Outlier,ND			
24	0.20				
26	0.50	ND			
33	0.24				
40	7.5	Outlier			
42	1.1	Outlier,ND			
47	12	Outlier,ND			
48	0.15				
49	0.47				
53	0.40				
59	0.47				
60	0.028				
75	0.48				
77	0.25				
80	0.60				
87	4.8	Outlier,ND			
92	0.40				
94	0.22				
97	0.11				
103	0.23				
106	0.22	ND			
107	0.99	Outlier			
112	0.87				

Consenus statistics

Consensus median, pg/g	0.25
Median all values pg/g	0.47
Consensus mean, pg/g	0.35
Standard deviation, pg/g	0.22
Relative standard deviation, %	61
No. of values reported	27
No. of values removed	6
No. of reported non-detects	6


PBDE 154
pg/g fw
0.932
0.832
0.732
0.632
0.532
0.432
0.332
0.232
0.132
0.032
-0.068
4 5 8 19 23 24 26 33 40 42 47 48 49 53 59 60 75 77 80 87 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 97 48 4 19 24 94 106 103 33 77 53 92 59 49 75 26 80 8 5 112 107 42 23 87 40 47
Lab code

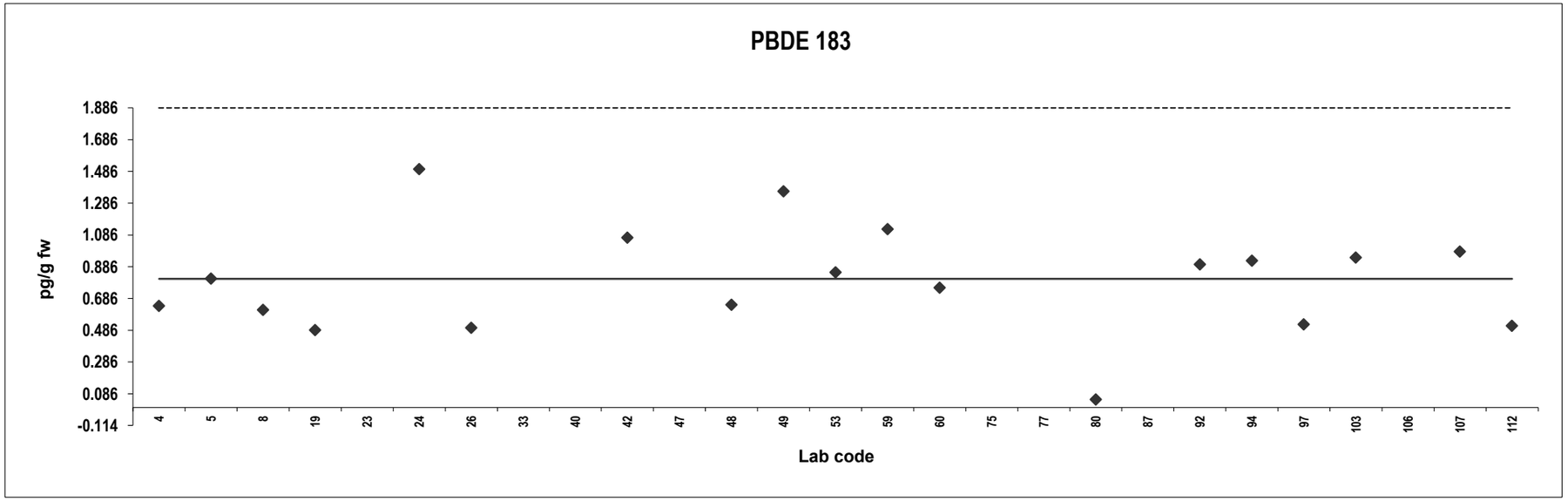
Sheep liver, fresh weight

Congener: PBDE 183

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	0.64				
5	0.81				
8	0.61				
19	0.49				
23	3.0	Outlier,ND			
24	1.5	ND			
26	0.50	ND			
33	2.0	Outlier,ND			
40	159	Outlier			
42	1.1	ND			
47	23	Outlier,ND			
48	0.65				
49	1.4				
53	0.85				
59	1.1				
60	0.75				
75	2.2	Outlier			
77	2.3	Outlier			
80	0.050	ND			
87	8.0	Outlier,ND			
92	0.90				
94	0.92				
97	0.52				
103	0.94				
106	2.1	Outlier			
107	0.98				
112	0.51				

Consenus statistics

Consensus median, pg/g	0.81
Median all values pg/g	0.94
Consensus mean, pg/g	0.80
Standard deviation, pg/g	0.34
Relative standard deviation, %	42
No. of values reported	27
No. of values removed	8
No. of reported non-detects	8


PBDE 183
pg/g fw
1.886
1.686
1.486
1.286
1.086
0.886
0.686
0.486
0.286
0.086
-0.114
4
5
8
19
23
24
26
33
40
42
47
48
49
53
59
60
75
77
80
87
92
94
97
103
106
107
112
Lab code

Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
80
19
26
112
97
8
4
48
60
5
53
92
94
103
107
42
59
49
24
33
106
75
77
23
87
47
40
Lab code

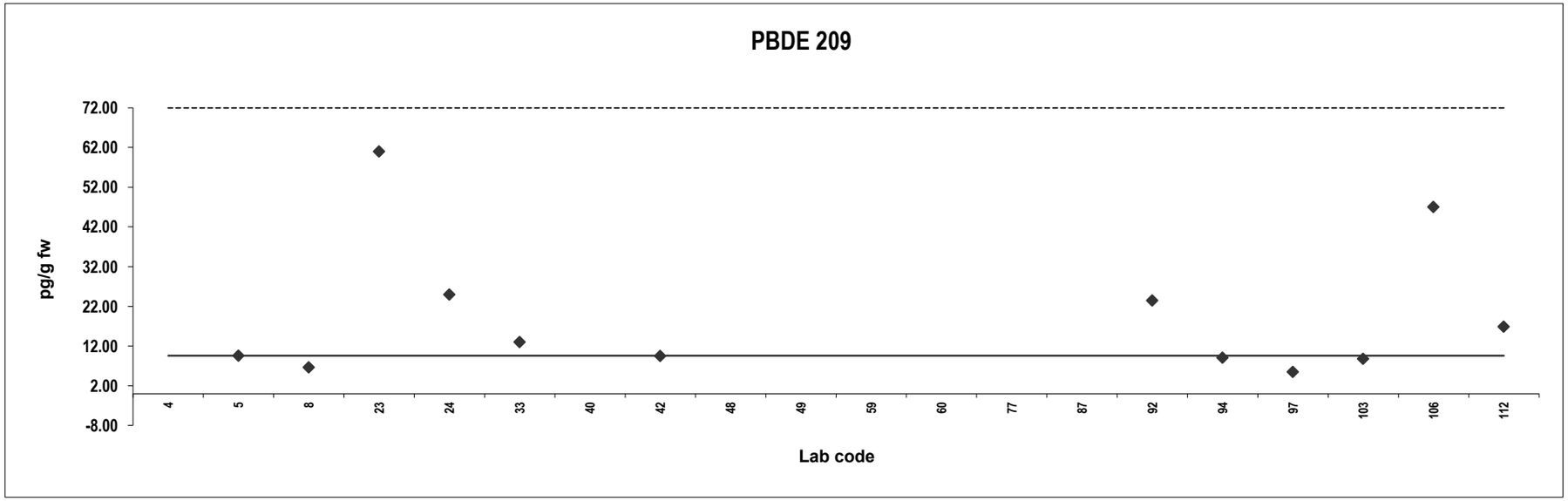
Sheep liver, fresh weight

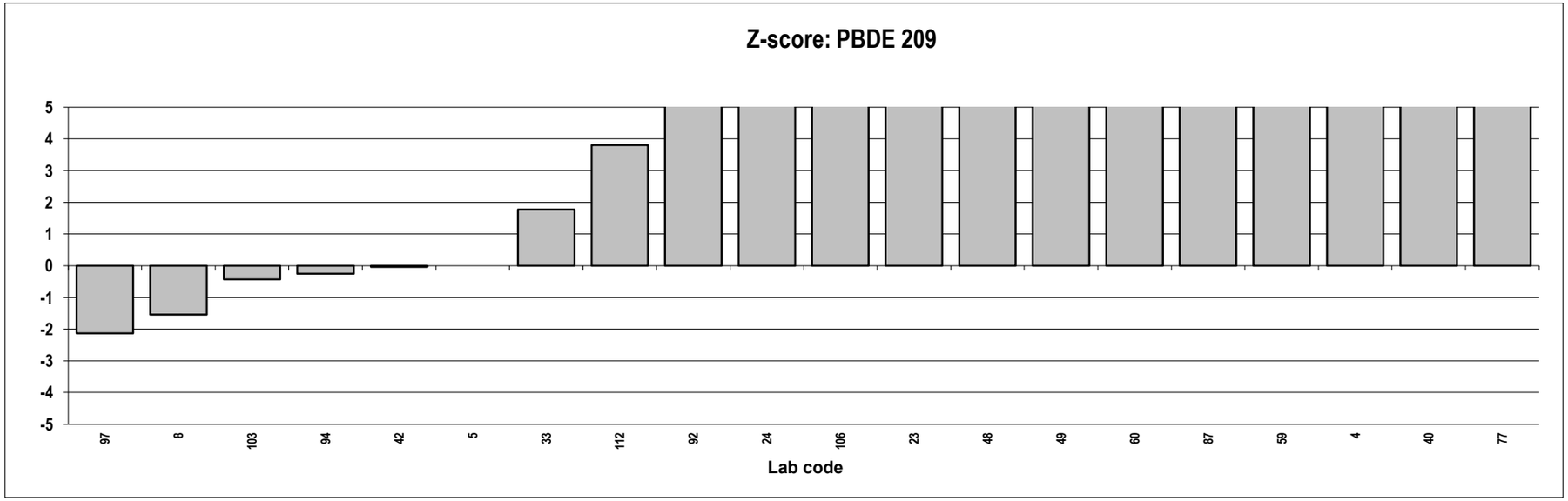
Congener: PBDE 209

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
4	380	Outlier			
5	9.6				
8	6.6				
23	61	ND			
24	25				
33	13	ND			
40	414	Outlier			
42	9.5	ND			
48	91	Outlier			
49	157	Outlier			
59	313	Outlier			
60	158	Outlier			
77	3313	Outlier			
87	160	Outlier,ND			
92	24				
94	9.1				
97	5.5				
103	8.8				
106	47				
112	17				

Consenus statistics

Consensus median, pg/g	9.6
Median all values pg/g	36
Consensus mean, pg/g	20
Standard deviation, pg/g	17
Relative standard deviation, %	89
No. of values reported	20
No. of values removed	8
No. of reported non-detects	4


PBDE 209
72.00
62.00
52.00
42.00
32.00
22.00
12.00
2.00
-8.00
pg/g fw
4
5
8
23
24
33
40
42
48
49
59
60
77
87
92
94
97
103
106
112
Lab code


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
97
8
103
94
42
5
33
112
92
24
106
23
48
49
60
87
59
4
40
77
Lab code

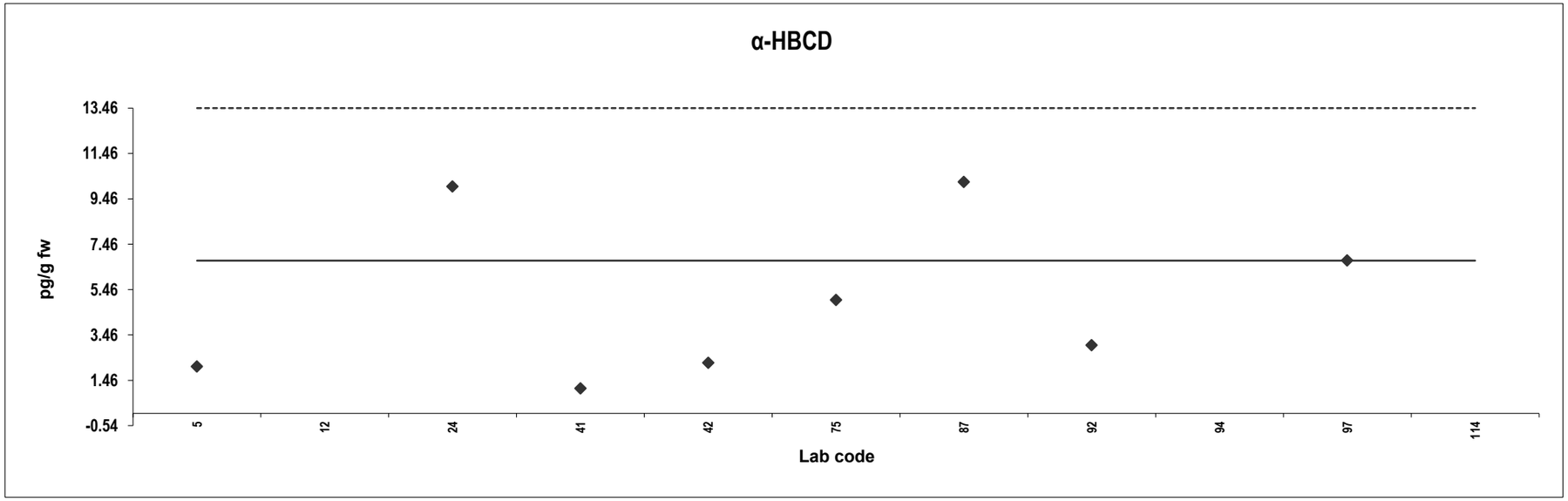
Sheep liver, fresh weight

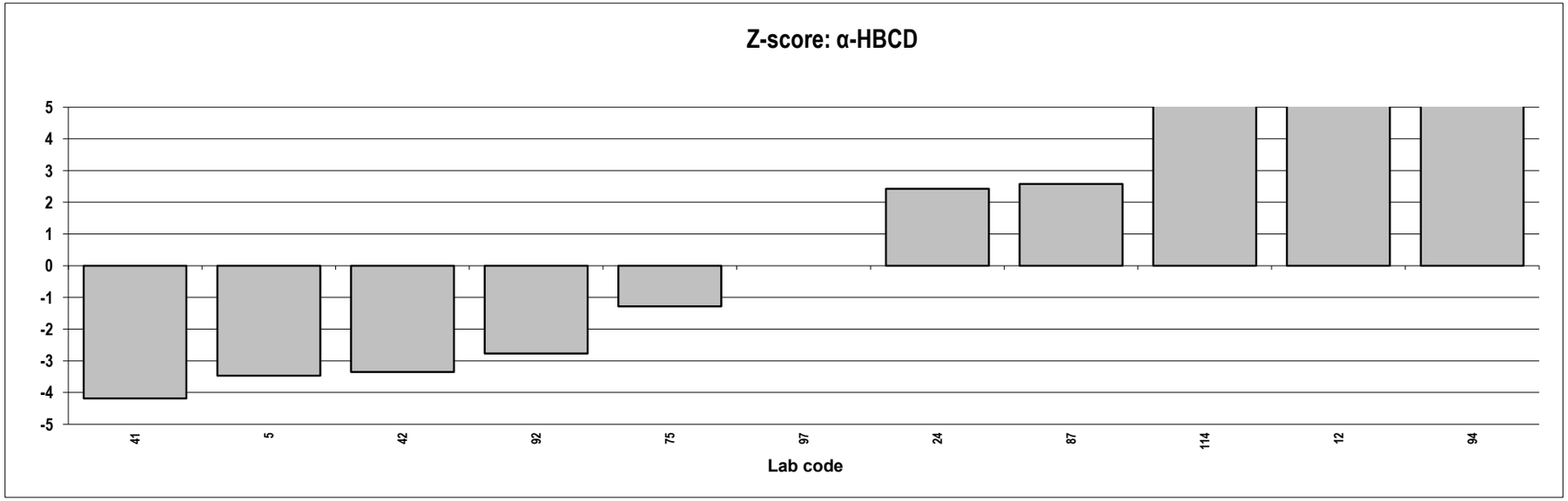
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2.1				
12	45	Outlier,ND			
24	10	ND			
41	1.1	ND			
42	2.2	ND			
75	5.0	ND			
87	10				
92	3.0	ND			
94	51	Outlier			
97	6.7				
114	21	Outlier			

Consenus statistics

Consensus median, pg/g	6.7
Median all values pg/g	6.7
Consensus mean, pg/g	5.0
Standard deviation, pg/g	3.6
Relative standard deviation, %	71
No. of values reported	11
No. of values removed	3
No. of reported non-detects	6


α-HBCD
13.46
11.46
9.46
7.46
5.46
3.46
1.46
-0.54
pg/g fw
5
12
24
41
42
75
87
92
94
97
114
Lab code


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
41
5
42
92
75
97
24
87
114
12
94
Lab code

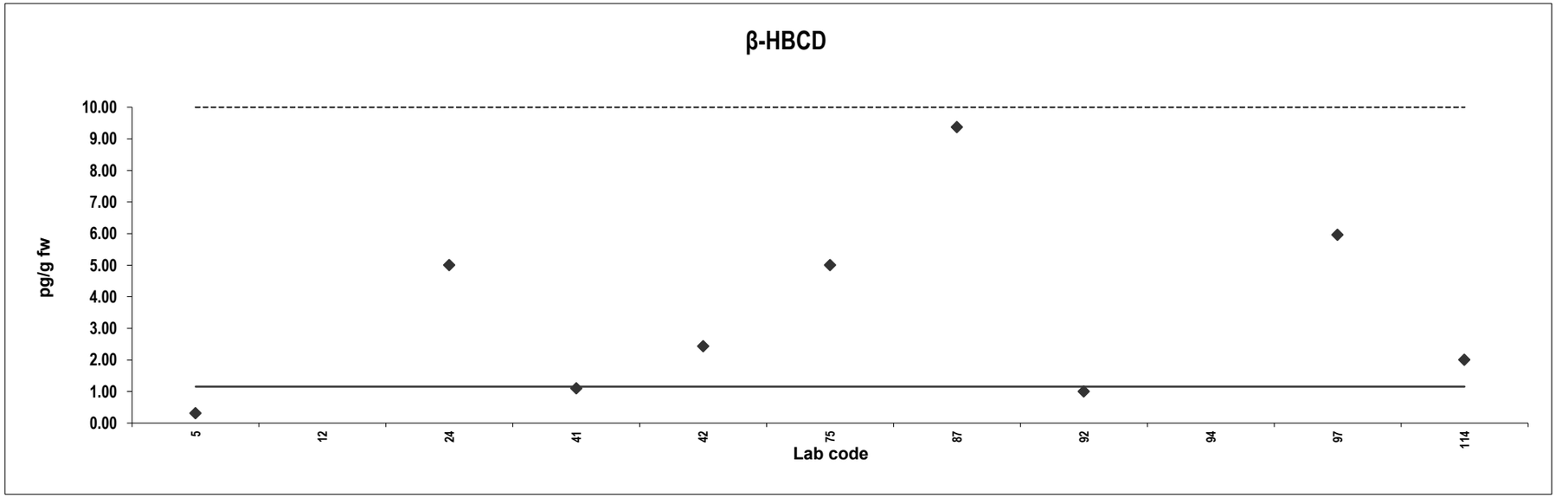
Sheep liver, fresh weight

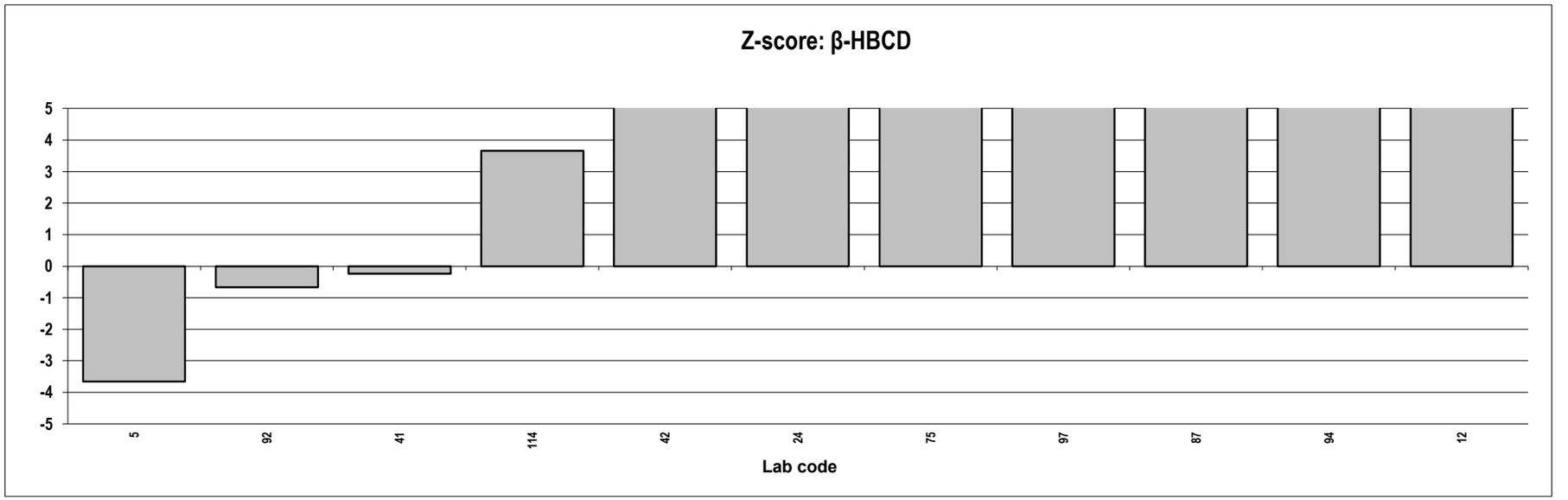
Congener: β-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	0.31				
12	15	Outlier,ND			
24	5.0	ND			
41	1.1	ND			
42	2.4	ND			
75	5.0	ND			
87	9.4	ND			
92	1.0	ND			
94	14	Outlier			
97	6.0	ND			
114	2.0				

Consenus statistics

Consensus median, pg/g	1.2
Median all values pg/g	5.0
Consensus mean, pg/g	3.6
Standard deviation, pg/g	3.0
Relative standard deviation, %	83
No. of values reported	11
No. of values removed	2
No. of reported non-detects	8


β-HBCD
pg/g fw
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5
12
24
41
42
75
87
92
94
97
114
Lab code


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
5
92
41
114
42
24
75
97
87
94
12
Lab code

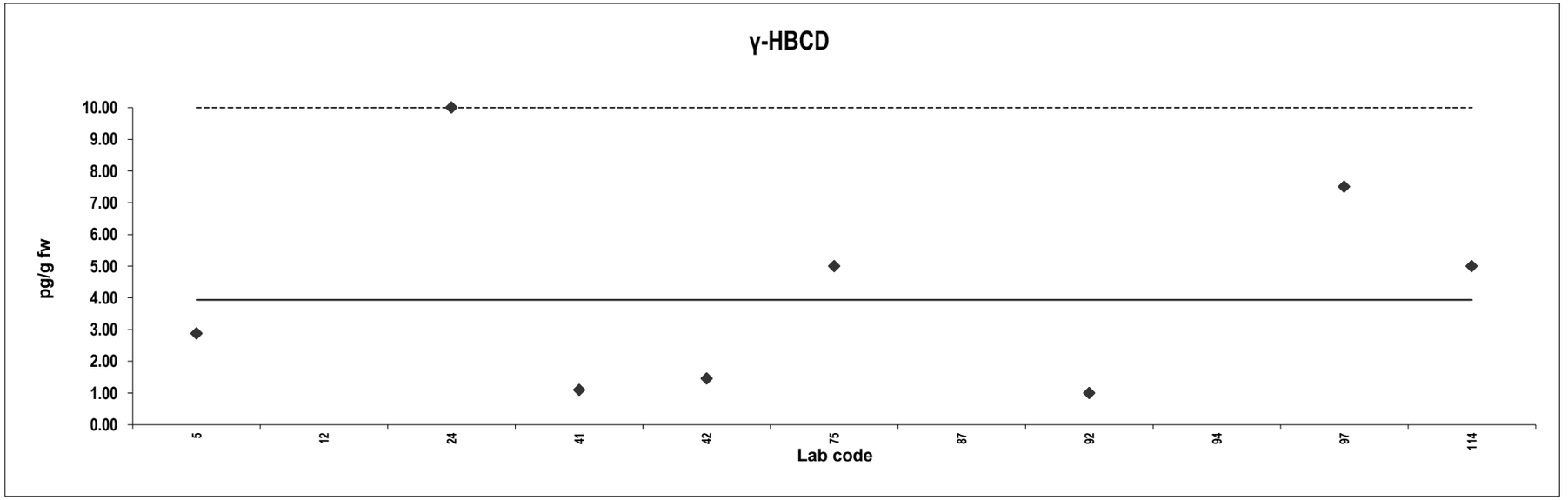
Sheep liver, fresh weight

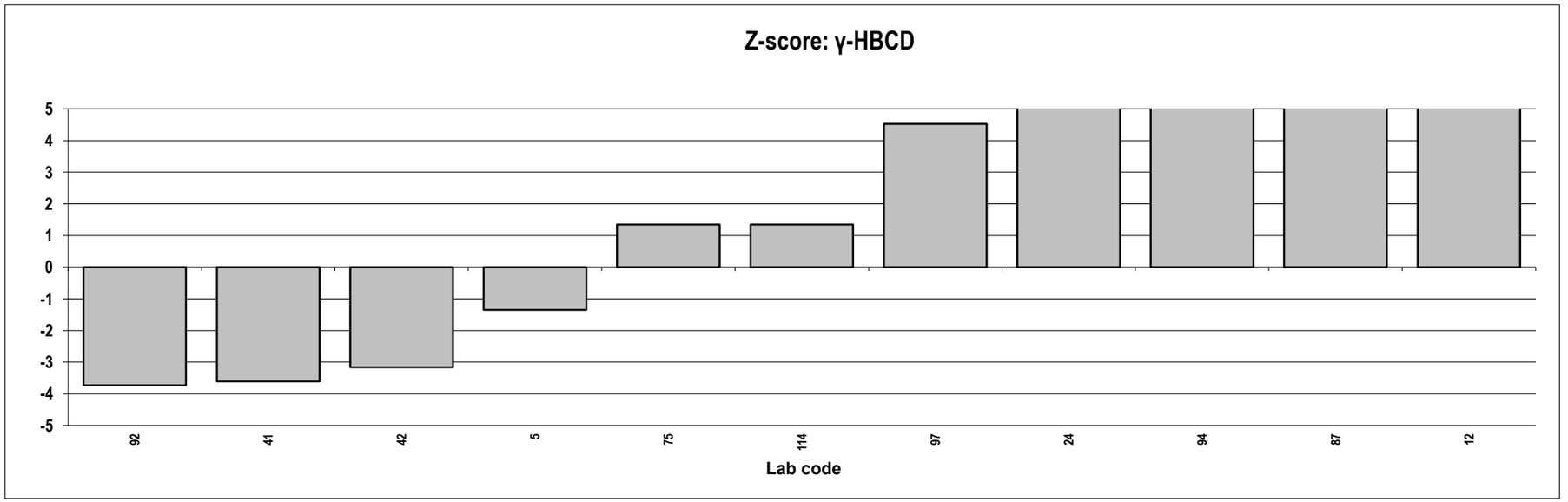
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2.9				
12	20	Outlier,ND			
24	10	ND			
41	1.1	ND			
42	1.5	ND			
75	5.0	ND			
87	12	Outlier			
92	1.0	ND			
94	11	Outlier			
97	7.5	ND			
114	5.0				

Consenus statistics

Consensus median, pg/g	3.9
Median all values pg/g	5.0
Consensus mean, pg/g	4.2
Standard deviation, pg/g	3.3
Relative standard deviation, %	77
No. of values reported	11
No. of values removed	3
No. of reported non-detects	7


γ-HBCD
pg/g fw
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5
12
24
41
42
75
87
92
94
97
114
Lab code


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
92
41
42
5
75
114
97
24
94
87
12
Lab code

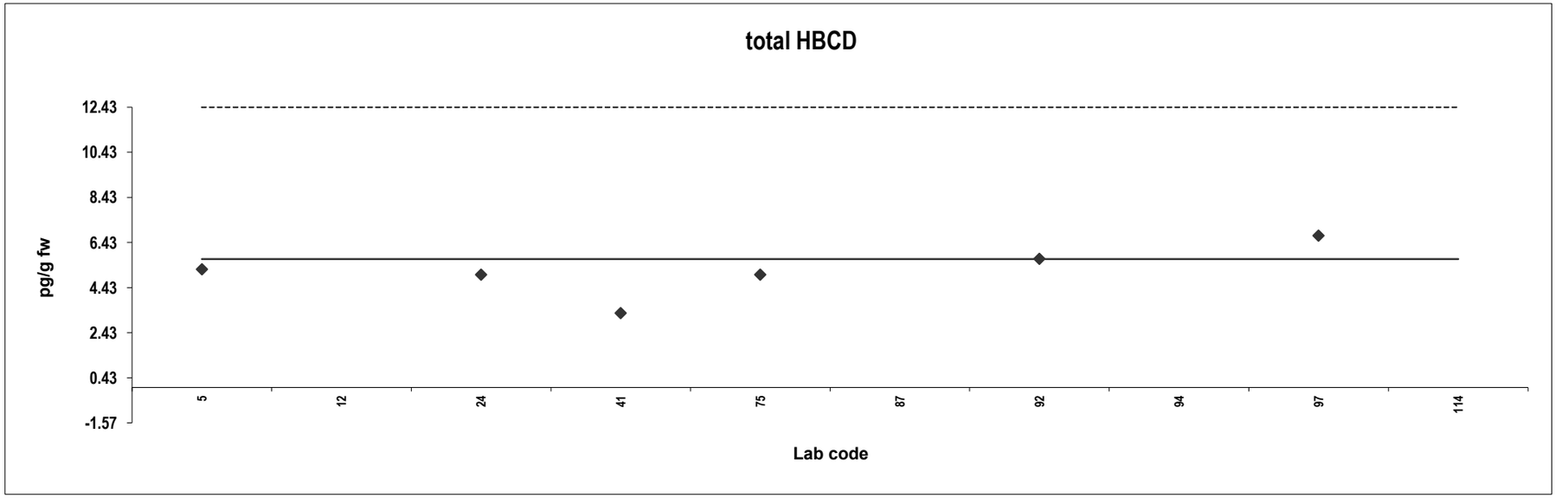
Sheep liver, fresh weight

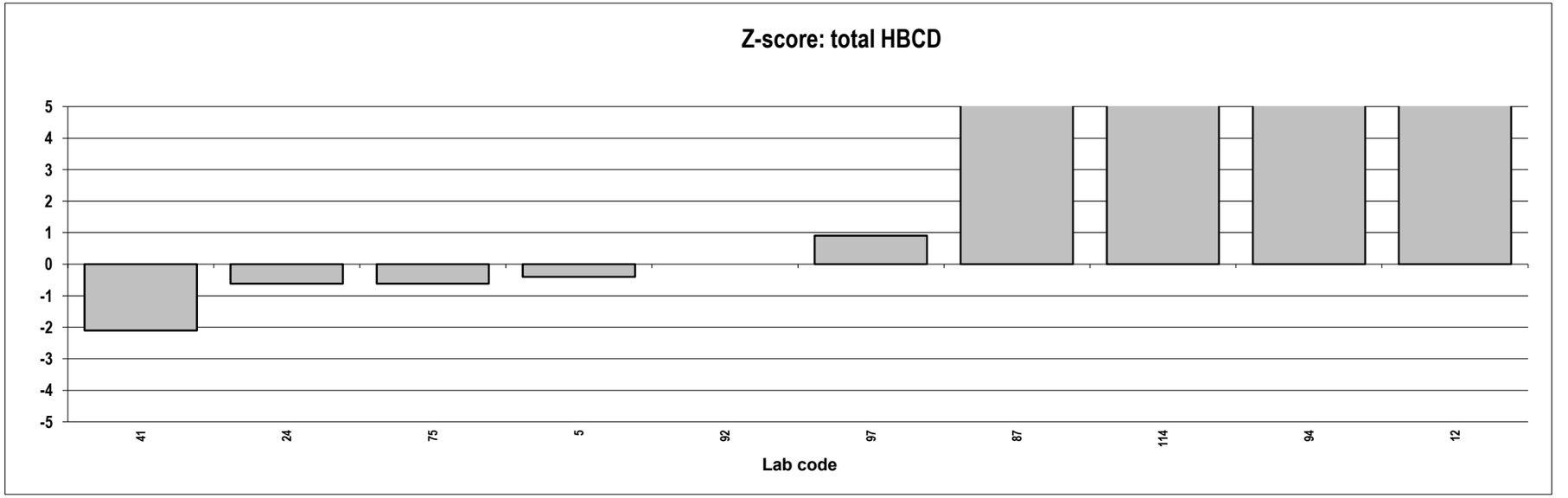
Congener: total HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	5.2				
12	80	Outlier,ND			
24	5.0	ND			
41	3.3	ND			
75	5.0	ND			
87	22	Outlier			
92	5.7				
94	76	Outlier			
97	6.7				
114	28	Outlier			

Consenus statistics

Consensus median, pg/g	5.7
Median all values pg/g	6.2
Consensus mean, pg/g	5.2
Standard deviation, pg/g	1.1
Relative standard deviation, %	22
No. of values reported	10
No. of values removed	4
No. of reported non-detects	4


total HBCD
12.43
10.43
8.43
6.43
4.43
2.43
0.43
-1.57
pg/g fw
5
12
24
41
75
87
92
94
97
114
Lab code


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
41
24
75
5
92
97
87
114
94
12
Lab code

Appendix 3:

Presentation of results
for Salmon-2016

Appendix 3: Presentation of results: Salmon-2016

Statistic calculations for PCDDs, PCDFs and dioxin-like PCBs

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

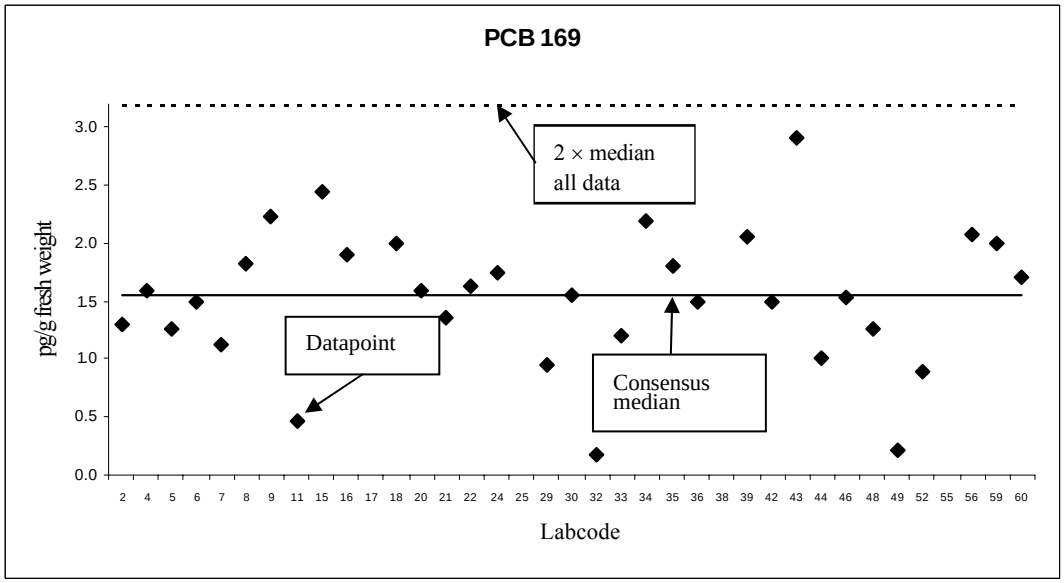
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data.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

Statistic calculations for indicator PCBs, PBDEs and HBCD

For each congener, the outliers were removed and the consensus value 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.

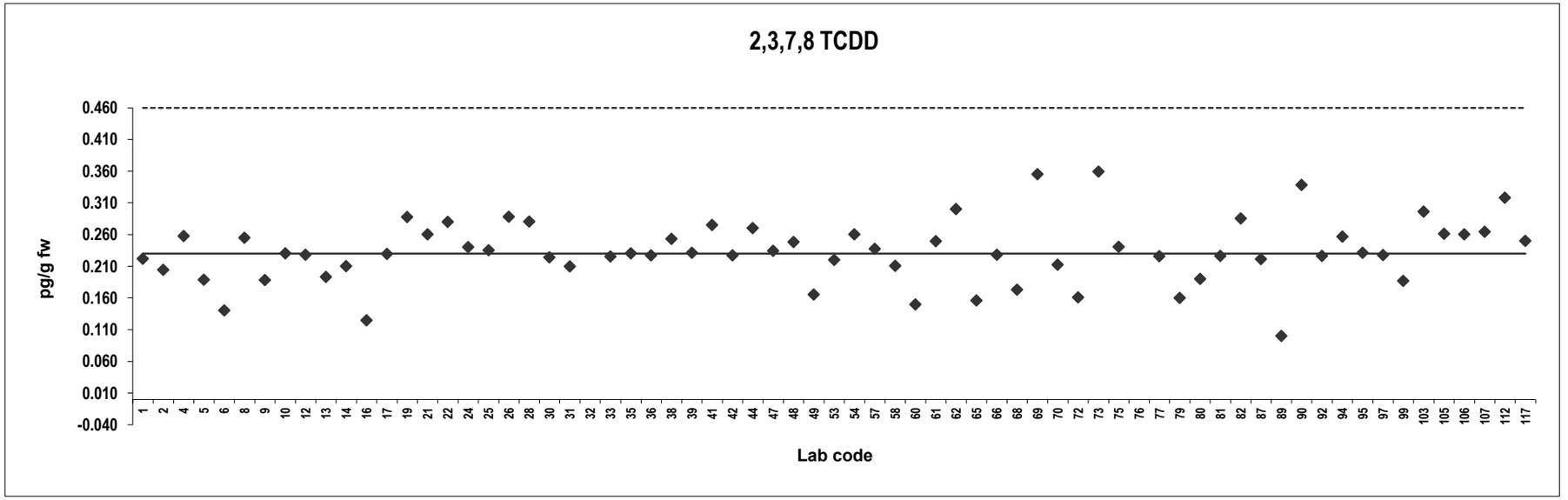
Salmon, fresh weight

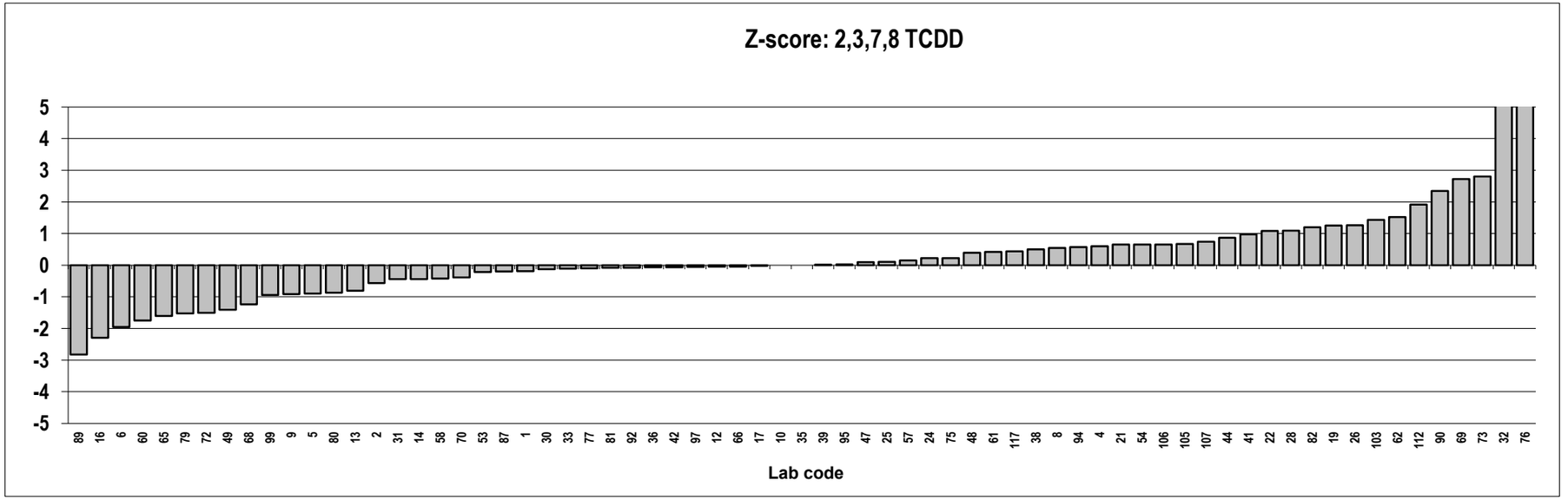
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.22		70	0.21	
2	0.20		72	0.16	
4	0.26		73	0.36	
5	0.19		75	0.24	
6	0.14		76	1.0	Outlier,ND
8	0.25		77	0.23	
9	0.19		79	0.16	
10	0.23		80	0.19	
12	0.23		81	0.23	
13	0.19		82	0.29	
14	0.21		87	0.22	
16	0.12		89	0.10	
17	0.23		90	0.34	
19	0.29		92	0.23	
21	0.26		94	0.26	
22	0.28		95	0.23	
24	0.24		97	0.23	
25	0.24		99	0.19	
26	0.29		103	0.30	
28	0.28		105	0.26	
30	0.22		106	0.26	
31	0.21		107	0.26	
32	0.78	Outlier	112	0.32	
33	0.23		117	0.25	
35	0.23				
36	0.23				
38	0.25				
39	0.23				
41	0.28				
42	0.23				
44	0.27				
47	0.23				
48	0.25				
49	0.17				
53	0.22				
54	0.26				
57	0.24				
58	0.21				
60	0.15				
61	0.25				
62	0.30	ND			
65	0.16				
66	0.23				
68	0.17				
69	0.36				

Consenus statistics

Consensus median, pg/g	0.23
Median all values pg/g	0.23
Consensus mean, pg/g	0.23
Standard deviation, pg/g	0.050
Relative standard deviation, %	21
No. of values reported	69
No. of values removed	2
No. of reported non-detects	2


2,3,7,8 TCDD
pg/g fw
0.460
0.410
0.360
0.310
0.260
0.210
0.160
0.110
0.060
0.010
-0.040
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 16 6 60 65 79 72 49 68 99 9 5 80 13 2 31 14 58 70 53 87 1 30 33 77 81 92 36 42 97 12 66 17 10 35 39 95 47 25 57 24 75 48 61 117 38 8 94 4 21 54 106 105 107 44 41 22 28 82 19 26 103 62 112 90 69 73 32 76
Lab code

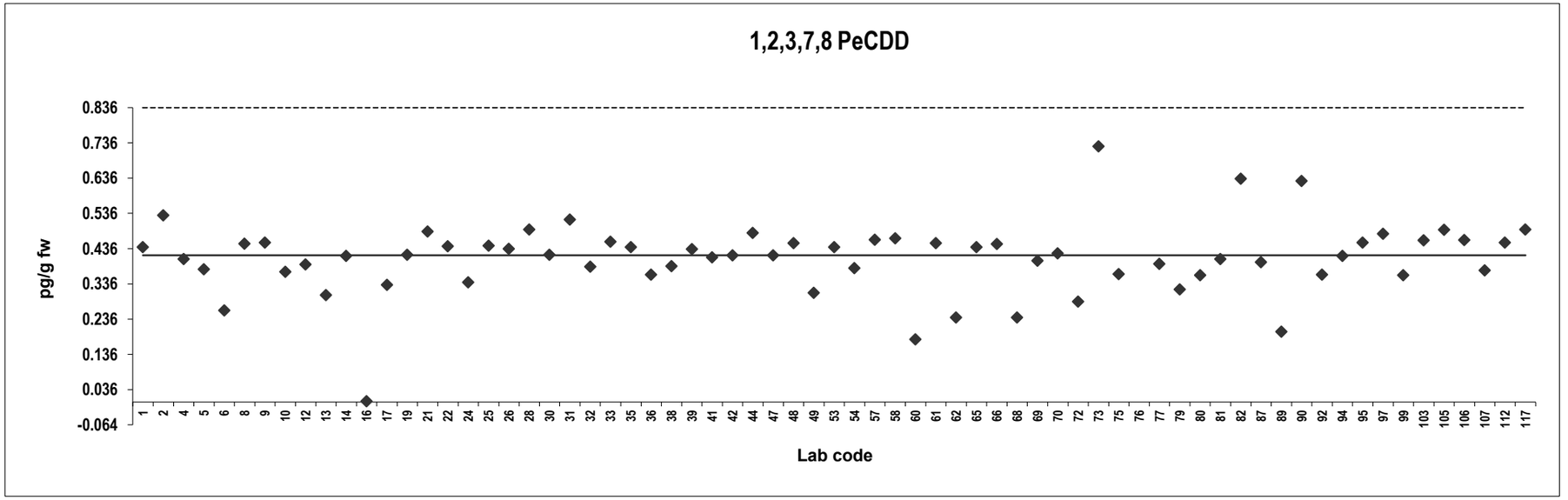
Salmon, fresh weight

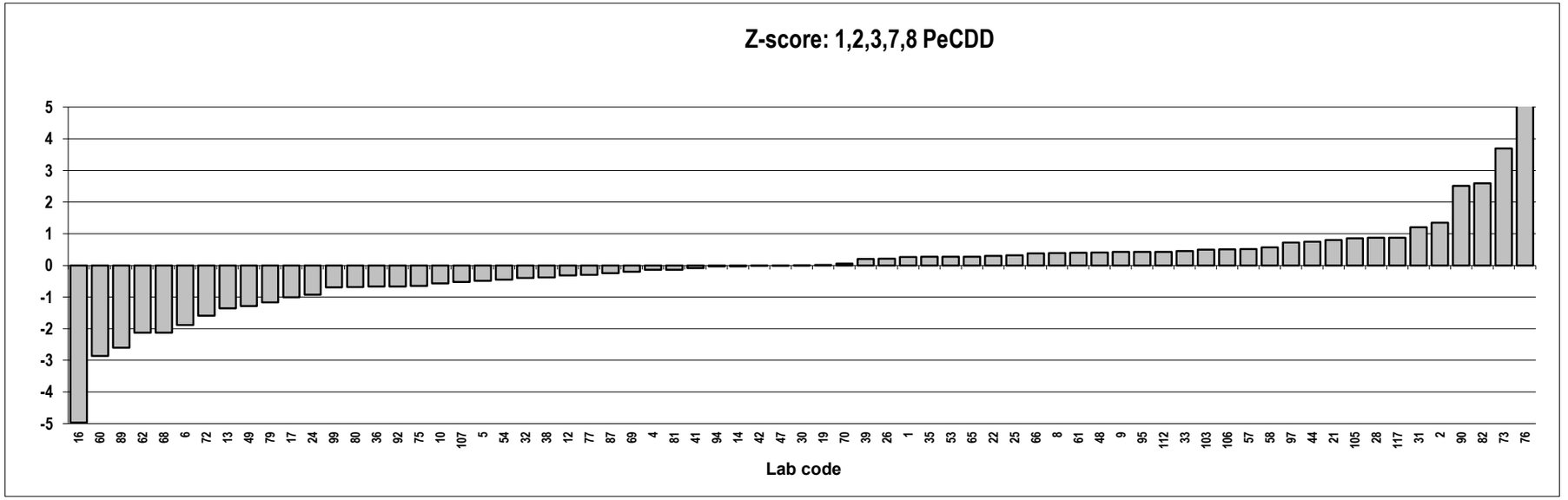
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.44		70	0.42	
2	0.53		72	0.28	
4	0.41		73	0.73	
5	0.38		75	0.36	
6	0.26		76	5.0	Outlier,ND
8	0.45		77	0.39	
9	0.45		79	0.32	
10	0.37		80	0.36	
12	0.39		81	0.41	
13	0.30		82	0.63	
14	0.42		87	0.40	
16	0.0024	ND	89	0.20	
17	0.33		90	0.63	
19	0.42		92	0.36	
21	0.48		94	0.41	
22	0.44		95	0.45	
24	0.34		97	0.48	
25	0.44		99	0.36	
26	0.44		103	0.46	
28	0.49		105	0.49	
30	0.42		106	0.46	
31	0.52		107	0.37	
32	0.38		112	0.45	
33	0.46		117	0.49	
35	0.44				
36	0.36				
38	0.39				
39	0.43				
41	0.41				
42	0.42				
44	0.48				
47	0.42				
48	0.45				
49	0.31				
53	0.44				
54	0.38				
57	0.46				
58	0.47				
60	0.18				
61	0.45				
62	0.24	ND			
65	0.44				
66	0.45				
68	0.24				
69	0.40				

Consenus statistics

Consensus median, pg/g	0.42
Median all values pg/g	0.42
Consensus mean, pg/g	0.41
Standard deviation, pg/g	0.10
Relative standard deviation, %	25
No. of values reported	69
No. of values removed	1
No. of reported non-detects	3


1,2,3,7,8 PeCDD
pg/g fw
0.836
0.736
0.636
0.536
0.436
0.336
0.236
0.136
0.036
-0.064
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 60 89 62 68 6 72 13 49 79 17 24 99 80 36 92 75 10 107 5 54 32 38 12 77 87 69 4 81 41 94 14 42 47 30 19 70 39 26 1 35 53 65 22 25 66 8 61 48 9 95 112 33 103 106 57 58 97 44 21 105 28 117 31 2 90 82 73 76
Lab code

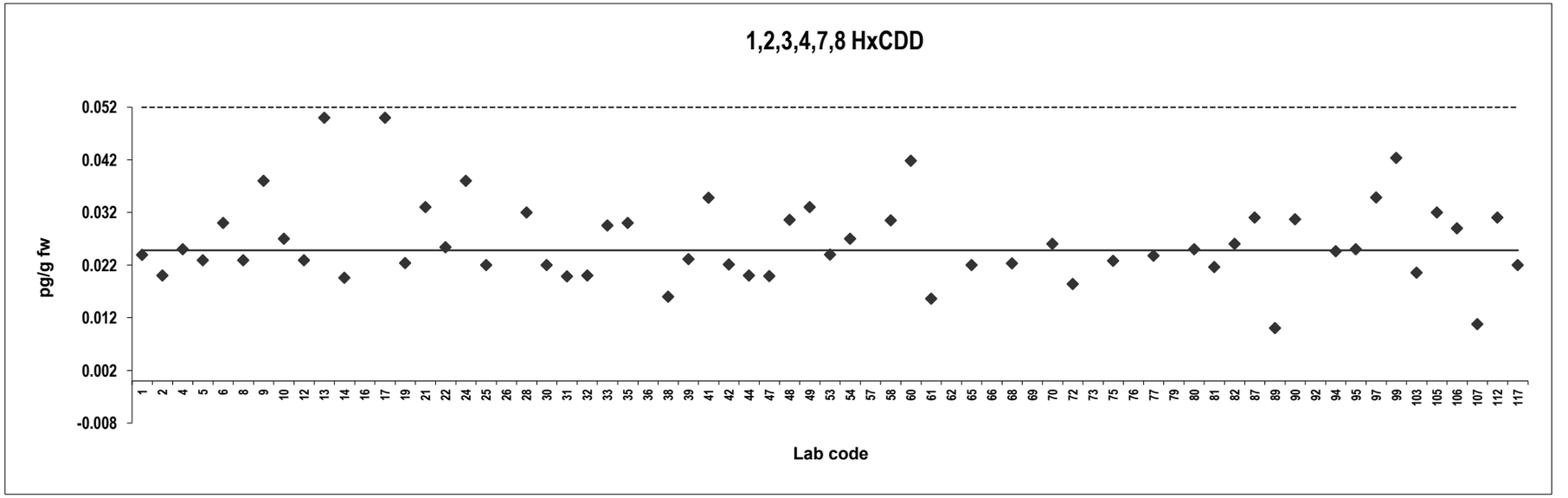
Salmon, fresh weight

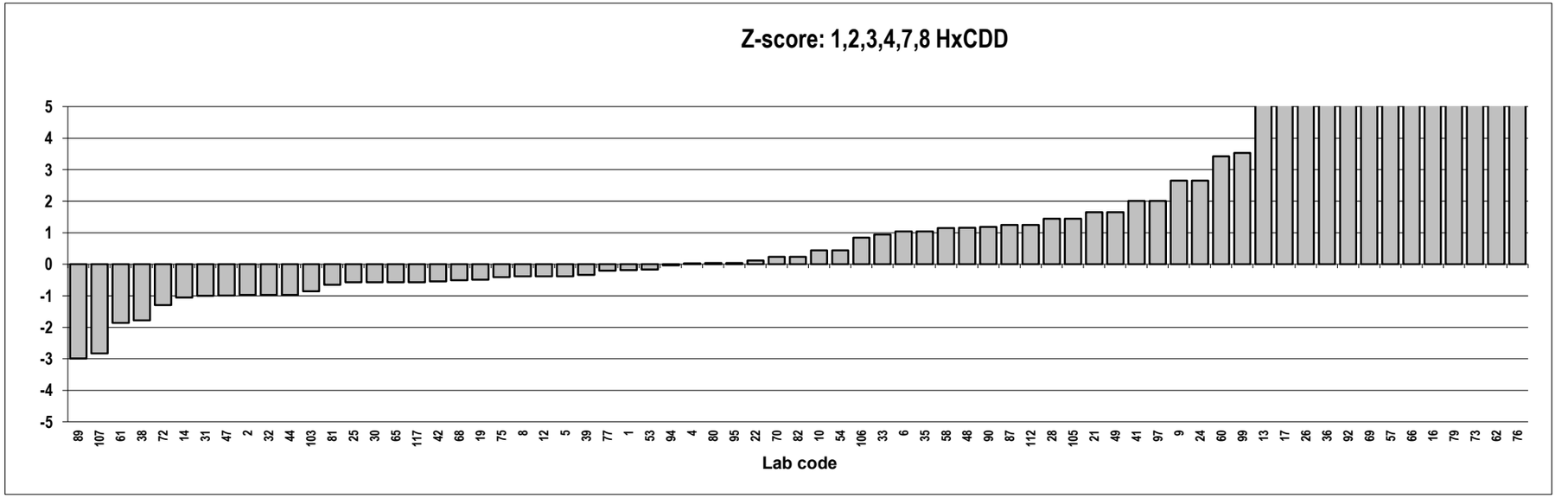
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.024		70	0.026	
2	0.020		72	0.018	
4	0.025		73	0.36	Outlier
5	0.023		75	0.023	
6	0.030	ND	76	5.0	Outlier,ND
8	0.023		77	0.024	
9	0.038		79	0.15	Outlier,ND
10	0.027		80	0.025	ND
12	0.023		81	0.022	
13	0.050	ND	82	0.026	ND
14	0.020		87	0.031	ND
16	0.088	Outlier,ND	89	0.010	ND
17	0.050	ND	90	0.031	
19	0.022		92	0.056	Outlier
21	0.033		94	0.025	
22	0.025		95	0.025	
24	0.038		97	0.035	
25	0.022	ND	99	0.042	
26	0.053	Outlier	103	0.021	
28	0.032		105	0.032	
30	0.022		106	0.029	
31	0.020		107	0.011	
32	0.020		112	0.031	
33	0.030		117	0.022	
35	0.030				
36	0.055	Outlier			
38	0.016	ND			
39	0.023				
41	0.035				
42	0.022				
44	0.020				
47	0.020				
48	0.031				
49	0.033	ND			
53	0.024				
54	0.027				
57	0.075	Outlier			
58	0.031				
60	0.042				
61	0.016				
62	0.71	Outlier,ND			
65	0.022				
66	0.078	Outlier,ND			
68	0.022				
69	0.056	Outlier			

Consenus statistics

Consensus median, pg/g	0.025
Median all values pg/g	0.026
Consensus mean, pg/g	0.026
Standard deviation, pg/g	0.0080
Relative standard deviation, %	30
No. of values reported	69
No. of values removed	11
No. of reported non-detects	15


1,2,3,4,7,8 HxCDD
pg/g fw
0.052
0.042
0.032
0.022
0.012
0.002
-0.008
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 107 61 38 72 14 31 47 2 32 44 103 81 25 30 65 117 42 68 19 75 8 12 5 39 77 1 53 94 4 80 95 22 70 82 10 54 106 33 6 35 58 48 90 87 112 28 105 21 49 41 97 9 24 60 99 13 17 26 36 92 69 57 66 16 79 73 62 76
Lab code

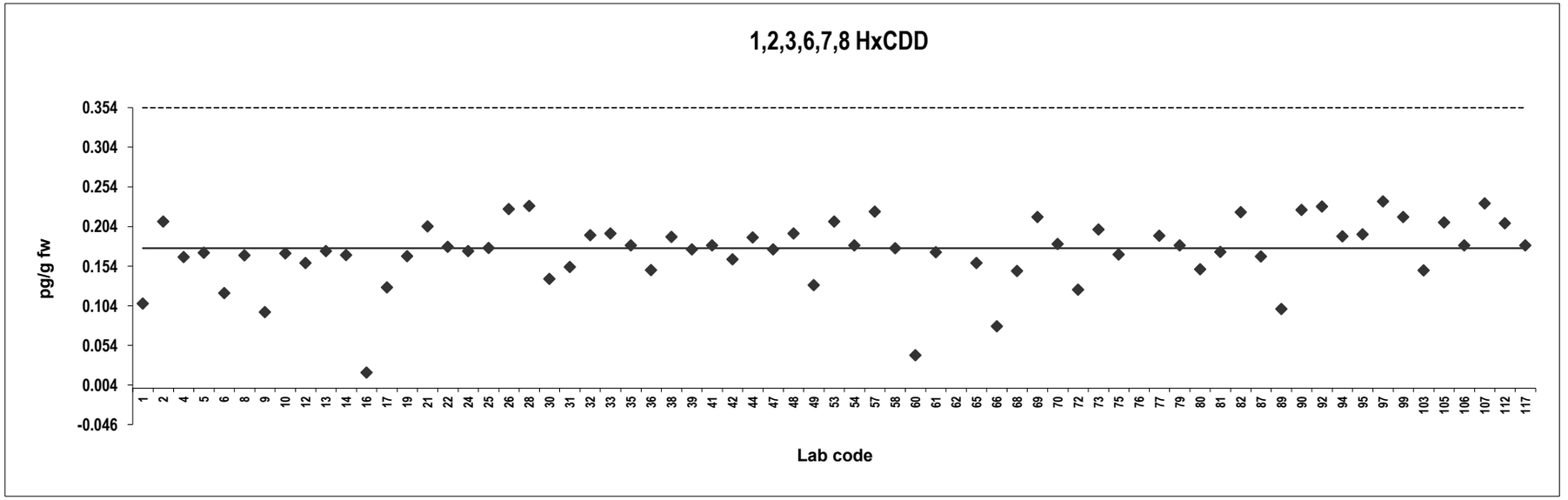
Salmon, fresh weight

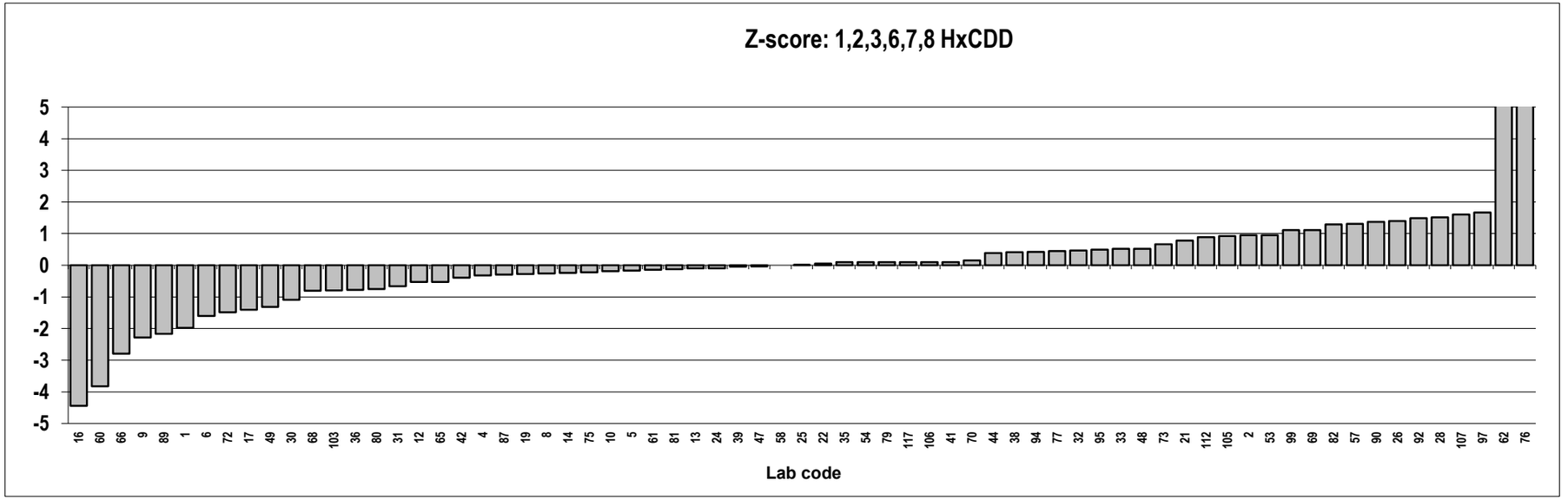
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.11		70	0.18	
2	0.21		72	0.12	
4	0.17		73	0.20	ND
5	0.17		75	0.17	
6	0.12		76	5.0	Outlier,ND
8	0.17		77	0.19	
9	0.096		79	0.18	
10	0.17		80	0.15	
12	0.16		81	0.17	
13	0.17		82	0.22	
14	0.17		87	0.17	
16	0.020	ND	89	0.10	
17	0.13		90	0.23	
19	0.17		92	0.23	
21	0.20		94	0.19	
22	0.18		95	0.19	
24	0.17		97	0.24	
25	0.18		99	0.22	
26	0.23		103	0.15	
28	0.23		105	0.21	
30	0.14		106	0.18	
31	0.15		107	0.23	
32	0.19		112	0.21	
33	0.20		117	0.18	
35	0.18				
36	0.15				
38	0.19				
39	0.18				
41	0.18				
42	0.16				
44	0.19				
47	0.18				
48	0.20				
49	0.13	ND			
53	0.21				
54	0.18				
57	0.22				
58	0.18				
60	0.042				
61	0.17				
62	0.76	Outlier,ND			
65	0.16				
66	0.078	ND			
68	0.15				
69	0.22				

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	0.042
Relative standard deviation, %	25
No. of values reported	69
No. of values removed	2
No. of reported non-detects	6


1,2,3,6,7,8 HxCDD
pg/g fw
0.354
0.304
0.254
0.204
0.154
0.104
0.054
0.004
-0.046
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 60 66 9 89 1 6 72 17 49 30 68 103 36 80 31 12 65 42 4 87 19 8 14 75 10 5 61 81 13 24 39 47 58 25 22 35 54 79 117 106 41 70 44 38 94 77 32 95 33 48 73 21 112 105 2 53 99 69 82 57 90 26 92 28 107 97 62 76
Lab code

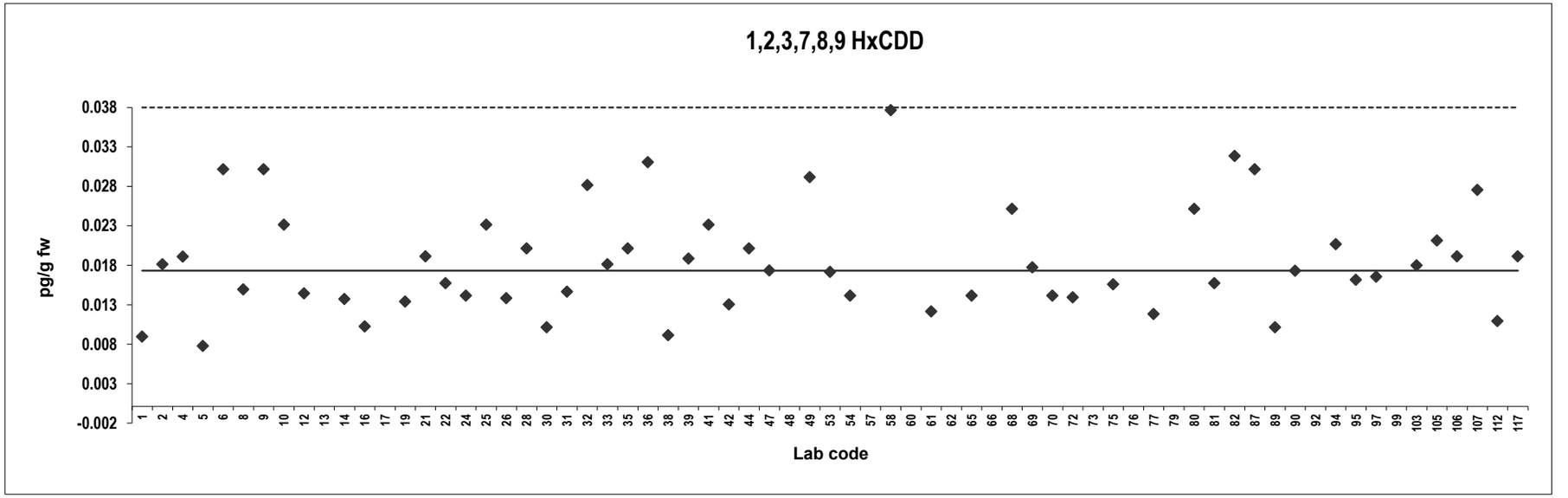
Salmon, fresh weight

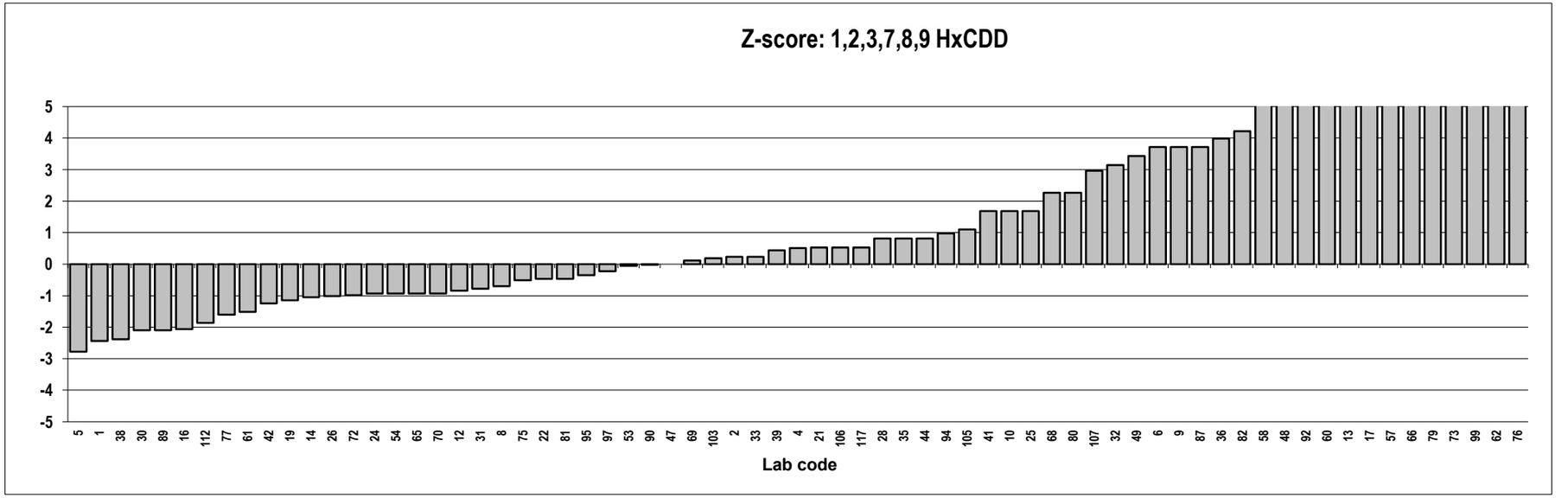
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0088		70	0.014	
2	0.018		72	0.014	
4	0.019		73	0.20	Outlier,ND
5	0.0076		75	0.015	
6	0.030	ND	76	5.0	Outlier,ND
8	0.015		77	0.012	
9	0.030	ND	79	0.15	Outlier,ND
10	0.023		80	0.025	ND
12	0.014		81	0.016	
13	0.050	Outlier,ND	82	0.032	
14	0.014		87	0.030	ND
16	0.010	ND	89	0.010	ND
17	0.050	Outlier,ND	90	0.017	
19	0.013		92	0.044	Outlier
21	0.019		94	0.021	
22	0.016		95	0.016	
24	0.014	ND	97	0.016	
25	0.023	ND	99	0.26	Outlier
26	0.014		103	0.018	
28	0.020		105	0.021	
30	0.010		106	0.019	ND
31	0.015		107	0.027	
32	0.028		112	0.011	
33	0.018	ND	117	0.019	
35	0.020				
36	0.031	ND			
38	0.0090	ND			
39	0.019				
41	0.023	ND			
42	0.013				
44	0.020				
47	0.017				
48	0.038	Outlier			
49	0.029	ND			
53	0.017				
54	0.014				
57	0.077	Outlier			
58	0.038				
60	0.045	Outlier			
61	0.012	ND			
62	0.81	Outlier,ND			
65	0.014				
66	0.078	Outlier,ND			
68	0.025	ND			
69	0.018				

Consenus statistics

Consensus median, pg/g	0.017
Median all values pg/g	0.019
Consensus mean, pg/g	0.018
Standard deviation, pg/g	0.0067
Relative standard deviation, %	36
No. of values reported	69
No. of values removed	12
No. of reported non-detects	23


1,2,3,7,8,9 HxCDD
pg/g fw
0.038
0.033
0.028
0.023
0.018
0.013
0.008
0.003
-0.002
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
5 1 38 30 89 16 112 77 61 42 19 14 26 72 24 54 65 70 12 31 8 75 22 81 95 97 53 90 47 69 103 2 33 39 4 21 106 117 28 35 44 94 105 41 10 25 68 80 107 32 49 6 9 87 36 82 58 48 92 60 13 17 57 66 79 73 99 62 76
Lab code

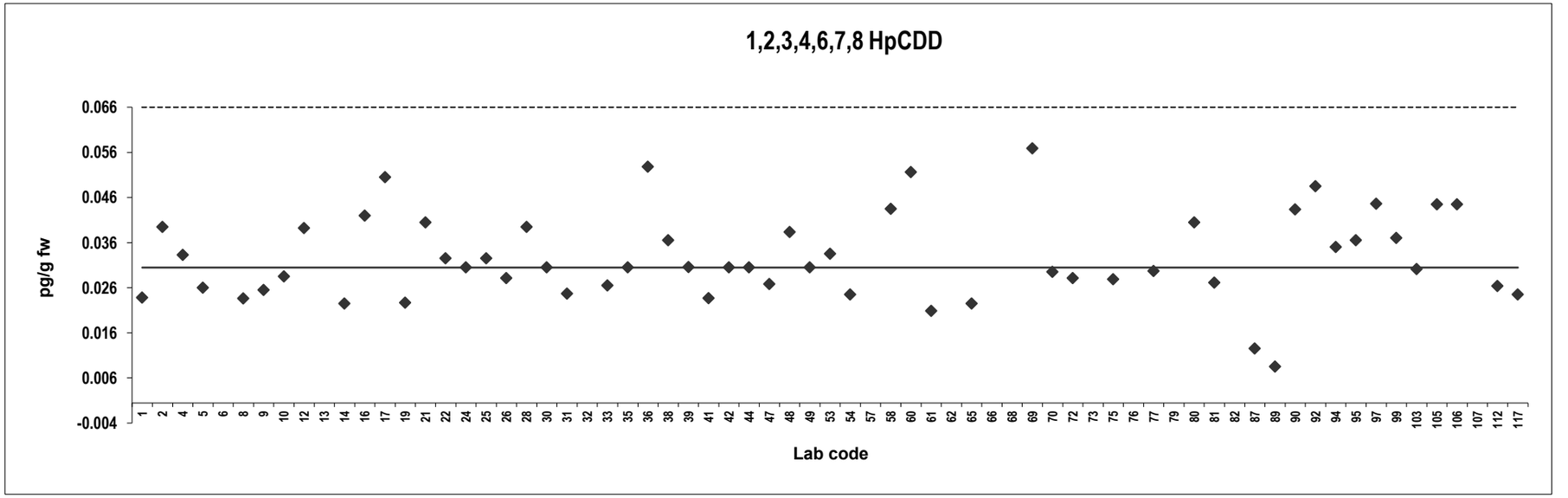
Salmon, fresh weight

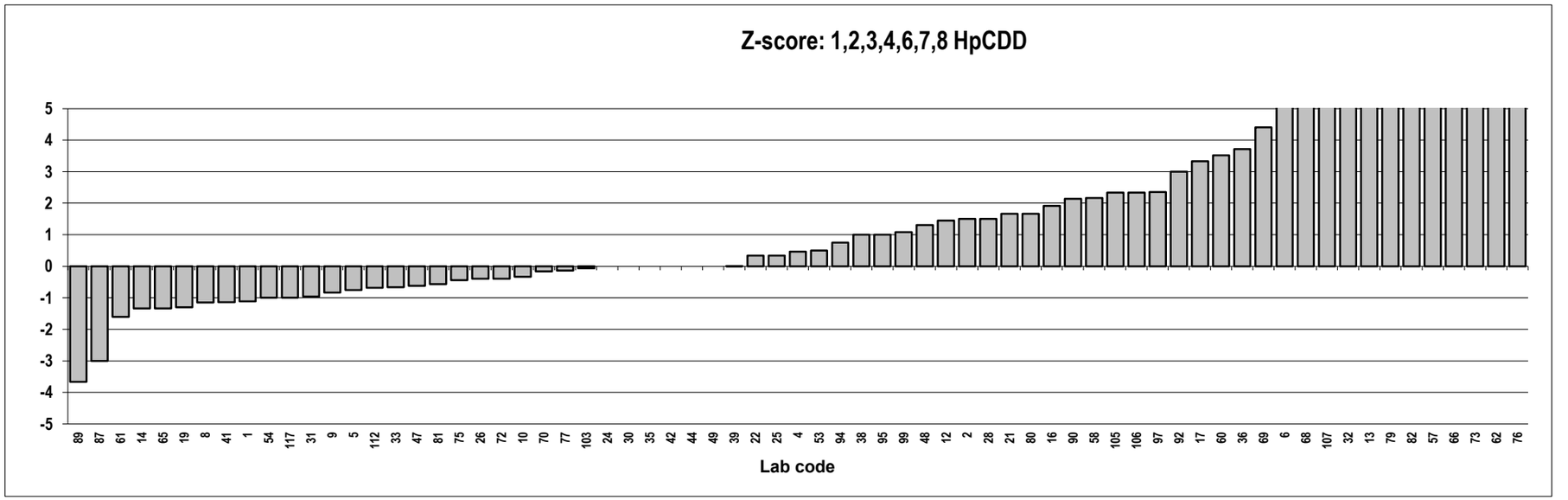
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.023		70	0.029	
2	0.039		72	0.028	
4	0.033		73	0.47	Outlier
5	0.025		75	0.027	
6	0.070	Outlier,ND	76	5.0	Outlier,ND
8	0.023		77	0.029	
9	0.025		79	0.15	Outlier,ND
10	0.028		80	0.040	
12	0.039		81	0.027	
13	0.10	Outlier,ND	82	0.16	Outlier
14	0.022		87	0.012	ND
16	0.042	ND	89	0.0080	ND
17	0.050	ND	90	0.043	
19	0.022		92	0.048	
21	0.040		94	0.035	
22	0.032		95	0.036	
24	0.030		97	0.044	
25	0.032	ND	99	0.037	
26	0.028		103	0.030	
28	0.039	ND	105	0.044	
30	0.030		106	0.044	
31	0.024		107	0.097	Outlier
32	0.098	Outlier	112	0.026	
33	0.026	ND	117	0.024	
35	0.030				
36	0.052	ND			
38	0.036				
39	0.030				
41	0.023				
42	0.030				
44	0.030				
47	0.026				
48	0.038				
49	0.030	ND			
53	0.033				
54	0.024				
57	0.18	Outlier			
58	0.043				
60	0.051				
61	0.020				
62	0.84	Outlier,ND			
65	0.022				
66	0.22	Outlier			
68	0.071	Outlier			
69	0.056				

Consenus statistics

Consensus median, pg/g	0.030
Median all values pg/g	0.033
Consensus mean, pg/g	0.032
Standard deviation, pg/g	0.0097
Relative standard deviation, %	30
No. of values reported	69
No. of values removed	12
No. of reported non-detects	14


1,2,3,4,6,7,8 HpCDD
pg/g fw
0.066
0.056
0.046
0.036
0.026
0.016
0.006
-0.004
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 87 61 14 65 19 8 41 1 54 117 31 9 5 112 33 47 81 75 26 72 10 70 77 103 24 30 35 42 44 49 39 22 25 4 53 94 38 95 99 48 12 2 28 21 80 16 90 58 105 106 97 92 17 60 36 69 6 68 107 32 13 79 82 57 66 73 62 76
Lab code

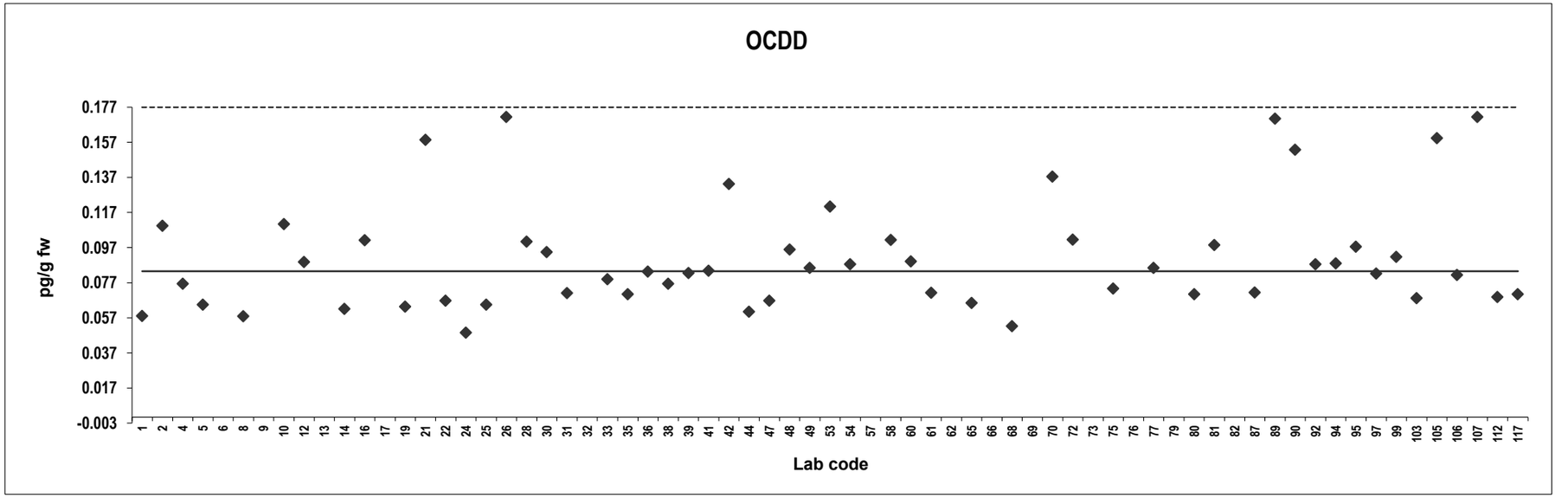
Salmon, fresh weight

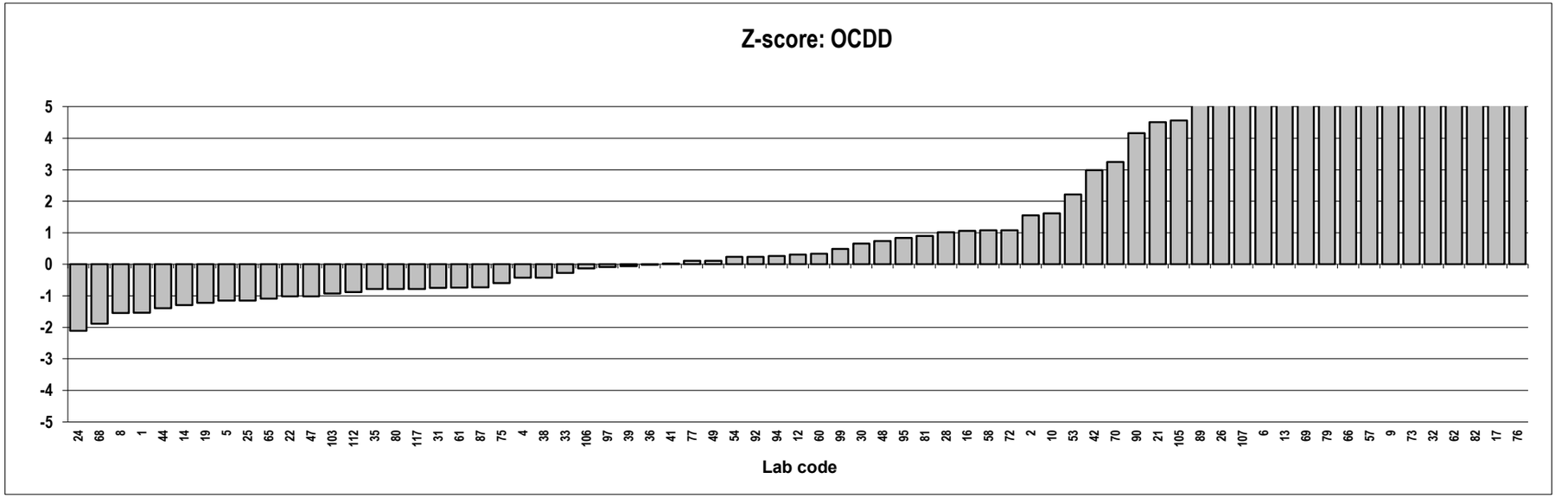
Congener: OCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.058		70	0.14	
2	0.11		72	0.10	
4	0.076		73	0.52	Outlier
5	0.064		75	0.073	
6	0.20	Outlier,ND	76	10	Outlier,ND
8	0.057		77	0.085	
9	0.45	Outlier	79	0.29	Outlier,ND
10	0.11		80	0.070	
12	0.088		81	0.098	
13	0.20	Outlier,ND	82	1.1	Outlier
14	0.062		87	0.071	ND
16	0.10	ND	89	0.17	ND
17	2.0	Outlier,ND	90	0.15	
19	0.063		92	0.087	
21	0.16		94	0.088	
22	0.066		95	0.097	
24	0.048	ND	97	0.082	
25	0.064		99	0.091	
26	0.17		103	0.068	
28	0.10	ND	105	0.16	
30	0.094		106	0.081	
31	0.071		107	0.17	
32	0.58	Outlier	112	0.068	
33	0.079		117	0.070	
35	0.070				
36	0.083	ND			
38	0.076				
39	0.082				
41	0.083				
42	0.13				
44	0.060				
47	0.066				
48	0.095				
49	0.085	ND			
53	0.12				
54	0.087				
57	0.44	Outlier			
58	0.10				
60	0.089				
61	0.071				
62	0.62	Outlier,ND			
65	0.065				
66	0.35	Outlier,ND			
68	0.052				
69	0.22	Outlier			

Consenus statistics

Consensus median, pg/g	0.083
Median all values pg/g	0.088
Consensus mean, pg/g	0.091
Standard deviation, pg/g	0.031
Relative standard deviation, %	35
No. of values reported	69
No. of values removed	13
No. of reported non-detects	14


OCDD
pg/g fw
0.177
0.157
0.137
0.117
0.097
0.077
0.057
0.037
0.017
-0.003
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 68 8 1 44 14 19 5 25 65 22 47 103 112 35 80 117 31 61 87 75 4 38 33 106 97 39 36 41 77 49 54 92 94 12 60 99 30 48 95 81 28 16 58 72 2 10 53 42 70 90 21 105 89 26 107 6 13 69 79 66 57 9 73 32 62 82 17 76
Lab code

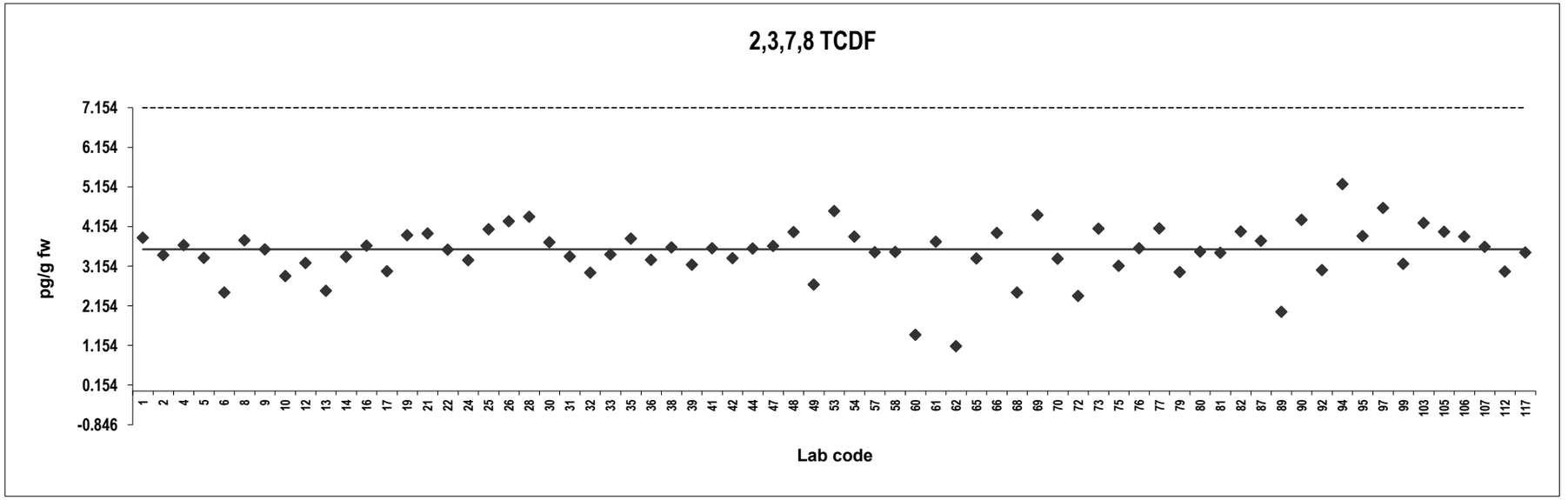
Salmon, fresh weight

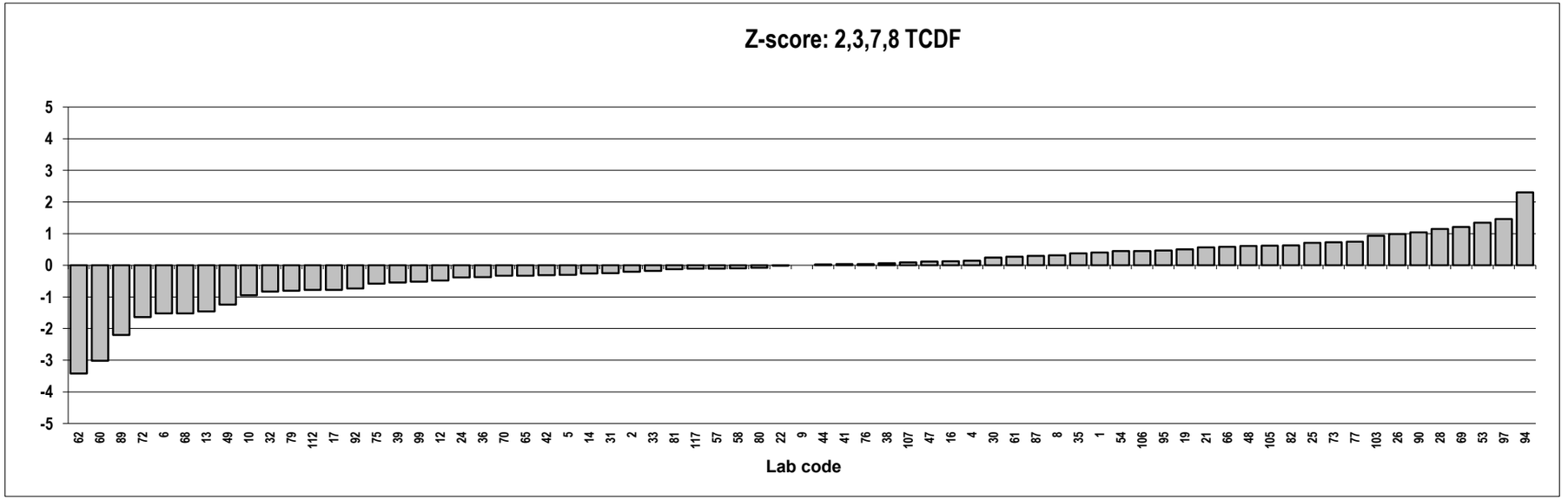
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	3.9		70	3.3	
2	3.4		72	2.4	
4	3.7		73	4.1	
5	3.4		75	3.2	
6	2.5		76	3.6	
8	3.8		77	4.1	
9	3.6		79	3.0	
10	2.9		80	3.5	
12	3.2		81	3.5	
13	2.5		82	4.0	
14	3.4		87	3.8	
16	3.7		89	2.0	
17	3.0		90	4.3	
19	3.9		92	3.1	
21	4.0		94	5.2	
22	3.6		95	3.9	
24	3.3		97	4.6	
25	4.1		99	3.2	
26	4.3		103	4.2	
28	4.4		105	4.0	
30	3.8		106	3.9	
31	3.4		107	3.6	
32	3.0		112	3.0	
33	3.5		117	3.5	
35	3.9				
36	3.3				
38	3.6				
39	3.2				
41	3.6				
42	3.4				
44	3.6				
47	3.7				
48	4.0				
49	2.7				
53	4.5				
54	3.9				
57	3.5				
58	3.5				
60	1.4				
61	3.8				
62	1.1	ND			
65	3.3				
66	4.0				
68	2.5				
69	4.4				

Consenus statistics

Consensus median, pg/g	3.6
Median all values pg/g	3.6
Consensus mean, pg/g	3.5
Standard deviation, pg/g	0.68
Relative standard deviation, %	19
No. of values reported	69
No. of values removed	0
No. of reported non-detects	1


2,3,7,8 TCDF
7.154
6.154
5.154
4.154
3.154
2.154
1.154
0.154
-0.846
pg/g fw
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
62 60 89 72 6 68 13 49 10 32 79 112 17 92 75 39 99 12 24 36 70 65 42 5 14 31 2 33 81 117 57 58 80 22 9 44 41 76 38 107 47 16 4 30 61 87 8 35 1 54 106 95 19 21 66 48 105 82 25 73 77 103 26 90 28 69 53 97 94
Lab code

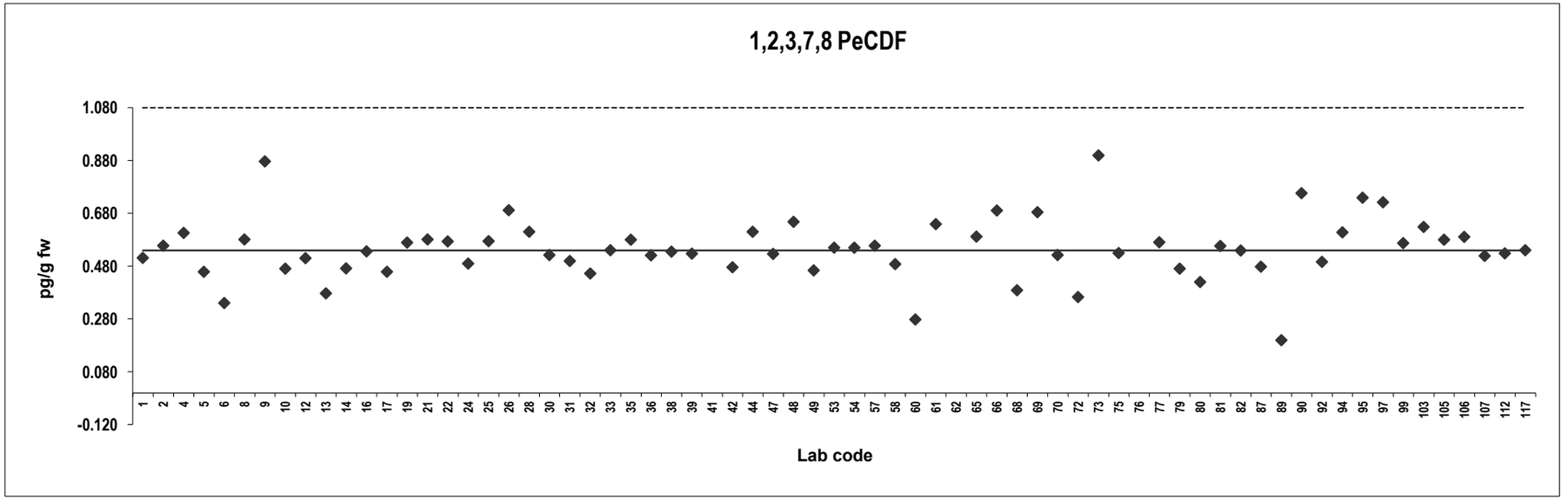
Salmon, fresh weight

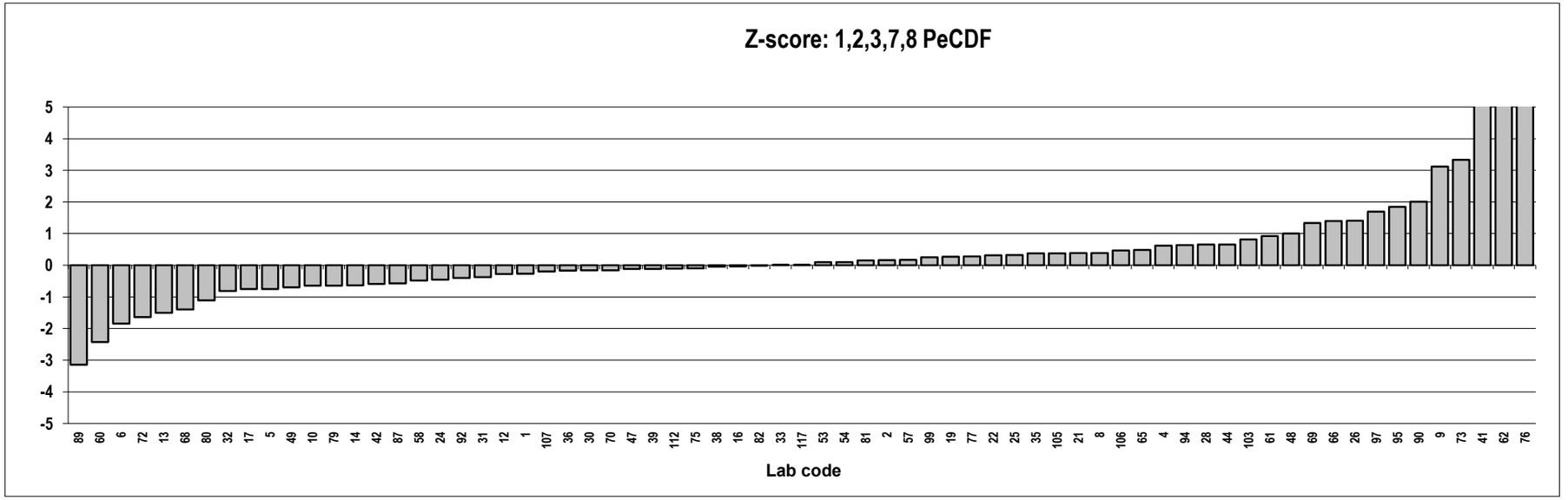
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.51		70	0.52	
2	0.56		72	0.36	
4	0.61		73	0.90	
5	0.46		75	0.53	
6	0.34		76	5.0	Outlier,ND
8	0.58		77	0.57	
9	0.88		79	0.47	
10	0.47		80	0.42	
12	0.51		81	0.56	
13	0.38		82	0.54	
14	0.47		87	0.48	
16	0.54		89	0.20	
17	0.46		90	0.76	
19	0.57		92	0.50	
21	0.58		94	0.61	
22	0.57		95	0.74	
24	0.49		97	0.72	
25	0.57		99	0.57	
26	0.69		103	0.63	
28	0.61		105	0.58	
30	0.52		106	0.59	
31	0.50		107	0.52	
32	0.45		112	0.53	
33	0.54		117	0.54	
35	0.58				
36	0.52				
38	0.54				
39	0.53				
41	1.2	Outlier			
42	0.48				
44	0.61				
47	0.53				
48	0.65				
49	0.46				
53	0.55				
54	0.55				
57	0.56				
58	0.49				
60	0.28				
61	0.64				
62	3.0	Outlier			
65	0.59				
66	0.69				
68	0.39				
69	0.68				

Consenus statistics

Consensus median, pg/g	0.54
Median all values pg/g	0.54
Consensus mean, pg/g	0.55
Standard deviation, pg/g	0.12
Relative standard deviation, %	21
No. of values reported	69
No. of values removed	3
No. of reported non-detects	1


1,2,3,7,8 PeCDF
pg/g fw
1.080
0.880
0.680
0.480
0.280
0.080
-0.120
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 60 6 72 13 68 80 32 17 5 49 10 79 14 42 87 58 24 92 31 12 1 107 36 30 70 47 39 112 75 38 16 82 33 117 53 54 81 2 57 99 19 77 22 25 35 105 21 8 106 65 4 94 28 44 103 61 48 69 66 26 97 95 90 9 73 41 62 76
Lab code

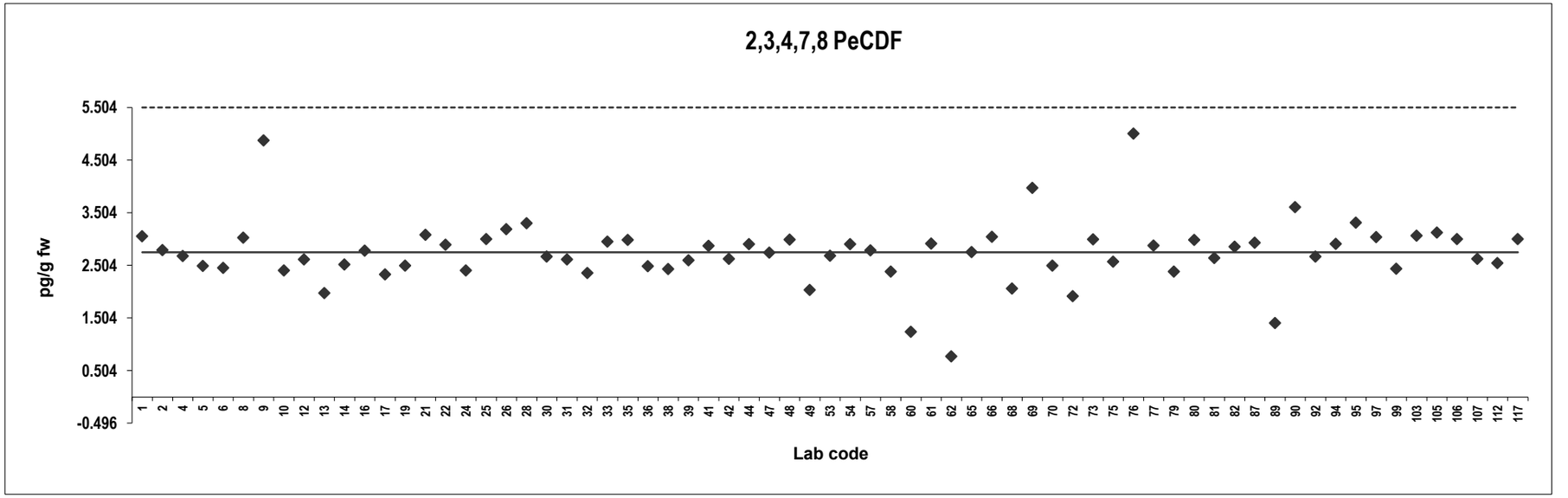
Salmon, fresh weight

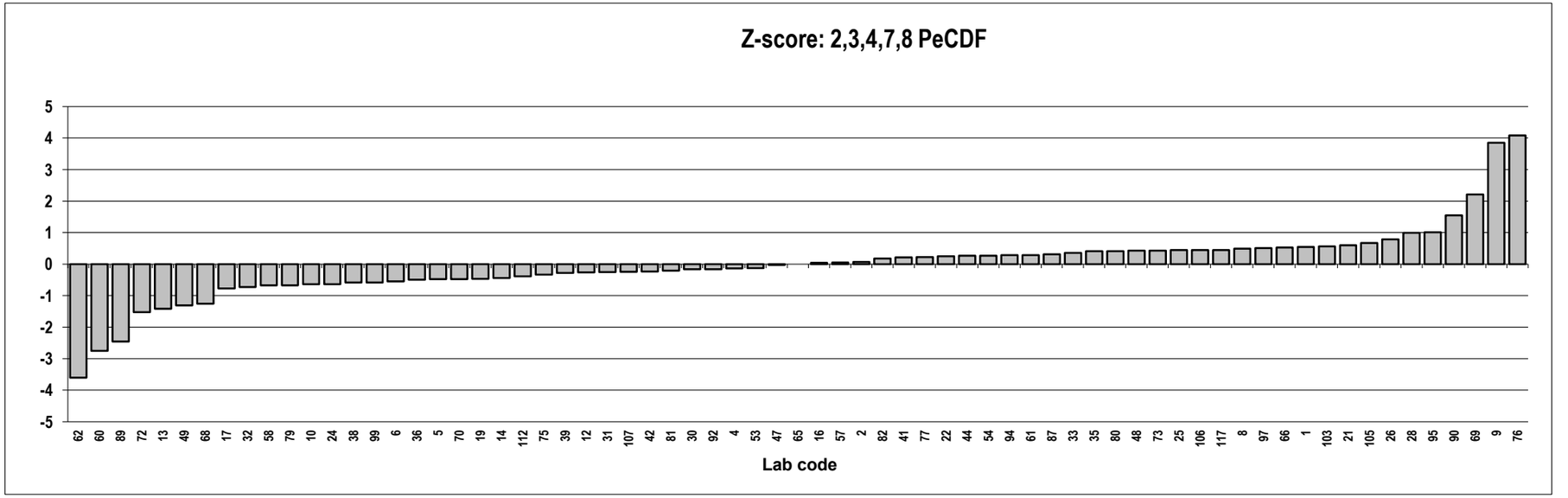
Congener: 2,3,4,7,8 PeCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	3.1		70	2.5	
2	2.8		72	1.9	
4	2.7		73	3.0	
5	2.5		75	2.6	
6	2.5		76	5.0	ND
8	3.0		77	2.9	
9	4.9		79	2.4	
10	2.4		80	3.0	
12	2.6		81	2.6	
13	2.0		82	2.9	
14	2.5		87	2.9	
16	2.8		89	1.4	
17	2.3		90	3.6	
19	2.5		92	2.7	
21	3.1		94	2.9	
22	2.9		95	3.3	
24	2.4		97	3.0	
25	3.0		99	2.4	
26	3.2		103	3.1	
28	3.3		105	3.1	
30	2.7		106	3.0	
31	2.6		107	2.6	
32	2.4		112	2.5	
33	3.0		117	3.0	
35	3.0				
36	2.5				
38	2.4				
39	2.6				
41	2.9				
42	2.6				
44	2.9				
47	2.7				
48	3.0				
49	2.0				
53	2.7				
54	2.9				
57	2.8				
58	2.4				
60	1.2				
61	2.9				
62	0.77	ND			
65	2.8				
66	3.0				
68	2.1				
69	4.0				

Consenus statistics

Consensus median, pg/g	2.8
Median all values pg/g	2.8
Consensus mean, pg/g	2.7
Standard deviation, pg/g	0.62
Relative standard deviation, %	23
No. of values reported	69
No. of values removed	0
No. of reported non-detects	2


2,3,4,7,8 PeCDF
pg/g fw
5.504
4.504
3.504
2.504
1.504
0.504
-0.496
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 88 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
62 60 89 72 13 49 68 17 32 58 79 10 24 38 99 6 36 5 70 19 14 112 75 39 12 31 107 42 81 30 92 4 53 47 65 16 57 2 82 41 77 22 44 54 94 61 87 33 35 80 48 73 25 106 117 8 97 66 1 103 21 105 26 28 95 90 69 9 76
Lab code

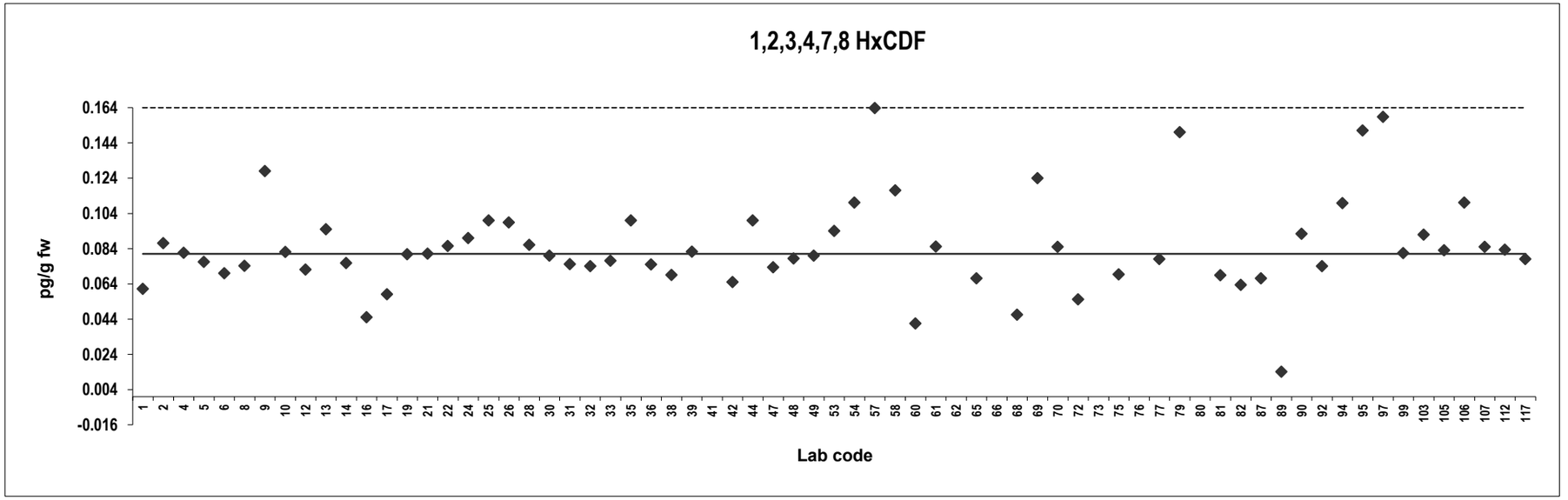
Salmon, fresh weight

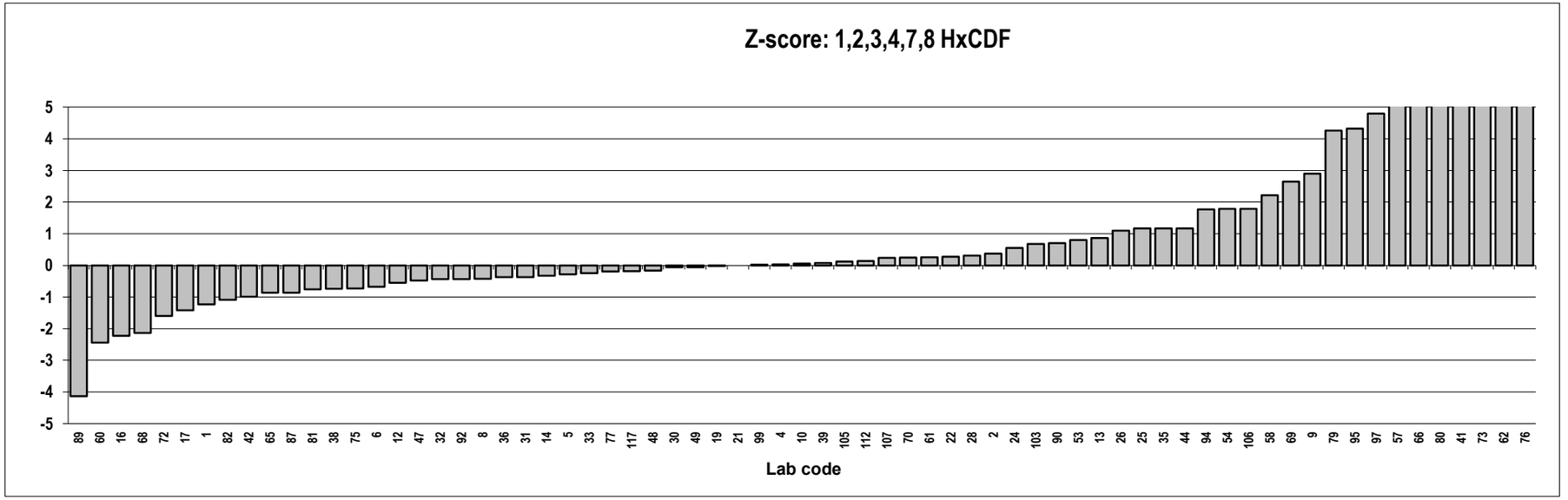
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.061		70	0.085	
2	0.087		72	0.055	
4	0.082		73	0.41	Outlier
5	0.076		75	0.069	
6	0.070		76	5.0	Outlier,ND
8	0.074		77	0.078	
9	0.13		79	0.15	ND
10	0.082		80	0.23	Outlier
12	0.072		81	0.069	
13	0.095		82	0.063	
14	0.076		87	0.067	
16	0.045	ND	89	0.014	ND
17	0.058		90	0.092	
19	0.081		92	0.074	
21	0.081		94	0.11	
22	0.086		95	0.15	
24	0.090		97	0.16	
25	0.10		99	0.081	
26	0.099		103	0.092	
28	0.086		105	0.083	
30	0.080		106	0.11	
31	0.075		107	0.085	
32	0.074		112	0.083	
33	0.077		117	0.078	
35	0.10				
36	0.075				
38	0.069				
39	0.082				
41	0.40	Outlier			
42	0.065				
44	0.10				
47	0.073				
48	0.078				
49	0.080	ND			
53	0.094				
54	0.11				
57	0.16				
58	0.12				
60	0.041				
61	0.085				
62	1.1	Outlier			
65	0.067				
66	0.19	Outlier			
68	0.046				
69	0.12				

Consenus statistics

Consensus median, pg/g	0.081
Median all values pg/g	0.082
Consensus mean, pg/g	0.085
Standard deviation, pg/g	0.027
Relative standard deviation, %	31
No. of values reported	69
No. of values removed	6
No. of reported non-detects	5


1,2,3,4,7,8 HxCDF
pg/g fw
0.164
0.144
0.124
0.104
0.084
0.064
0.044
0.024
0.004
-0.016
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 60 16 68 72 17 1 82 42 65 87 81 38 75 6 12 47 32 92 8 36 31 14 5 33 77 117 48 30 49 19 21 99 4 10 39 105 112 107 70 61 22 28 2 24 103 90 53 13 26 25 35 44 94 54 106 58 69 9 79 95 97 57 66 80 41 73 62 76
Lab code

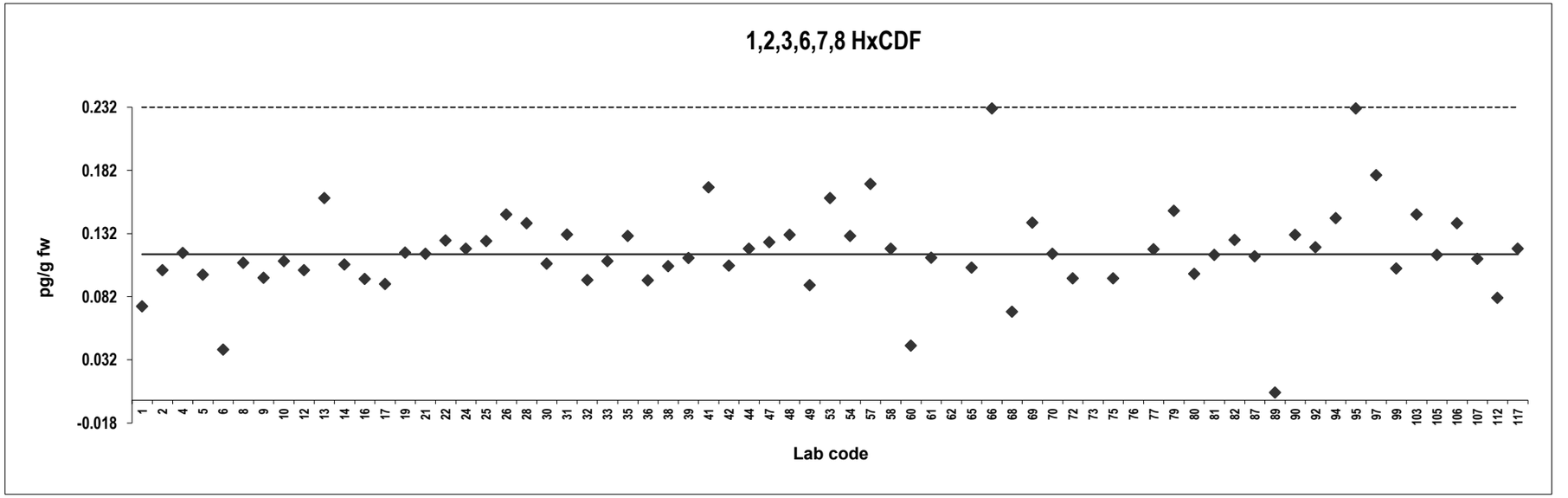
Salmon, fresh weight

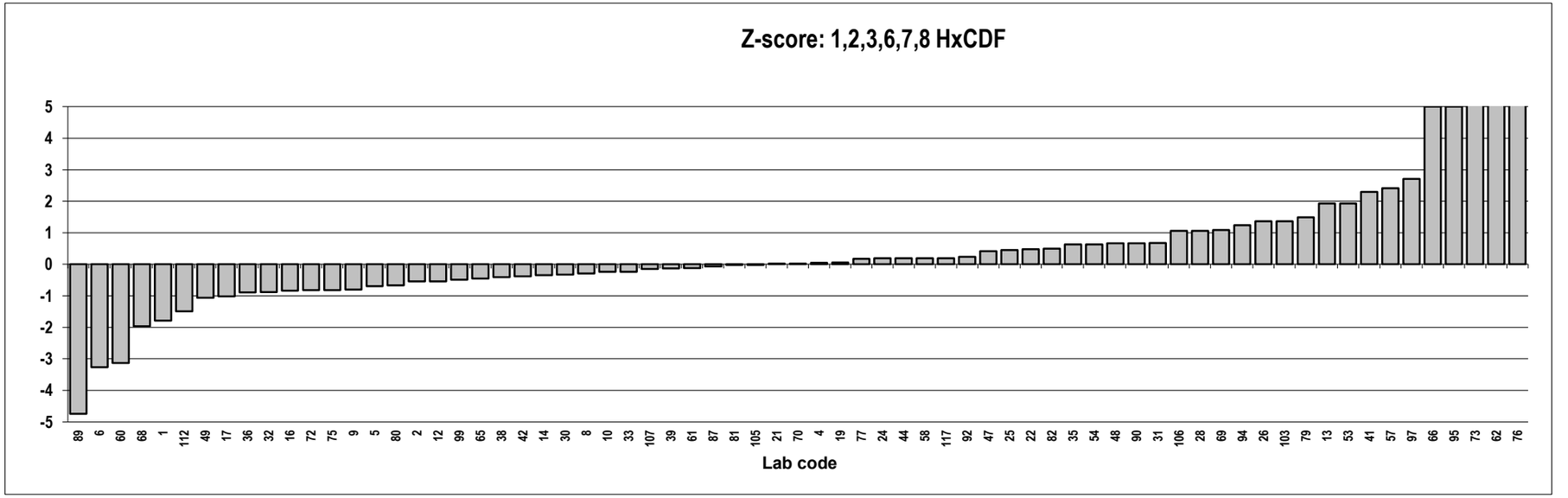
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.074		70	0.12	
2	0.10		72	0.097	
4	0.12		73	0.43	Outlier
5	0.099		75	0.097	
6	0.040		76	5.0	Outlier,ND
8	0.11		77	0.12	
9	0.097		79	0.15	ND
10	0.11		80	0.10	
12	0.10		81	0.12	
13	0.16		82	0.13	
14	0.11		87	0.11	
16	0.096		89	0.0060	ND
17	0.092		90	0.13	
19	0.12		92	0.12	
21	0.12		94	0.14	
22	0.13		95	0.23	
24	0.12		97	0.18	
25	0.13		99	0.10	
26	0.15		103	0.15	
28	0.14		105	0.12	
30	0.11		106	0.14	
31	0.13		107	0.11	
32	0.095		112	0.081	
33	0.11		117	0.12	
35	0.13				
36	0.095				
38	0.11				
39	0.11				
41	0.17				
42	0.11				
44	0.12				
47	0.13				
48	0.13				
49	0.091	ND			
53	0.16				
54	0.13				
57	0.17				
58	0.12				
60	0.043				
61	0.11				
62	2.4	Outlier			
65	0.11				
66	0.23				
68	0.070				
69	0.14				

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	0.035
Relative standard deviation, %	30
No. of values reported	69
No. of values removed	3
No. of reported non-detects	4


1,2,3,6,7,8 HxCDF
pg/g fw
0.232
0.182
0.132
0.082
0.032
-0.018
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code

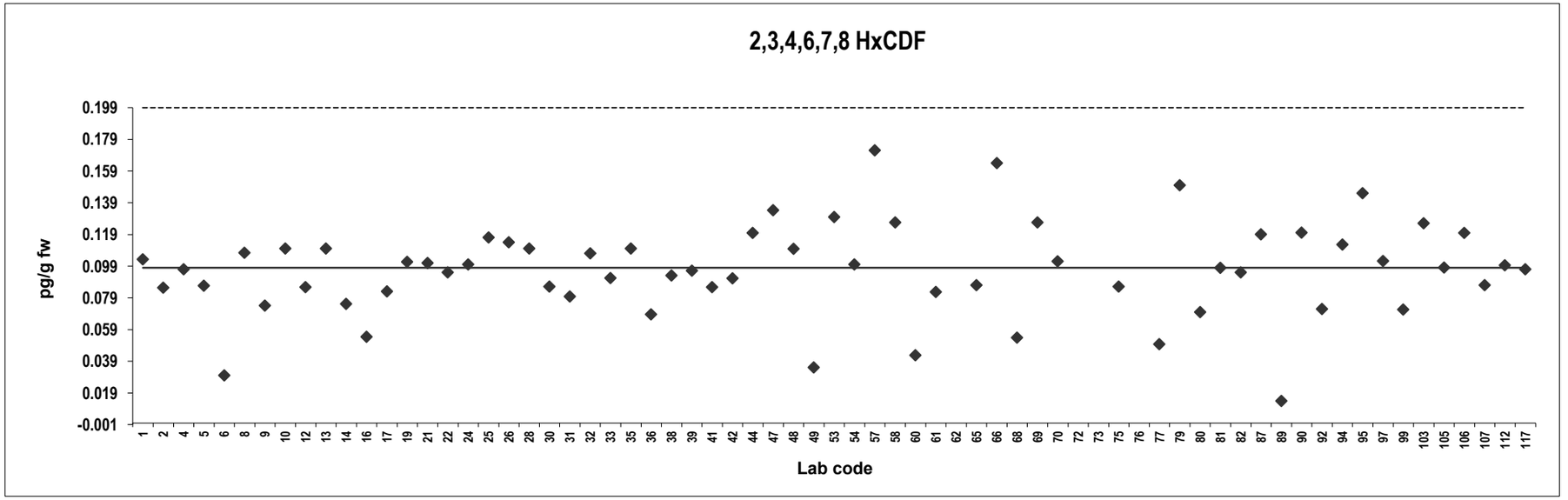

Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 6 60 68 1 112 49 17 36 32 16 72 75 9 5 80 2 12 99 65 38 42 14 30 8 10 33 107 39 61 87 81 105 21 70 4 19 77 24 44 58 117 92 47 25 22 82 35 54 48 90 31 106 28 69 94 26 103 79 13 53 41 57 97 66 95 73 62 76
Lab code

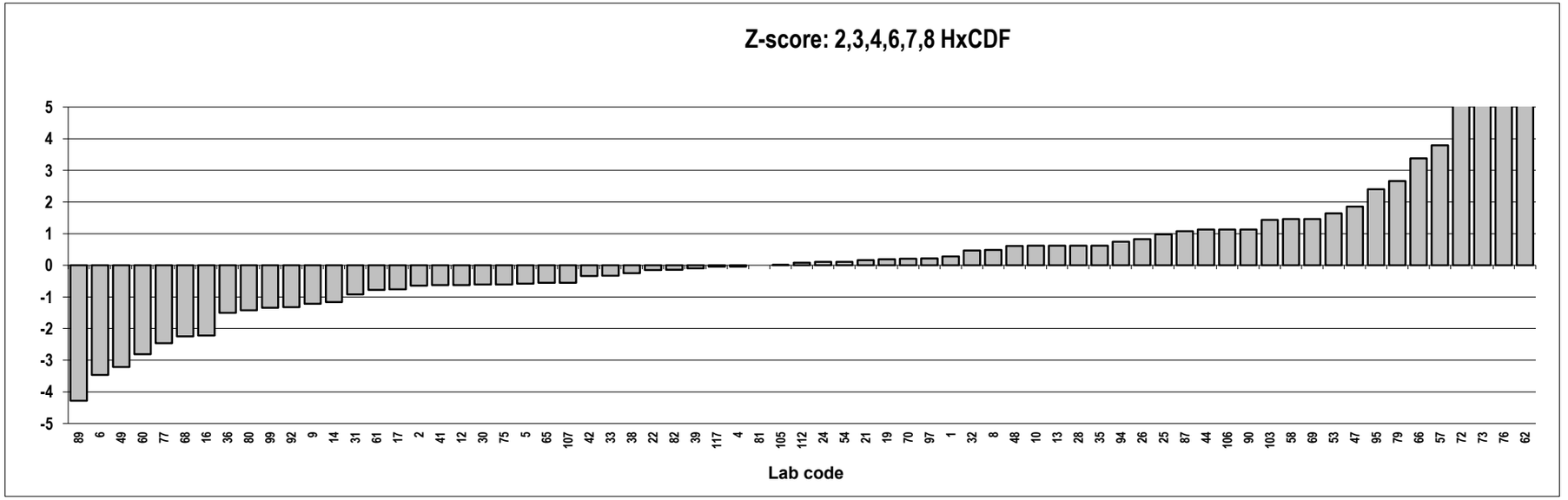
Salmon, fresh weight

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

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.10		70	0.10	
2	0.085		72	0.21	Outlier
4	0.097		73	0.42	Outlier
5	0.087		75	0.086	
6	0.030	ND	76	5.0	Outlier,ND
8	0.11		77	0.050	
9	0.074		79	0.15	ND
10	0.11		80	0.070	
12	0.086		81	0.098	
13	0.11		82	0.095	
14	0.075		87	0.12	
16	0.054	ND	89	0.014	ND
17	0.083		90	0.12	
19	0.10		92	0.072	
21	0.10		94	0.11	
22	0.095		95	0.15	
24	0.10		97	0.10	
25	0.12		99	0.072	
26	0.11		103	0.13	
28	0.11		105	0.098	
30	0.086		106	0.12	
31	0.080		107	0.087	
32	0.11		112	0.10	
33	0.092		117	0.097	
35	0.11				
36	0.069				
38	0.093				
39	0.096				
41	0.086				
42	0.091				
44	0.12				
47	0.13				
48	0.11				
49	0.035	ND			
53	0.13				
54	0.10				
57	0.17				
58	0.13				
60	0.043				
61	0.083				
62	7.8	Outlier			
65	0.087				
66	0.16				
68	0.054				
69	0.13				

Consenus statistics	
Consensus median, pg/g	0.10
Median all values pg/g	0.10
Consensus mean, pg/g	0.10
Standard deviation, pg/g	0.029
Relative standard deviation, %	30
No. of values reported	69
No. of values removed	4
No. of reported non-detects	6


2,3,4,6,7,8 HxCDF
pg/g fw
0.199
0.179
0.159
0.139
0.119
0.099
0.079
0.059
0.039
0.019
-0.001
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 6 49 60 77 68 16 36 80 99 92 9 14 31 61 17 2 41 12 30 75 5 65 107 42 33 38 22 82 39 117 4 81 105 112 24 54 21 19 70 97 1 32 8 48 10 13 28 35 94 26 25 87 44 106 90 103 58 69 53 47 95 79 66 57 72 73 76 62
Lab code

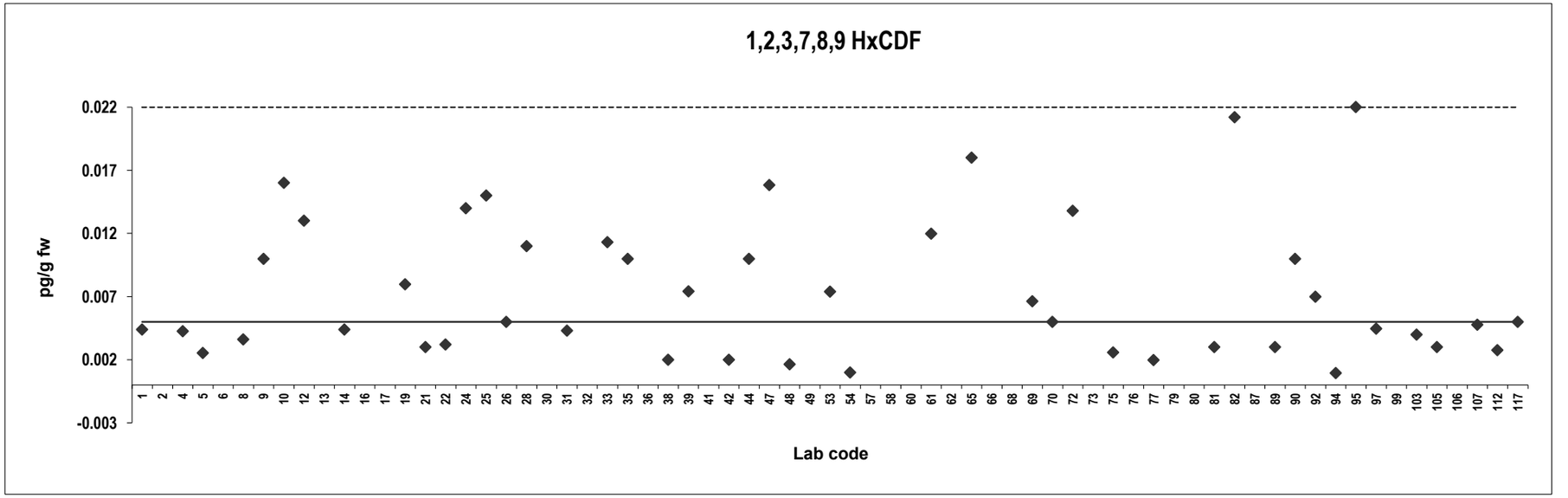
Salmon, fresh weight

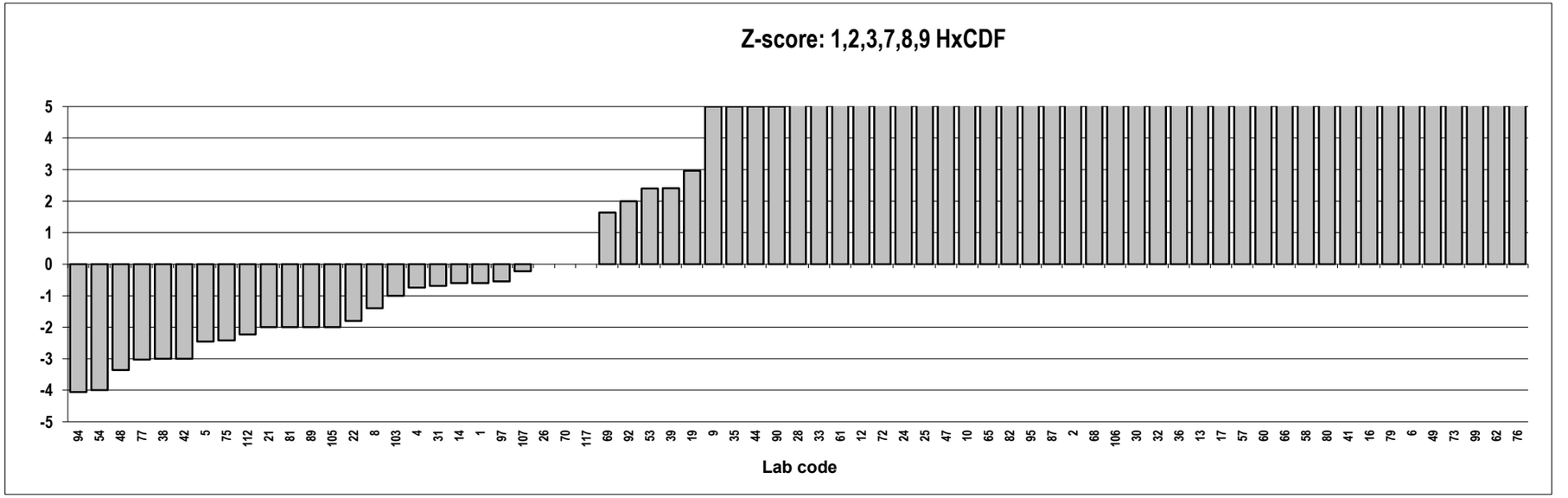
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0044	ND	70	0.0050	ND
2	0.025	Outlier	72	0.014	ND
4	0.0043		73	0.20	Outlier,ND
5	0.0025		75	0.0026	ND
6	0.17	Outlier	76	5.0	Outlier,ND
8	0.0036	ND	77	0.0020	
9	0.010		79	0.15	Outlier,ND
10	0.016		80	0.090	Outlier
12	0.013	ND	81	0.0030	ND
13	0.050	Outlier,ND	82	0.021	ND
14	0.0044		87	0.024	Outlier,ND
16	0.11	Outlier,ND	89	0.0030	ND
17	0.050	Outlier,ND	90	0.010	ND
19	0.0080	ND	92	0.0070	
21	0.0030	ND	94	0.00094	ND
22	0.0032	ND	95	0.022	
24	0.014	ND	97	0.0045	ND
25	0.015	ND	99	0.31	Outlier
26	0.0050	ND	103	0.0040	ND
28	0.011	ND	105	0.0030	ND
30	0.028	Outlier	106	0.025	Outlier,ND
31	0.0043	ND	107	0.0048	ND
32	0.030	Outlier	112	0.0028	ND
33	0.011	ND	117	0.0050	ND
35	0.010	ND			
36	0.034	Outlier,ND			
38	0.0020	ND			
39	0.0074				
41	0.099	Outlier			
42	0.0020	ND			
44	0.010	ND			
47	0.016	ND			
48	0.0016				
49	0.18	Outlier,ND			
53	0.0074				
54	0.0010				
57	0.063	Outlier			
58	0.084	Outlier			
60	0.065	Outlier			
61	0.012	ND			
62	1.4	Outlier,ND			
65	0.018				
66	0.078	Outlier,ND			
68	0.025	Outlier,ND			
69	0.0066				

Consenus statistics

Consensus median, pg/g	0.0050
Median all values pg/g	0.011
Consensus mean, pg/g	0.007
Standard deviation, pg/g	0.0055
Relative standard deviation, %	74
No. of values reported	69
No. of values removed	23
No. of reported non-detects	45


1,2,3,7,8,9 HxCDF
pg/g fw
0.022
0.017
0.012
0.007
0.002
-0.003
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 88 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
94 54 48 77 38 42 5 75 112 21 81 89 105 22 8 103 4 31 14 1 97 107 26 70 117 69 92 53 39 19 9 35 44 90 28 33 61 12 72 24 25 47 10 65 82 95 87 2 68 106 30 32 36 13 17 57 60 66 58 80 41 16 79 6 49 73 99 62 76
Lab code

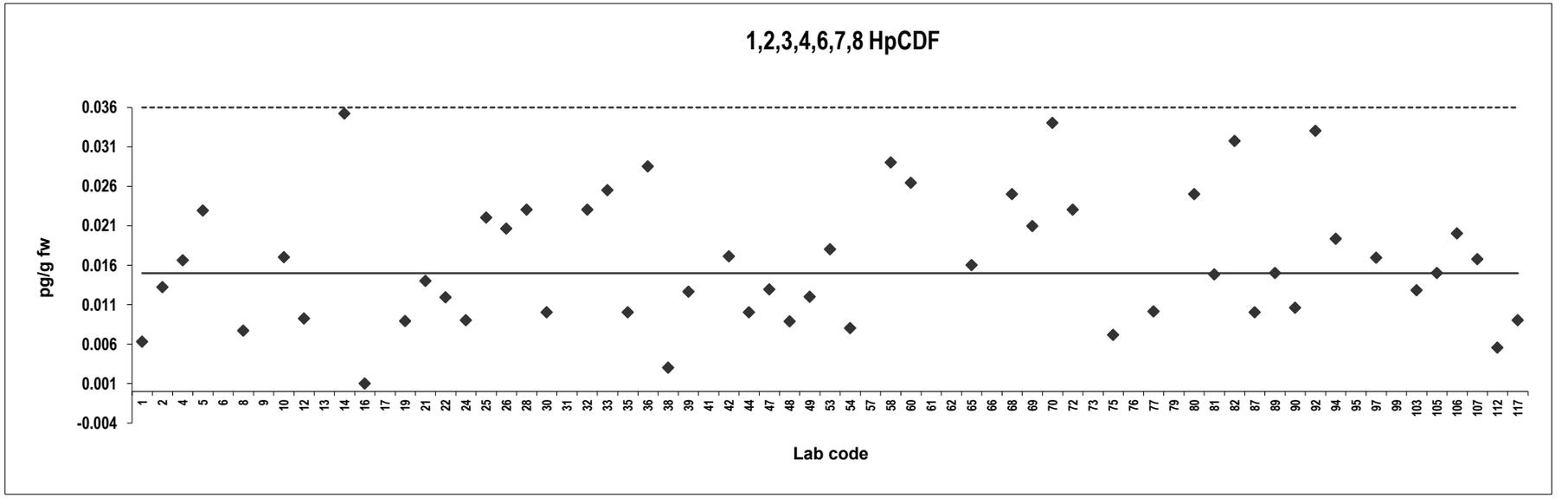
Salmon, fresh weight

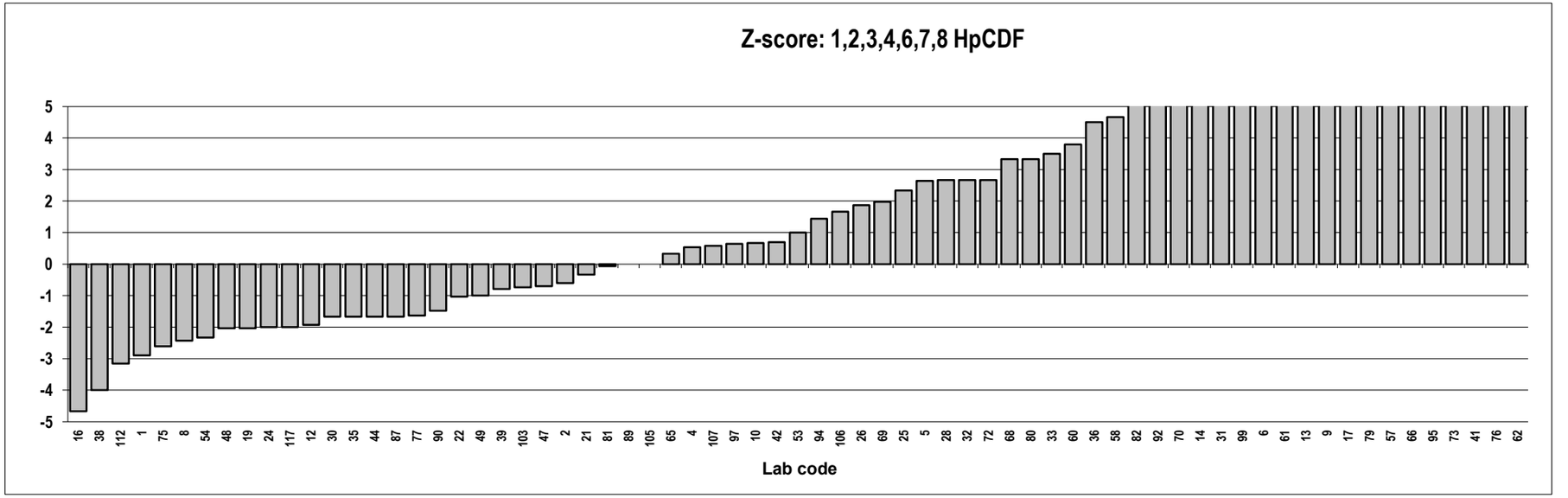
Congener: 1,2,3,4,6,7,8 HpCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0063		70	0.034	
2	0.013		72	0.023	
4	0.017		73	0.40	Outlier,ND
5	0.023		75	0.0072	
6	0.070	Outlier,ND	76	5.0	Outlier,ND
8	0.0077		77	0.010	
9	0.13	Outlier	79	0.15	Outlier,ND
10	0.017		80	0.025	ND
12	0.0092		81	0.015	
13	0.10	Outlier,ND	82	0.032	
14	0.035		87	0.010	ND
16	0.0010	ND	89	0.015	ND
17	0.15	Outlier,ND	90	0.011	
19	0.0089		92	0.033	
21	0.014		94	0.019	
22	0.012		95	0.35	Outlier
24	0.0090		97	0.017	
25	0.022	ND	99	0.043	Outlier
26	0.021		103	0.013	
28	0.023	ND	105	0.015	
30	0.010		106	0.020	
31	0.043	Outlier	107	0.017	
32	0.023		112	0.0055	ND
33	0.026		117	0.0090	
35	0.010				
36	0.029	ND			
38	0.0030	ND			
39	0.013				
41	1.1	Outlier			
42	0.017				
44	0.010				
47	0.013				
48	0.0089				
49	0.012	ND			
53	0.018				
54	0.0080				
57	0.20	Outlier			
58	0.029				
60	0.026				
61	0.089	Outlier			
62	5.4	Outlier			
65	0.016				
66	0.21	Outlier,ND			
68	0.025	ND			
69	0.021				

Consenus statistics

Consensus median, pg/g	0.015
Median all values pg/g	0.018
Consensus mean, pg/g	0.016
Standard deviation, pg/g	0.0082
Relative standard deviation, %	50
No. of values reported	69
No. of values removed	15
No. of reported non-detects	18


1,2,3,4,6,7,8 HpCDF
pg/g fw
0.036
0.031
0.026
0.021
0.016
0.011
0.006
0.001
-0.004
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 38 112 1 75 8 54 48 19 24 117 12 30 35 44 87 77 90 22 49 39 103 47 2 21 81 89 105 65 4 107 97 10 42 53 94 106 26 69 25 5 28 32 72 68 80 33 60 36 58 82 92 70 14 31 99 6 61 13 9 17 79 57 66 95 73 41 76 62
Lab code

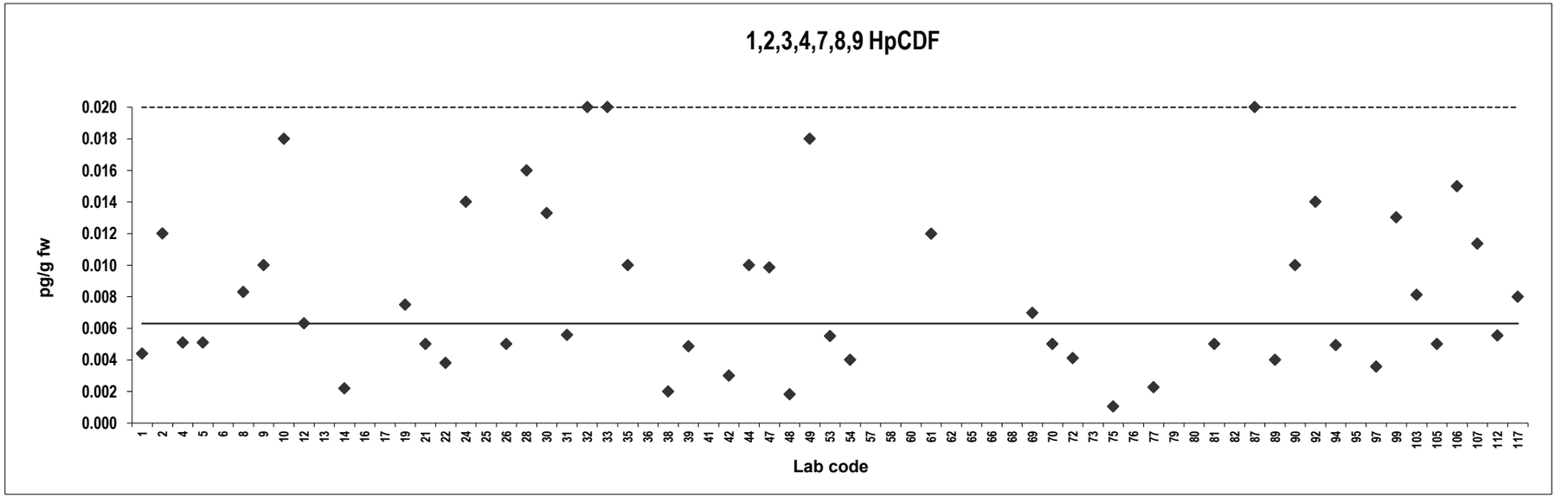
Salmon, fresh weight

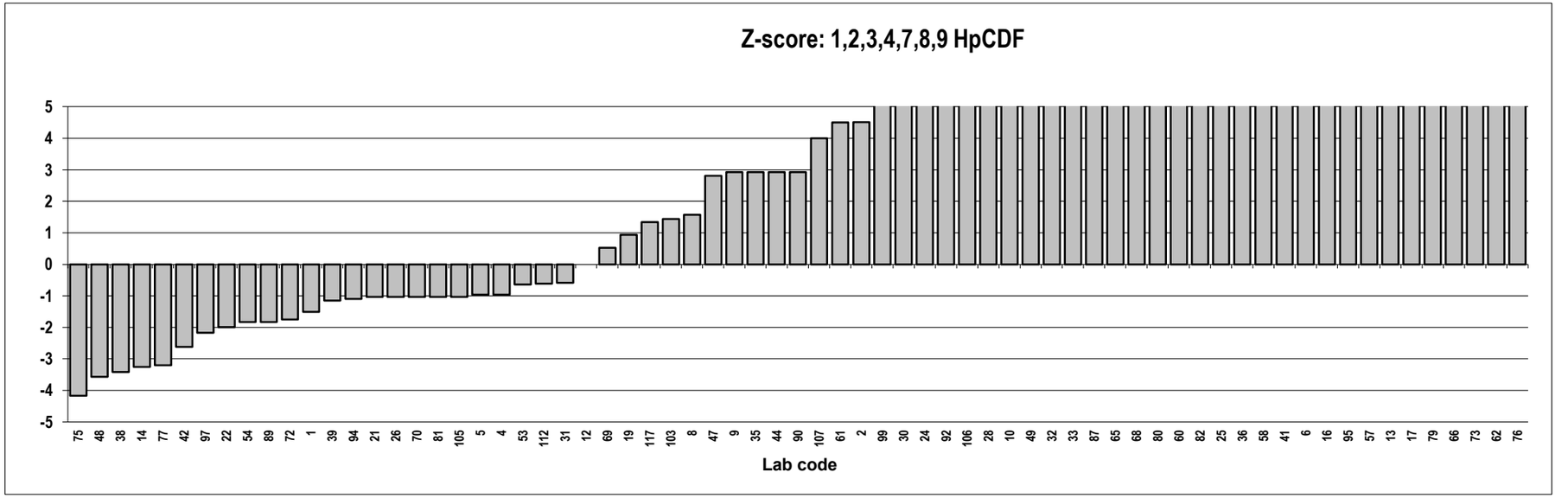
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0044	ND	70	0.0050	ND
2	0.012		72	0.0041	ND
4	0.0051		73	0.40	Outlier,ND
5	0.0051		75	0.0011	
6	0.070	Outlier,ND	76	5.0	Outlier,ND
8	0.0083		77	0.0023	
9	0.010	ND	79	0.15	Outlier,ND
10	0.018		80	0.025	Outlier,ND
12	0.0063	ND	81	0.0050	ND
13	0.10	Outlier,ND	82	0.032	Outlier
14	0.0022		87	0.020	ND
16	0.071	Outlier,ND	89	0.0040	ND
17	0.15	Outlier,ND	90	0.010	ND
19	0.0075	ND	92	0.014	
21	0.0050	ND	94	0.0049	
22	0.0038	ND	95	0.082	Outlier
24	0.014	ND	97	0.0036	
25	0.032	Outlier,ND	99	0.013	
26	0.0050	ND	103	0.0081	
28	0.016	ND	105	0.0050	ND
30	0.013	ND	106	0.015	ND
31	0.0056	ND	107	0.011	
32	0.020		112	0.0055	ND
33	0.020	ND	117	0.0080	ND
35	0.010	ND			
36	0.044	Outlier,ND			
38	0.0020	ND			
39	0.0049	ND			
41	0.062	Outlier,ND			
42	0.0030	ND			
44	0.010	ND			
47	0.0098	ND			
48	0.0018				
49	0.018	ND			
53	0.0055				
54	0.0040				
57	0.088	Outlier			
58	0.045	Outlier			
60	0.025	Outlier			
61	0.012	ND			
62	0.66	Outlier,ND			
65	0.025	Outlier,ND			
66	0.21	Outlier,ND			
68	0.025	Outlier,ND			
69	0.0070				

Consenus statistics

Consensus median, pg/g	0.0063
Median all values pg/g	0.010
Consensus mean, pg/g	0.0084
Standard deviation, pg/g	0.0053
Relative standard deviation, %	63
No. of values reported	69
No. of values removed	20
No. of reported non-detects	45


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
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
75 48 38 14 77 42 97 22 54 89 72 1 39 94 21 26 70 81 105 5 4 53 112 31 12 69 19 117 103 8 47 9 35 44 90 107 61 2 99 30 24 92 106 28 10 49 32 33 87 65 68 80 60 82 25 36 58 41 6 16 95 57 13 17 79 66 73 62 76
Lab code

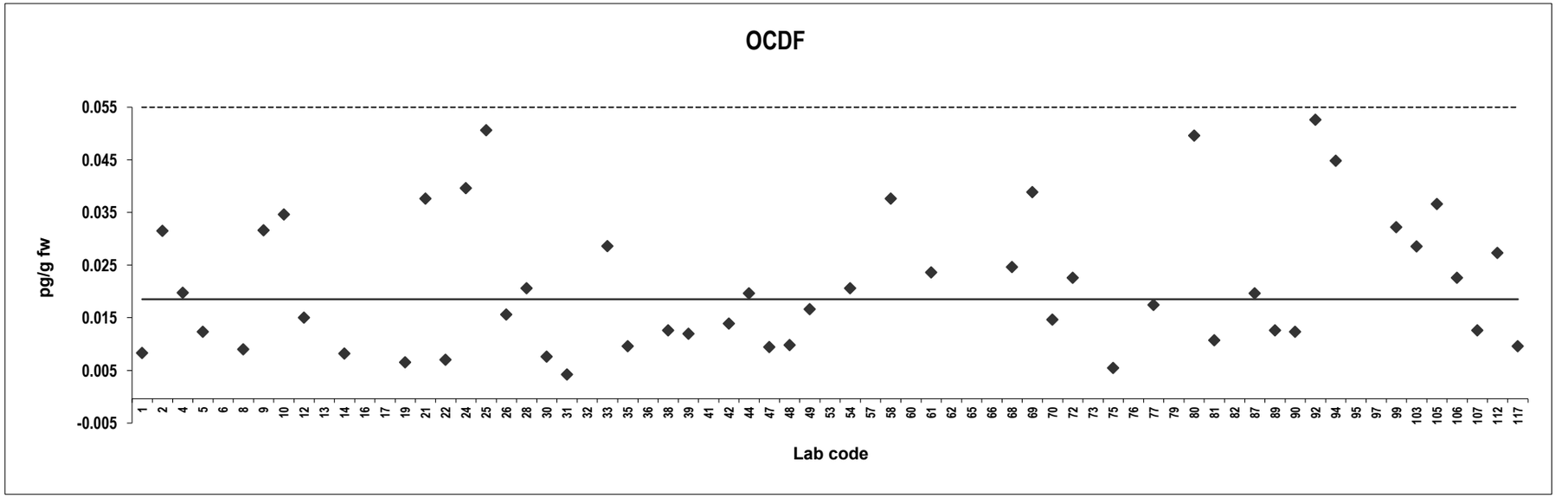
Salmon, fresh weight

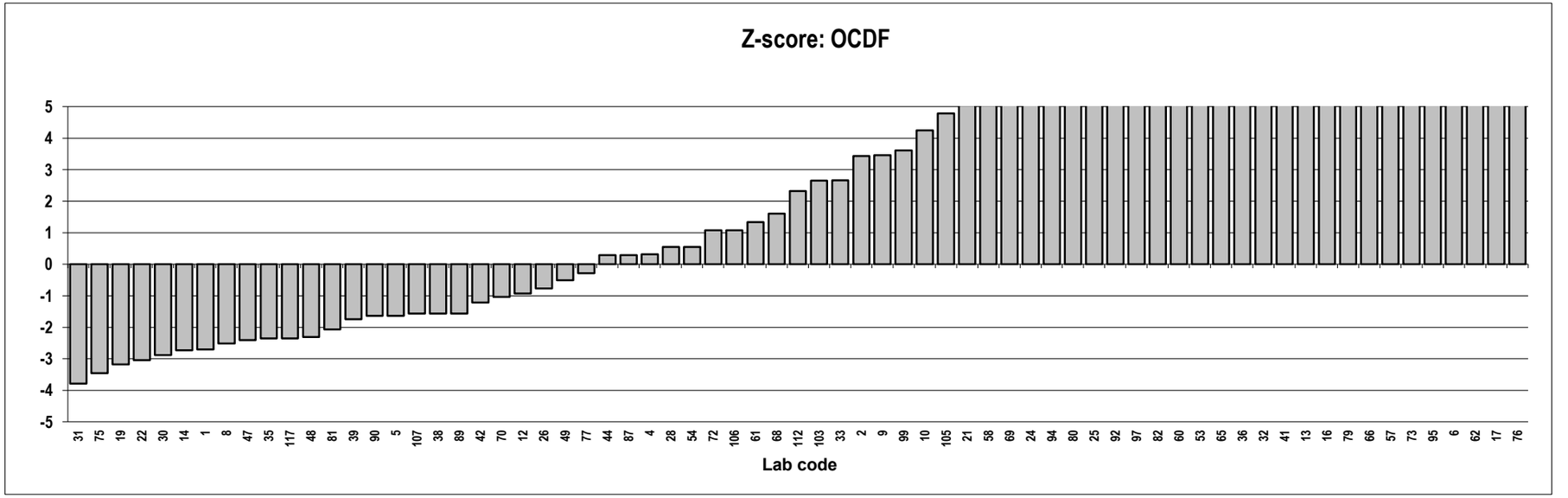
Congener: OCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.0087	ND	70	0.015	ND
2	0.032		72	0.023	
4	0.020		73	0.40	Outlier,ND
5	0.013		75	0.0058	
6	0.50	Outlier,ND	76	10	Outlier,ND
8	0.0094	ND	77	0.018	
9	0.032		79	0.29	Outlier,ND
10	0.035		80	0.050	ND
12	0.015	ND	81	0.011	
13	0.20	Outlier,ND	82	0.063	Outlier
14	0.0086		87	0.020	ND
16	0.25	Outlier,ND	89	0.013	ND
17	2.0	Outlier,ND	90	0.013	
19	0.0069	ND	92	0.053	
21	0.038		94	0.045	
22	0.0074	ND	95	0.49	Outlier
24	0.040	ND	97	0.061	Outlier
25	0.051	ND	99	0.033	
26	0.016		103	0.029	
28	0.021	ND	105	0.037	
30	0.0080		106	0.023	
31	0.0046	ND	107	0.013	
32	0.12	Outlier	112	0.028	ND
33	0.029	ND	117	0.010	
35	0.010				
36	0.11	Outlier,ND			
38	0.013				
39	0.012				
41	0.16	Outlier			
42	0.014				
44	0.020				
47	0.0098				
48	0.010				
49	0.017	ND			
53	0.068	Outlier			
54	0.021				
57	0.39	Outlier			
58	0.038				
60	0.067	Outlier			
61	0.024				
62	1.3	Outlier,ND			
65	0.10	Outlier,ND			
66	0.36	Outlier			
68	0.025	ND			
69	0.039				

Consenus statistics

Consensus median, pg/g	0.019
Median all values pg/g	0.028
Consensus mean, pg/g	0.022
Standard deviation, pg/g	0.013
Relative standard deviation, %	60
No. of values reported	69
No. of values removed	19
No. of reported non-detects	27


OCDF
pg/g fw
0.055
0.045
0.035
0.025
0.015
0.005
-0.005
1 2 4 5 6 8 9 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 62 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
31 75 19 22 30 14 1 8 47 35 117 48 81 39 90 5 107 38 89 42 70 12 26 49 77 44 87 4 28 54 72 106 61 68 112 103 33 2 9 99 10 105 21 58 69 24 94 80 25 92 97 82 60 53 65 36 32 41 13 16 79 66 57 73 95 6 62 17 76
Lab code

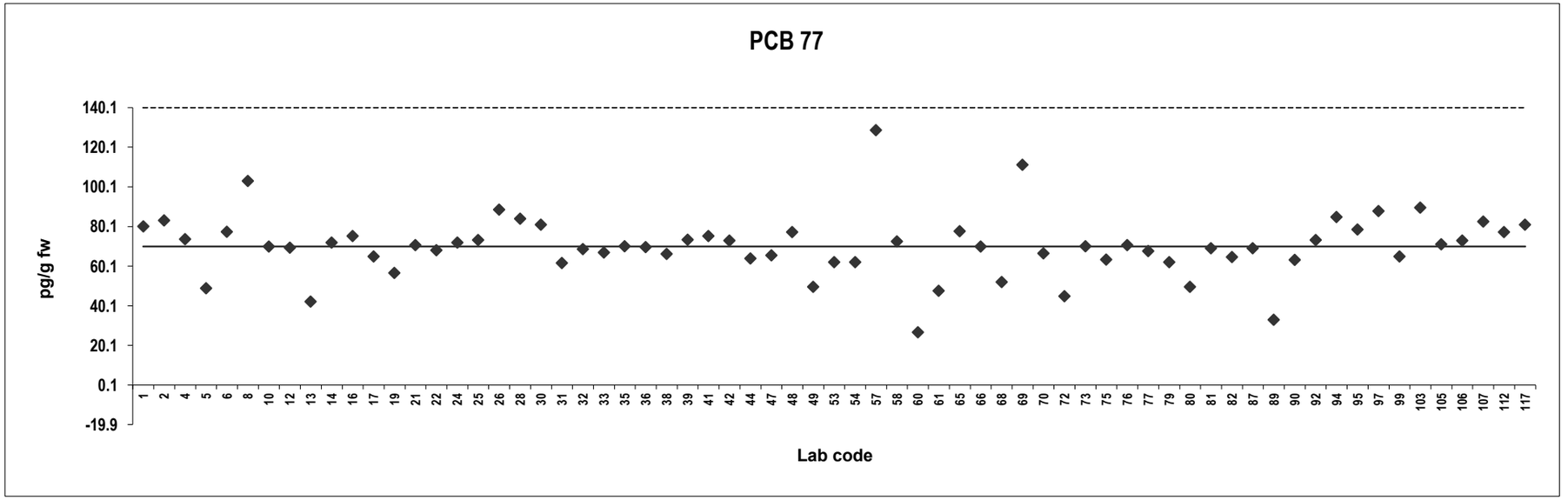
Salmon, fresh weight

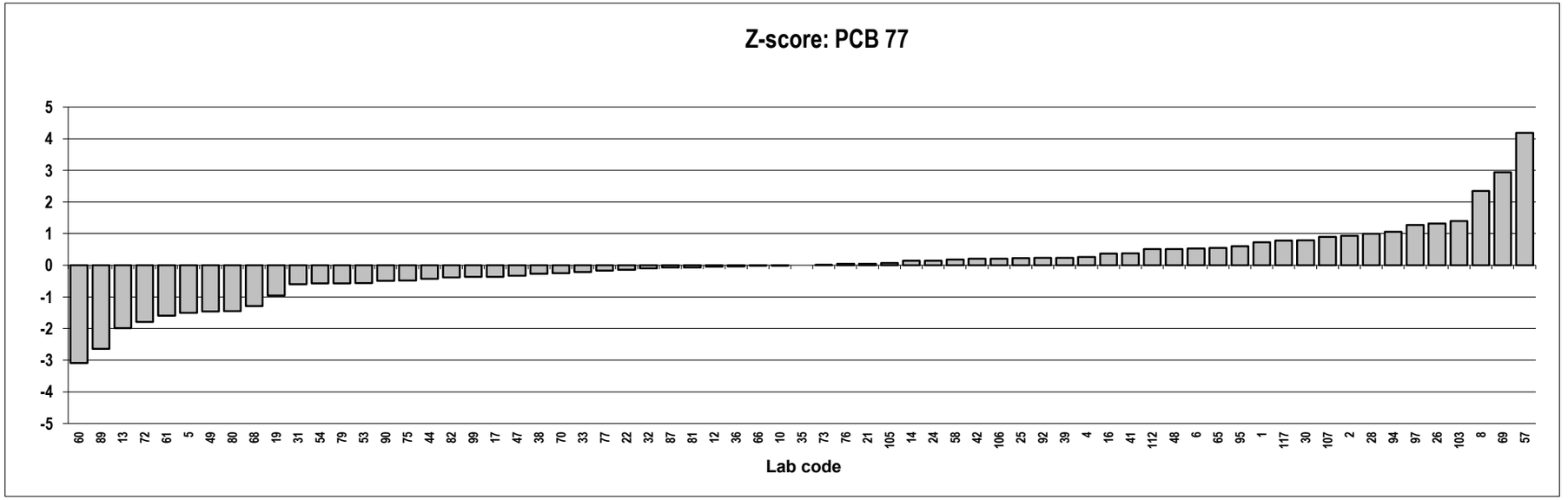
Congener: PCB 77

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	80		73	70	
2	83		75	63	
4	74		76	71	
5	49		77	68	
6	77		79	62	
8	103		80	50	
10	70		81	69	
12	69		82	65	
13	42		87	69	
14	72		89	33	
16	75		90	63	
17	65		92	73	
19	57		94	85	
21	71		95	79	
22	68		97	88	
24	72		99	65	
25	73		103	90	
26	89		105	71	
28	84		106	73	
30	81		107	83	
31	62		112	77	
32	69		117	81	
33	67				
35	70				
36	70				
38	66				
39	73				
41	75				
42	73				
44	64				
47	65				
48	77				
49	50				
53	62				
54	62				
57	129				
58	73				
60	27				
61	48				
65	78				
66	70				
68	52				
69	111				
70	67				
72	45				

Consenus statistics

Consensus median, pg/g	70
Median all values pg/g	70
Consensus mean, pg/g	70
Standard deviation, pg/g	16
Relative standard deviation, %	22
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 77
140.1
120.1
100.1
80.1
60.1
40.1
20.1
0.1
-19.9
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 13 72 61 5 49 80 68 19 31 54 79 53 90 75 44 82 99 17 47 38 70 33 77 22 32 87 81 12 36 66 10 35 73 76 21 105 14 24 58 42 106 25 92 39 4 16 41 112 48 6 65 95 1 117 30 107 2 28 94 97 26 103 8 69 57
Lab code

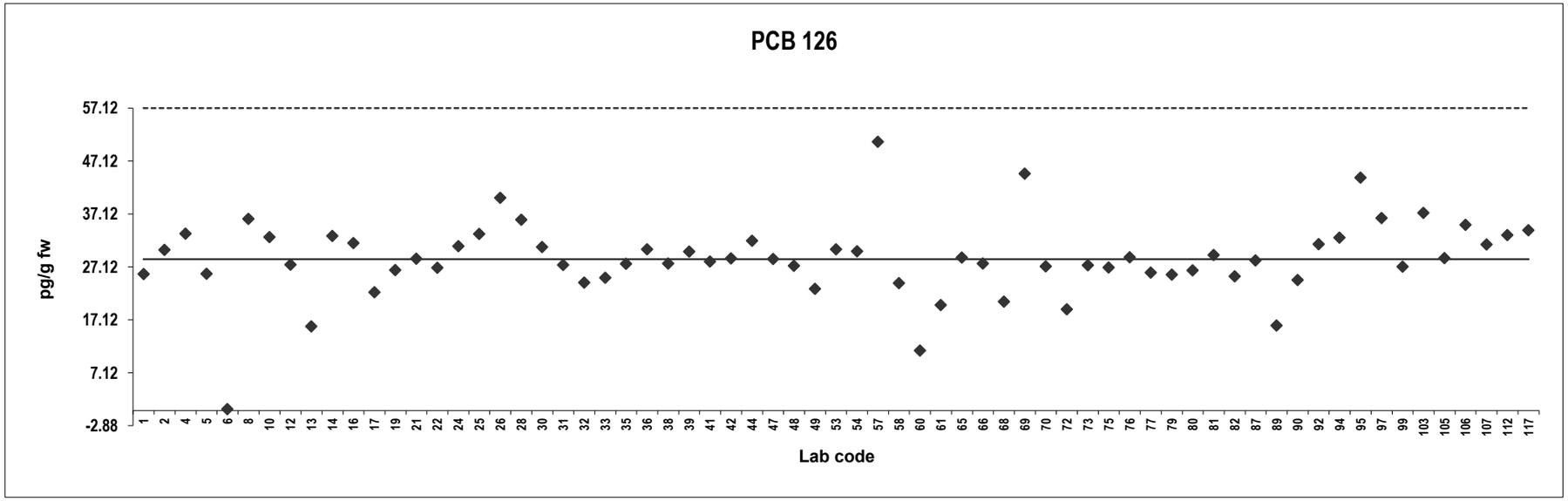
Salmon, fresh weight

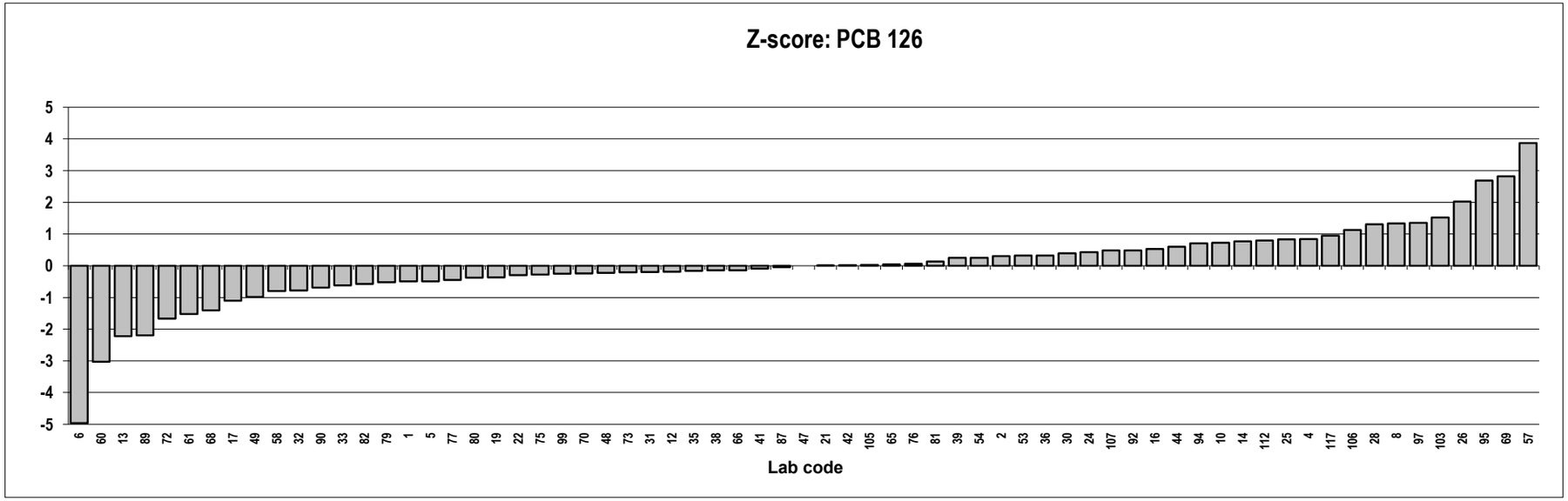
Congener: PCB 126

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	26		73	27	
2	30		75	27	
4	33		76	29	
5	26		77	26	
6	0.20	ND	79	26	
8	36		80	26	
10	33		81	29	
12	28		82	25	
13	16		87	28	
14	33		89	16	
16	32		90	25	
17	22		92	31	
19	26		94	33	
21	29		95	44	
22	27		97	36	
24	31		99	27	
25	33		103	37	
26	40		105	29	
28	36		106	35	
30	31		107	31	
31	27		112	33	
32	24		117	34	
33	25				
35	28				
36	30				
38	28				
39	30				
41	28				
42	29				
44	32				
47	29				
48	27				
49	23				
53	30				
54	30				
57	51				
58	24				
60	11				
61	20				
65	29				
66	28				
68	21				
69	45				
70	27				
72	19				

Consenus statistics

Consensus median, pg/g	29
Median all values pg/g	29
Consensus mean, pg/g	29
Standard deviation, pg/g	7.3
Relative standard deviation, %	25
No. of values reported	67
No. of values removed	0
No. of reported non-detects	1


PCB 126
57.12
47.12
37.12
27.12
17.12
7.12
-2.88
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 13 89 72 61 68 17 49 58 32 90 33 82 79 1 5 77 80 19 22 75 99 70 48 73 31 12 35 38 66 41 87 47 21 42 105 65 76 81 39 54 2 53 36 30 24 107 92 16 44 94 10 14 112 25 4 117 106 28 8 97 103 26 95 69 57
Lab code

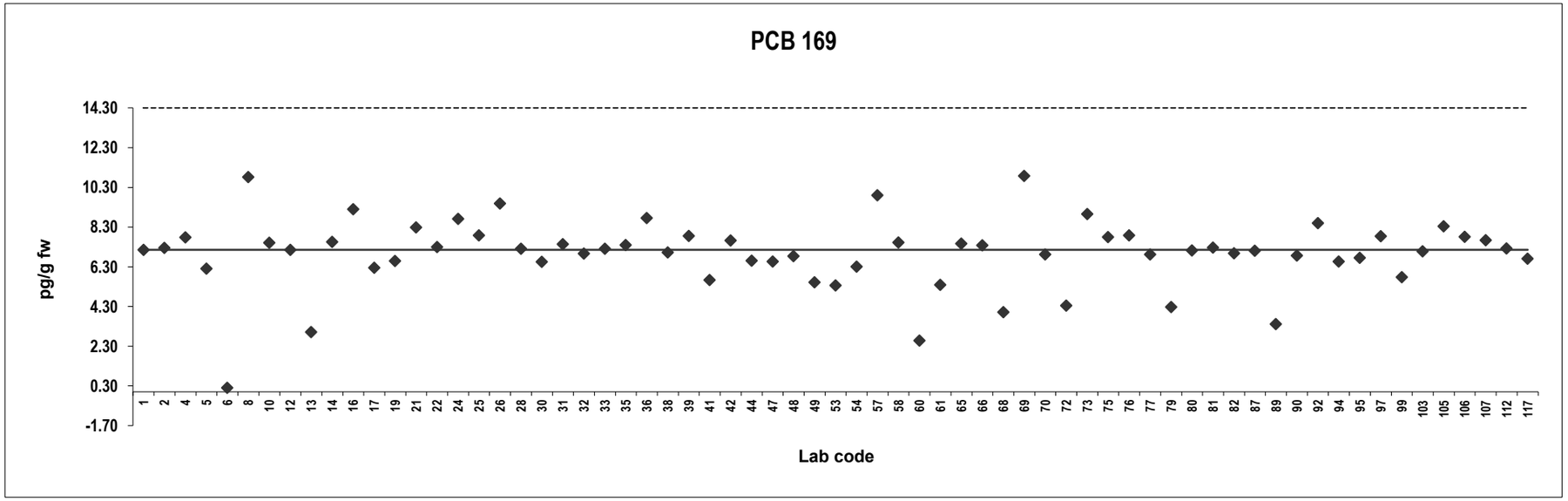
Salmon, fresh weight

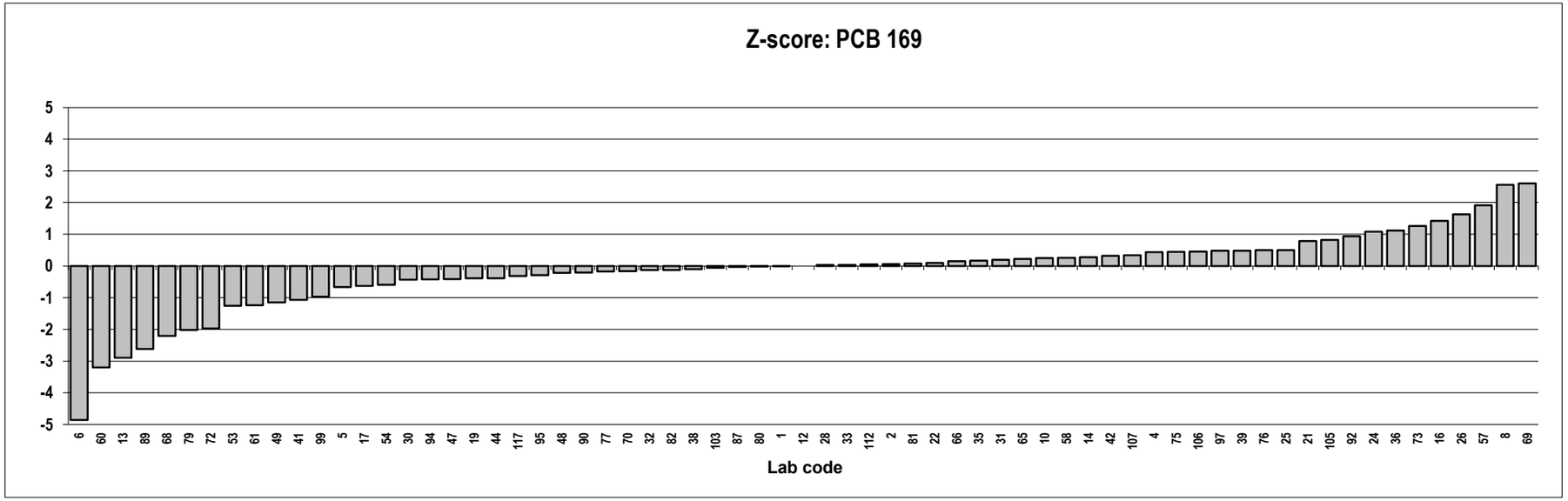
Congener: PCB 169

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	7.1		73	9.0	
2	7.2		75	7.8	
4	7.8		76	7.9	
5	6.2		77	6.9	
6	0.20	ND	79	4.3	
8	11		80	7.1	
10	7.5		81	7.3	
12	7.2		82	7.0	
13	3.0		87	7.1	
14	7.5		89	3.4	
16	9.2		90	6.9	
17	6.2		92	8.5	
19	6.6		94	6.5	
21	8.3		95	6.7	
22	7.3		97	7.8	
24	8.7		99	5.8	
25	7.9		103	7.1	
26	9.5		105	8.3	
28	7.2		106	7.8	
30	6.5		107	7.6	
31	7.4		112	7.2	
32	7.0		117	6.7	
33	7.2				
35	7.4				
36	8.8				
38	7.0				
39	7.8				
41	5.6				
42	7.6				
44	6.6				
47	6.6				
48	6.8				
49	5.5				
53	5.4				
54	6.3				
57	9.9				
58	7.5				
60	2.6				
61	5.4				
65	7.5				
66	7.4				
68	4.0				
69	11				
70	6.9				
72	4.3				

Consenus statistics

Consensus median, pg/g	7.2
Median all values pg/g	7.2
Consensus mean, pg/g	7.0
Standard deviation, pg/g	1.8
Relative standard deviation, %	25
No. of values reported	67
No. of values removed	0
No. of reported non-detects	1


PCB 169
14.30
12.30
10.30
8.30
6.30
4.30
2.30
0.30
-1.70
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 13 89 68 79 72 53 61 49 41 99 5 17 54 30 94 47 19 44 117 95 48 90 77 70 32 82 38 103 87 80 1 12 28 33 112 2 81 22 66 35 31 65 10 58 14 42 107 4 75 106 97 39 76 25 21 105 92 24 36 73 16 26 57 8 69
Lab code

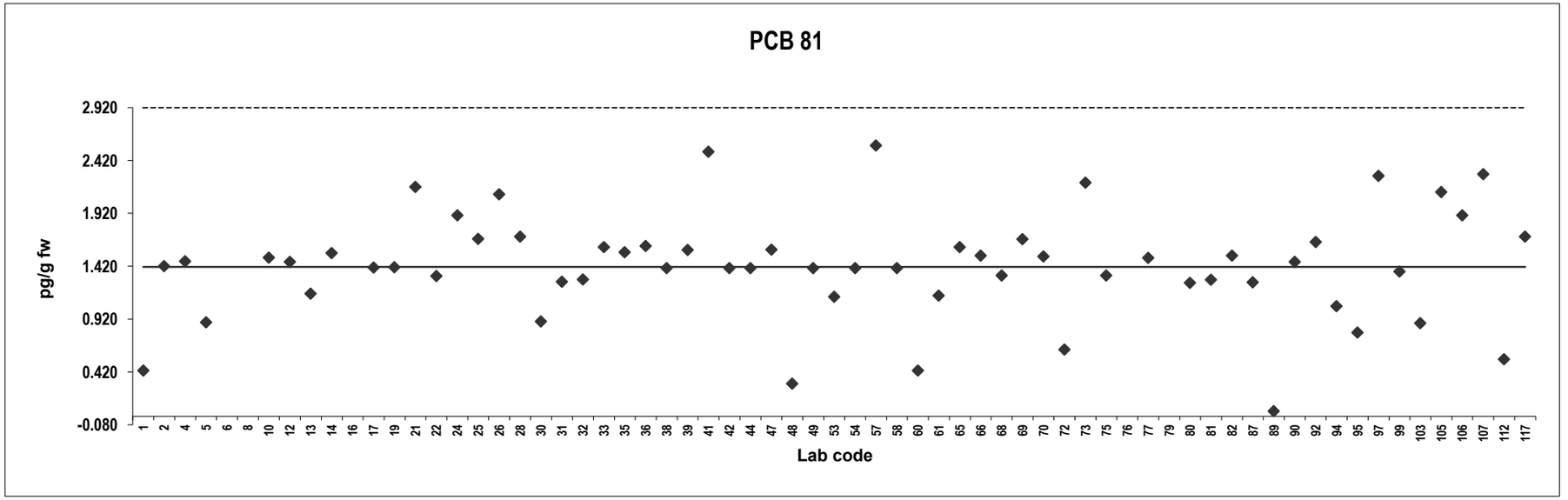
Salmon, fresh weight

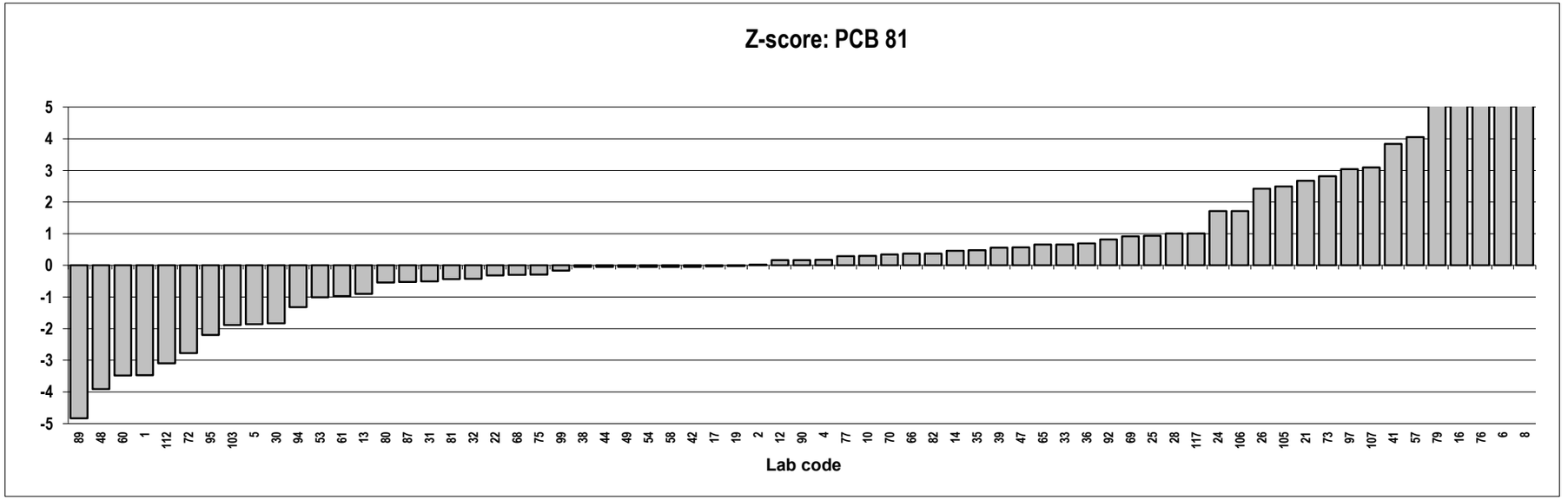
Congener: PCB 81

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.43		73	2.2	
2	1.4		75	1.3	
4	1.5		76	5.0	Outlier,ND
5	0.89		77	1.5	
6	6.4	Outlier	79	3.0	Outlier,ND
8	47	Outlier,ND	80	1.3	
10	1.5		81	1.3	
12	1.5		82	1.5	
13	1.2		87	1.3	
14	1.5		89	0.046	ND
16	3.4	Outlier	90	1.5	
17	1.4		92	1.6	
19	1.4		94	1.0	
21	2.2		95	0.79	
22	1.3		97	2.3	
24	1.9		99	1.4	
25	1.7		103	0.88	
26	2.1		105	2.1	
28	1.7		106	1.9	
30	0.90		107	2.3	
31	1.3		112	0.54	
32	1.3		117	1.7	
33	1.6				
35	1.6				
36	1.6				
38	1.4				
39	1.6				
41	2.5				
42	1.4				
44	1.4				
47	1.6				
48	0.31				
49	1.4	ND			
53	1.1				
54	1.4				
57	2.6				
58	1.4	ND			
60	0.43				
61	1.1				
65	1.6				
66	1.5				
68	1.3				
69	1.7				
70	1.5				
72	0.63				

Consenus statistics

Consensus median, pg/g	1.4
Median all values pg/g	1.5
Consensus mean, pg/g	1.4
Standard deviation, pg/g	0.50
Relative standard deviation, %	35
No. of values reported	67
No. of values removed	5
No. of reported non-detects	6


PCB 81
pg/g fw
2.920
2.420
1.920
1.420
0.920
0.420
-0.080
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 48 60 1 112 72 95 103 5 30 94 53 61 13 80 87 31 81 32 22 68 75 99 38 44 49 54 58 42 17 19 2 12 90 4 77 10 70 66 82 14 35 39 47 65 33 36 92 69 25 28 117 24 106 26 105 21 73 97 107 41 57 79 16 76 6 8
Lab code

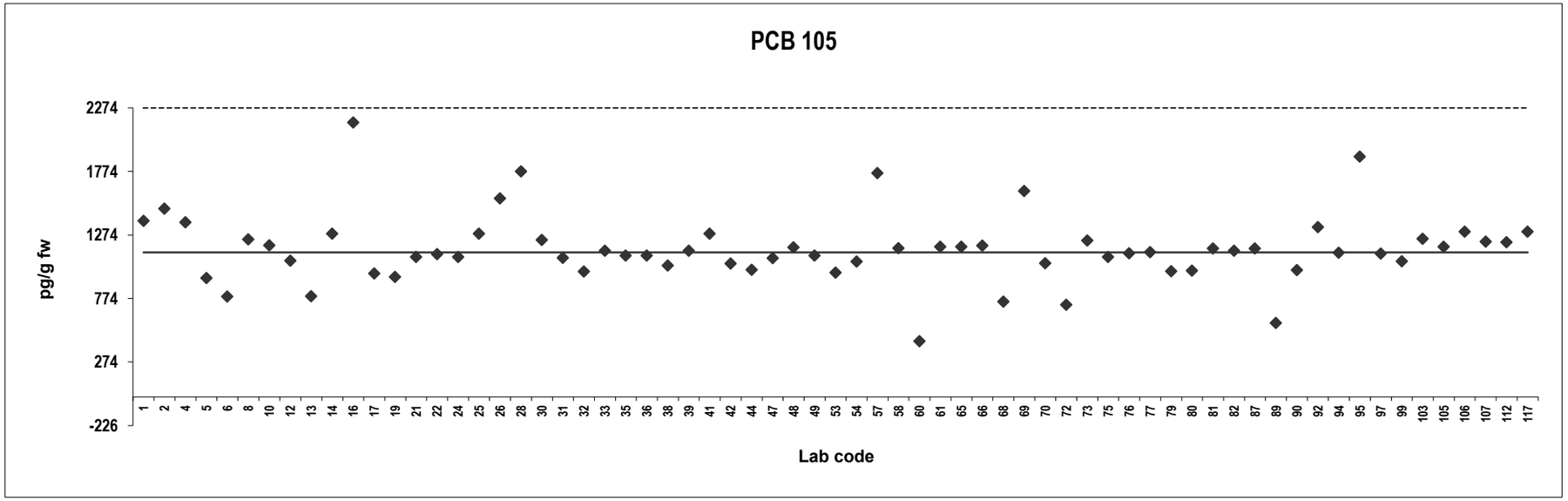
Salmon, fresh weight

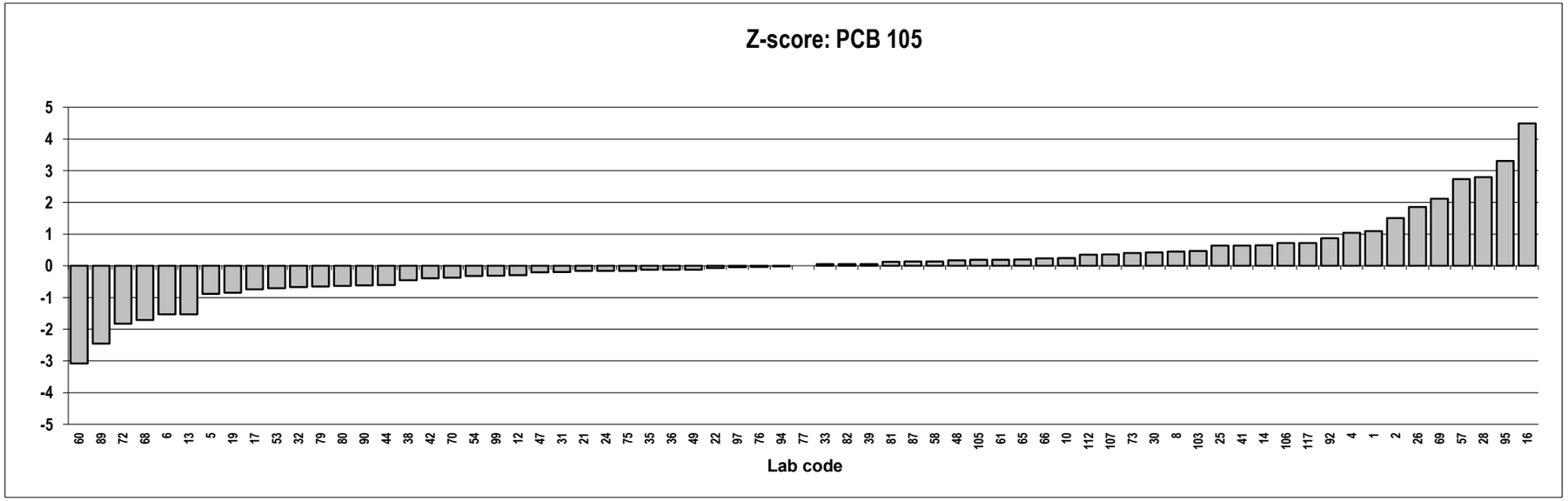
Congener: PCB 105

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1385		73	1230	
2	1480		75	1100	
4	1373		76	1130	
5	935		77	1137	
6	790		79	989	
8	1239		80	993	
10	1192		81	1166	
12	1070		82	1150	
13	790		87	1168	
14	1285		89	580	
16	2158		90	997	
17	969		92	1335	
19	944		94	1134	
21	1100		95	1890	
22	1121		97	1127	
24	1100		99	1066	
25	1283		103	1243	
26	1560		105	1180	
28	1773		106	1300	
30	1234		107	1220	
31	1093		112	1217	
32	985		117	1300	
33	1150				
35	1110				
36	1110				
38	1033				
39	1150				
41	1283				
42	1048				
44	1000				
47	1091				
48	1176				
49	1110				
53	977				
54	1065				
57	1759				
58	1169				
60	437				
61	1180				
65	1182				
66	1190				
68	749				
69	1619				
70	1051				
72	723				

Consenus statistics

Consensus median, pg/g	1137
Median all values pg/g	1137
Consensus mean, pg/g	1162
Standard deviation, pg/g	272
Relative standard deviation, %	23
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 105
2274
1774
1274
774
274
-226
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 72 68 6 13 5 19 17 53 32 79 80 90 44 38 42 70 54 99 12 47 31 21 24 75 35 36 49 22 97 76 94 77 33 82 39 81 87 58 48 105 61 65 66 10 112 107 73 30 8 103 25 41 14 106 117 92 4 1 2 26 69 57 28 95 16
Lab code

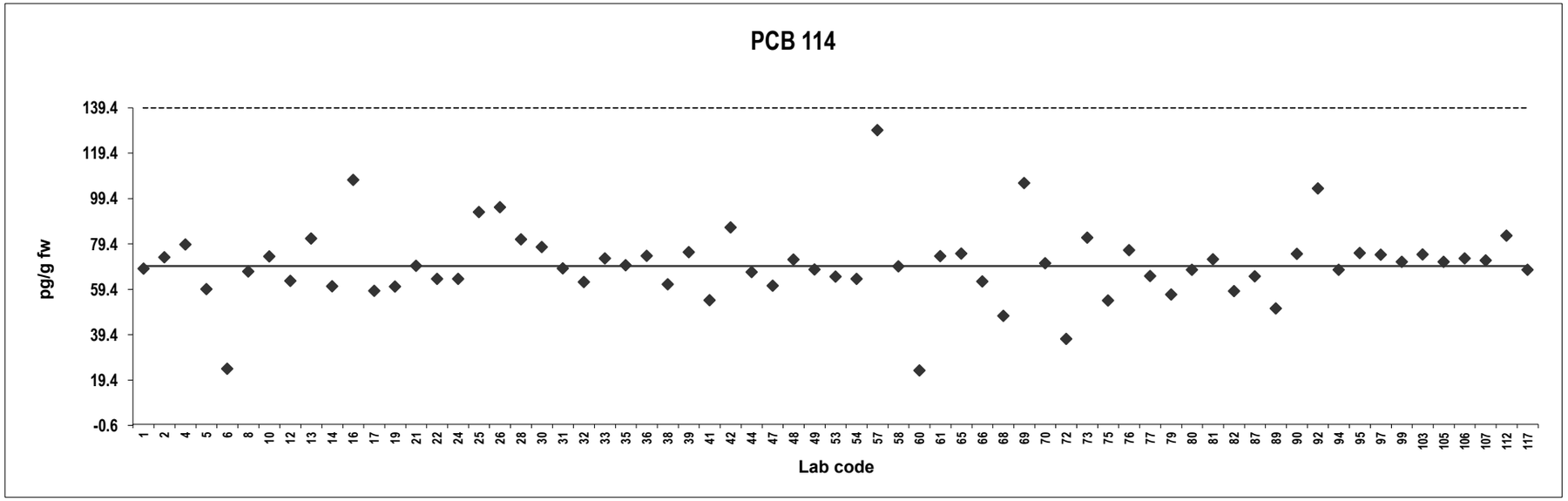
Salmon, fresh weight

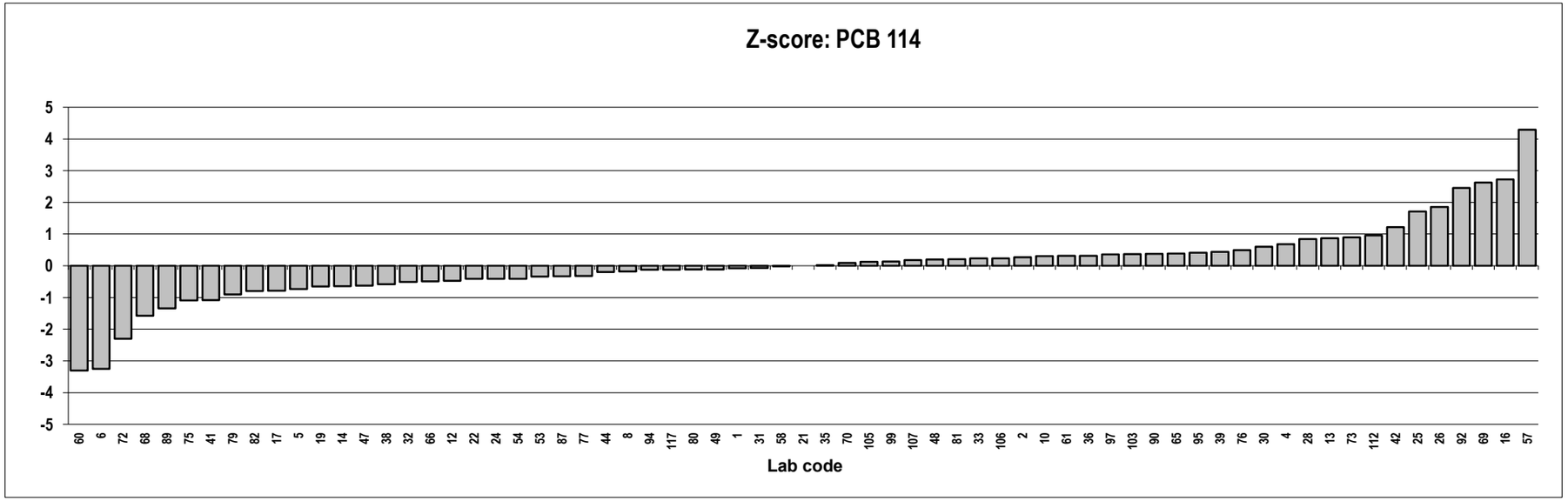
Congener: PCB 114

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	69		73	82	
2	74		75	55	
4	79		76	77	
5	59		77	65	
6	24		79	57	
8	67		80	68	
10	74		81	73	
12	63		82	59	
13	82		87	65	
14	61		89	51	
16	108		90	75	
17	59		92	104	
19	61		94	68	
21	70		95	75	
22	64		97	75	
24	64		99	72	
25	93		103	75	
26	96		105	72	
28	81		106	73	
30	78		107	72	
31	69		112	83	
32	63		117	68	
33	73				
35	70				
36	74				
38	62				
39	76				
41	55				
42	87				
44	67				
47	61				
48	72				
49	68				
53	65				
54	64				
57	130				
58	70				
60	24				
61	74				
65	75				
66	63				
68	48				
69	106				
70	71				
72	38				

Consenus statistics

Consensus median, pg/g	70
Median all values pg/g	70
Consensus mean, pg/g	70
Standard deviation, pg/g	16
Relative standard deviation, %	23
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 114
pg/g fw
139.4
119.4
99.4
79.4
59.4
39.4
19.4
-0.6
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 72 68 89 75 41 79 82 17 5 19 14 47 38 32 66 12 22 24 54 53 87 77 44 8 94 117 80 49 1 31 58 21 35 70 105 99 107 48 81 33 106 2 10 61 36 97 103 90 65 95 39 76 30 4 28 13 73 112 42 25 26 92 69 16 57
Lab code

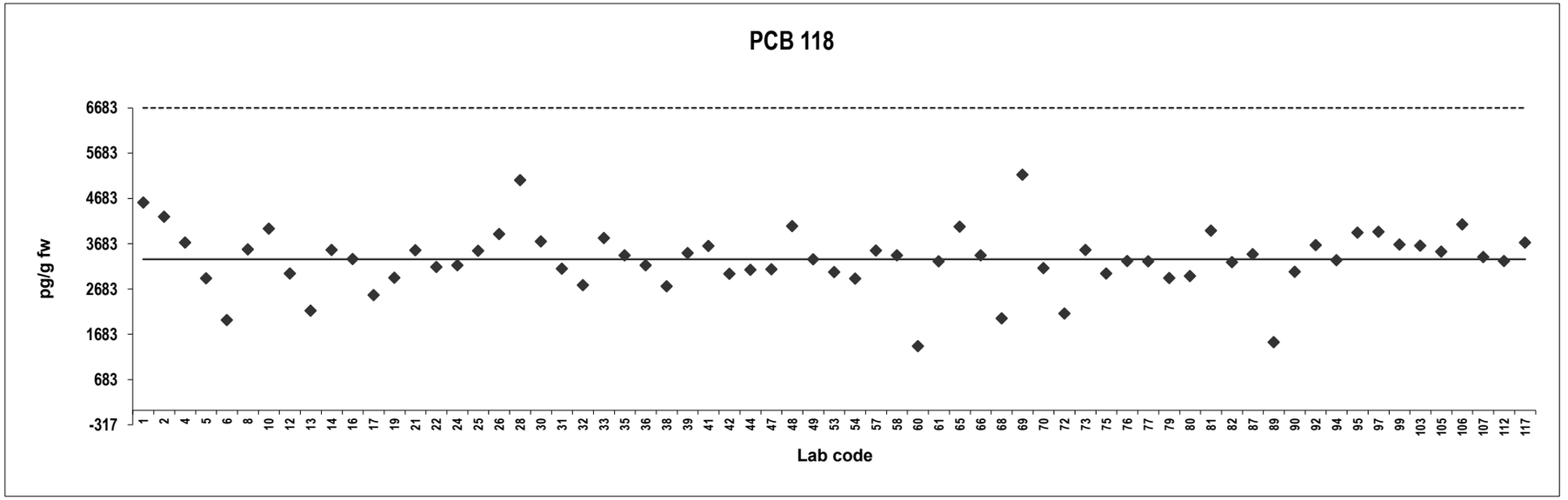
Salmon, fresh weight

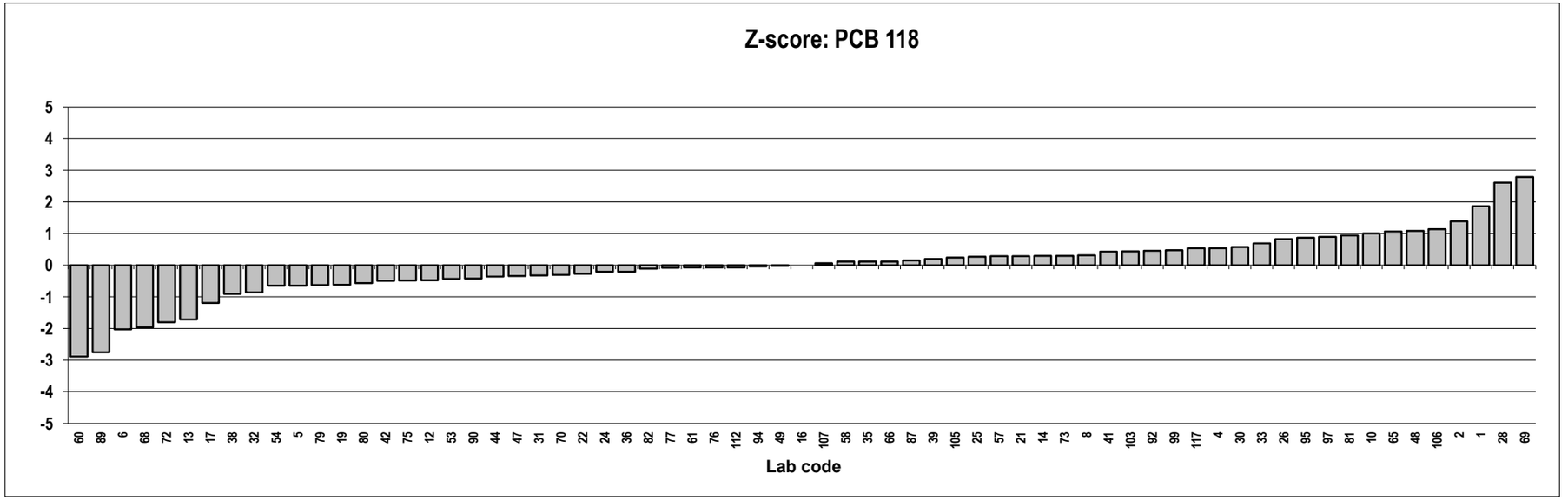
Congener: PCB 118

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	4584		73	3540	
2	4270		75	3017	
4	3702		76	3292	
5	2911		77	3288	
6	1989		79	2920	
8	3552		80	2963	
10	4012		81	3968	
12	3020		82	3270	
13	2196		87	3443	
14	3536		89	1500	
16	3341		90	3056	
17	2544		92	3646	
19	2925		94	3315	
21	3530		95	3920	
22	3161		97	3942	
24	3200		99	3655	
25	3522		103	3636	
26	3890		105	3500	
28	5081		106	4100	
30	3725		107	3380	
31	3127		112	3294	
32	2763		117	3700	
33	3800				
35	3420				
36	3200				
38	2735				
39	3472				
41	3630				
42	3011				
44	3100				
47	3114				
48	4063				
49	3330				
53	3052				
54	2909				
57	3529				
58	3419				
60	1412				
61	3291				
65	4052				
66	3421				
68	2030				
69	5200				
70	3139				
72	2138				

Consenus statistics

Consensus median, pg/g	3341
Median all values pg/g	3341
Consensus mean, pg/g	3334
Standard deviation, pg/g	674
Relative standard deviation, %	20
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 118
pg/g fw
6683
5683
4683
3683
2683
1683
683
-317
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 6 68 72 13 17 38 32 54 5 79 19 80 42 75 12 53 90 44 47 31 70 22 24 36 82 77 61 76 112 94 49 16 107 58 35 66 87 39 105 25 57 21 14 73 8 41 103 92 99 117 4 30 33 26 95 97 81 10 65 48 106 2 1 28 69
Lab code

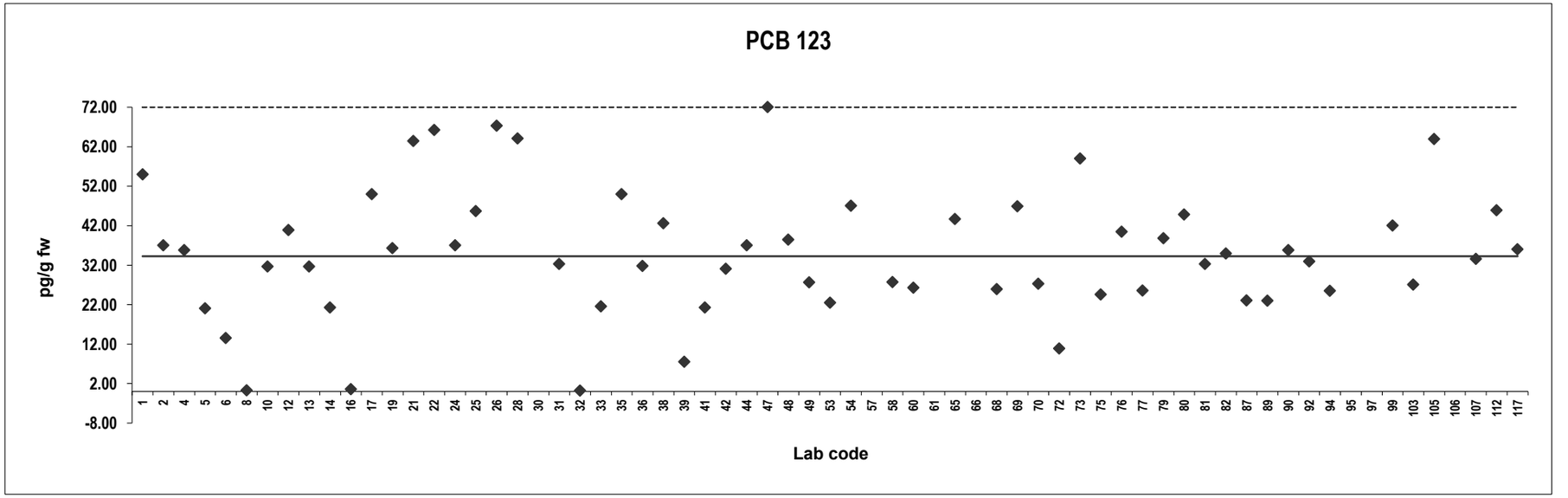
Salmon, fresh weight

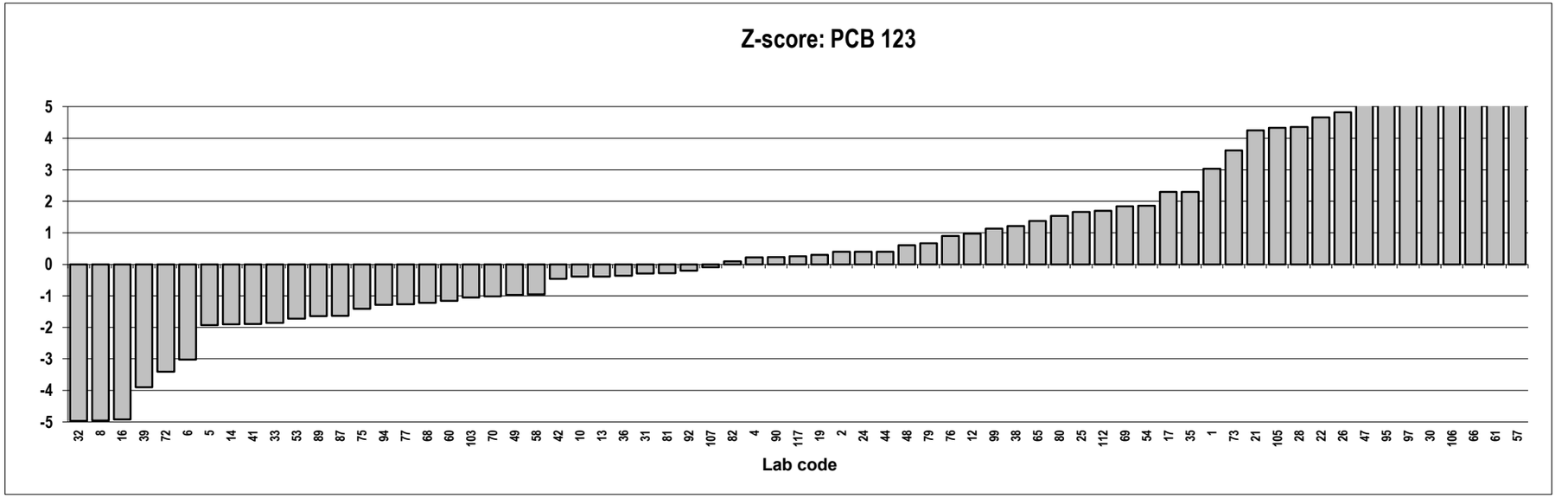
Congener: PCB 123

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	55		73	59	
2	37		75	25	
4	36		76	40	
5	21		77	26	
6	14		79	39	
8	0.27	ND	80	45	
10	32		81	32	
12	41		82	35	
13	32		87	23	
14	21		89	23	
16	0.53	ND	90	36	
17	50	ND	92	33	
19	36		94	25	
21	63		95	74	Outlier
22	66		97	85	Outlier
24	37		99	42	
25	46		103	27	
26	67		105	64	
28	64		106	92	Outlier
30	86	Outlier	107	34	
31	32		112	46	
32	0.20	ND	117	36	
33	22				
35	50				
36	32				
38	43				
39	7.5				
41	21				
42	31				
44	37				
47	72				
48	38				
49	28				
53	22				
54	47				
57	647	Outlier			
58	28				
60	26				
61	529	Outlier			
65	44				
66	123	Outlier			
68	26				
69	47				
70	27				
72	11				

Consenus statistics

Consensus median, pg/g	34
Median all values pg/g	36
Consensus mean, pg/g	35
Standard deviation, pg/g	16
Relative standard deviation, %	46
No. of values reported	67
No. of values removed	7
No. of reported non-detects	4


PCB 123
72.00
62.00
52.00
42.00
32.00
22.00
12.00
2.00
-8.00
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
32 8 16 39 72 6 5 14 41 33 53 89 87 75 94 77 68 60 103 70 49 58 42 10 13 36 31 81 92 107 82 4 90 117 19 2 24 44 48 79 76 12 99 38 65 80 25 112 69 54 17 35 1 73 21 105 28 22 26 47 95 97 30 106 66 61 57
Lab code

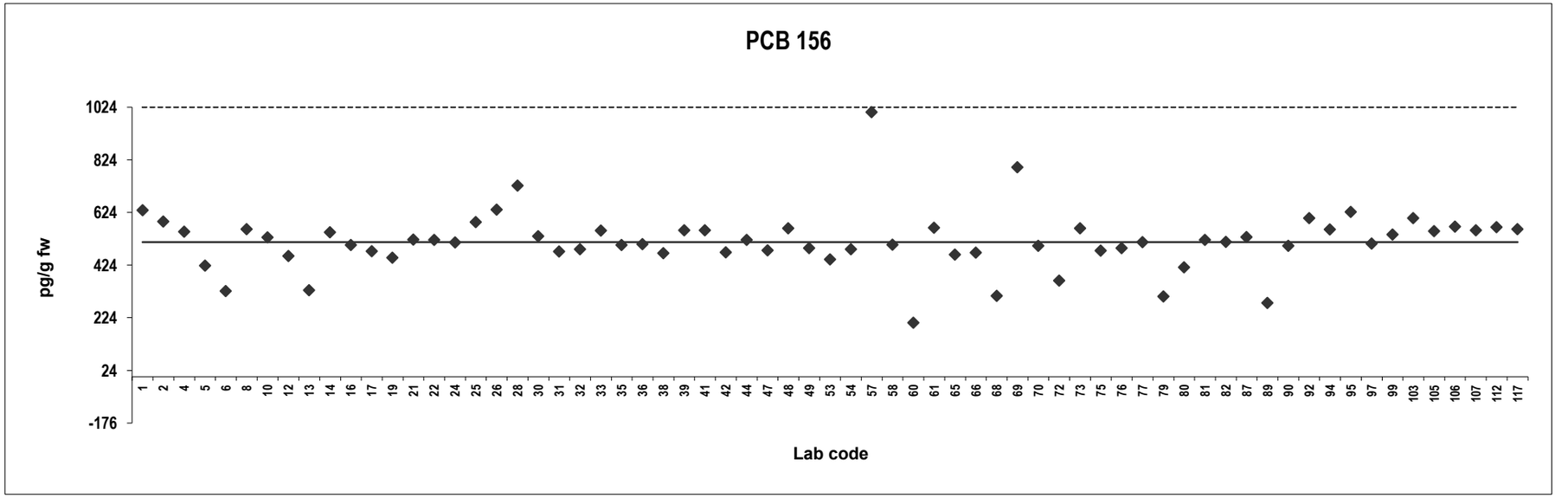
Salmon, fresh weight

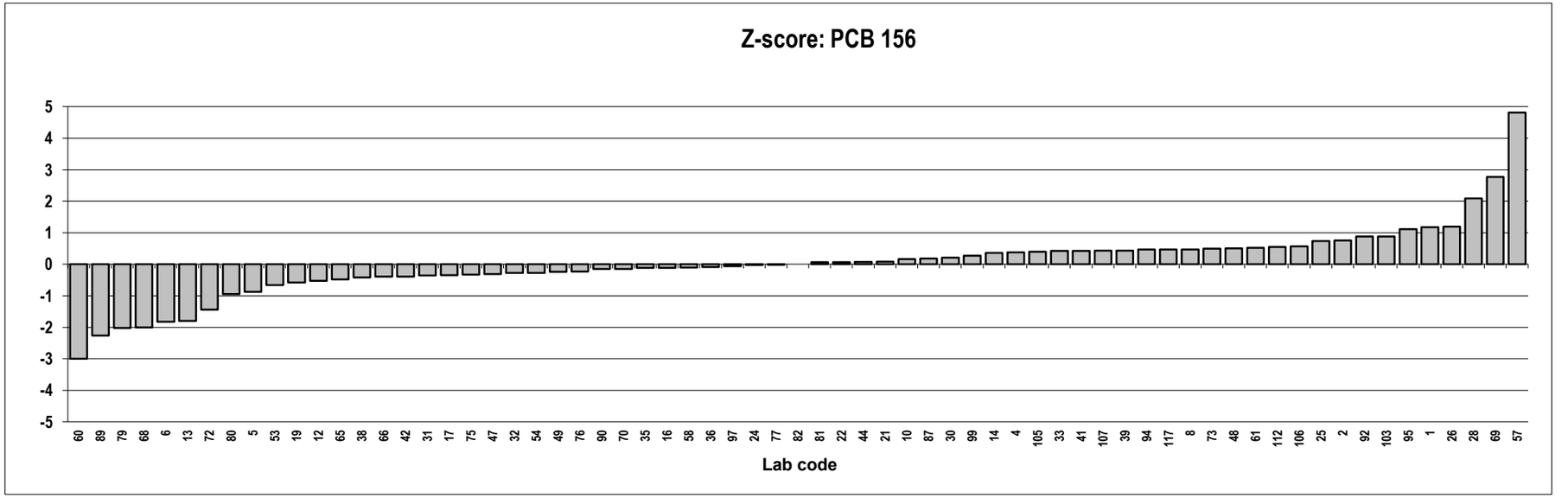
Congener: PCB 156

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	632		73	563	
2	589		75	478	
4	551		76	488	
5	422		77	511	
6	325		79	305	
8	560		80	415	
10	529		81	519	
12	458		82	512	
13	328		87	531	
14	549		89	280	
16	501		90	497	
17	476		92	602	
19	452		94	560	
21	521		95	626	
22	519		97	505	
24	510		99	540	
25	587		103	602	
26	634		105	553	
28	726		106	570	
30	533		107	556	
31	476		112	568	
32	484		117	560	
33	555				
35	500				
36	503				
38	469				
39	556				
41	556				
42	472				
44	520				
47	480				
48	563				
49	488				
53	445				
54	484				
57	1005				
58	501				
60	205				
61	566				
65	463				
66	472				
68	307				
69	796				
70	497				
72	365				

Consenus statistics

Consensus median, pg/g	512
Median all values pg/g	512
Consensus mean, pg/g	515
Standard deviation, pg/g	113
Relative standard deviation, %	22
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 156
pg/g fw
1024
824
624
424
224
24
-176
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 79 68 6 13 72 80 5 53 19 12 65 38 66 42 31 17 75 47 32 54 49 76 90 70 35 16 58 36 97 24 77 82 81 22 44 21 10 87 30 99 14 4 105 33 41 107 39 94 117 8 73 48 61 112 106 25 2 92 103 95 1 26 28 69 57
Lab code

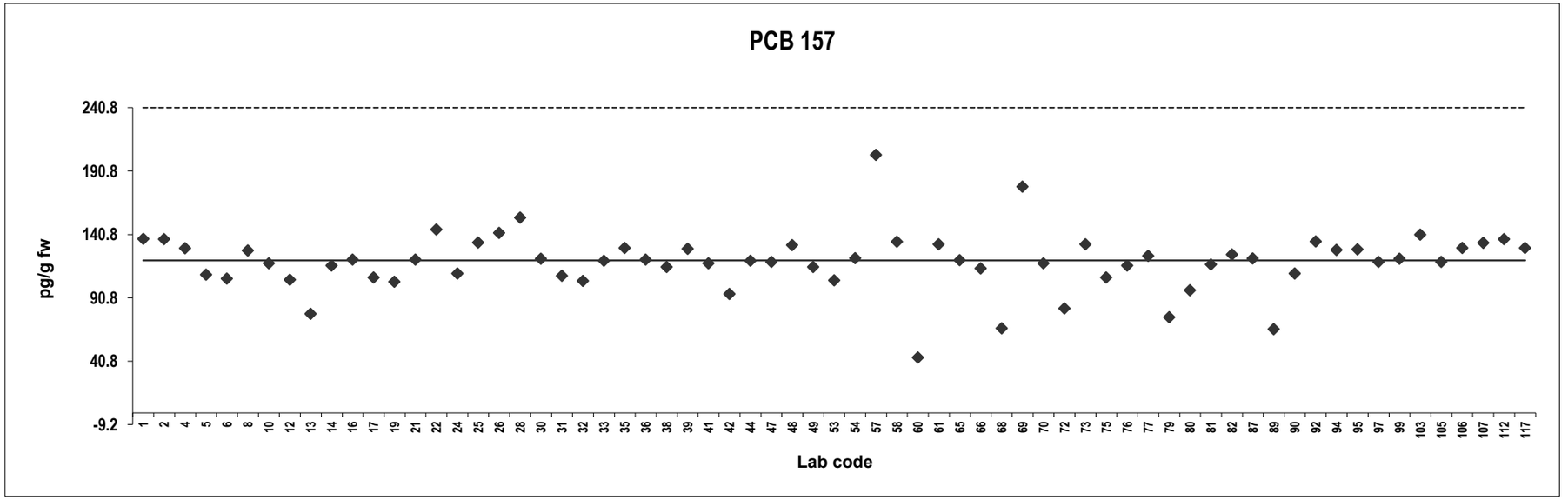
Salmon, fresh weight

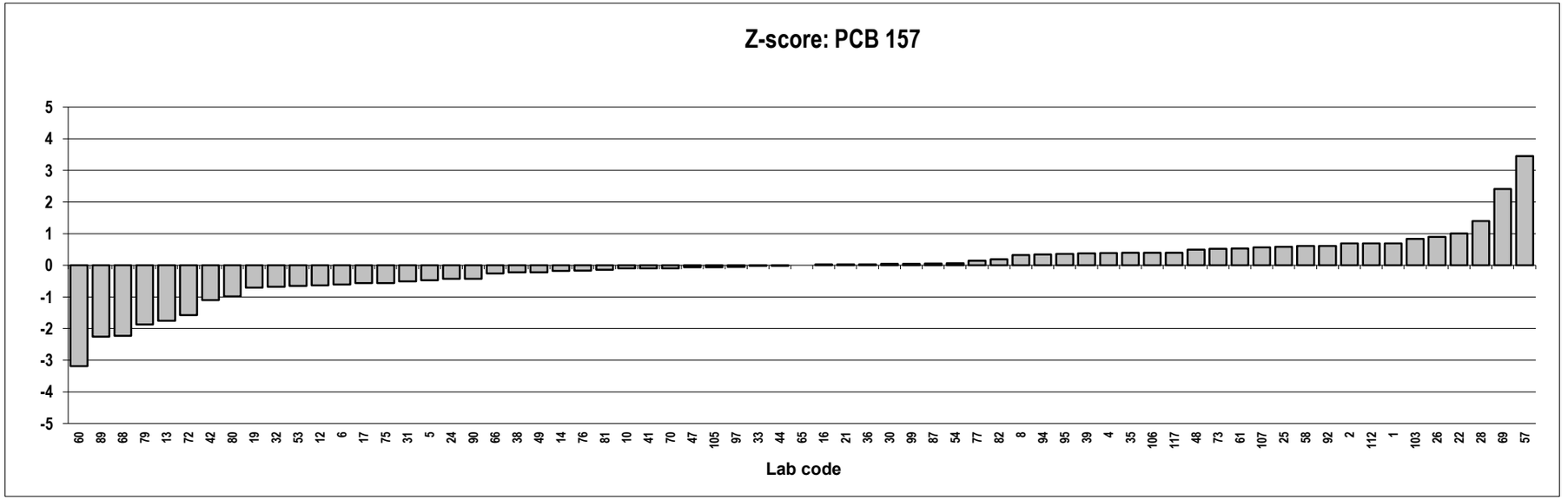
Congener: PCB 157

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	137		73	133	
2	137		75	107	
4	130		76	116	
5	109		77	124	
6	106		79	75	
8	128		80	97	
10	118		81	117	
12	105		82	125	
13	78		87	122	
14	116		89	66	
16	121		90	110	
17	107		92	135	
19	103		94	129	
21	121		95	129	
22	145		97	119	
24	110		99	122	
25	134		103	141	
26	142		105	119	
28	154		106	130	
30	121		107	134	
31	108		112	137	
32	104		117	130	
33	120				
35	130				
36	121				
38	115				
39	129				
41	118				
42	94				
44	120				
47	119				
48	132				
49	115				
53	105				
54	122				
57	203				
58	135				
60	44				
61	133				
65	120				
66	114				
68	67				
69	178				
70	118				
72	82				

Consenus statistics

Consensus median, pg/g	120
Median all values pg/g	120
Consensus mean, pg/g	119
Standard deviation, pg/g	23
Relative standard deviation, %	20
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 157
240.8
190.8
140.8
90.8
40.8
-9.2
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 68 79 13 72 42 80 19 32 53 12 6 17 75 31 5 24 90 66 38 49 14 76 81 10 41 70 47 105 97 33 44 65 16 21 36 30 99 87 54 77 82 8 94 95 39 4 35 106 117 48 73 61 107 25 58 92 2 112 1 103 26 22 28 69 57
Lab code

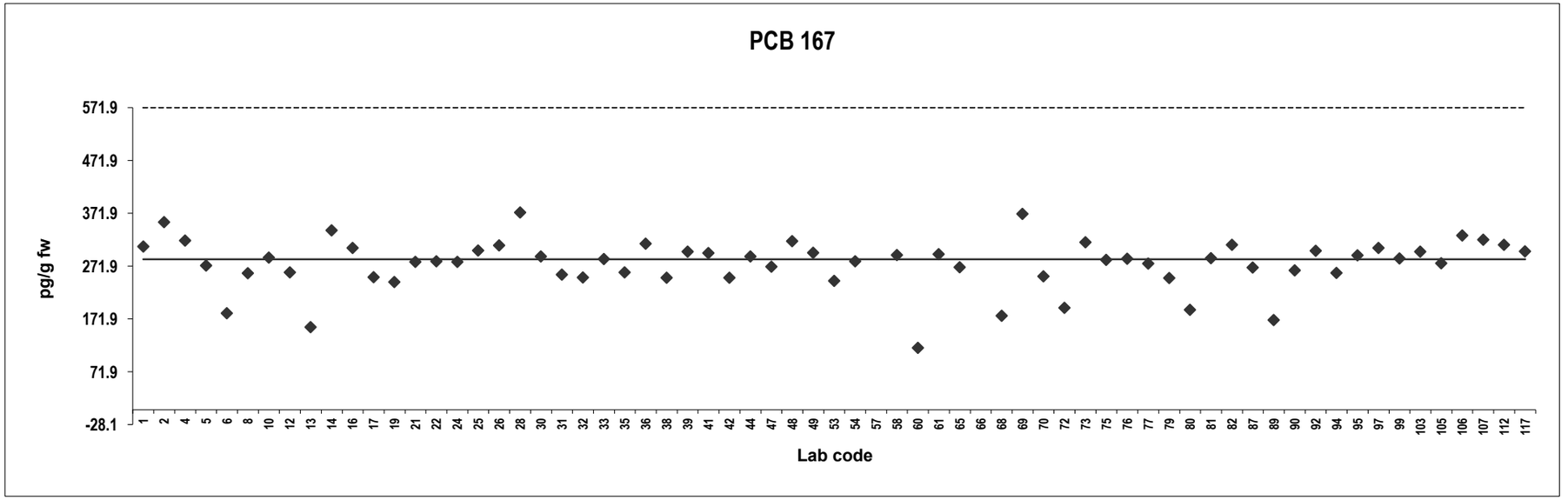
Salmon, fresh weight

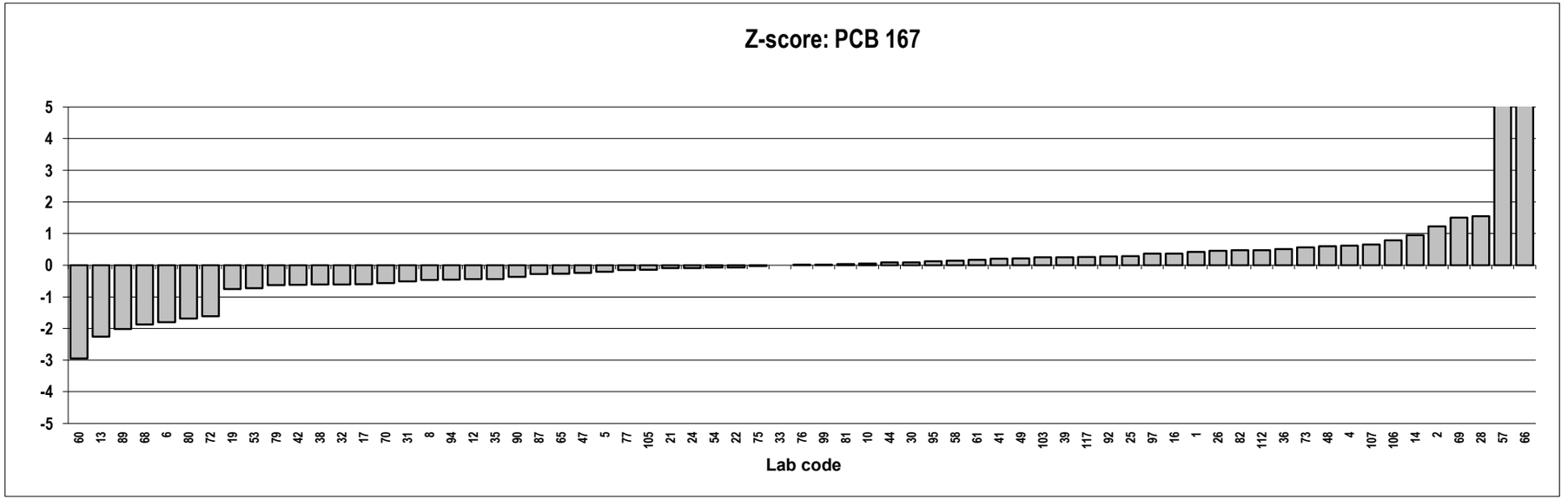
Congener: PCB 167

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	309		73	317	
2	355		75	283	
4	320		76	286	
5	273		77	276	
6	182		79	249	
8	258		80	189	
10	288		81	287	
12	260		82	312	
13	157		87	269	
14	339		89	170	
16	306		90	264	
17	251		92	301	
19	242		94	259	
21	280		95	292	
22	281		97	306	
24	280		99	286	
25	301		103	299	
26	311		105	277	
28	373		106	330	
30	290		107	322	
31	256		112	312	
32	250		117	300	
33	285				
35	260				
36	314				
38	250				
39	299				
41	297				
42	250				
44	290				
47	271				
48	319				
49	297				
53	244				
54	281				
57	602	Outlier			
58	293				
60	117				
61	295				
65	269				
66	1157	Outlier			
68	178				
69	371				
70	253				
72	193				

Consenus statistics

Consensus median, pg/g	285
Median all values pg/g	286
Consensus mean, pg/g	277
Standard deviation, pg/g	48
Relative standard deviation, %	17
No. of values reported	67
No. of values removed	2
No. of reported non-detects	0


PCB 167
571.9
471.9
371.9
271.9
171.9
71.9
-28.1
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 13 89 68 6 80 72 19 53 79 42 38 32 17 70 31 8 94 12 35 90 87 65 47 5 77 105 21 24 54 22 75 33 76 99 81 10 44 30 95 58 61 41 49 103 39 117 92 25 97 16 1 26 82 112 36 73 48 4 107 106 14 2 69 28 57 66
Lab code

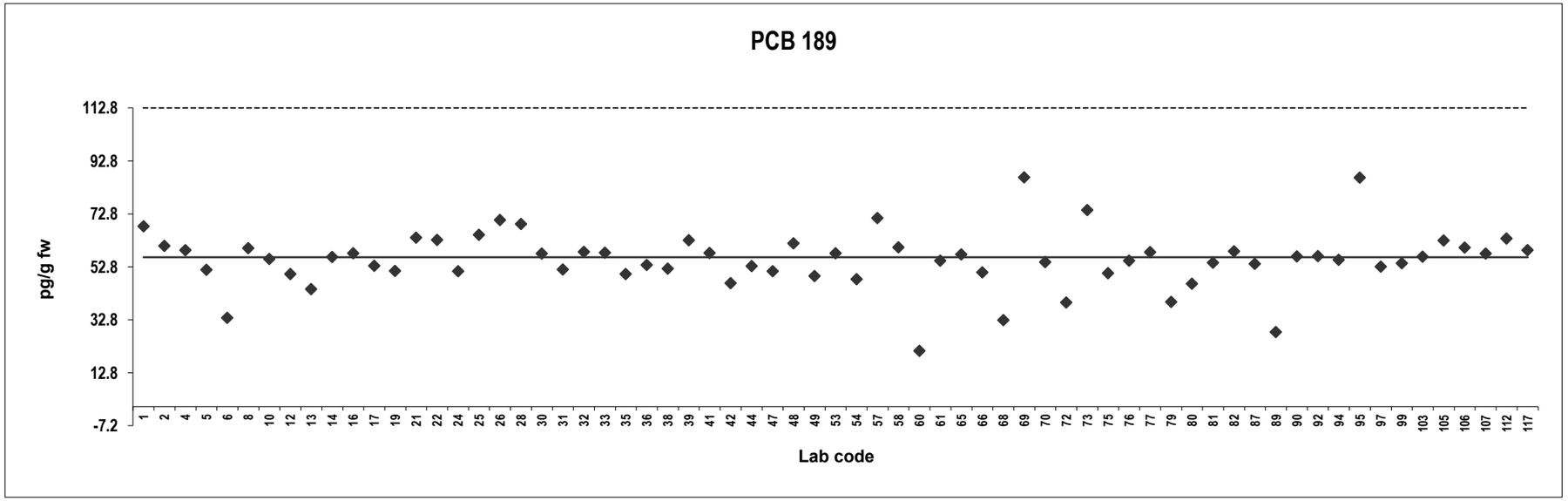
Salmon, fresh weight

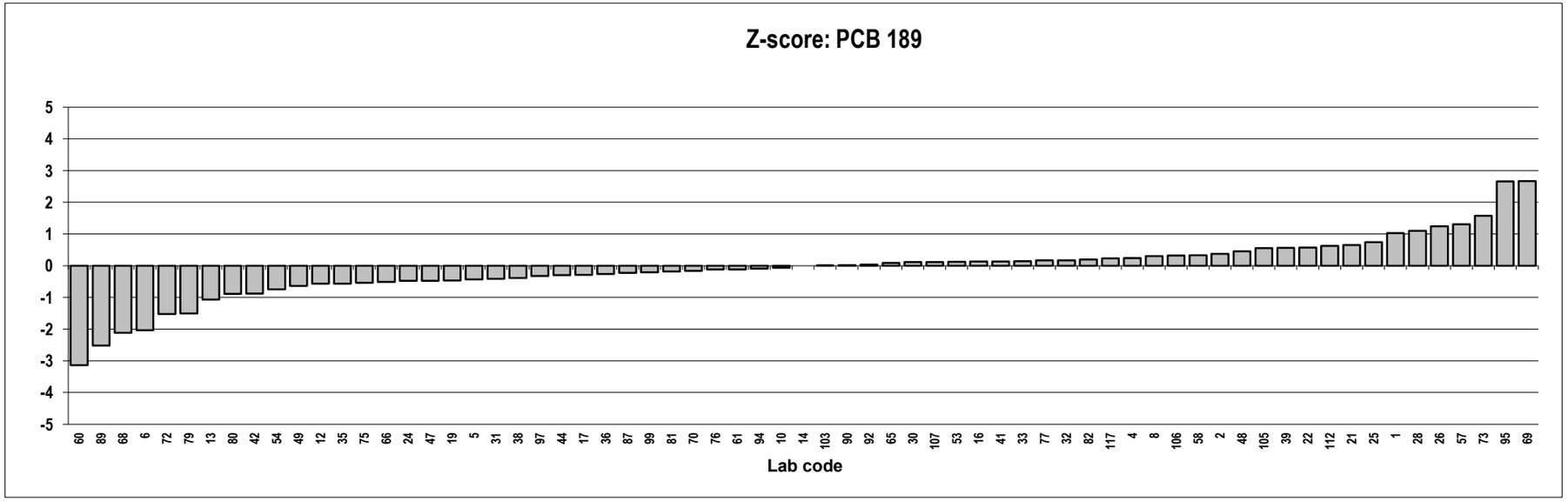
Congener: PCB 189

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	68		73	74	
2	61		75	50	
4	59		76	55	
5	52		77	58	
6	33		79	39	
8	60		80	46	
10	56		81	54	
12	50		82	59	
13	44		87	54	
14	56		89	28	
16	58		90	57	
17	53		92	57	
19	51		94	55	
21	64		95	86	
22	63		97	53	
24	51		99	54	
25	65		103	57	
26	70		105	63	
28	69		106	60	
30	58		107	58	
31	52		112	63	
32	58		117	59	
33	58				
35	50				
36	53				
38	52				
39	63				
41	58				
42	46				
44	53				
47	51				
48	62				
49	49				
53	58				
54	48				
57	71				
58	60				
60	21				
61	55				
65	57				
66	51				
68	33				
69	86				
70	55				
72	39				

Consenus statistics

Consensus median, pg/g	56
Median all values pg/g	56
Consensus mean, pg/g	55
Standard deviation, pg/g	11
Relative standard deviation, %	20
No. of values reported	67
No. of values removed	0
No. of reported non-detects	0


PCB 189
112.8
92.8
72.8
52.8
32.8
12.8
-7.2
pg/g fw
1 2 4 5 6 8 10 12 13 14 16 17 19 21 22 24 25 26 28 30 31 32 33 35 36 38 39 41 42 44 47 48 49 53 54 57 58 60 61 65 66 68 69 70 72 73 75 76 77 79 80 81 82 87 89 90 92 94 95 97 99 103 105 106 107 112 117
Lab code


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 89 68 6 72 79 13 80 42 54 49 12 35 75 66 24 47 19 5 31 38 97 44 17 36 87 99 81 70 76 61 94 10 14 103 90 92 65 30 107 53 16 41 33 77 32 82 117 4 8 106 58 2 48 105 39 22 112 21 25 1 28 26 57 73 95 69
Lab code

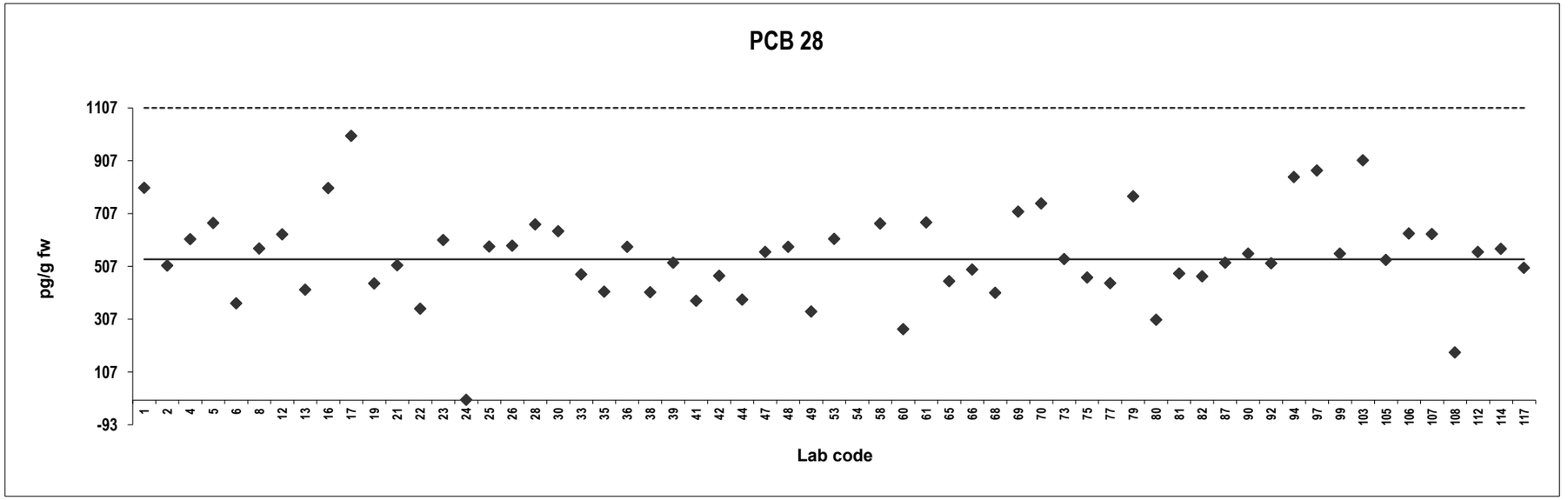
Salmon, fresh weight

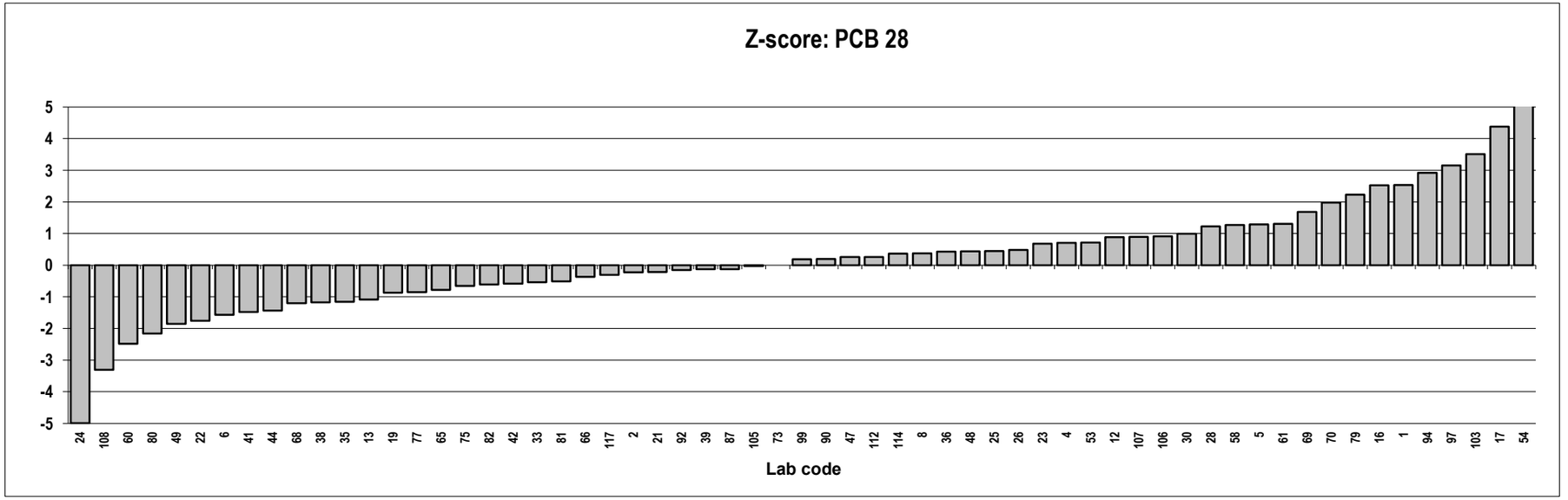
Congener: PCB 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	803		81	478	
2	509		82	468	
4	608		87	519	
5	670		90	554	
6	366		92	517	
8	573		94	844	
12	627		97	869	
13	417		99	553	
16	802		103	907	
17	1000	ND	105	530	
19	440		106	630	
21	510		107	628	
22	345		108	180	
23	605		112	560	
24	0.52		114	572	
25	581		117	500	
26	584				
28	664				
30	639				
33	475				
35	410				
36	579				
38	408				
39	519				
41	376				
42	470				
44	380				
47	560				
48	579				
49	335				
53	610				
54	5019	Outlier			
58	668				
60	268				
61	672				
65	450				
66	494				
68	405				
69	712				
70	744				
73	533				
75	463				
77	442				
79	771				
80	303				

Consenus statistics

Consensus median, pg/g	533
Median all values pg/g	553
Consensus mean, pg/g	545
Standard deviation, pg/g	173
Relative standard deviation, %	32
No. of values reported	61
No. of values removed	1
No. of reported non-detects	1


PCB 28
pg/g fw
1107
907
707
507
307
107
-93
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 108 60 80 49 22 6 41 44 68 38 35 13 19 77 65 75 82 42 33 81 66 117 2 21 92 39 87 105 73 99 90 47 112 114 8 36 48 25 26 23 4 53 12 107 106 30 28 58 5 61 69 70 79 16 1 94 97 103 17 54
Lab code

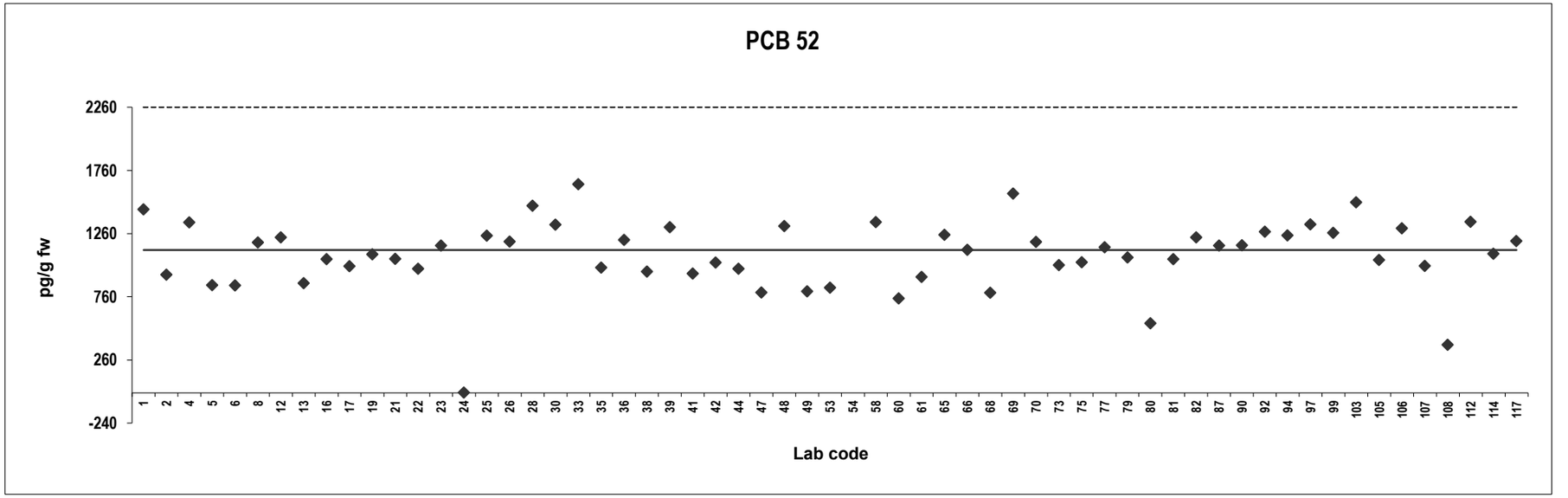
Salmon, fresh weight

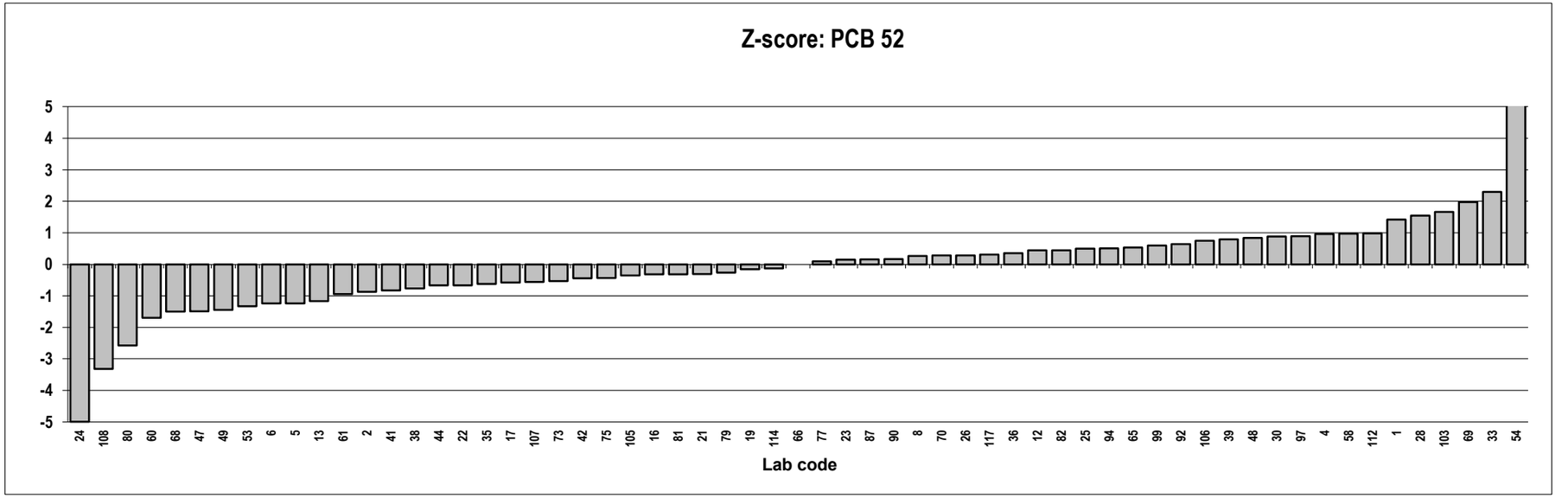
Congener: PCB 52

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1452		81	1058	
2	933		82	1230	
4	1348		87	1165	
5	850		90	1167	
6	850		92	1275	
8	1189		94	1245	
12	1230		97	1332	
13	867		99	1265	
16	1058		103	1507	
17	1000	ND	105	1050	
19	1095		106	1300	
21	1060		107	1003	
22	980		108	380	
23	1164		112	1353	
24	1.2		114	1100	
25	1243		117	1200	
26	1195				
28	1480				
30	1330				
33	1650				
35	990				
36	1210				
38	958				
39	1310				
41	944				
42	1030				
44	980				
47	794				
48	1319				
49	803				
53	830				
54	26623	Outlier			
58	1350				
60	746				
61	917				
65	1250				
66	1130				
68	791				
69	1576				
70	1194				
73	1010				
75	1033				
77	1151				
79	1070				
80	548				

Consenus statistics

Consensus median, pg/g	1130
Median all values pg/g	1130
Consensus mean, pg/g	1092
Standard deviation, pg/g	276
Relative standard deviation, %	25
No. of values reported	61
No. of values removed	1
No. of reported non-detects	1


PCB 52
2260
1760
1260
760
260
-240
pg/g fw
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 108 80 60 68 47 49 53 6 5 13 61 2 41 38 44 22 35 17 107 73 42 75 105 16 81 21 79 19 114 66 77 23 87 90 8 70 26 117 36 12 82 25 94 65 99 92 106 39 48 30 97 4 58 112 1 28 103 69 33 54
Lab code

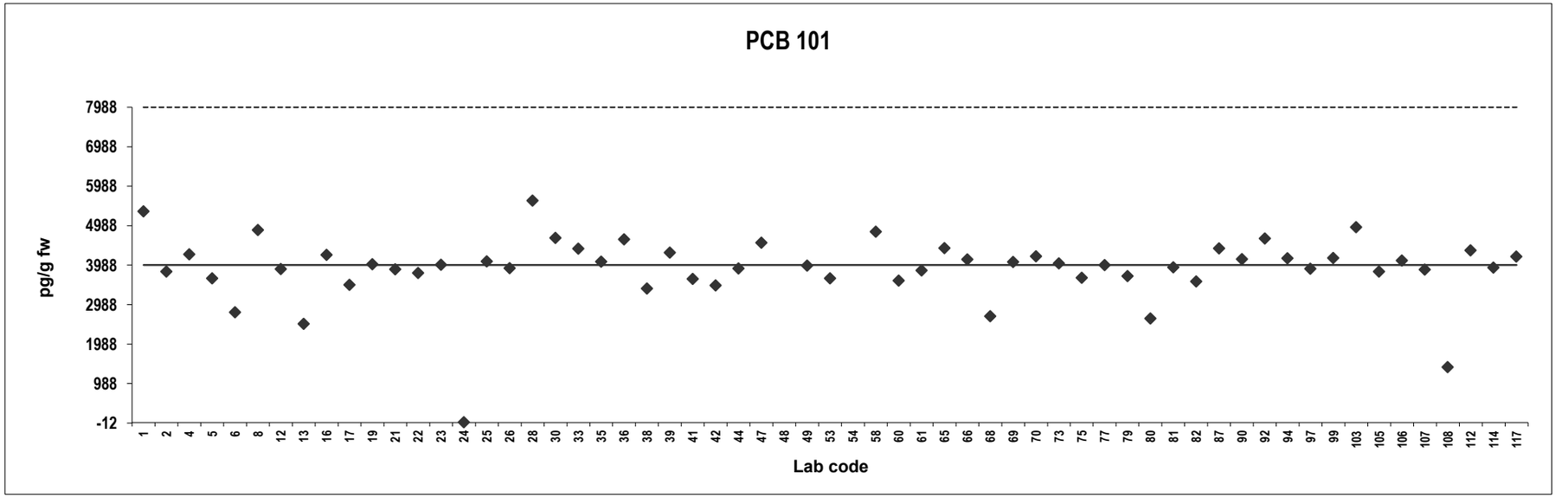
Salmon, fresh weight

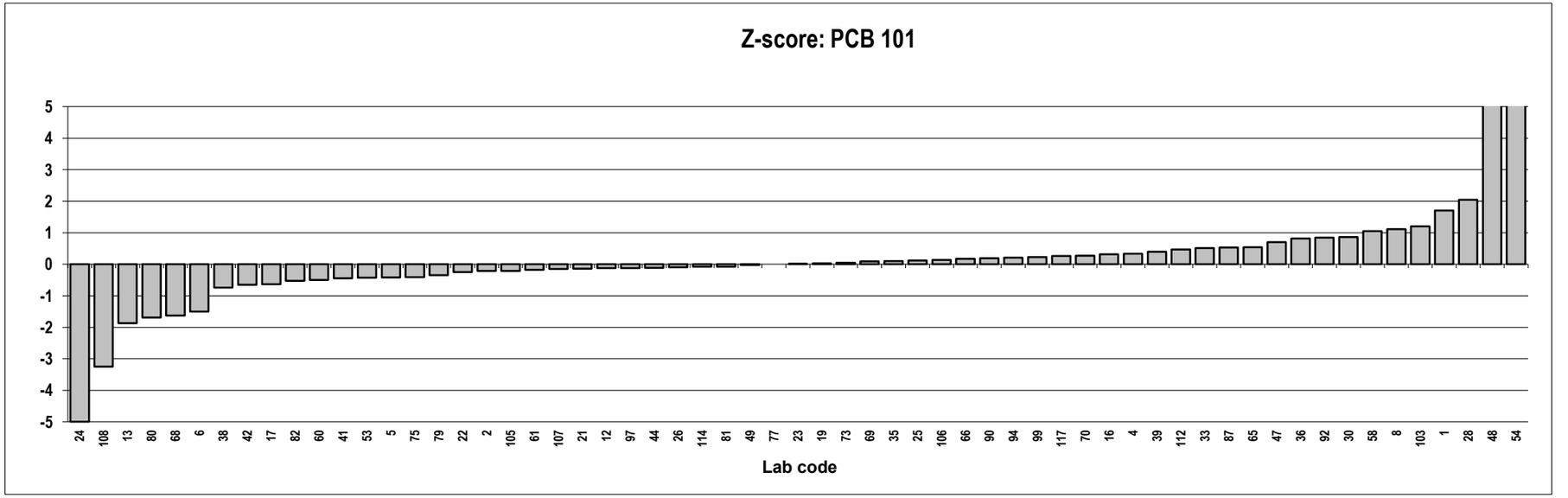
Congener: PCB 101

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	5349		81	3928	
2	3820		82	3570	
4	4258		87	4410	
5	3654		90	4139	
6	2792		92	4663	
8	4878		94	4159	
12	3890		97	3894	
13	2497		99	4166	
16	4243		103	4948	
17	3486		105	3820	
19	4012		106	4100	
21	3880		107	3873	
22	3789		108	1400	
23	3994		112	4362	
24	4.1		114	3926	
25	4084		117	4200	
26	3909				
28	5623				
30	4677				
33	4400				
35	4070				
36	4640				
38	3396				
39	4304				
41	3633				
42	3473				
44	3900				
47	4550				
48	17311	Outlier			
49	3970				
53	3651				
54	2396066	Outlier			
58	4830				
60	3593				
61	3848				
65	4420				
66	4127				
68	2690				
69	4064				
70	4207				
73	4030				
75	3664				
77	3989				
79	3710				
80	2637				

Consenus statistics

Consensus median, pg/g	3989
Median all values pg/g	3994
Consensus mean, pg/g	3902
Standard deviation, pg/g	840
Relative standard deviation, %	22
No. of values reported	61
No. of values removed	2
No. of reported non-detects	0


PCB 101
7988
6988
5988
4988
3988
2988
1988
988
-12
pg/g fw
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 108 13 80 68 6 38 42 17 82 60 41 53 5 75 79 22 2 105 61 107 21 12 97 44 26 114 81 49 77 23 19 73 69 35 25 106 66 90 94 99 117 70 16 4 39 112 33 87 65 47 36 92 30 58 8 103 1 28 48 54
Lab code

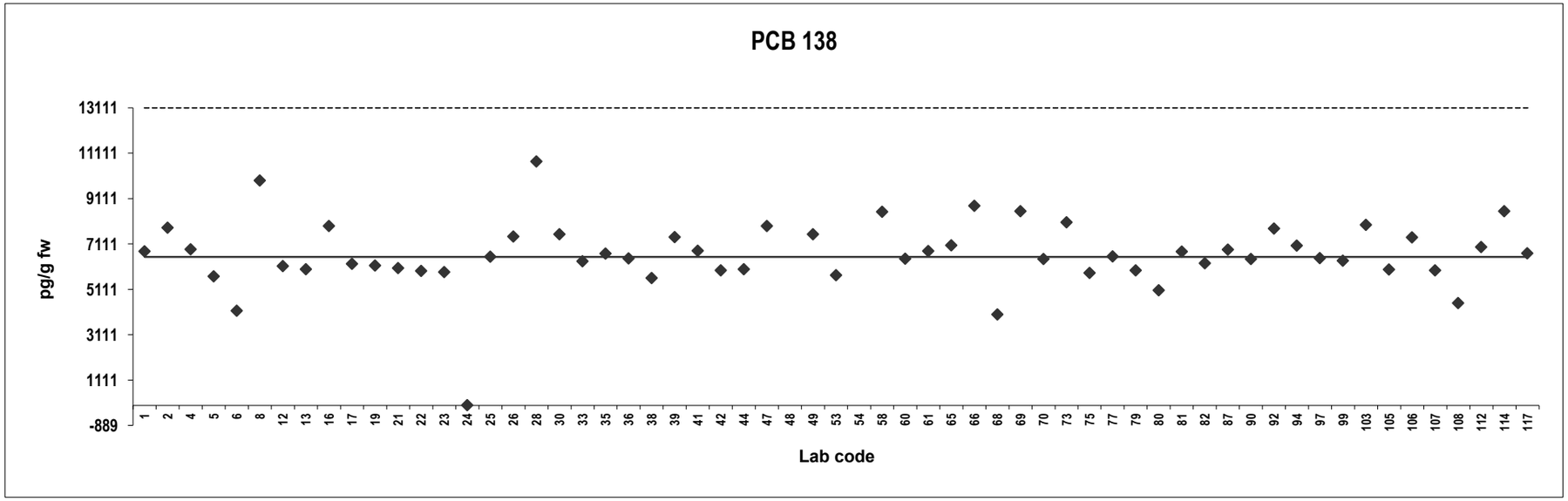
Salmon, fresh weight

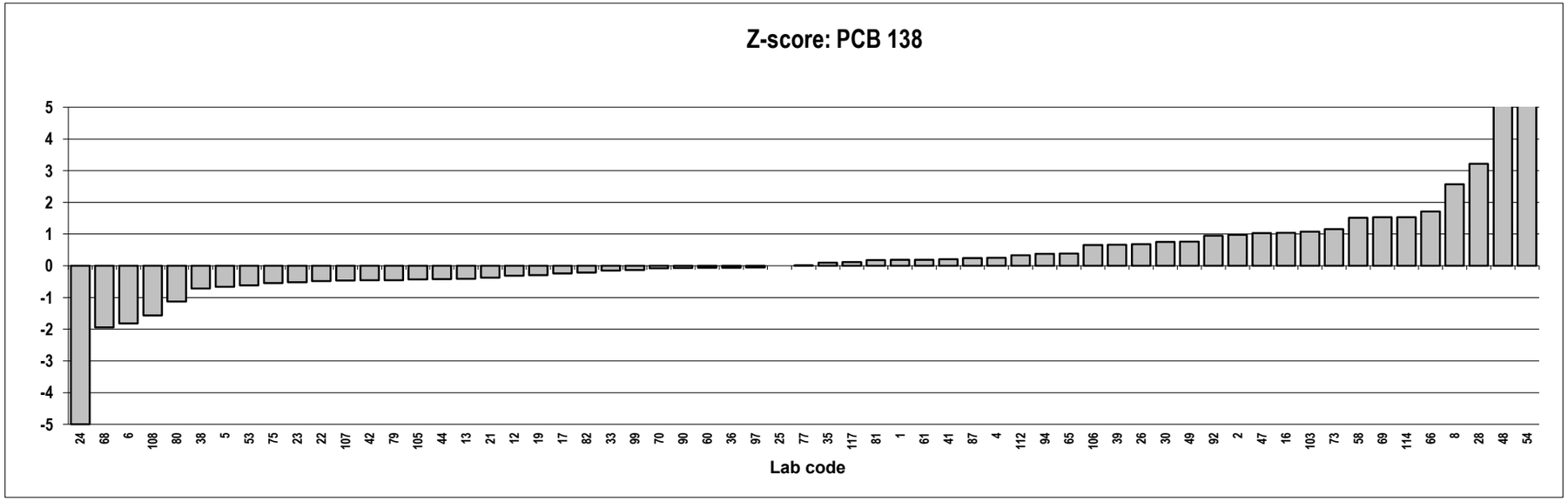
Congener: PCB 138

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	6788		81	6776	
2	7830		82	6260	
4	6874		87	6865	
5	5680		90	6452	
6	4169		92	7794	
8	9909		94	7034	
12	6140		97	6481	
13	6003		99	6376	
16	7908		103	7956	
17	6232		105	5980	
19	6160		106	7400	
21	6050		107	5941	
22	5919		108	4500	
23	5869		112	6979	
24	6.7		114	8554	
25	6545		117	6700	
26	7432				
28	10752				
30	7537				
33	6350				
35	6680				
36	6470				
38	5608				
39	7412				
41	6817				
42	5950				
44	6000				
47	7900				
48	31823	Outlier			
49	7540				
53	5739				
54	423731	Outlier			
58	8530				
60	6463				
61	6797				
65	7050				
66	8787				
68	4000				
69	8549				
70	6443				
73	8060				
75	5835				
77	6556				
79	5950				
80	5065				

Consenus statistics

Consensus median, pg/g	6545
Median all values pg/g	6556
Consensus mean, pg/g	6651
Standard deviation, pg/g	1495
Relative standard deviation, %	22
No. of values reported	61
No. of values removed	2
No. of reported non-detects	0


PCB 138
13111
11111
9111
7111
5111
3111
1111
-889
pg/g fw
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 68 6 108 80 38 5 53 75 23 22 107 42 79 105 44 13 21 12 19 17 82 33 99 70 90 60 36 97 25 77 35 117 81 1 61 41 87 4 112 94 65 106 39 26 30 49 92 2 47 16 103 73 58 69 114 66 8 28 48 54
Lab code

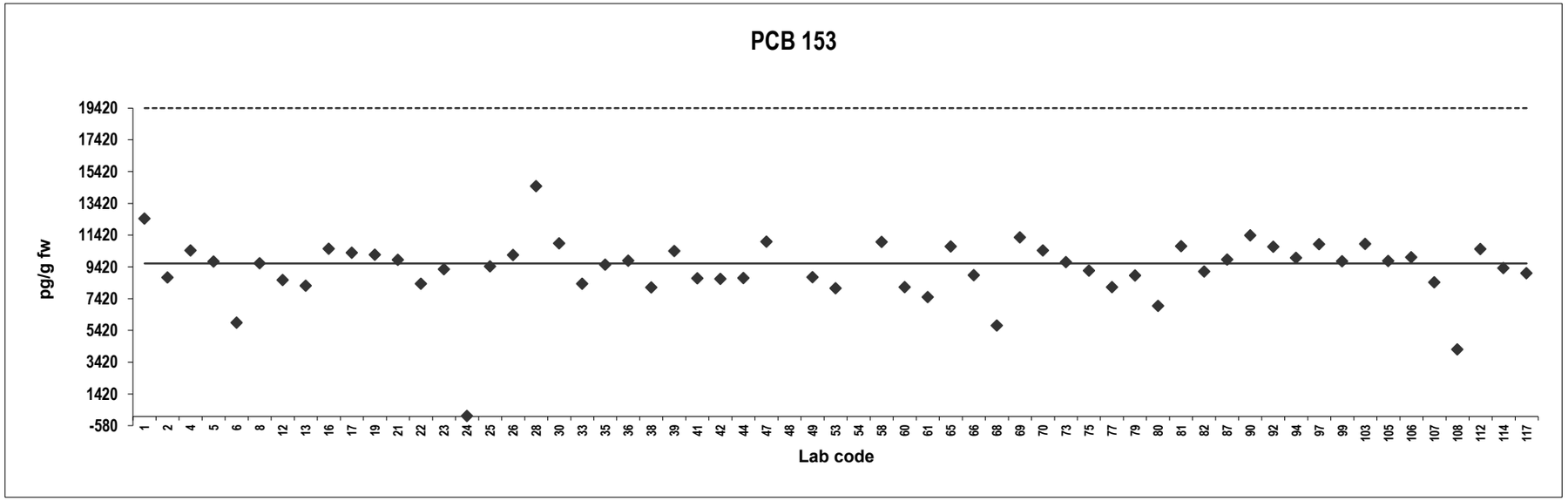
Salmon, fresh weight

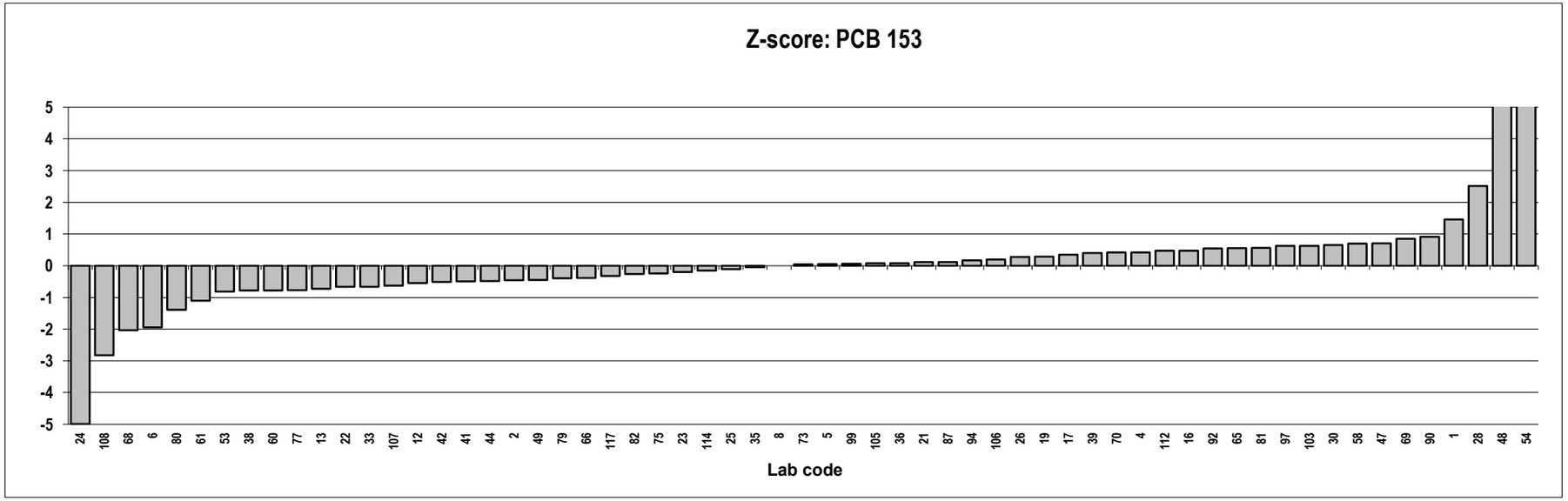
Congener: PCB 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	12442		81	10709	
2	8740		82	9120	
4	10447		87	9860	
5	9737		90	11396	
6	5890		92	10678	
8	9630		94	9964	
12	8580		97	10829	
13	8225		99	9754	
16	10546		103	10844	
17	10299		105	9780	
19	10173		106	10000	
21	9850		107	8428	
22	8347		108	4200	
23	9255		112	10536	
24	10		114	9332	
25	9429		117	9000	
26	10160				
28	14477				
30	10888				
33	8350				
35	9550				
36	9790				
38	8119				
39	10399				
41	8679				
42	8646				
44	8700				
47	10990				
48	35520	Outlier			
49	8760				
53	8057				
54	457221	Outlier			
58	10970				
60	8127				
61	7498				
65	10690				
66	8888				
68	5710				
69	11269				
70	10432				
73	9710				
75	9161				
77	8137				
79	8870				
80	6946				

Consenus statistics

Consensus median, pg/g	9630
Median all values pg/g	9710
Consensus mean, pg/g	9288
Standard deviation, pg/g	2007
Relative standard deviation, %	22
No. of values reported	61
No. of values removed	2
No. of reported non-detects	0


PCB 153
pg/g fw
19420
17420
15420
13420
11420
9420
7420
5420
3420
1420
-580
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 108 68 6 80 61 53 38 60 77 13 22 33 107 12 42 41 44 2 49 79 66 117 82 75 23 114 25 35 8 73 5 99 105 36 21 87 94 106 26 19 17 39 70 4 112 16 92 65 81 97 103 30 58 47 69 90 1 28 48 54
Lab code

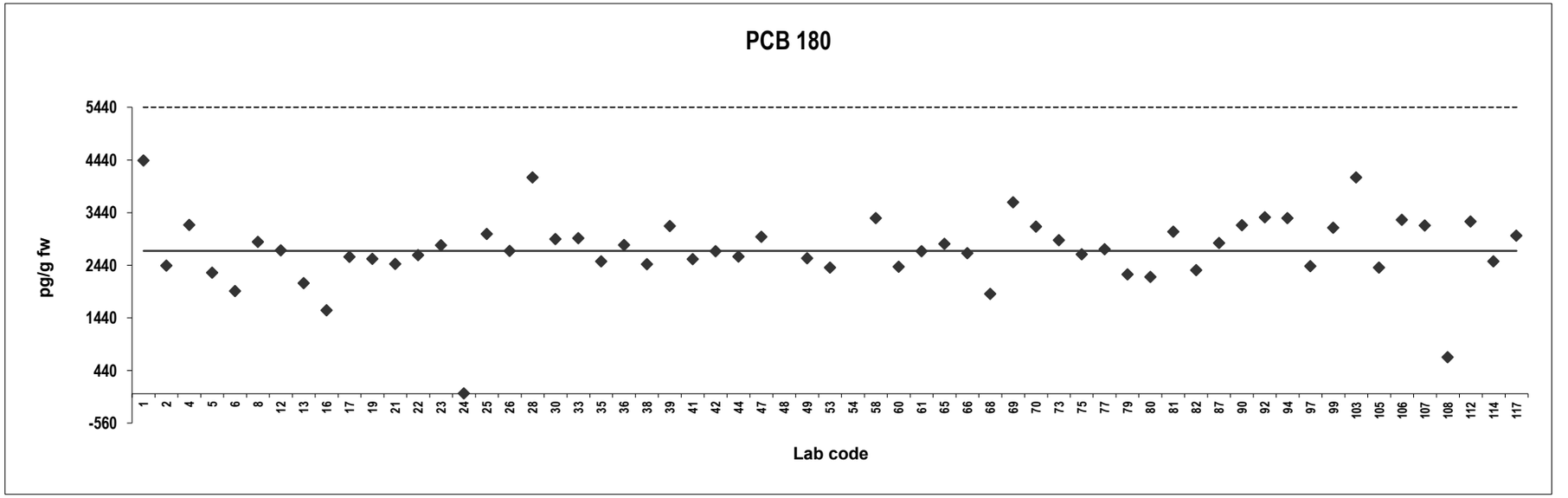
Salmon, fresh weight

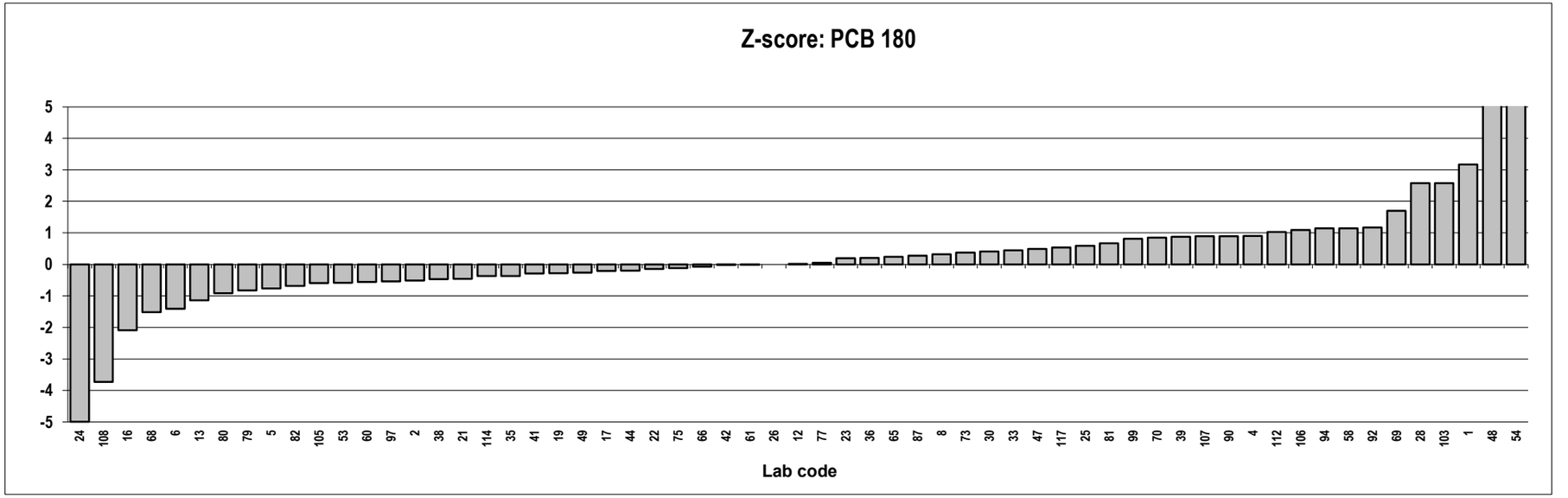
Congener: PCB 180

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	4427		81	3072	
2	2430		82	2340	
4	3201		87	2857	
5	2296		90	3196	
6	1944		92	3346	
8	2881		94	3330	
12	2720		97	2418	
13	2093		99	3150	
16	1578		103	4107	
17	2596		105	2390	
19	2558		106	3300	
21	2460		107	3193	
22	2629		108	690	
23	2817		112	3269	
24	2.7		114	2509	
25	3028		117	3000	
26	2710				
28	4105				
30	2931				
33	2950				
35	2510				
36	2820				
38	2458				
39	3182				
41	2553				
42	2701				
44	2600				
47	2977				
48	9540	Outlier			
49	2570				
53	2393				
54	169919	Outlier			
58	3330				
60	2406				
61	2704				
65	2840				
66	2667				
68	1890				
69	3633				
70	3171				
73	2910				
75	2644				
77	2739				
79	2260				
80	2215				

Consenus statistics

Consensus median, pg/g	2710
Median all values pg/g	2720
Consensus mean, pg/g	2724
Standard deviation, pg/g	687
Relative standard deviation, %	25
No. of values reported	61
No. of values removed	2
No. of reported non-detects	0


PCB 180
pg/g fw
5440
4440
3440
2440
1440
440
-560
1 2 4 5 6 8 12 13 16 17 19 21 22 23 24 25 26 28 30 33 35 36 38 39 41 42 44 47 48 49 53 54 58 60 61 65 66 68 69 70 73 75 77 79 80 81 82 87 90 92 94 97 99 103 105 106 107 108 112 114 117
Lab code


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 108 16 68 6 13 80 79 5 82 105 53 60 97 2 38 21 114 35 41 19 49 17 44 22 75 66 42 61 26 12 77 23 36 65 87 8 73 30 33 47 117 25 81 99 70 39 107 90 4 112 106 94 58 92 69 28 103 1 48 54
Lab code

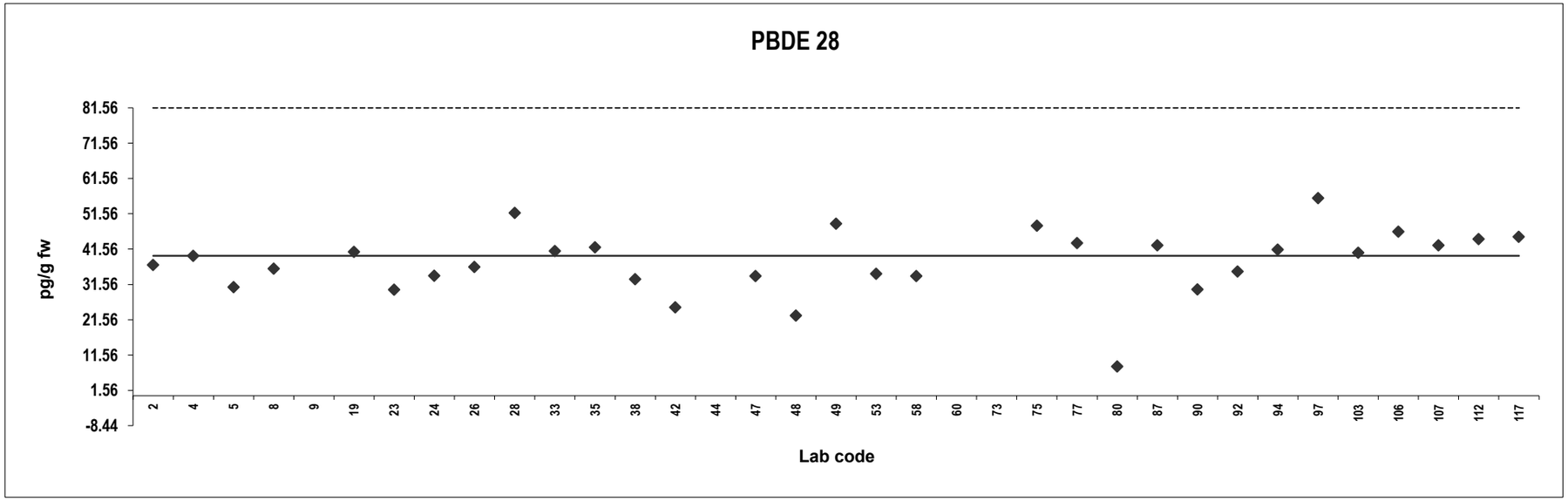
Salmon, fresh weight

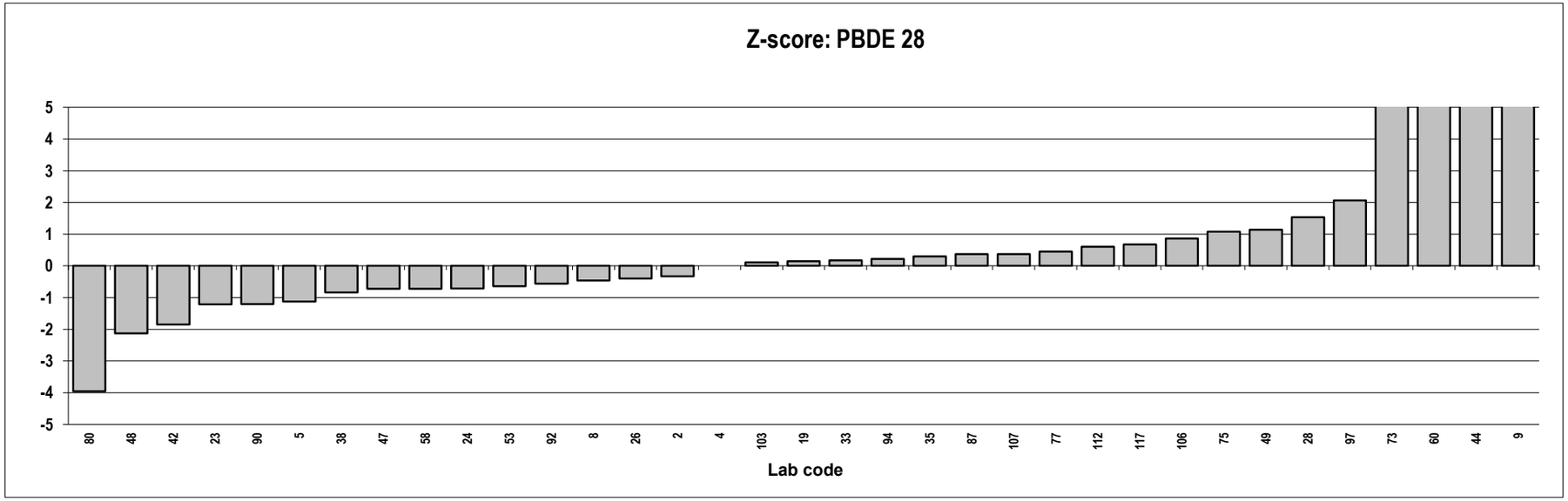
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	37				
4	40				
5	31				
8	36				
9	175	Outlier			
19	41				
23	30				
24	34				
26	37				
28	52				
33	41				
35	42				
38	33				
42	25				
44	100	Outlier			
47	34				
48	23				
49	49				
53	35				
58	34				
60	93	Outlier			
73	83	Outlier			
75	48				
77	43				
80	8.3				
87	43				
90	30				
92	35				
94	41				
97	56				
103	41				
106	47				
107	43				
112	44				
117	45				

Consenus statistics

Consensus median, pg/g	40
Median all values pg/g	41
Consensus mean, pg/g	38
Standard deviation, pg/g	9.3
Relative standard deviation, %	24
No. of values reported	35
No. of values removed	4
No. of reported non-detects	0


PBDE 28
81.56
71.56
61.56
51.56
41.56
31.56
21.56
11.56
1.56
-8.44
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 48 42 23 90 5 38 47 58 24 53 92 8 26 2 4 103 19 33 94 35 87 107 77 112 117 106 75 49 28 97 73 60 44 9
Lab code

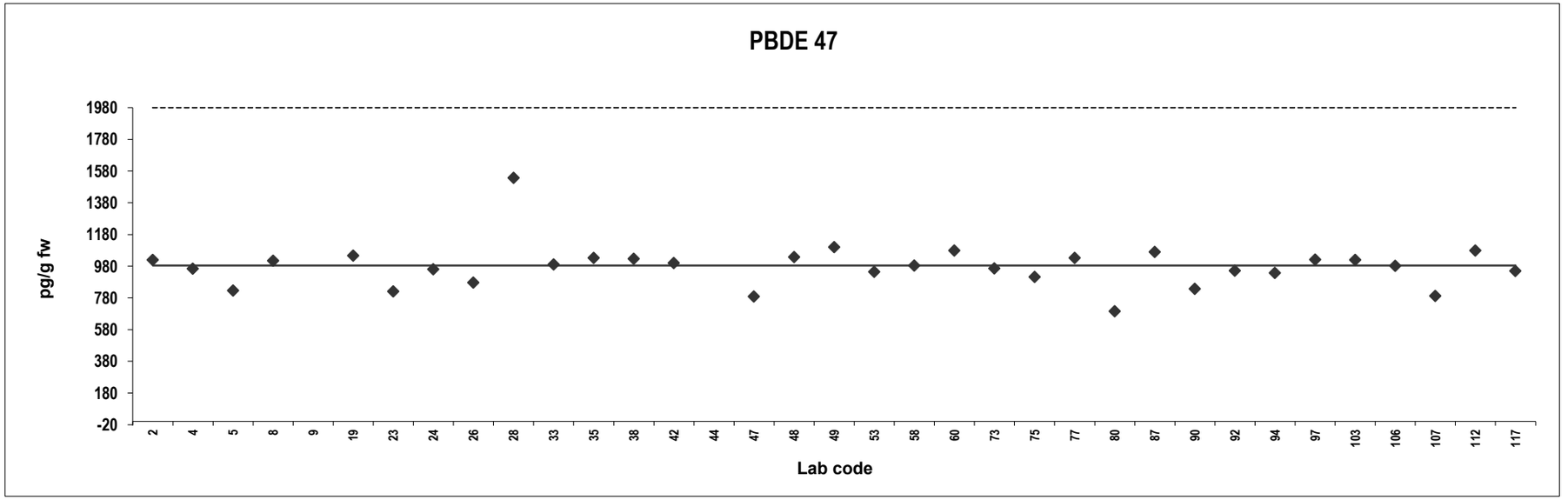
Salmon, fresh weight

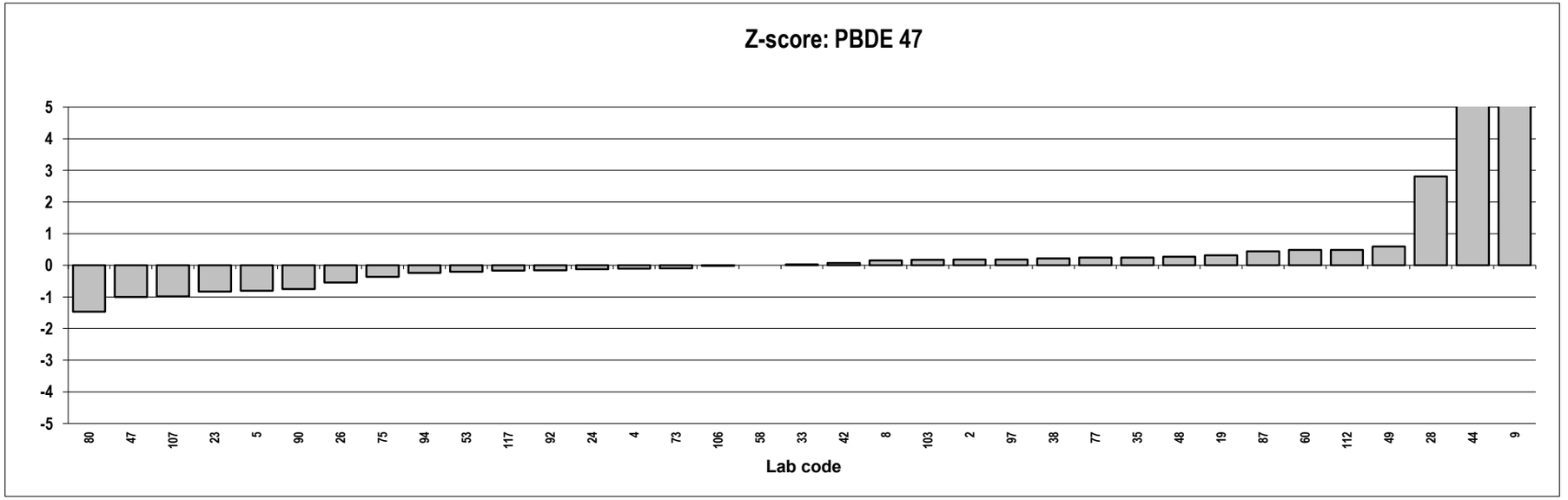
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	1020				
4	963				
5	826				
8	1014				
9	3058	Outlier			
19	1046				
23	821				
24	960				
26	876				
28	1536				
33	990				
35	1032				
38	1027				
42	999				
44	2200	Outlier			
47	787				
48	1037				
49	1100				
53	945				
58	984				
60	1079				
73	965				
75	913				
77	1031				
80	694				
87	1070				
90	837				
92	952				
94	937				
97	1020				
103	1018				
106	981				
107	791				
112	1079				
117	950				

Consenus statistics

Consensus median, pg/g	984
Median all values pg/g	990
Consensus mean, pg/g	978
Standard deviation, pg/g	139
Relative standard deviation, %	14
No. of values reported	35
No. of values removed	2
No. of reported non-detects	0


PBDE 47
pg/g fw
1980
1780
1580
1380
1180
980
780
580
380
180
-20
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 47 107 23 5 90 26 75 94 53 117 92 24 4 73 106 58 33 42 8 103 2 97 38 77 35 48 19 87 60 112 49 28 44 9
Lab code

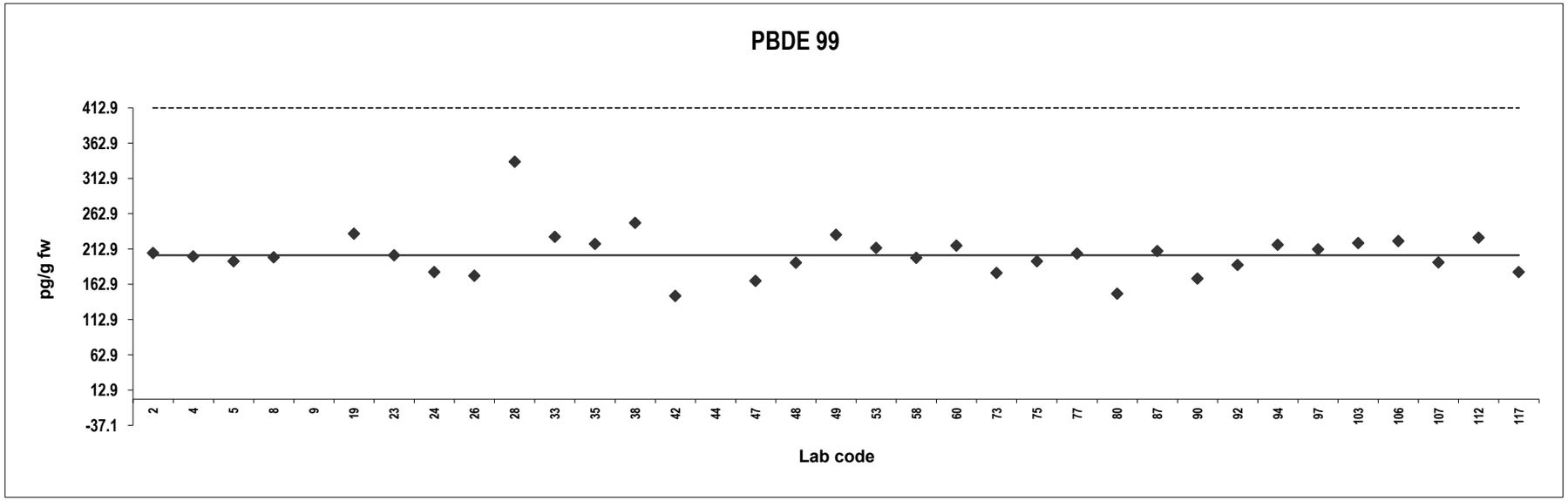
Salmon, fresh weight

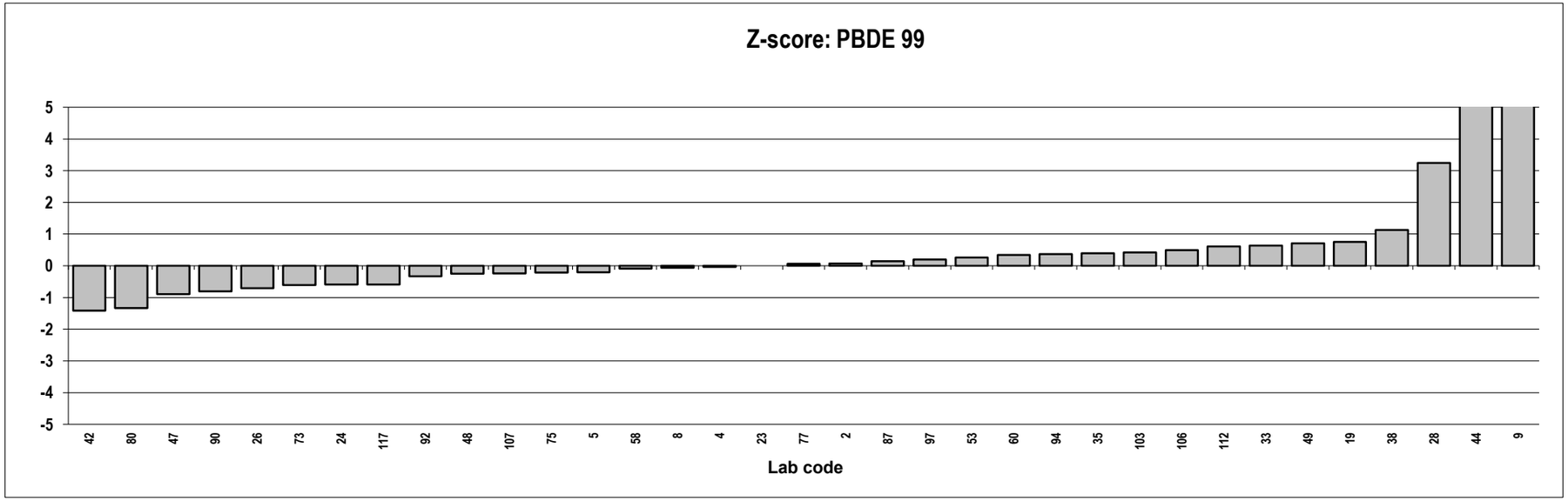
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	207				
4	202				
5	195				
8	201				
9	849	Outlier			
19	235				
23	204				
24	180				
26	175				
28	336				
33	230				
35	220				
38	250				
42	146				
44	420	Outlier			
47	168				
48	194				
49	233				
53	215				
58	201				
60	218				
73	179				
75	195				
77	206				
80	149				
87	210				
90	171				
92	190				
94	219				
97	212				
103	221				
106	224				
107	194				
112	229				
117	180				

Consenus statistics

Consensus median, pg/g	204
Median all values pg/g	206
Consensus mean, pg/g	206
Standard deviation, pg/g	34
Relative standard deviation, %	16
No. of values reported	35
No. of values removed	2
No. of reported non-detects	0


PBDE 99
412.9
362.9
312.9
262.9
212.9
162.9
112.9
62.9
12.9
-37.1
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 80 47 90 26 73 24 117 92 48 107 75 5 58 8 4 23 77 2 87 97 53 60 94 35 103 106 112 33 49 19 38 28 44 9
Lab code

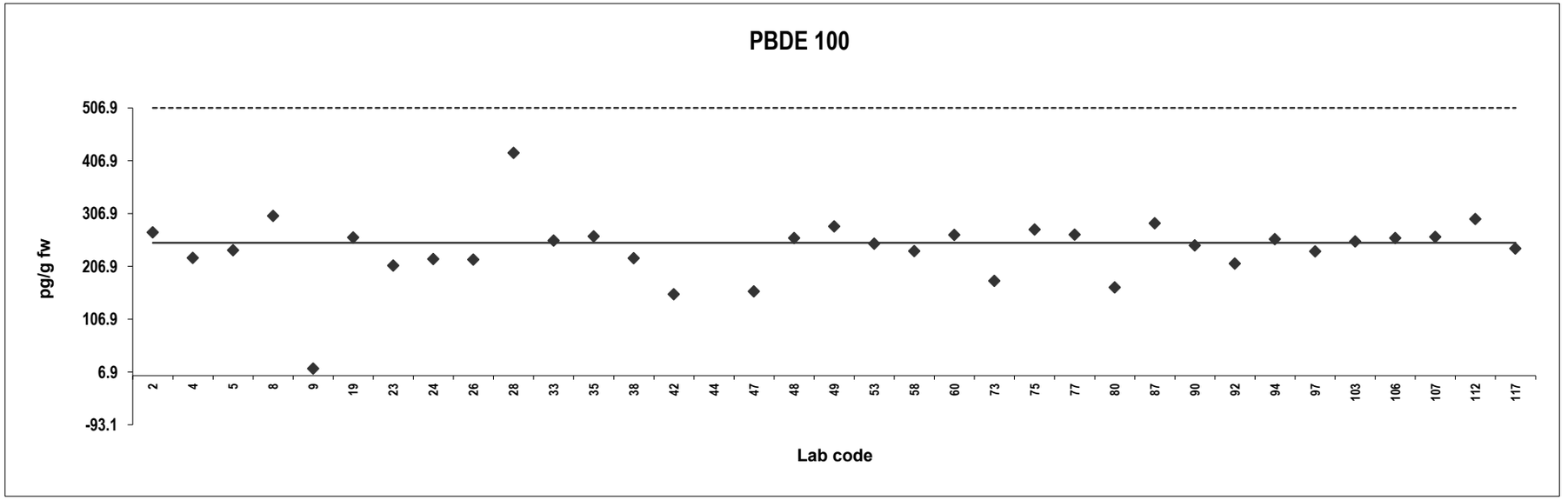
Salmon, fresh weight

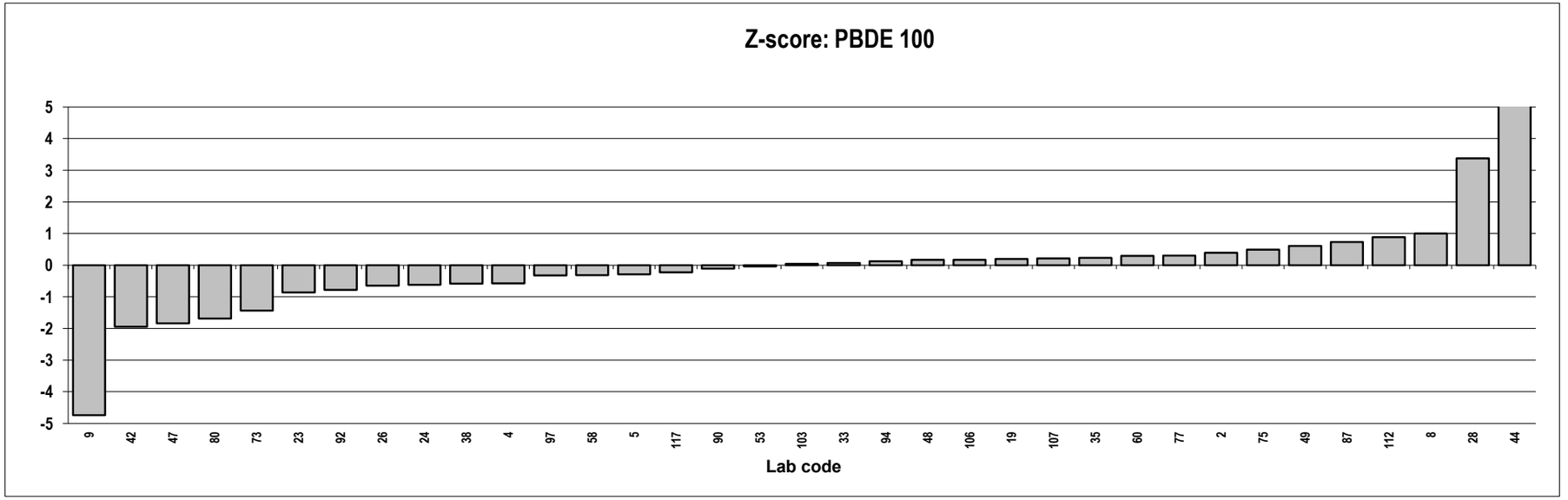
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	271				
4	223				
5	237				
8	302				
9	13				
19	261				
23	208				
24	220				
26	219				
28	421				
33	255				
35	263				
38	222				
42	154				
44	540	Outlier			
47	159				
48	260				
49	282				
53	249				
58	235				
60	266				
73	179				
75	276				
77	267				
80	167				
87	288				
90	246				
92	212				
94	258				
97	235				
103	253				
106	260				
107	262				
112	296				
117	240				

Consenus statistics

Consensus median, pg/g	251
Median all values pg/g	253
Consensus mean, pg/g	240
Standard deviation, pg/g	62
Relative standard deviation, %	26
No. of values reported	35
No. of values removed	1
No. of reported non-detects	0


PBDE 100
506.9
406.9
306.9
206.9
106.9
6.9
-93.1
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
9 42 47 80 73 23 92 26 24 38 4 97 58 5 117 90 53 103 33 94 48 106 19 107 35 60 77 2 75 49 87 112 8 28 44
Lab code

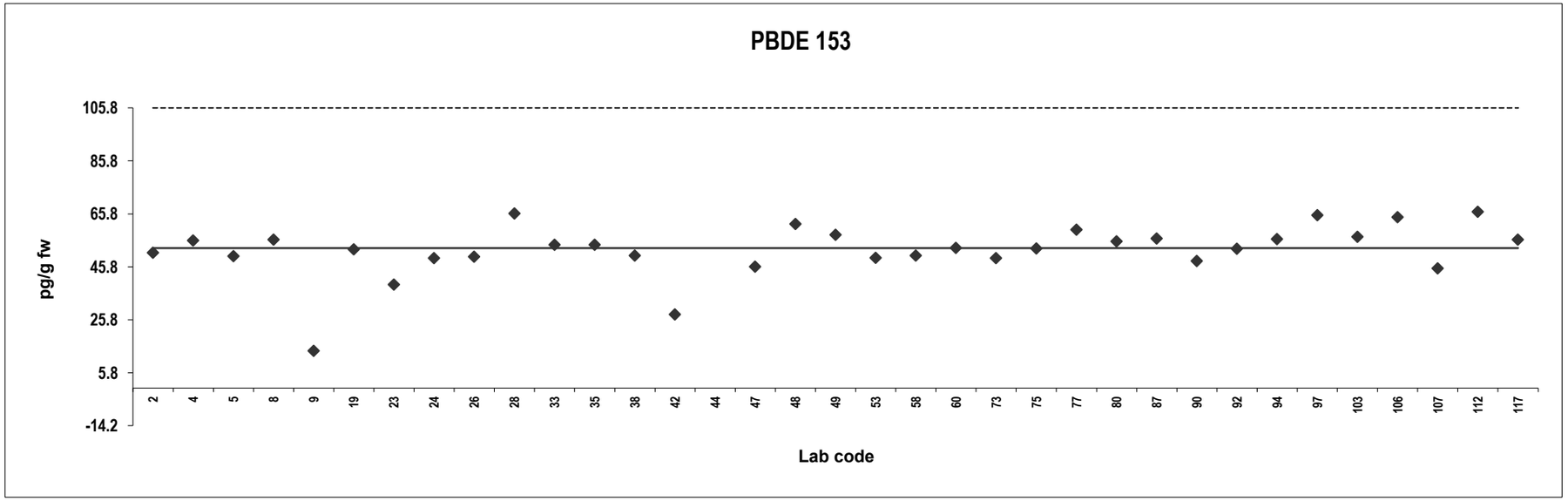
Salmon, fresh weight

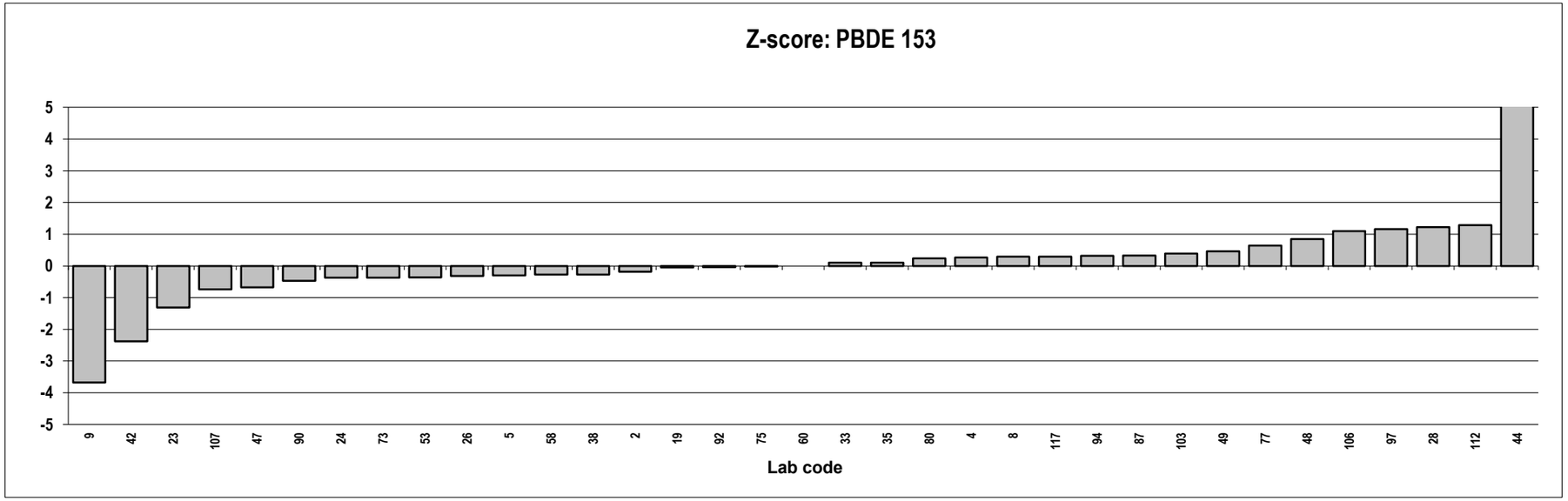
Congener: PBDE 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	51				
4	56				
5	50				
8	56				
9	14				
19	52				
23	39				
24	49				
26	50				
28	66				
33	54				
35	54				
38	50				
42	28				
44	130	Outlier			
47	46				
48	62				
49	58				
53	49				
58	50				
60	53				
73	49	ND			
75	53				
77	60				
80	55				
87	56				
90	48				
92	53				
94	56				
97	65				
103	57				
106	65				
107	45				
112	67				
117	56				

Consenus statistics

Consensus median, pg/g	53
Median all values pg/g	53
Consensus mean, pg/g	52
Standard deviation, pg/g	10
Relative standard deviation, %	20
No. of values reported	35
No. of values removed	1
No. of reported non-detects	1


PBDE 153
105.8
85.8
65.8
45.8
25.8
5.8
-14.2
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
9 42 23 107 47 90 24 73 53 26 5 58 38 2 19 92 75 60 33 35 80 4 8 117 94 87 103 49 77 48 106 97 28 112 44
Lab code

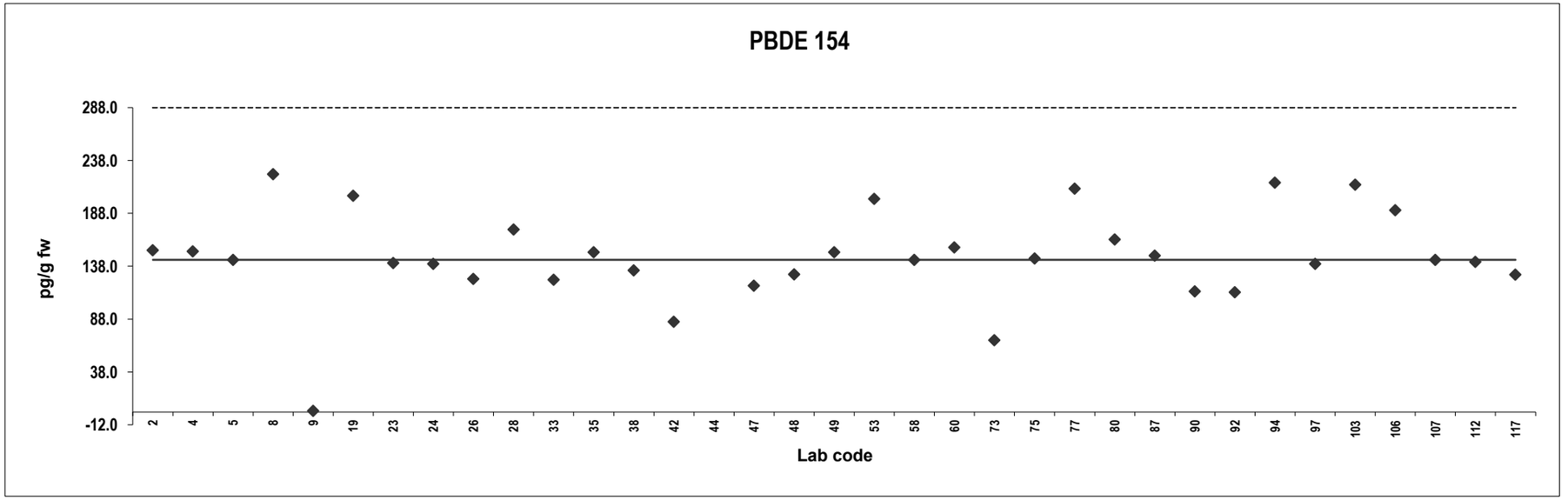
Salmon, fresh weight

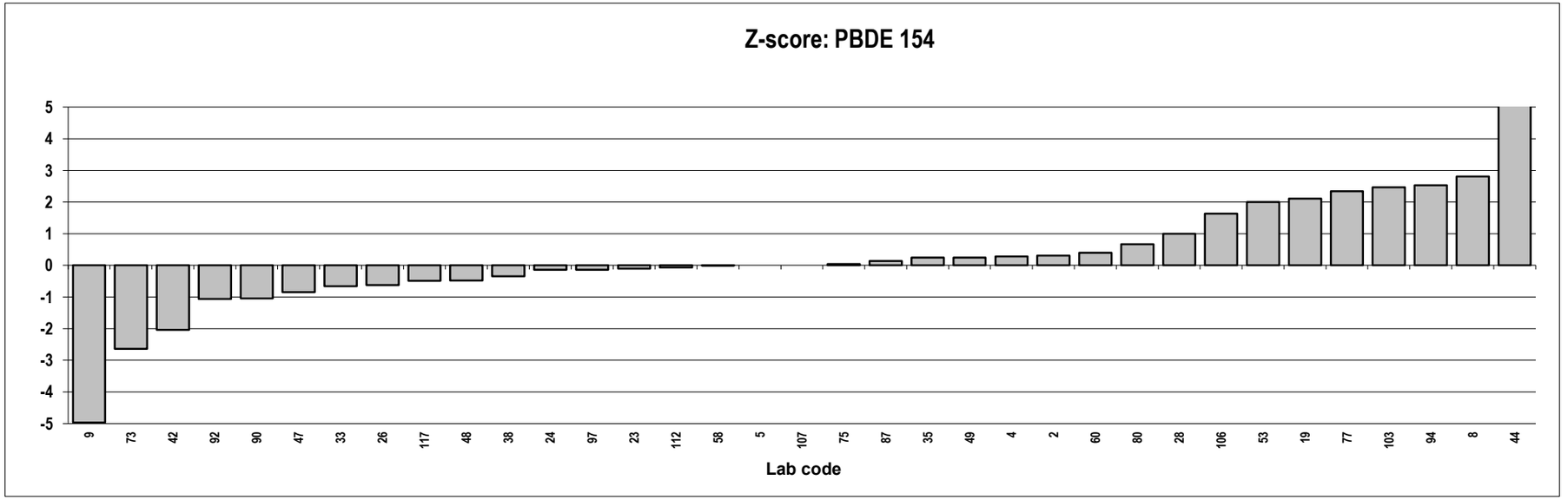
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	153				
4	152				
5	144				
8	225				
9	0.89				
19	205				
23	141				
24	140				
26	126				
28	173				
33	125				
35	151				
38	134				
42	85				
44	370	Outlier			
47	120				
48	130				
49	151				
53	202				
58	144				
60	156				
73	68				
75	145				
77	211				
80	163				
87	148				
90	114				
92	113				
94	217				
97	140				
103	215				
106	191				
107	144				
112	142				
117	130				

Consenus statistics

Consensus median, pg/g	144
Median all values pg/g	144
Consensus mean, pg/g	147
Standard deviation, pg/g	44
Relative standard deviation, %	30
No. of values reported	35
No. of values removed	1
No. of reported non-detects	0


PBDE 154
288.0
238.0
188.0
138.0
88.0
38.0
-12.0
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
9 73 42 92 90 47 33 26 117 48 38 24 97 23 112 58 5 107 75 87 35 49 4 2 60 80 28 106 53 19 77 103 94 8 44
Lab code

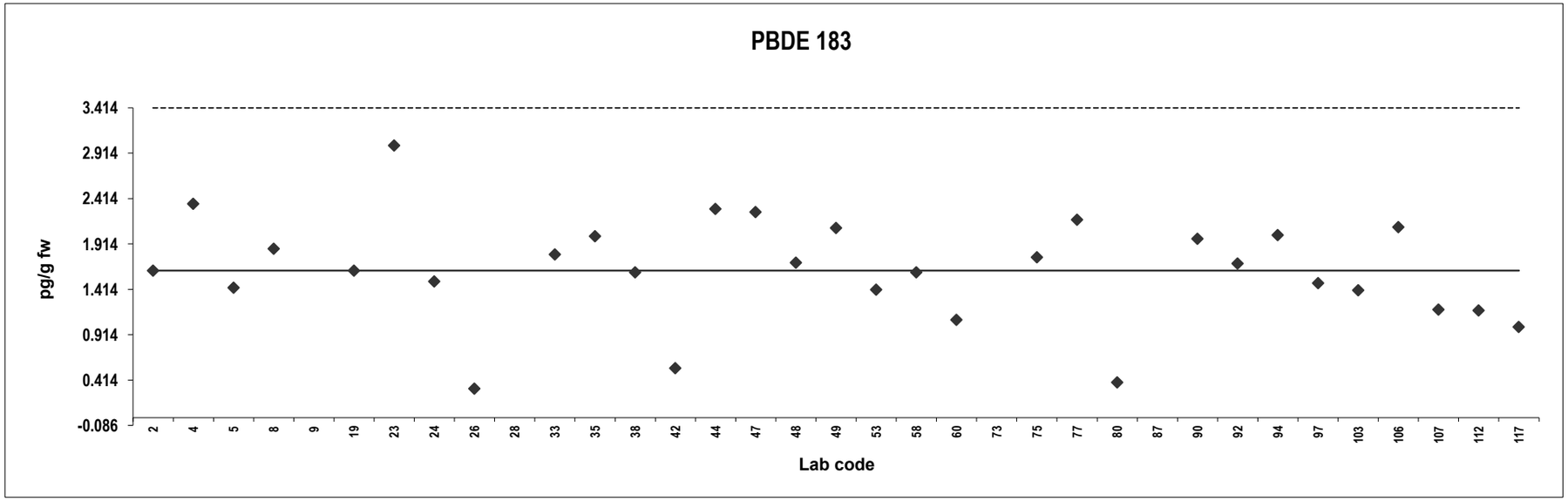
Salmon, fresh weight

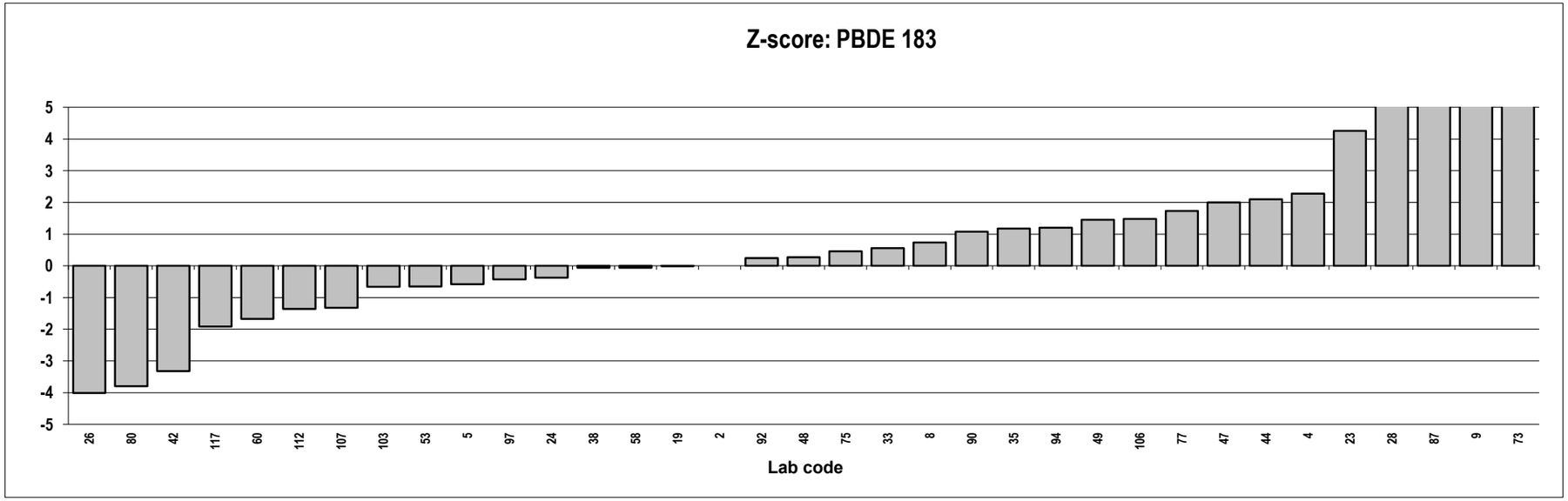
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	1.6				
4	2.4				
5	1.4				
8	1.9				
9	30	Outlier			
19	1.6				
23	3.0	ND			
24	1.5	ND			
26	0.32				
28	6.5	Outlier,ND			
33	1.8	ND			
35	2.0	ND			
38	1.6	ND			
42	0.54	ND			
44	2.3				
47	2.3	ND			
48	1.7				
49	2.1				
53	1.4				
58	1.6				
60	1.1				
73	49	Outlier,ND			
75	1.8				
77	2.2				
80	0.39				
87	8.1	Outlier,ND			
90	2.0				
92	1.7				
94	2.0				
97	1.5				
103	1.4				
106	2.1				
107	1.2				
112	1.2				
117	1.0	ND			

Consenus statistics

Consensus median, pg/g	1.6
Median all values pg/g	1.7
Consensus mean, pg/g	1.6
Standard deviation, pg/g	0.58
Relative standard deviation, %	36
No. of values reported	35
No. of values removed	4
No. of reported non-detects	11


PBDE 183
3.414
2.914
2.414
1.914
1.414
0.914
0.414
-0.086
pg/g fw
2 4 5 8 9 19 23 24 26 28 33 35 38 42 44 47 48 49 53 58 60 73 75 77 80 87 90 92 94 97 103 106 107 112 117
Lab code


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
26 80 42 117 60 112 107 103 53 5 97 24 38 58 19 2 92 48 75 33 8 90 35 94 49 106 77 47 44 4 23 28 87 9 73
Lab code

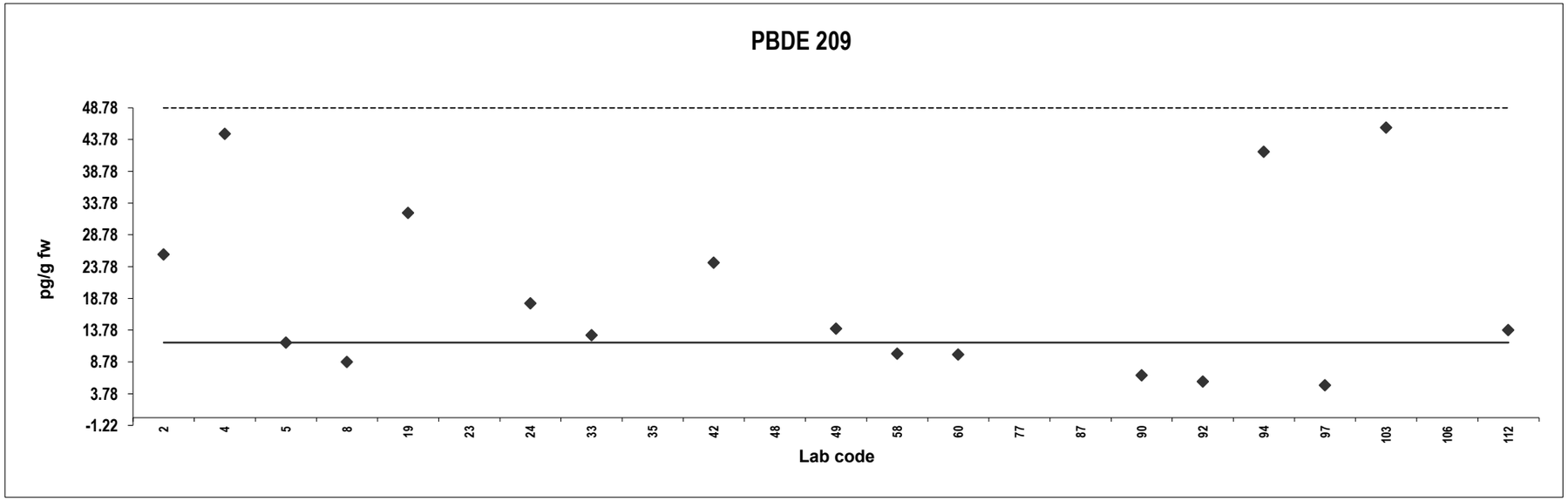
Salmon, fresh weight

Congener: PBDE 209

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	26	ND			
4	45				
5	12				
8	8.8				
19	32				
23	360	Outlier			
24	18				
33	13	ND			
35	89	Outlier,ND			
42	24				
48	476	Outlier			
49	14	ND			
58	10				
60	9.9				
77	529	Outlier			
87	160	Outlier,ND			
90	6.7				
92	5.7				
94	42				
97	5.1				
103	46				
106	50	Outlier			
112	14	ND			

Consenus statistics

Consensus median, pg/g	12
Median all values pg/g	24
Consensus mean, pg/g	19
Standard deviation, pg/g	14
Relative standard deviation, %	71
No. of values reported	23
No. of values removed	6
No. of reported non-detects	6


PBDE 209
pg/g fw
48.78
43.78
38.78
33.78
28.78
23.78
18.78
13.78
8.78
3.78
-1.22
2
4
5
8
19
23
24
33
35
42
48
49
58
60
77
87
90
92
94
97
103
106
112
Lab code

Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
97
92
90
8
60
58
5
33
112
49
24
42
2
19
94
4
103
106
35
87
23
48
77
Lab code

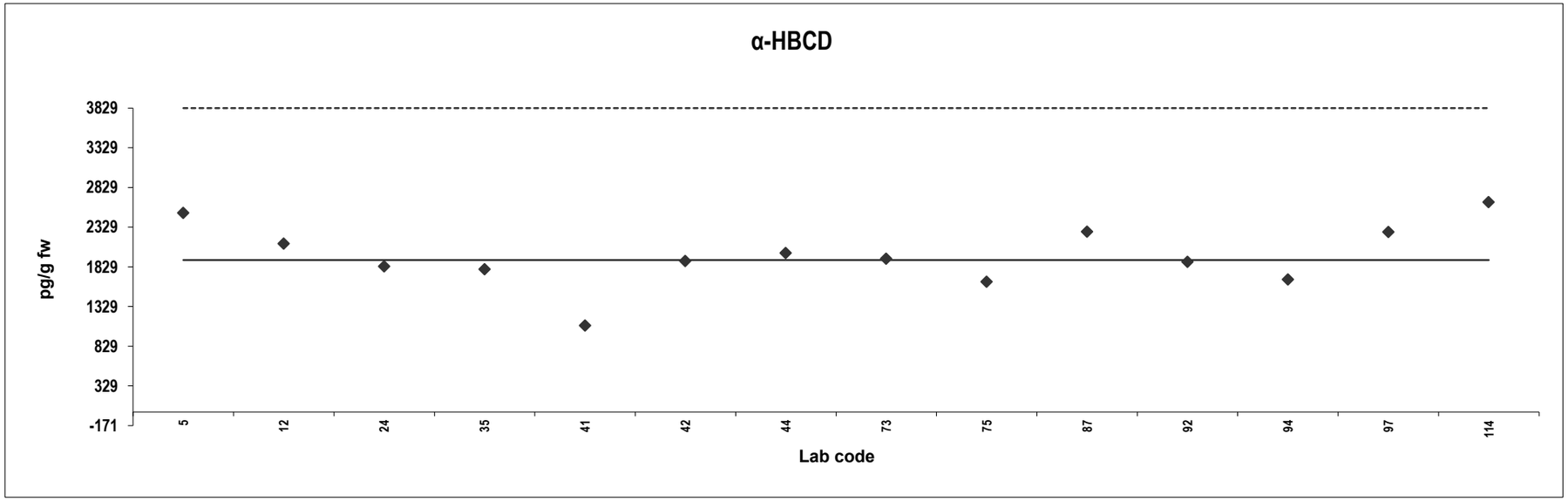
Salmon, fresh weight

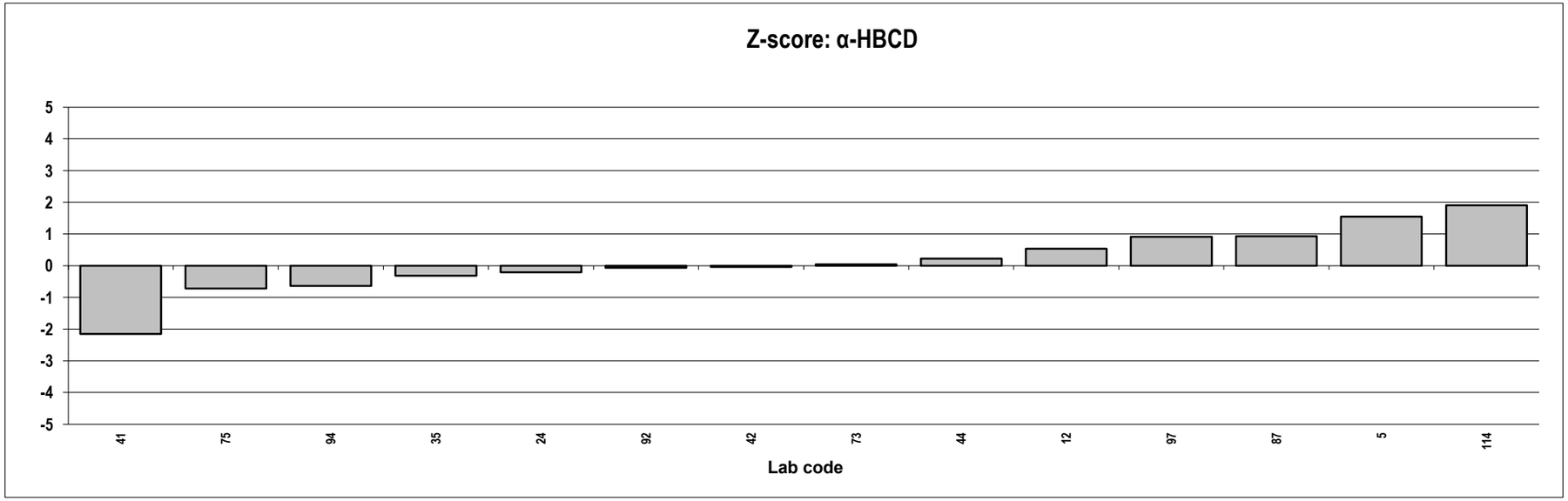
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2506				
12	2120				
24	1834				
35	1795				
41	1089				
42	1899				
44	2000				
73	1930				
75	1639				
87	2270				
92	1890				
94	1670				
97	2265				
114	2643				

Consenus statistics

Consensus median, pg/g	1915
Median all values pg/g	1915
Consensus mean, pg/g	1968
Standard deviation, pg/g	390
Relative standard deviation, %	20
No. of values reported	14
No. of values removed	0
No. of reported non-detects	0


α-HBCD
pg/g fw
3829
3329
2829
2329
1829
1329
829
329
-171
5
12
24
35
41
42
44
73
75
87
92
94
97
114
Lab code

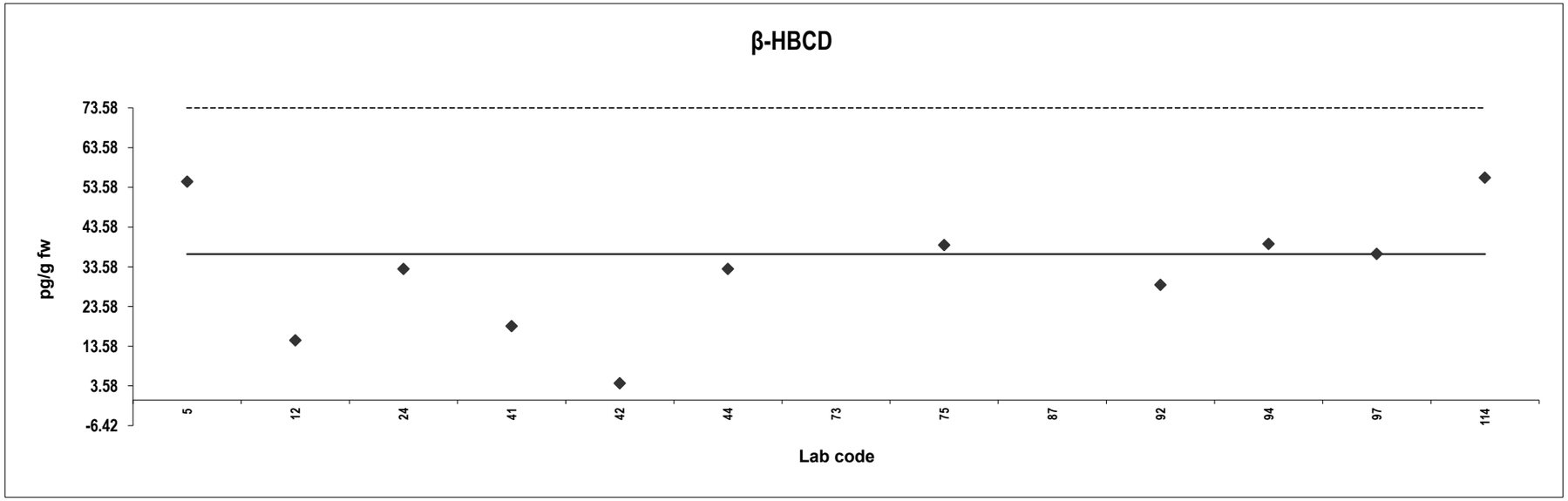

Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
41
75
94
35
24
92
42
73
44
12
97
87
5
114
Lab code

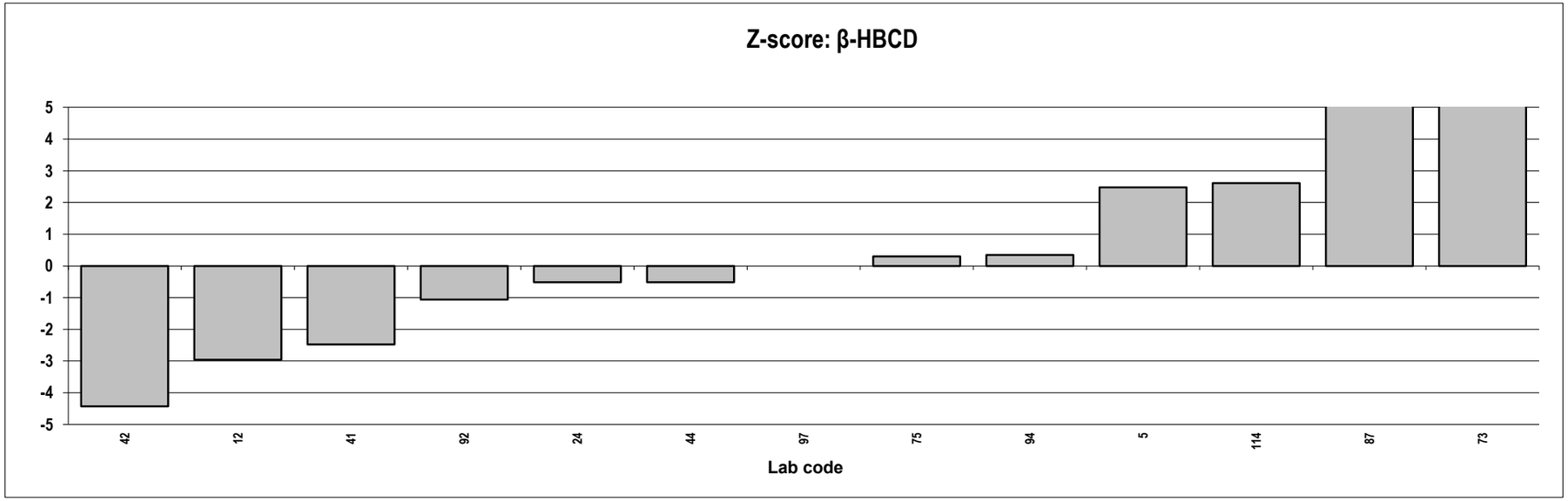
Salmon, fresh weight

Congener: β-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	55				
12	15	ND			
24	33				
41	19				
42	4.2	ND			
44	33				
73	150	Outlier,ND			
75	39				
87	75	Outlier			
92	29				
94	39				
97	37				
114	56				

Consenus statistics	
Consensus median, pg/g	37
Median all values pg/g	37
Consensus mean, pg/g	33
Standard deviation, pg/g	16
Relative standard deviation, %	48
No. of values reported	13
No. of values removed	2
No. of reported non-detects	3


β-HBCD
73.58
63.58
53.58
43.58
33.58
23.58
13.58
3.58
-6.42
pg/g fw
5
12
24
41
42
44
73
75
87
92
94
97
114
Lab code


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
42
12
41
92
24
44
97
75
94
5
114
87
73
Lab code

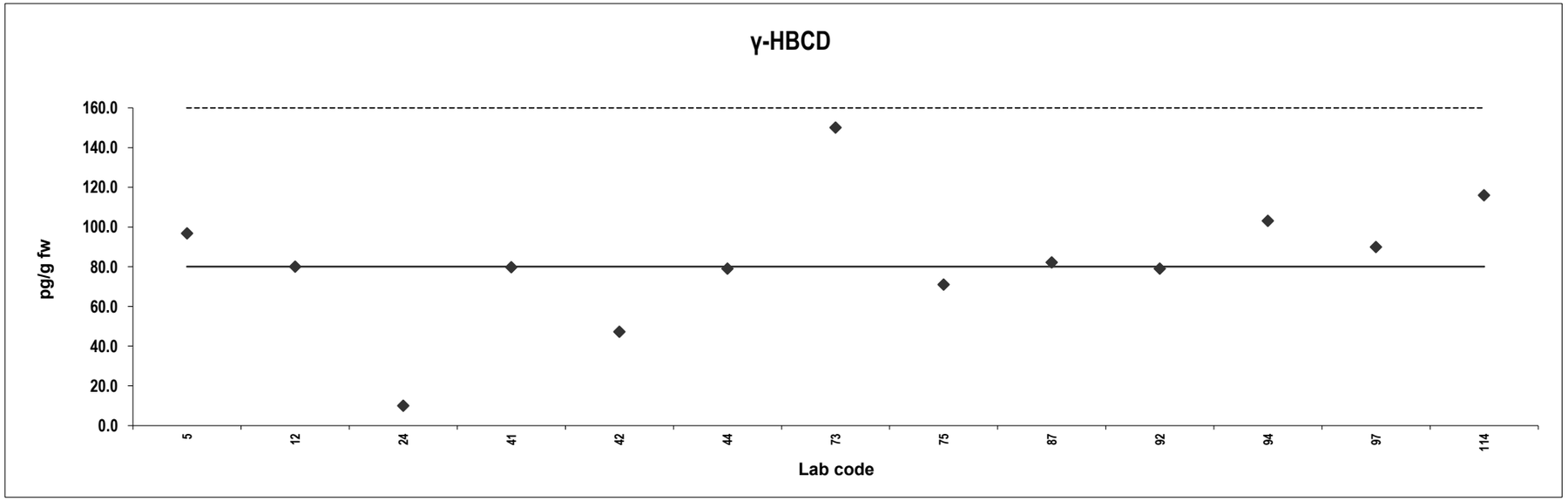
Salmon, fresh weight

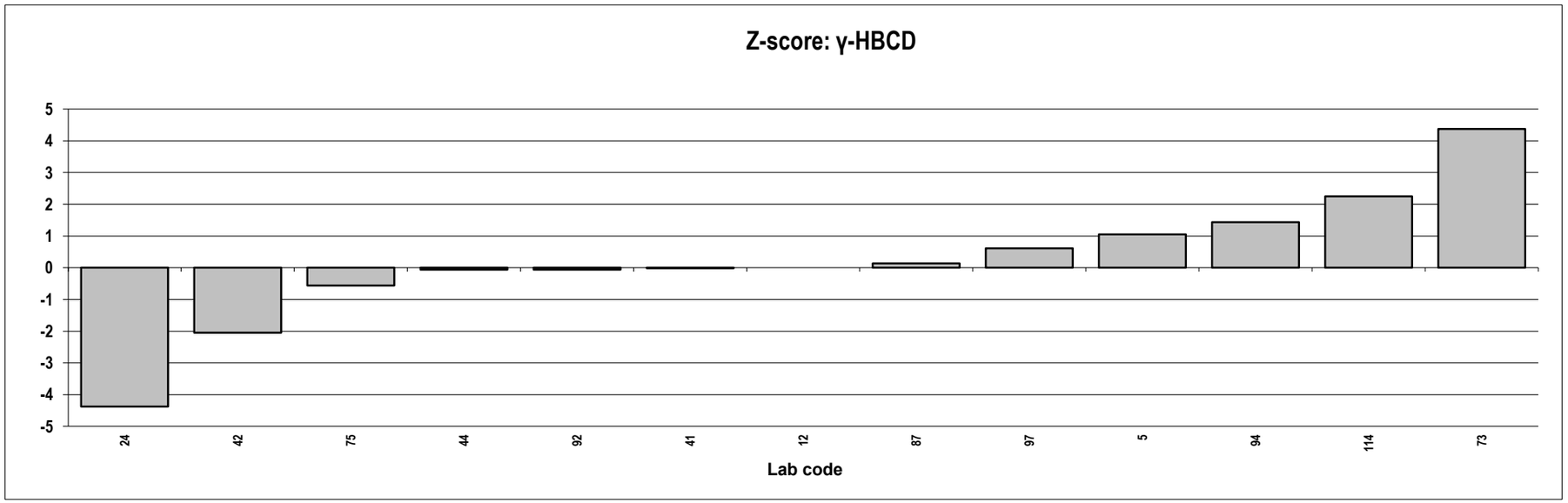
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	97				
12	80				
24	10	ND			
41	80				
42	47				
44	79				
73	150	ND			
75	71				
87	82				
92	79				
94	103				
97	90				
114	116				

Consenus statistics

Consensus median, pg/g	80
Median all values pg/g	80
Consensus mean, pg/g	83
Standard deviation, pg/g	33
Relative standard deviation, %	40
No. of values reported	13
No. of values removed	0
No. of reported non-detects	2


γ-HBCD
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
pg/g fw
5
12
24
41
42
44
73
75
87
92
94
97
114
Lab code


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
24
42
75
44
92
41
12
87
97
5
94
114
73
Lab code

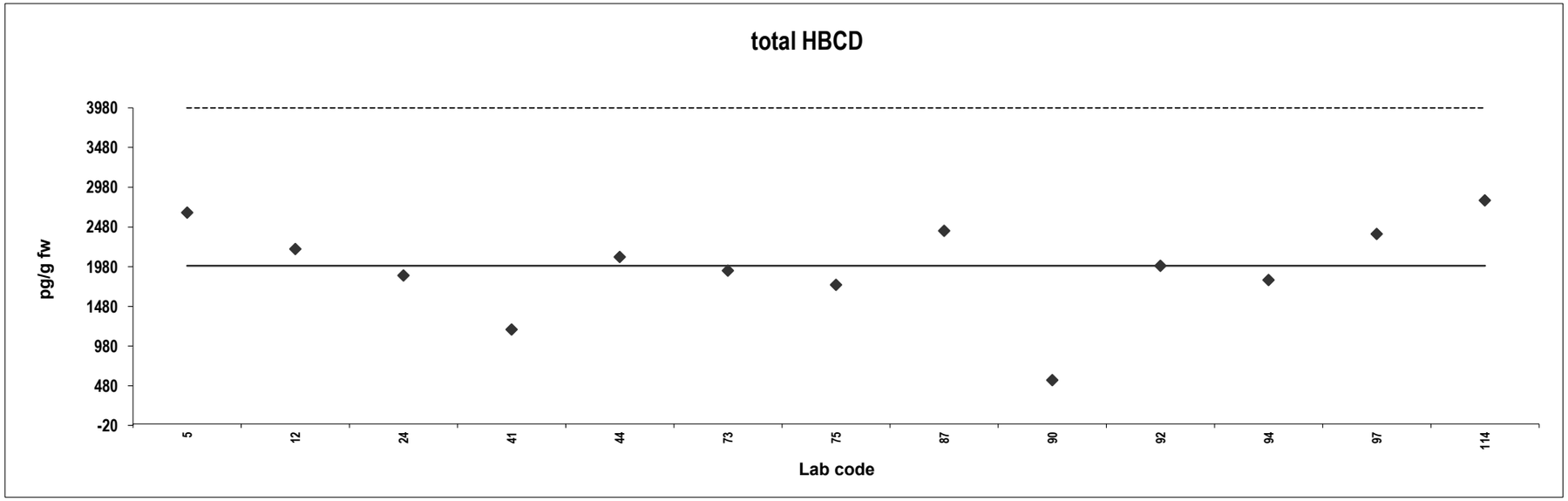
Salmon, fresh weight

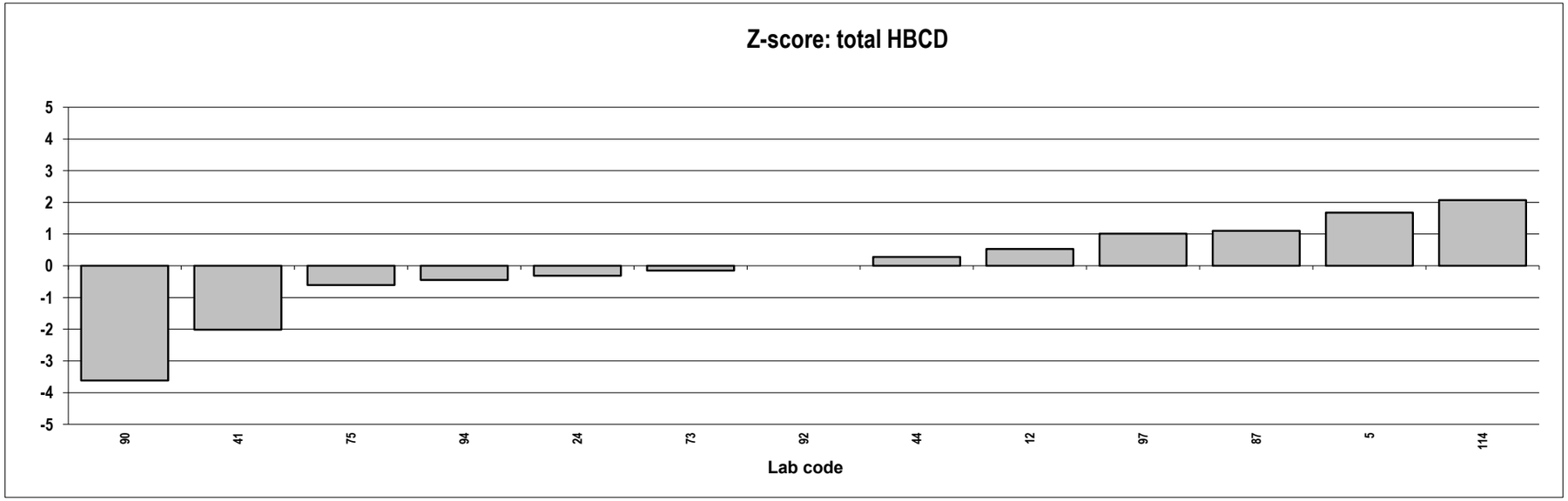
Congener: total HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2658				
12	2200				
24	1867				
41	1187				
44	2100				
73	1930				
75	1749				
87	2430				
90	550				
92	1990				
94	1812				
97	2392				
114	2815				

Consenus statistics

Consensus median, pg/g	1990
Median all values pg/g	1990
Consensus mean, pg/g	1975
Standard deviation, pg/g	603
Relative standard deviation, %	31
No. of values reported	13
No. of values removed	0
No. of reported non-detects	0


total HBCD
pg/g fw
3980
3480
2980
2480
1980
1480
980
480
-20
5
12
24
41
44
73
75
87
90
92
94
97
114
Lab code


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
90
41
75
94
24
73
92
44
12
97
87
5
114
Lab code

Appendix 4:

Presentation of results
for Fish oil-2016

Appendix 4: Presentation of results: Fish oil-2016

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:

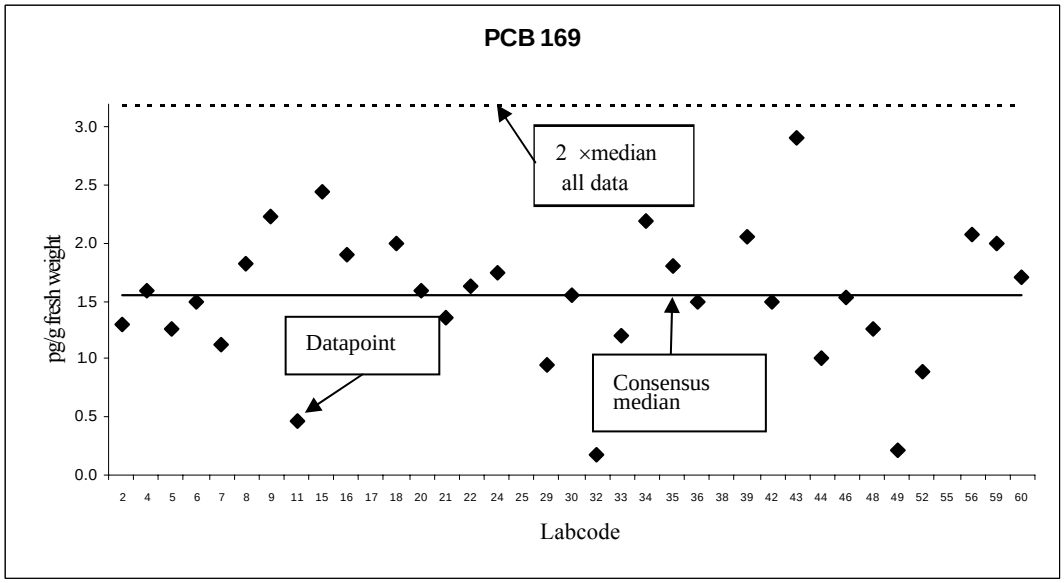
1. The median was calculated from all the reported data, using the detection limit as concentration for non-detected congeners.
2. Values exceeding 2 × this median were defined as outliers and removed from the data set.
3. Median, mean and standard deviation were re-calculated from the remaining data.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

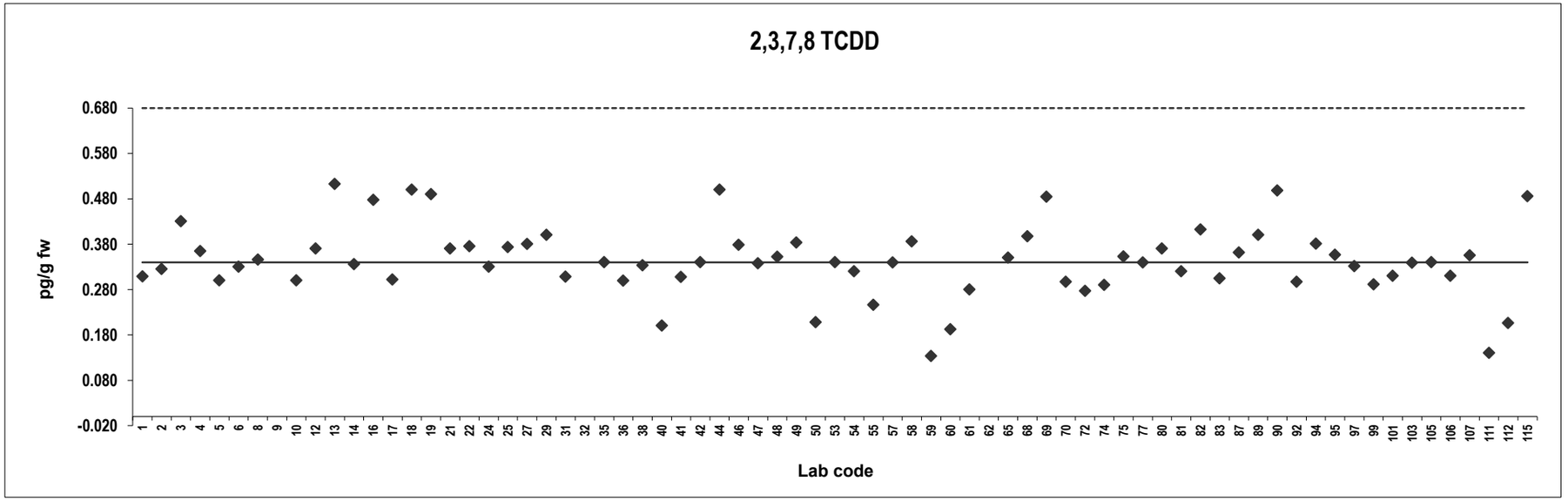
Fish oil

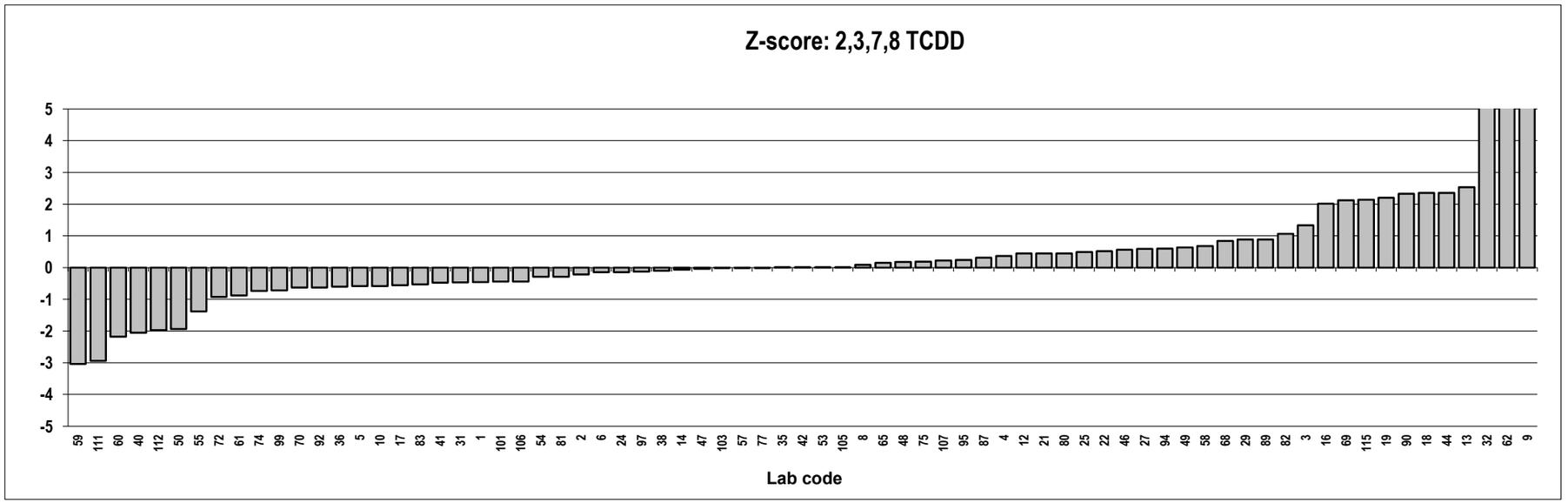
Congener: 2,3,7,8 TCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.31		65	0.35	
2	0.33		68	0.40	
3	0.43		69	0.48	
4	0.36		70	0.30	
5	0.30		72	0.28	
6	0.33		74	0.29	
8	0.35		75	0.35	
9	1.9	Outlier	77	0.34	
10	0.30		80	0.37	
12	0.37		81	0.32	
13	0.51		82	0.41	
14	0.34		83	0.30	
16	0.48		87	0.36	
17	0.30		89	0.40	
18	0.50	ND	90	0.50	
19	0.49		92	0.30	
21	0.37		94	0.38	
22	0.38		95	0.36	
24	0.33		97	0.33	
25	0.37		99	0.29	
27	0.38		101	0.31	
29	0.40		103	0.34	
31	0.31		105	0.34	
32	0.90	Outlier	106	0.31	
35	0.34		107	0.36	
36	0.30		111	0.14	ND
38	0.33		112	0.21	
40	0.20	ND	115	0.49	
41	0.31				
42	0.34				
44	0.50				
46	0.38				
47	0.34				
48	0.35				
49	0.38				
50	0.21				
53	0.34				
54	0.32				
55	0.25				
57	0.34				
58	0.39				
59	0.13				
60	0.19				
61	0.28				
62	1.7	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.34
Median all values pg/g	0.34
Consensus mean, pg/g	0.34
Standard deviation, pg/g	0.079
Relative standard deviation, %	23
No. of values reported	73
No. of values removed	3
No. of reported non-detects	4


2,3,7,8 TCDD
pg/g fw
0.680
0.580
0.480
0.380
0.280
0.180
0.080
-0.020
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 2,3,7,8 TCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
59 111 60 40 112 50 55 72 61 74 99 70 92 36 5 10 17 83 41 31 1 101 106 54 81 2 6 24 97 38 14 47 103 57 77 35 42 53 105 8 65 48 75 107 95 87 4 12 21 80 25 22 46 27 94 49 58 68 29 89 82 3 16 69 115 19 90 18 44 13 32 62 9
Lab code

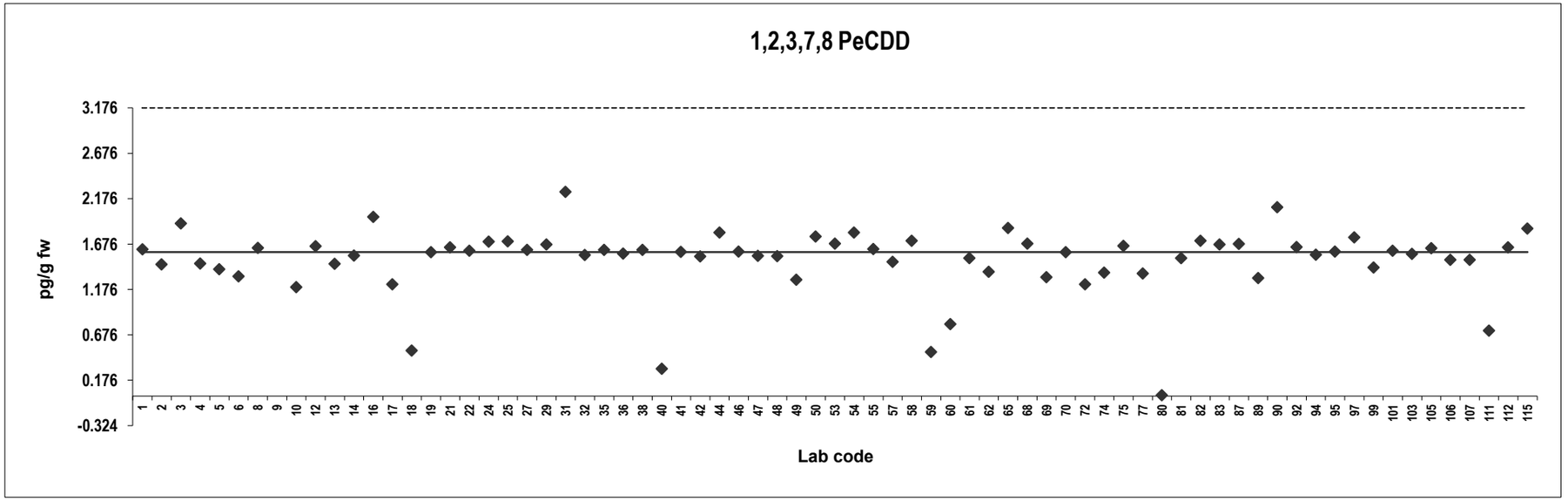
Fish oil

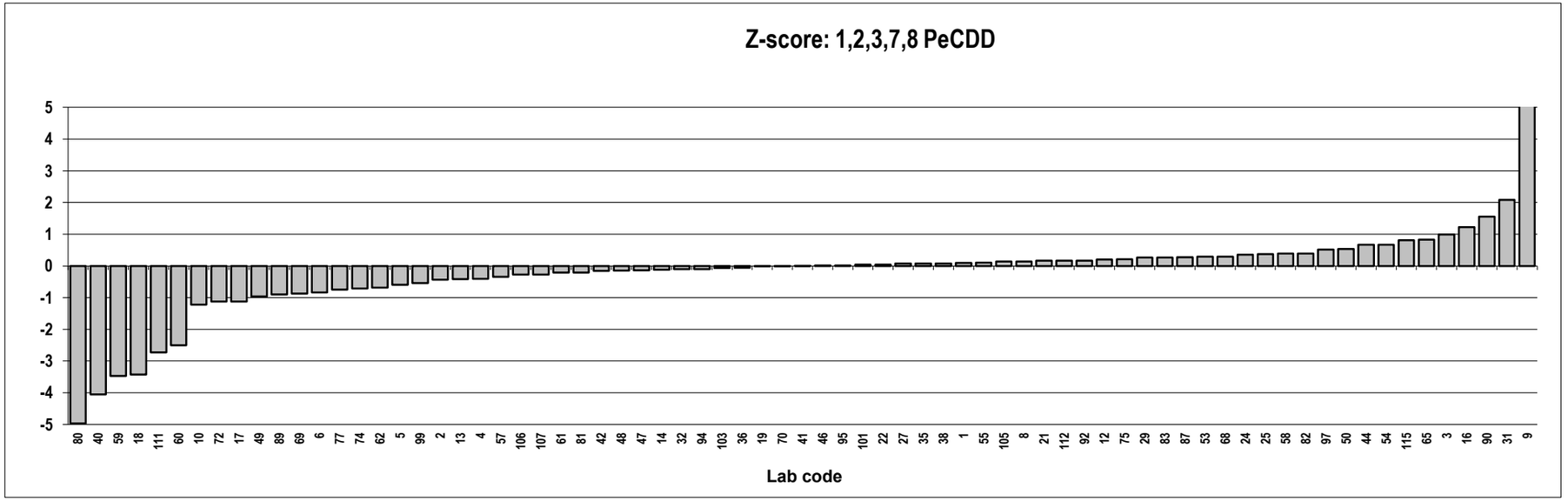
Congener: 1,2,3,7,8 PeCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.6		65	1.9	
2	1.5		68	1.7	
3	1.9		69	1.3	
4	1.5		70	1.6	
5	1.4		72	1.2	
6	1.3		74	1.4	
8	1.6		75	1.7	
9	3.5	Outlier	77	1.3	
10	1.2		80	0.010	ND
12	1.7		81	1.5	
13	1.5		82	1.7	
14	1.5		83	1.7	
16	2.0		87	1.7	
17	1.2		89	1.3	
18	0.50	ND	90	2.1	
19	1.6		92	1.6	
21	1.6		94	1.6	
22	1.6		95	1.6	
24	1.7		97	1.7	
25	1.7		99	1.4	
27	1.6		101	1.6	
29	1.7		103	1.6	
31	2.2		105	1.6	
32	1.6		106	1.5	
35	1.6		107	1.5	
36	1.6		111	0.72	
38	1.6		112	1.6	
40	0.30	ND	115	1.8	
41	1.6				
42	1.5				
44	1.8				
46	1.6				
47	1.5				
48	1.5				
49	1.3				
50	1.8				
53	1.7				
54	1.8				
55	1.6				
57	1.5				
58	1.7				
59	0.49				
60	0.79				
61	1.5				
62	1.4	ND			

Consenus statistics

Consensus median, pg/g	1.6
Median all values pg/g	1.6
Consensus mean, pg/g	1.5
Standard deviation, pg/g	0.37
Relative standard deviation, %	25
No. of values reported	73
No. of values removed	1
No. of reported non-detects	4


1,2,3,7,8 PeCDD
pg/g fw
3.176
2.676
2.176
1.676
1.176
0.676
0.176
-0.324
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,7,8 PeCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 40 59 18 111 60 10 72 17 49 89 69 6 77 74 62 5 99 2 13 4 57 106 107 61 81 42 48 47 14 32 94 103 36 19 70 41 46 95 101 22 27 35 38 1 55 105 8 21 112 92 12 75 29 83 87 53 68 24 25 58 82 97 50 44 54 115 65 3 16 90 31 9
Lab code

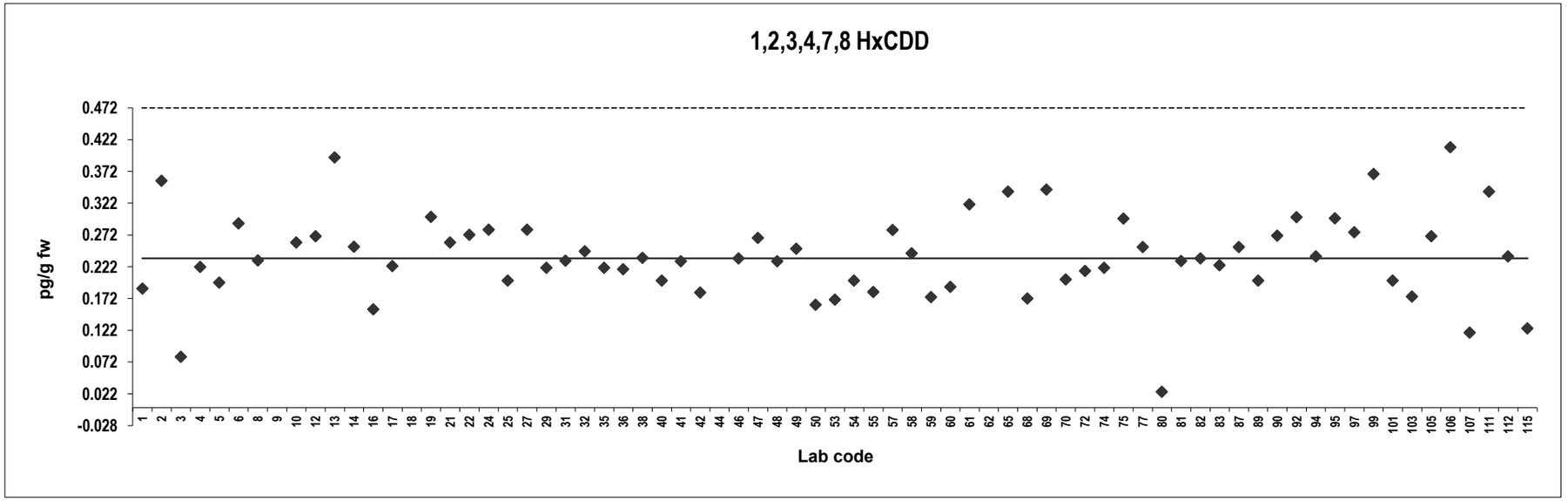
Fish oil

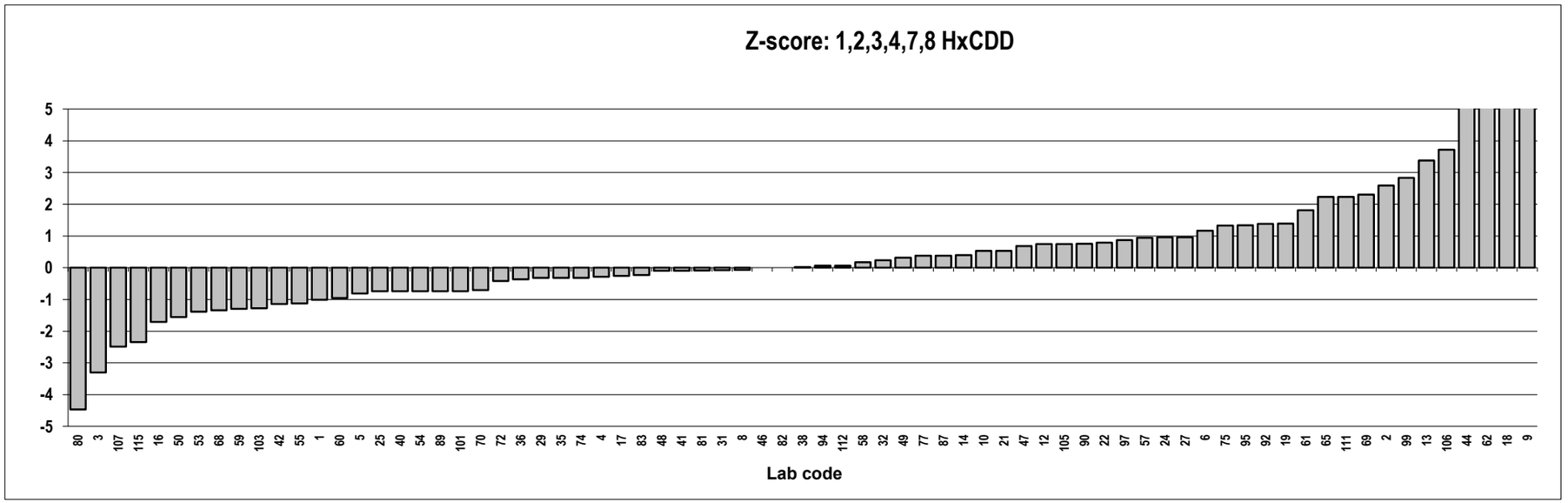
Congener: 1,2,3,4,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.19		65	0.34	
2	0.36		68	0.17	
3	0.080		69	0.34	
4	0.22		70	0.20	
5	0.20		72	0.22	
6	0.29		74	0.22	
8	0.23		75	0.30	
9	1.8	Outlier	77	0.25	
10	0.26		80	0.025	ND
12	0.27		81	0.23	
13	0.39		82	0.24	
14	0.25		83	0.22	
16	0.15	ND	87	0.25	
17	0.22		89	0.20	
18	1.0	Outlier,ND	90	0.27	
19	0.30		92	0.30	
21	0.26		94	0.24	
22	0.27		95	0.30	
24	0.28		97	0.28	
25	0.20		99	0.37	
27	0.28		101	0.20	
29	0.22		103	0.17	
31	0.23		105	0.27	
32	0.25		106	0.41	ND
35	0.22		107	0.12	
36	0.22		111	0.34	ND
38	0.24		112	0.24	
40	0.20	ND	115	0.12	
41	0.23				
42	0.18				
44	0.50	Outlier			
46	0.24				
47	0.27				
48	0.23				
49	0.25	ND			
50	0.16				
53	0.17				
54	0.20				
55	0.18				
57	0.28				
58	0.24				
59	0.17				
60	0.19				
61	0.32				
62	0.59	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.24
Median all values pg/g	0.24
Consensus mean, pg/g	0.24
Standard deviation, pg/g	0.067
Relative standard deviation, %	28
No. of values reported	73
No. of values removed	4
No. of reported non-detects	8


1,2,3,4,7,8 HxCDD
pg/g fw
0.472
0.422
0.372
0.322
0.272
0.222
0.172
0.122
0.072
0.022
-0.028
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,4,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 3 107 115 16 50 53 68 59 103 42 55 1 60 5 25 40 54 89 101 70 72 36 29 35 74 4 17 83 48 41 81 31 8 46 82 38 94 112 58 32 49 77 87 14 10 21 47 12 105 90 22 97 57 24 27 6 75 95 92 19 61 65 111 69 2 99 13 106 44 62 18 9
Lab code

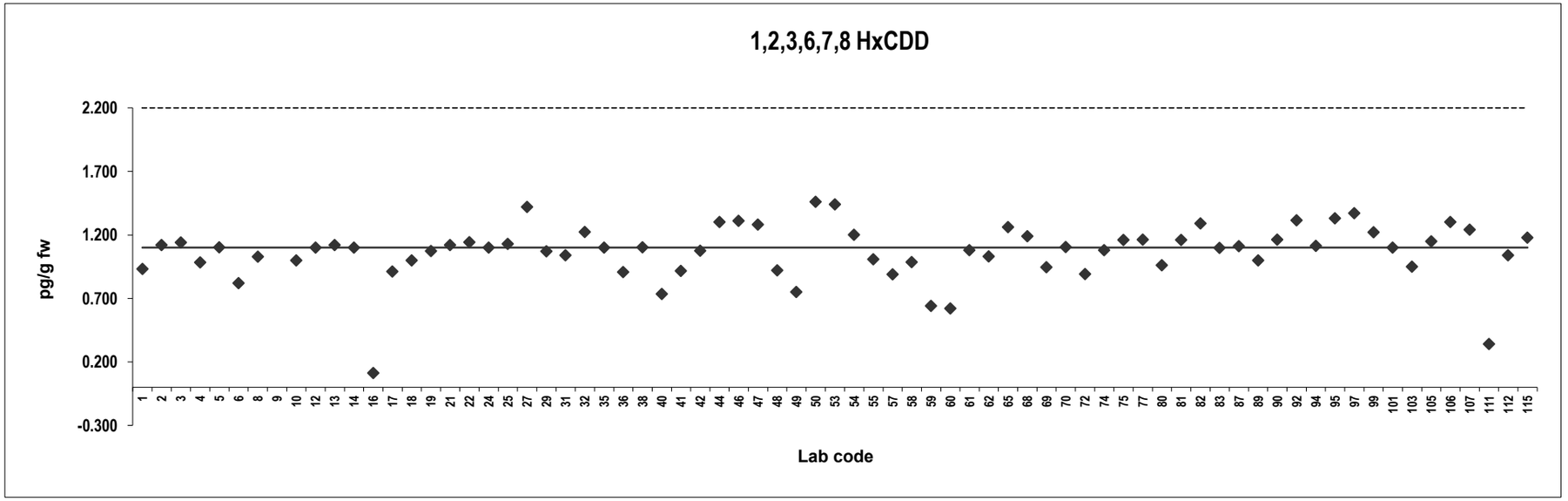
Fish oil

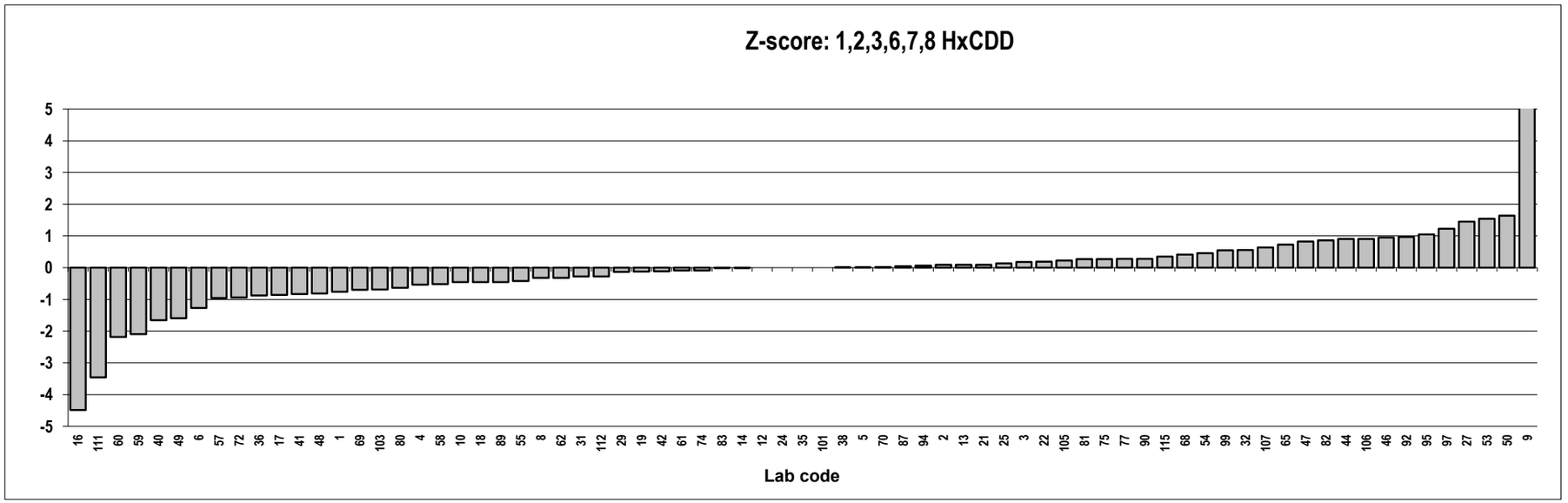
Congener: 1,2,3,6,7,8 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.93		65	1.3	
2	1.1		68	1.2	
3	1.1		69	0.95	
4	0.98		70	1.1	
5	1.1		72	0.89	
6	0.82		74	1.1	
8	1.0		75	1.2	
9	3.7	Outlier	77	1.2	
10	1.0		80	0.96	
12	1.1		81	1.2	
13	1.1		82	1.3	
14	1.1		83	1.1	
16	0.11	ND	87	1.1	
17	0.91		89	1.0	
18	1.0	ND	90	1.2	
19	1.1		92	1.3	
21	1.1		94	1.1	
22	1.1		95	1.3	
24	1.1		97	1.4	
25	1.1		99	1.2	
27	1.4		101	1.1	
29	1.1		103	0.95	
31	1.0		105	1.2	
32	1.2		106	1.3	
35	1.1		107	1.2	
36	0.91		111	0.34	ND
38	1.1		112	1.0	
40	0.74		115	1.2	
41	0.92				
42	1.1				
44	1.3				
46	1.3				
47	1.3				
48	0.92				
49	0.75	ND			
50	1.5				
53	1.4				
54	1.2				
55	1.0				
57	0.89				
58	0.99				
59	0.64				
60	0.62				
61	1.1				
62	1.0	ND			

Consenus statistics

Consensus median, pg/g	1.1
Median all values pg/g	1.1
Consensus mean, pg/g	1.1
Standard deviation, pg/g	0.22
Relative standard deviation, %	21
No. of values reported	73
No. of values removed	1
No. of reported non-detects	5


1,2,3,6,7,8 HxCDD
2.200
1.700
1.200
0.700
0.200
-0.300
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,6,7,8 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 111 60 59 40 49 6 57 72 36 17 41 48 1 69 103 80 4 58 10 18 89 55 8 62 31 112 29 19 42 61 74 83 14 12 24 35 101 38 5 70 87 94 2 13 21 25 3 22 105 81 75 77 90 115 68 54 99 32 107 65 47 82 44 106 46 92 95 97 27 53 50 9
Lab code

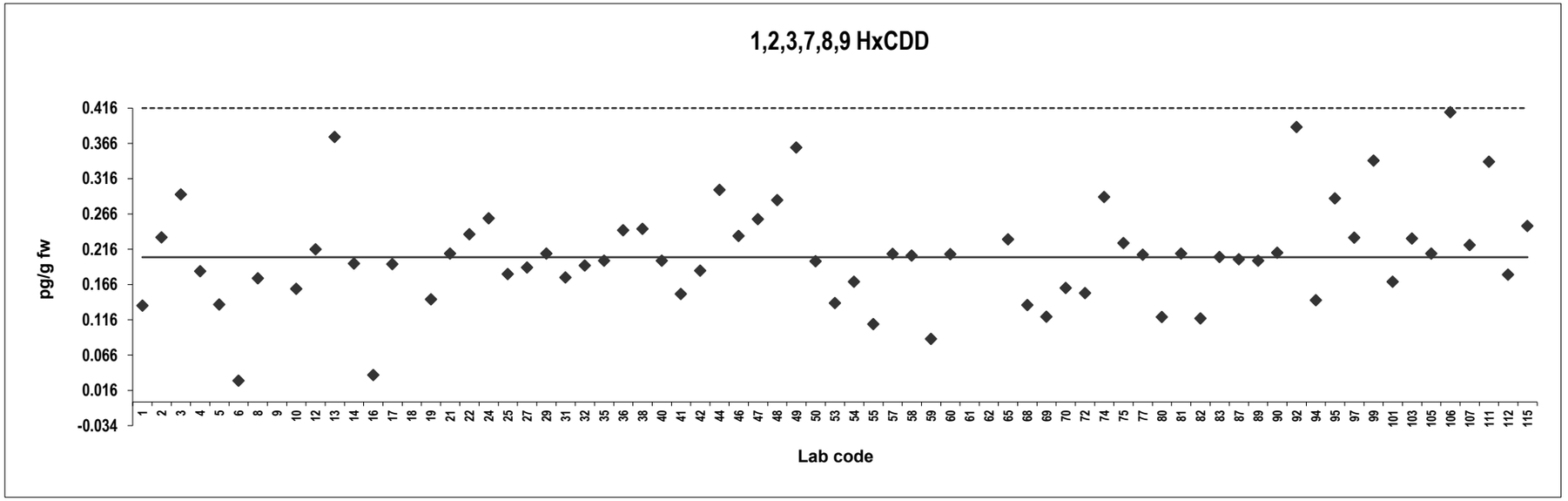
Fish oil

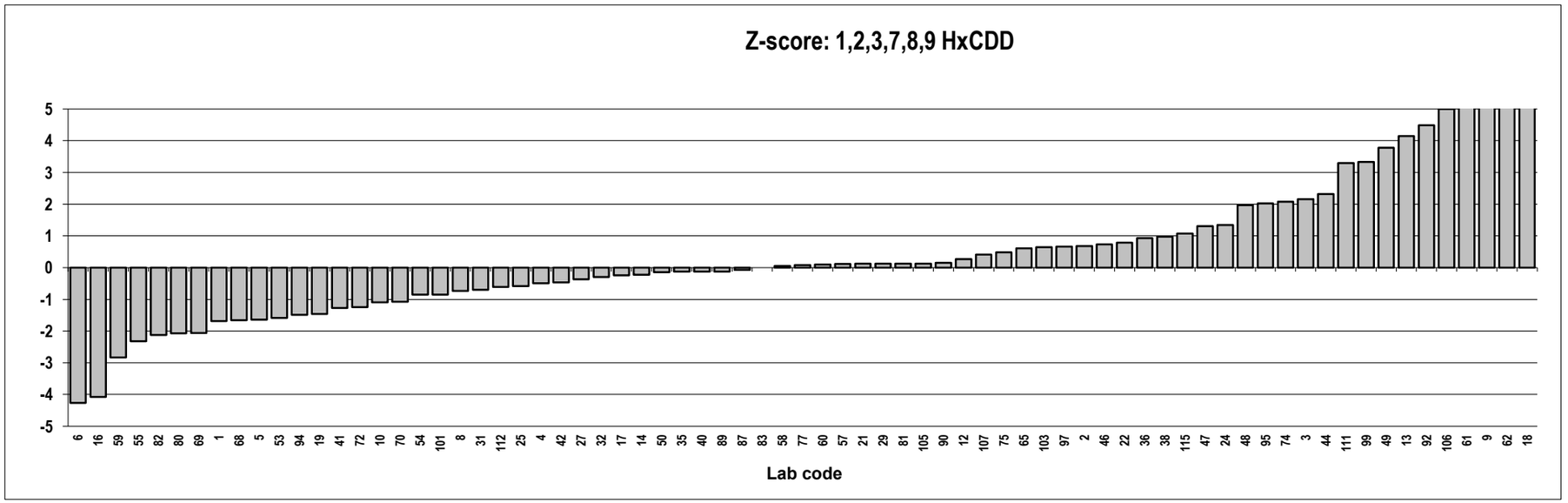
Congener: 1,2,3,7,8,9 HxCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.14		65	0.23	
2	0.23		68	0.14	
3	0.29	ND	69	0.12	
4	0.18		70	0.16	
5	0.14		72	0.15	
6	0.030	ND	74	0.29	
8	0.17		75	0.22	
9	0.64	Outlier	77	0.21	
10	0.16		80	0.12	
12	0.22		81	0.21	
13	0.38		82	0.12	
14	0.20		83	0.21	
16	0.038	ND	87	0.20	
17	0.20		89	0.20	
18	1.0	Outlier,ND	90	0.21	
19	0.14		92	0.39	
21	0.21		94	0.14	
22	0.24		95	0.29	
24	0.26		97	0.23	
25	0.18		99	0.34	
27	0.19		101	0.17	
29	0.21		103	0.23	
31	0.18		105	0.21	
32	0.19		106	0.41	ND
35	0.20		107	0.22	
36	0.24		111	0.34	ND
38	0.25		112	0.18	
40	0.20	ND	115	0.25	ND
41	0.15				
42	0.19				
44	0.30				
46	0.24				
47	0.26				
48	0.29				
49	0.36	ND			
50	0.20				
53	0.14				
54	0.17				
55	0.11				
57	0.21				
58	0.21				
59	0.089				
60	0.21				
61	0.45	Outlier			
62	0.84	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.21
Median all values pg/g	0.21
Consensus mean, pg/g	0.21
Standard deviation, pg/g	0.073
Relative standard deviation, %	35
No. of values reported	73
No. of values removed	4
No. of reported non-detects	10


1,2,3,7,8,9 HxCDD
pg/g fw
0.416
0.366
0.316
0.266
0.216
0.166
0.116
0.066
0.016
-0.034
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,7,8,9 HxCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 16 59 55 82 80 69 1 68 5 53 94 19 41 72 10 70 54 101 8 31 112 25 4 42 27 32 17 14 50 35 40 89 87 83 58 77 60 57 21 29 81 105 90 12 107 75 65 103 97 2 46 22 36 38 115 47 24 48 95 74 3 44 111 99 49 13 92 106 61 9 62 18
Lab code

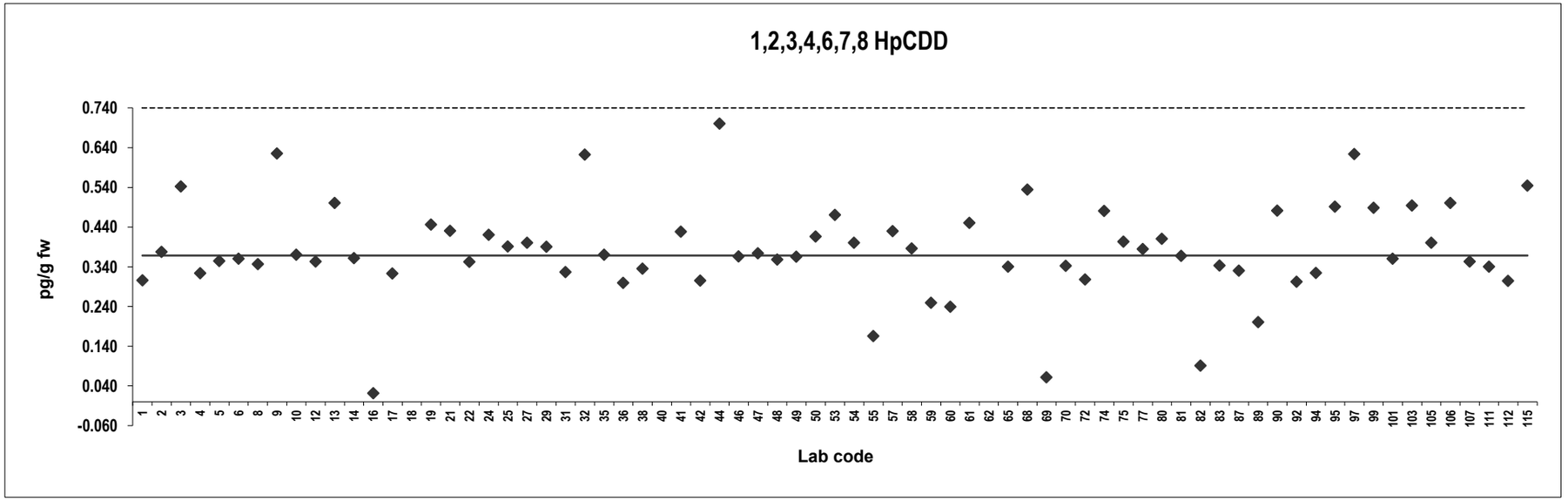
Fish oil

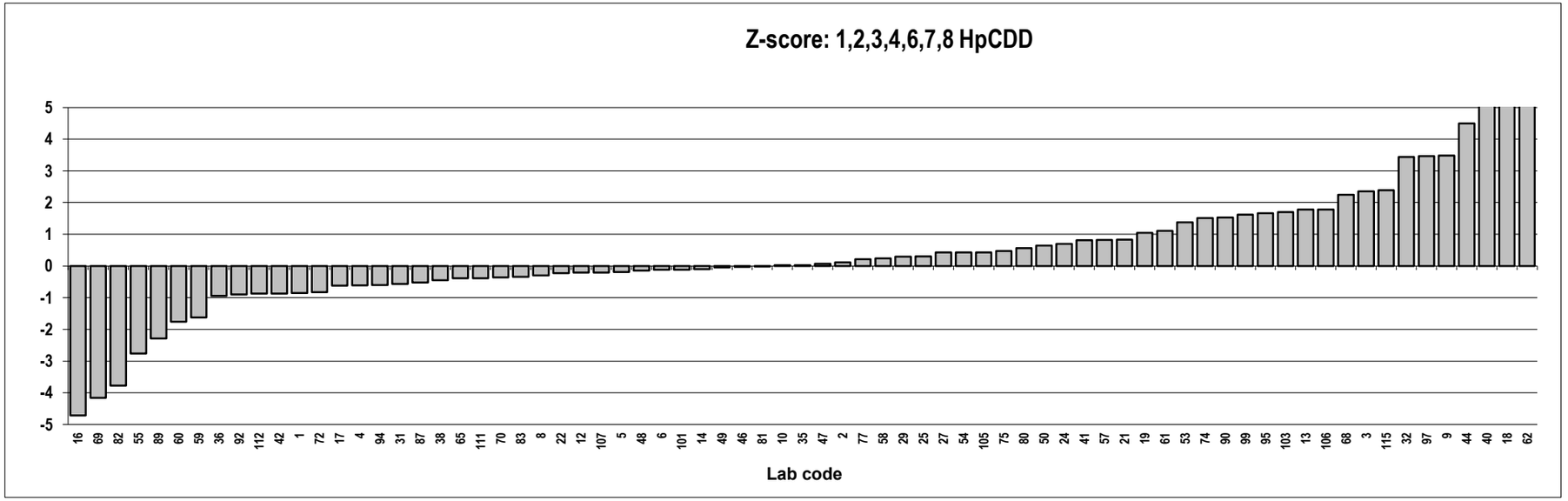
Congener: 1,2,3,4,6,7,8 HpCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.31		65	0.34	
2	0.38		68	0.53	
3	0.54		69	0.062	
4	0.32		70	0.34	
5	0.35		72	0.31	
6	0.36		74	0.48	
8	0.35		75	0.40	
9	0.63		77	0.38	
10	0.37		80	0.41	
12	0.35		81	0.37	
13	0.50	ND	82	0.091	ND
14	0.36		83	0.34	
16	0.021	ND	87	0.33	
17	0.32		89	0.20	
18	1.0	Outlier,ND	90	0.48	
19	0.45		92	0.30	
21	0.43		94	0.32	
22	0.35		95	0.49	
24	0.42		97	0.62	
25	0.39		99	0.49	
27	0.40		101	0.36	ND
29	0.39		103	0.49	
31	0.33		105	0.40	
32	0.62		106	0.50	
35	0.37		107	0.35	
36	0.30		111	0.34	ND
38	0.34		112	0.30	
40	0.90	Outlier,ND	115	0.54	
41	0.43				
42	0.30				
44	0.70				
46	0.37				
47	0.37				
48	0.36				
49	0.37				
50	0.42				
53	0.47				
54	0.40				
55	0.17				
57	0.43				
58	0.39				
59	0.25				
60	0.24				
61	0.45				
62	1.2	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.37
Median all values pg/g	0.37
Consensus mean, pg/g	0.38
Standard deviation, pg/g	0.12
Relative standard deviation, %	31
No. of values reported	73
No. of values removed	3
No. of reported non-detects	8


1,2,3,4,6,7,8 HpCDD
pg/g fw
0.740
0.640
0.540
0.440
0.340
0.240
0.140
0.040
-0.060
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 69 82 55 89 60 59 36 92 112 42 1 72 17 4 94 31 87 38 65 111 70 83 8 22 12 107 5 48 6 101 14 49 46 81 10 35 47 2 77 58 29 25 27 54 105 75 80 50 24 41 57 21 19 61 53 74 90 99 95 103 13 106 68 3 115 32 97 9 44 40 18 62
Lab code

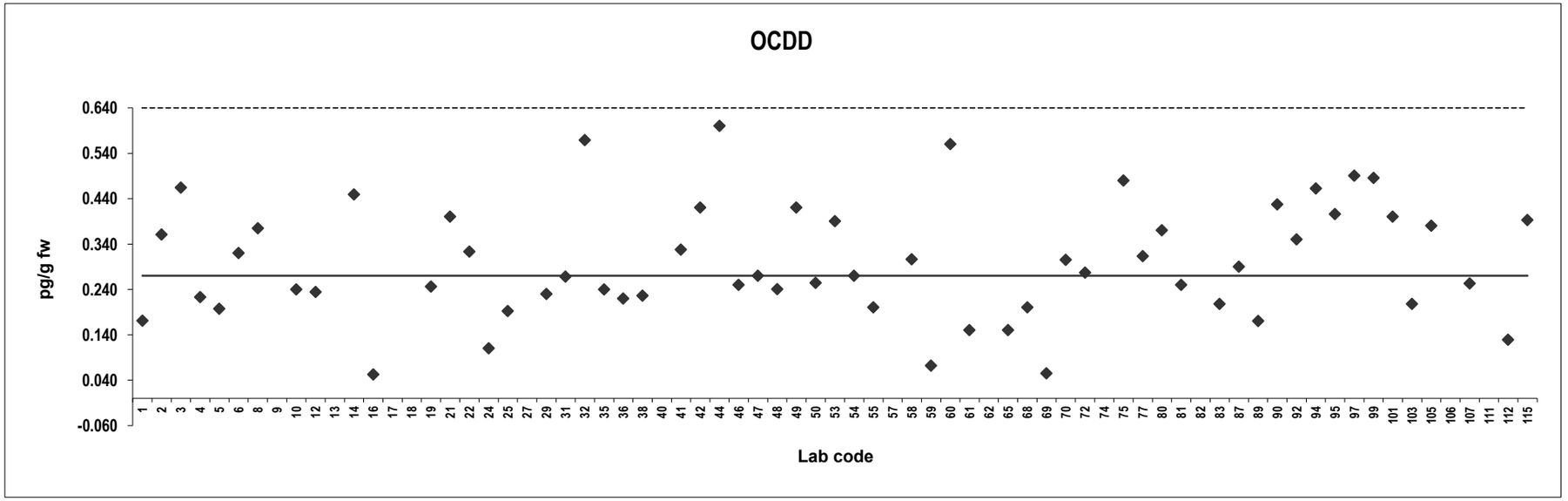
Fish oil

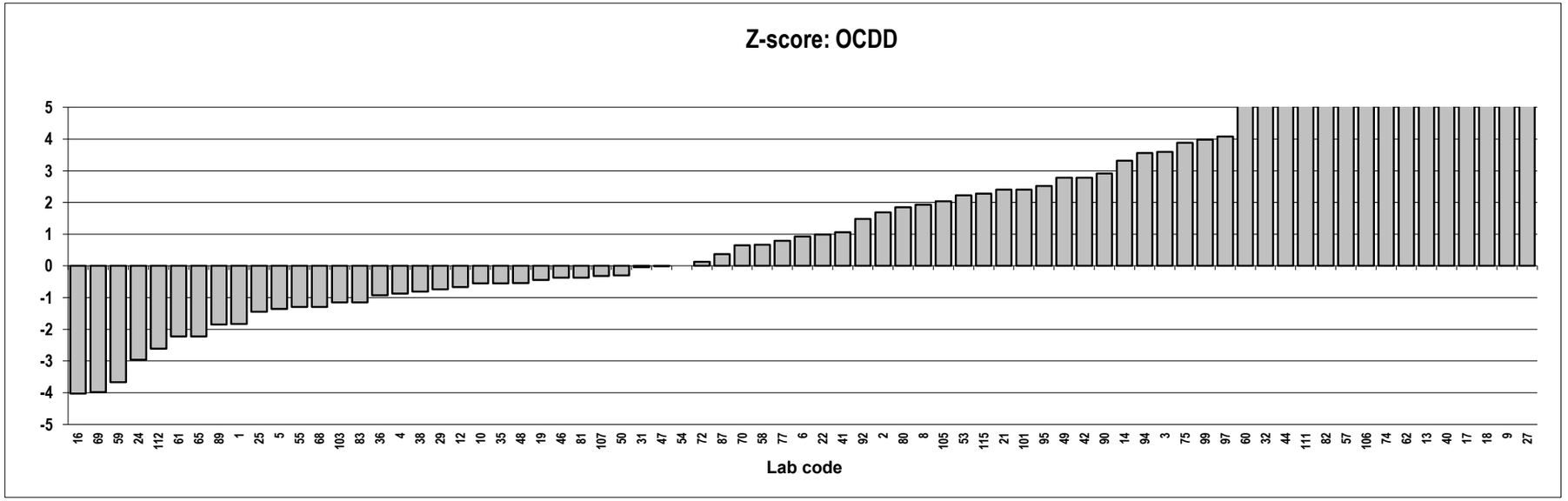
Congener: OCDD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.17		65	0.15	
2	0.36		68	0.20	
3	0.46		69	0.055	
4	0.22		70	0.31	
5	0.20		72	0.28	
6	0.32		74	0.86	Outlier
8	0.37		75	0.48	
9	5.7	Outlier	77	0.31	
10	0.24		80	0.37	
12	0.23		81	0.25	ND
13	1.0	Outlier,ND	82	0.71	Outlier
14	0.45		83	0.21	
16	0.053	ND	87	0.29	ND
17	2.0	Outlier,ND	89	0.17	ND
18	2.0	Outlier,ND	90	0.43	
19	0.25	ND	92	0.35	
21	0.40		94	0.46	
22	0.32		95	0.41	
24	0.11	ND	97	0.49	
25	0.19	ND	99	0.49	
27	7.0	Outlier,ND	101	0.40	ND
29	0.23		103	0.21	
31	0.27		105	0.38	
32	0.57		106	0.80	Outlier
35	0.24		107	0.25	
36	0.22		111	0.68	Outlier,ND
38	0.23		112	0.13	
40	1.5	Outlier,ND	115	0.39	
41	0.33				
42	0.42				
44	0.60				
46	0.25				
47	0.27				
48	0.24				
49	0.42	ND			
50	0.25				
53	0.39				
54	0.27				
55	0.20	ND			
57	0.79	Outlier			
58	0.31				
59	0.072				
60	0.56				
61	0.15				
62	0.96	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.27
Median all values pg/g	0.32
Consensus mean, pg/g	0.30
Standard deviation, pg/g	0.13
Relative standard deviation, %	42
No. of values reported	73
No. of values removed	12
No. of reported non-detects	17


OCDD
pg/g fw
0.640
0.540
0.440
0.340
0.240
0.140
0.040
-0.060
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: OCDD
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 69 59 24 112 61 65 89 1 25 5 55 68 103 83 36 4 38 29 12 10 35 48 19 46 81 107 50 31 47 54 72 87 70 58 77 6 22 41 92 2 80 8 105 53 115 21 101 95 49 42 90 14 94 3 75 99 97 60 32 44 111 82 57 106 74 62 13 40 17 18 9 27
Lab code

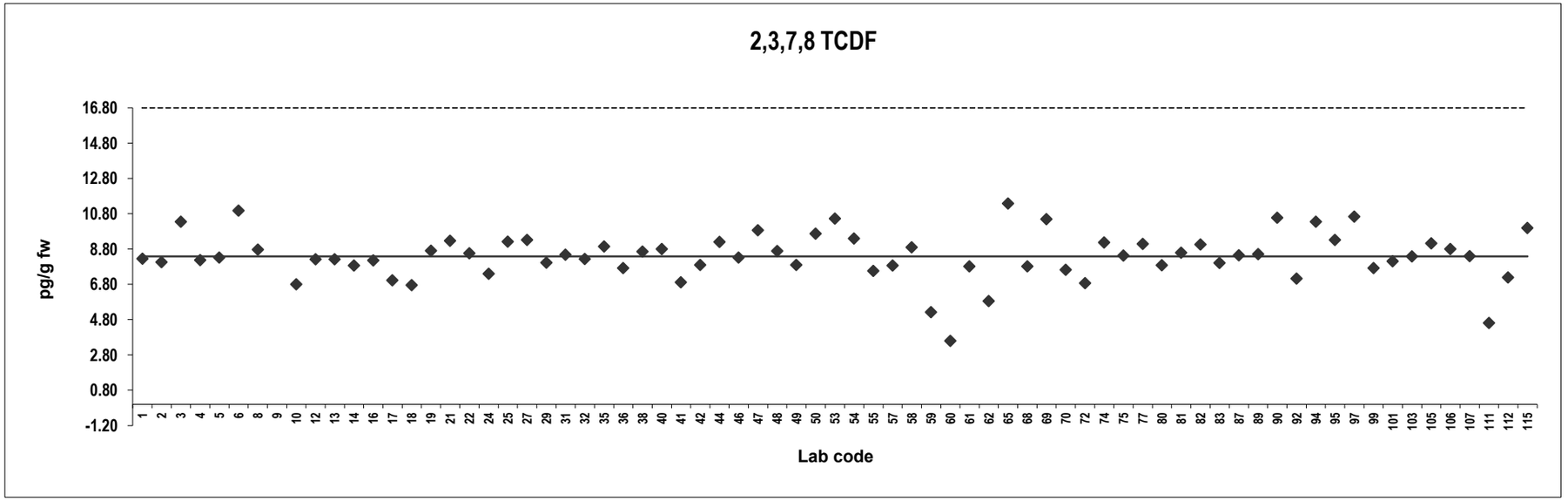
Fish oil

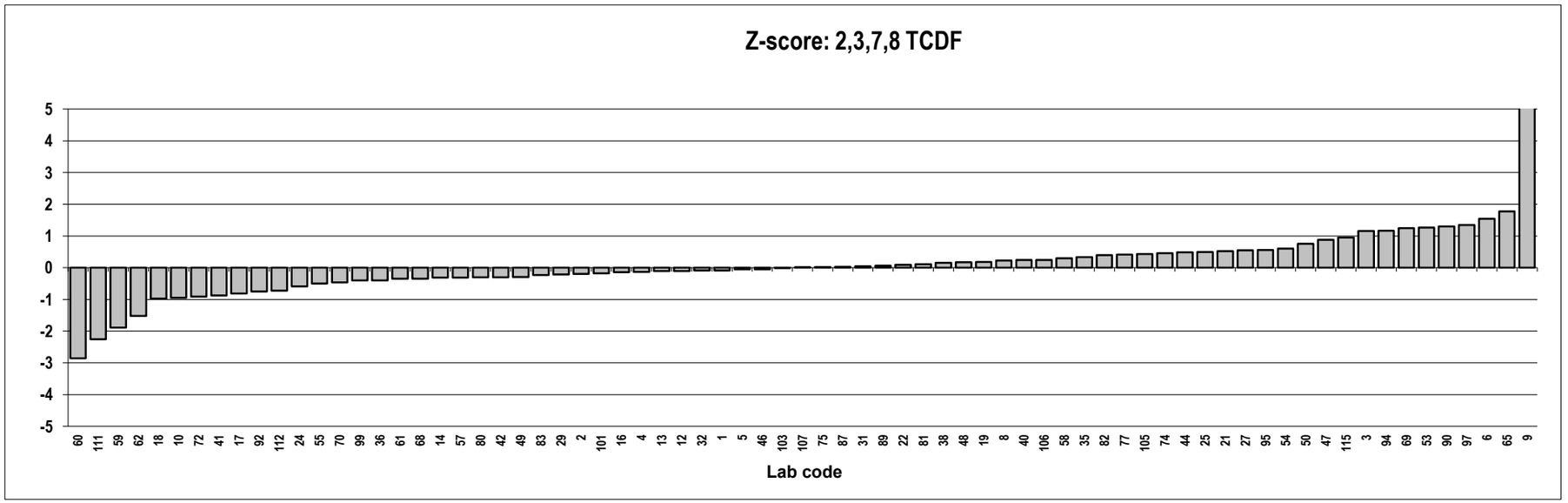
Congener: 2,3,7,8 TCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	8.2		65	11	
2	8.1		68	7.8	
3	10		69	10	
4	8.2		70	7.6	
5	8.3		72	6.9	
6	11		74	9.2	
8	8.8		75	8.4	
9	28	Outlier	77	9.1	
10	6.8		80	7.9	
12	8.2		81	8.6	
13	8.2		82	9.1	
14	7.9		83	8.0	
16	8.2		87	8.4	
17	7.0		89	8.5	
18	6.8		90	11	
19	8.7		92	7.1	
21	9.3		94	10	
22	8.6		95	9.3	
24	7.4		97	11	
25	9.2		99	7.7	
27	9.3		101	8.1	
29	8.0		103	8.4	
31	8.5		105	9.1	
32	8.2		106	8.8	
35	9.0		107	8.4	
36	7.7		111	4.6	
38	8.7		112	7.2	
40	8.8		115	10.0	
41	6.9				
42	7.9				
44	9.2				
46	8.3				
47	9.9				
48	8.7				
49	7.9				
50	9.7				
53	11				
54	9.4				
55	7.5				
57	7.9				
58	8.9				
59	5.2				
60	3.6				
61	7.8				
62	5.8				

Consenus statistics

Consensus median, pg/g	8.4
Median all values pg/g	8.4
Consensus mean, pg/g	8.4
Standard deviation, pg/g	1.4
Relative standard deviation, %	16
No. of values reported	73
No. of values removed	1
No. of reported non-detects	0


2,3,7,8 TCDF
pg/g fw
16.80
14.80
12.80
10.80
8.80
6.80
4.80
2.80
0.80
-1.20
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 2,3,7,8 TCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 59 62 18 10 72 41 17 92 112 24 55 70 99 36 61 68 14 57 80 42 49 83 29 2 101 16 4 13 12 32 1 5 46 103 107 75 87 31 89 22 81 38 48 19 8 40 106 58 35 82 77 105 74 44 25 21 27 95 54 50 47 115 3 94 69 53 90 97 6 65 9
Lab code

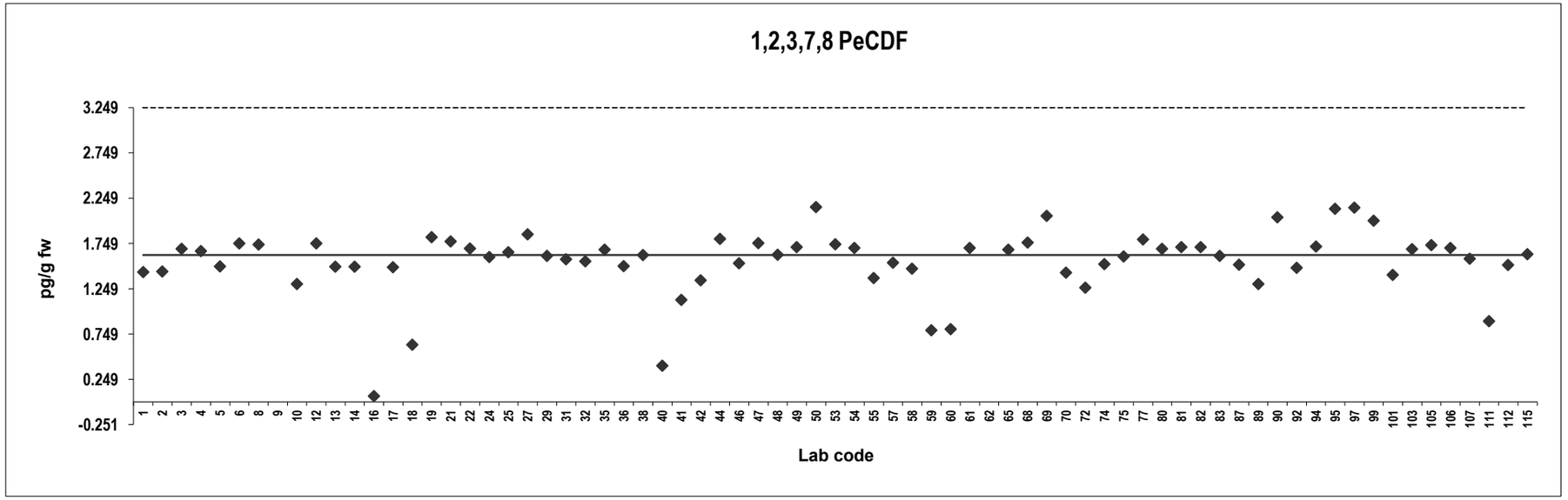
Fish oil

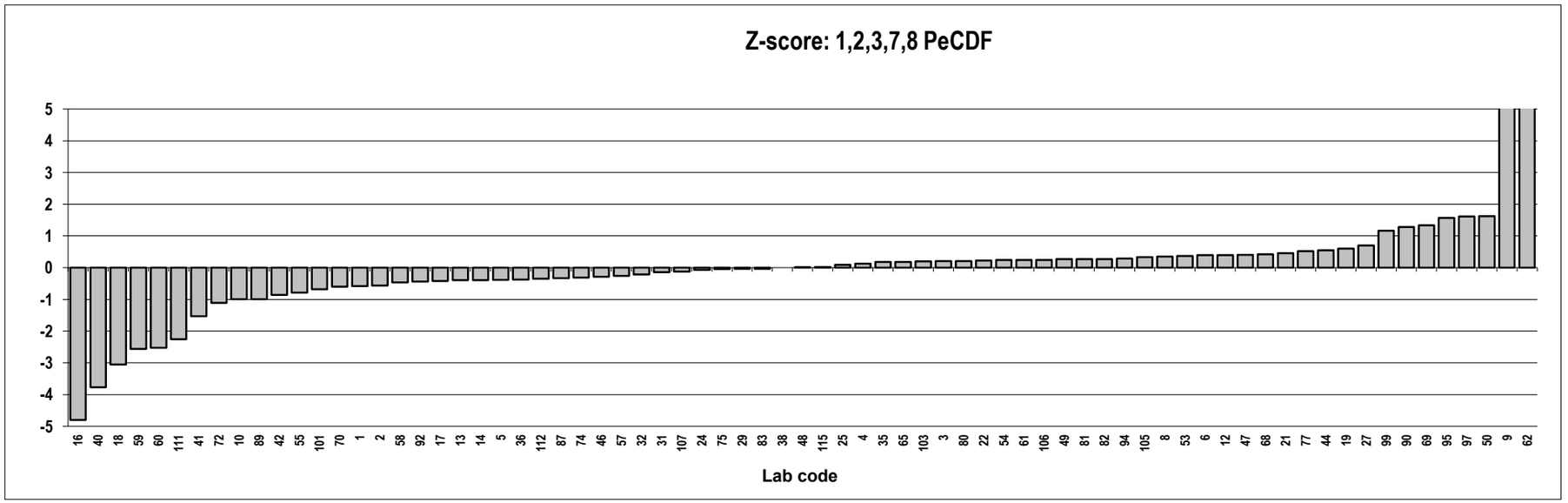
Congener: 1,2,3,7,8 PeCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.4		65	1.7	
2	1.4		68	1.8	
3	1.7		69	2.1	
4	1.7		70	1.4	
5	1.5		72	1.3	
6	1.8		74	1.5	
8	1.7		75	1.6	
9	4.5	Outlier	77	1.8	
10	1.3		80	1.7	
12	1.8		81	1.7	
13	1.5		82	1.7	
14	1.5		83	1.6	
16	0.065	ND	87	1.5	
17	1.5		89	1.3	
18	0.63		90	2.0	
19	1.8		92	1.5	
21	1.8		94	1.7	
22	1.7		95	2.1	
24	1.6		97	2.1	
25	1.7		99	2.0	
27	1.9		101	1.4	
29	1.6		103	1.7	
31	1.6		105	1.7	
32	1.6		106	1.7	
35	1.7		107	1.6	
36	1.5		111	0.89	
38	1.6		112	1.5	
40	0.40	ND	115	1.6	
41	1.1				
42	1.3				
44	1.8				
46	1.5				
47	1.8				
48	1.6				
49	1.7				
50	2.1				
53	1.7				
54	1.7				
55	1.4				
57	1.5				
58	1.5				
59	0.79				
60	0.80				
61	1.7				
62	12	Outlier			

Consenus statistics

Consensus median, pg/g	1.6
Median all values pg/g	1.6
Consensus mean, pg/g	1.6
Standard deviation, pg/g	0.36
Relative standard deviation, %	23
No. of values reported	73
No. of values removed	2
No. of reported non-detects	2


1,2,3,7,8 PeCDF
pg/g fw
3.249
2.749
2.249
1.749
1.249
0.749
0.249
-0.251
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code

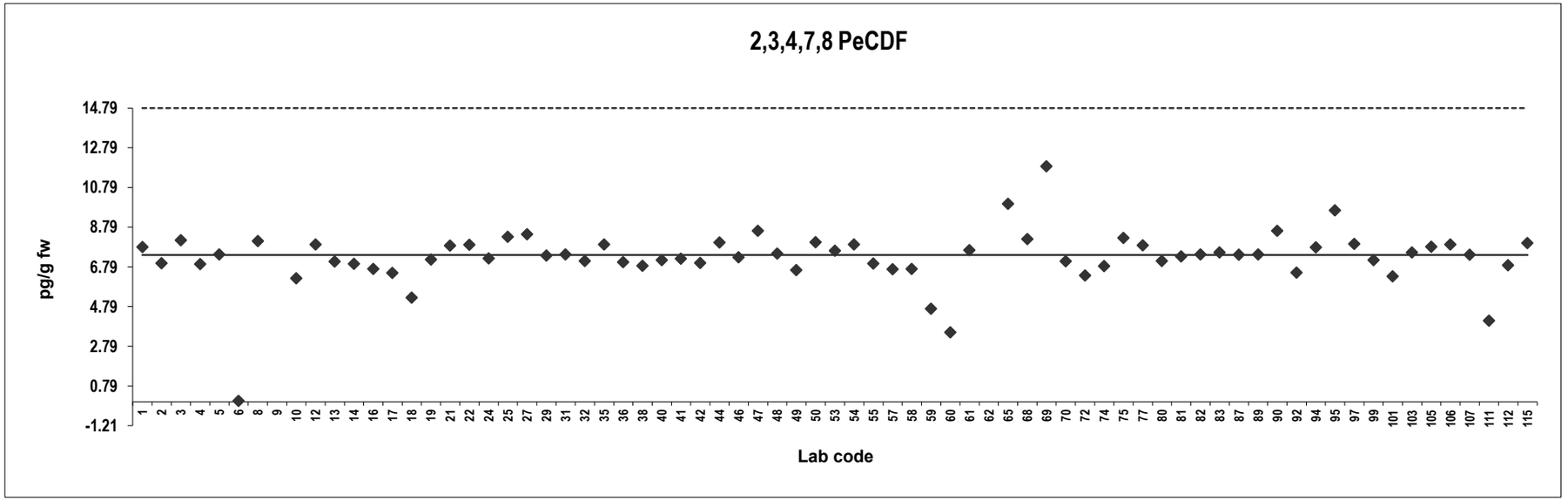

Z-score: 1,2,3,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 40 18 59 60 111 41 72 10 89 42 55 101 70 1 2 58 92 17 13 14 5 36 112 87 74 46 57 32 31 107 24 75 29 83 38 48 115 25 4 35 65 103 3 80 22 54 61 106 49 81 82 94 105 8 53 6 12 47 68 21 77 44 19 27 99 90 69 95 97 50 9 62
Lab code

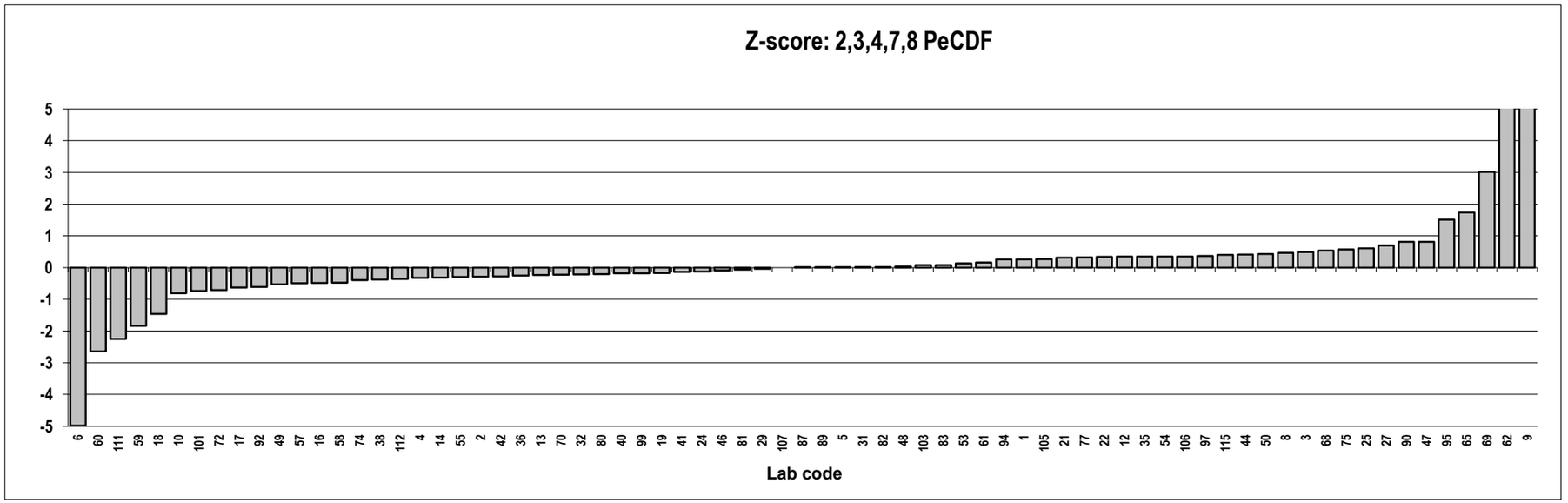
Fish oil

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

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	7.8		65	10	
2	7.0		68	8.2	
3	8.1		69	12	
4	6.9		70	7.1	
5	7.4		72	6.3	
6	0.030	ND	74	6.8	
8	8.1		75	8.2	
9	19	Outlier	77	7.9	
10	6.2		80	7.1	
12	7.9		81	7.3	
13	7.0		82	7.4	
14	6.9		83	7.5	
16	6.7		87	7.4	
17	6.5		89	7.4	
18	5.2		90	8.6	
19	7.1		92	6.5	
21	7.9		94	7.8	
22	7.9		95	9.6	
24	7.2		97	7.9	
25	8.3		99	7.1	
27	8.4		101	6.3	
29	7.3		103	7.5	
31	7.4		105	7.8	
32	7.1		106	7.9	
35	7.9		107	7.4	
36	7.0		111	4.1	
38	6.8		112	6.9	
40	7.1		115	8.0	
41	7.2				
42	7.0				
44	8.0				
46	7.3				
47	8.6				
48	7.4				
49	6.6				
50	8.0				
53	7.6				
54	7.9				
55	7.0				
57	6.7				
58	6.7				
59	4.7				
60	3.5				
61	7.6				
62	17	Outlier			

Consenus statistics	
Consensus median, pg/g	7.4
Median all values pg/g	7.4
Consensus mean, pg/g	7.2
Standard deviation, pg/g	1.4
Relative standard deviation, %	20
No. of values reported	73
No. of values removed	2
No. of reported non-detects	1


2,3,4,7,8 PeCDF
pg/g fw
14.79
12.79
10.79
8.79
6.79
4.79
2.79
0.79
-1.21
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 2,3,4,7,8 PeCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 60 111 59 18 10 101 72 17 92 49 57 16 58 74 38 112 4 14 55 2 42 36 13 70 32 80 40 99 19 41 24 46 81 29 107 87 89 5 31 82 48 103 83 53 61 94 1 105 21 77 22 12 35 54 106 97 115 44 50 8 3 68 75 25 27 90 47 95 65 69 62 9
Lab code

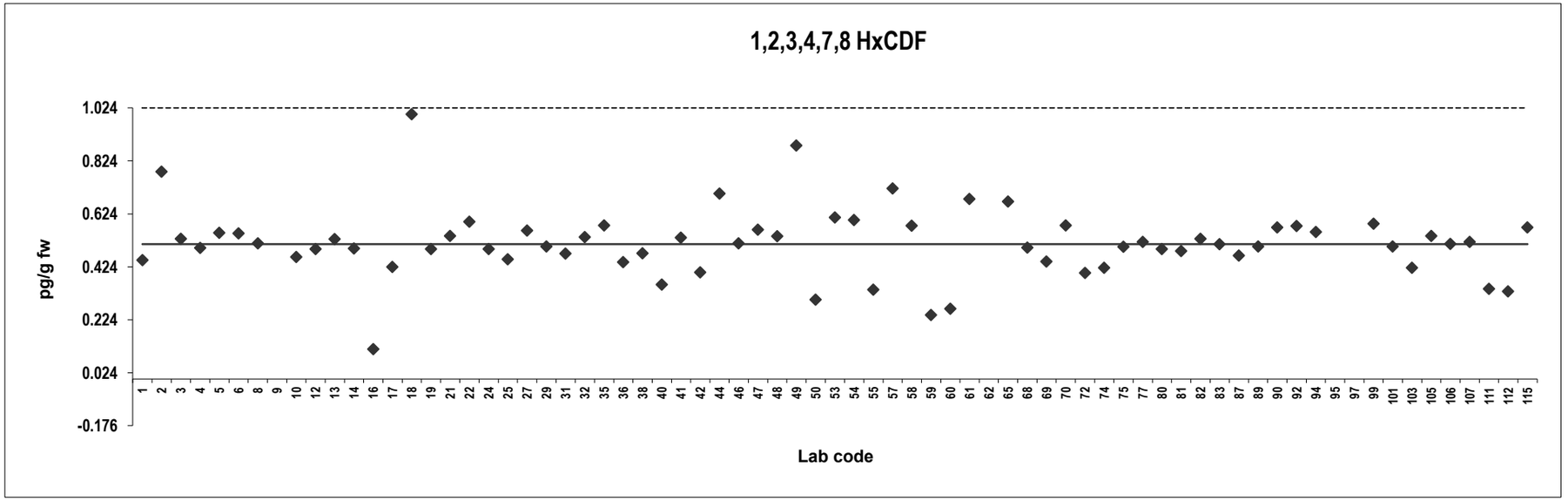
Fish oil

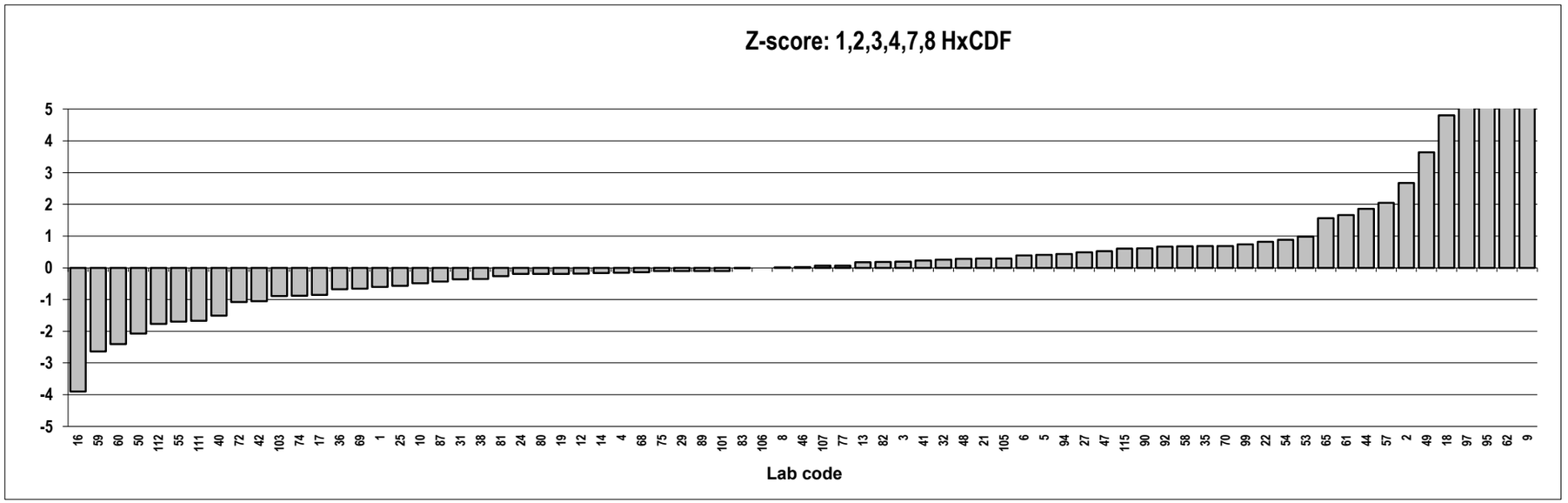
Congener: 1,2,3,4,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.45		65	0.67	
2	0.78		68	0.50	
3	0.53		69	0.44	
4	0.49		70	0.58	
5	0.55		72	0.40	
6	0.55		74	0.42	
8	0.51		75	0.50	
9	1.7	Outlier	77	0.52	
10	0.46		80	0.49	
12	0.49		81	0.48	
13	0.53		82	0.53	
14	0.49		83	0.51	
16	0.11	ND	87	0.47	
17	0.42		89	0.50	
18	1.0	ND	90	0.57	
19	0.49		92	0.58	
21	0.54		94	0.55	
22	0.59		95	1.4	Outlier
24	0.49		97	1.2	Outlier
25	0.45		99	0.59	
27	0.56		101	0.50	
29	0.50		103	0.42	
31	0.47		105	0.54	
32	0.54		106	0.51	
35	0.58		107	0.52	
36	0.44		111	0.34	ND
38	0.47		112	0.33	
40	0.36		115	0.57	
41	0.53				
42	0.40				
44	0.70				
46	0.51				
47	0.56				
48	0.54				
49	0.88				
50	0.30				
53	0.61				
54	0.60				
55	0.34				
57	0.72				
58	0.58				
59	0.24				
60	0.26				
61	0.68				
62	1.7	Outlier			

Consenus statistics

Consensus median, pg/g	0.51
Median all values pg/g	0.51
Consensus mean, pg/g	0.51
Standard deviation, pg/g	0.13
Relative standard deviation, %	26
No. of values reported	73
No. of values removed	4
No. of reported non-detects	3


1,2,3,4,7,8 HxCDF
pg/g fw
1.024
0.824
0.624
0.424
0.224
0.024
-0.176
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,4,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
16 59 60 50 112 55 111 40 72 42 103 74 17 36 69 1 25 10 87 31 38 81 24 80 19 12 14 4 68 75 29 89 101 83 106 8 46 107 77 13 82 3 41 32 48 21 105 6 5 94 27 47 115 90 92 58 35 70 99 22 54 53 65 61 44 57 2 49 18 97 95 62 9
Lab code

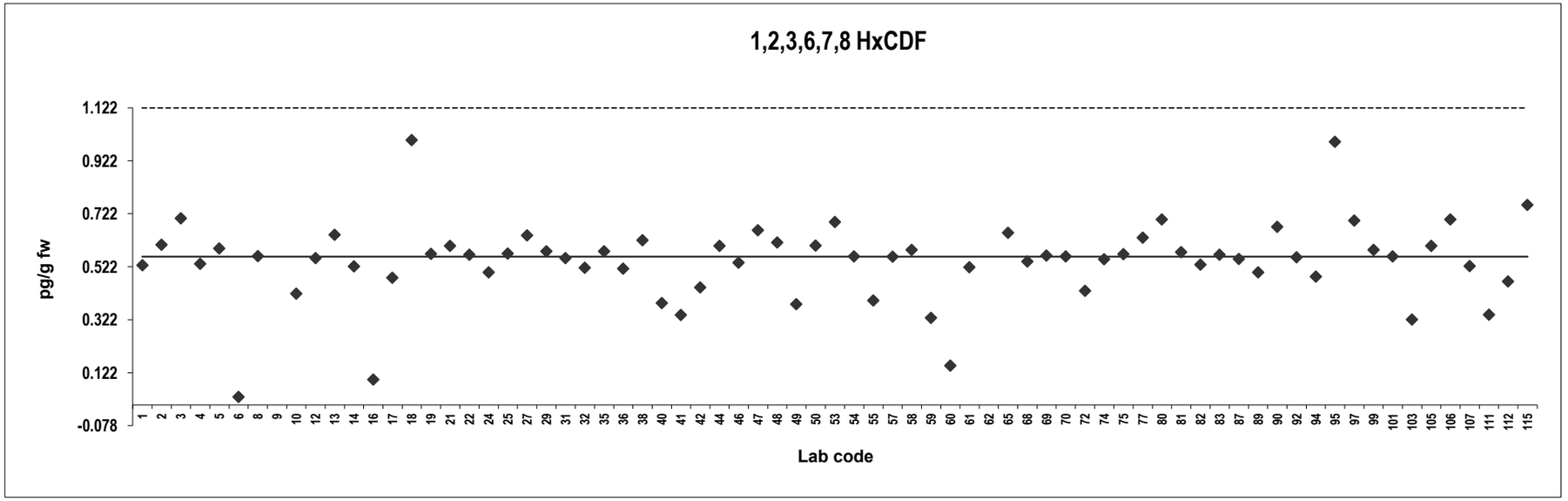
Fish oil

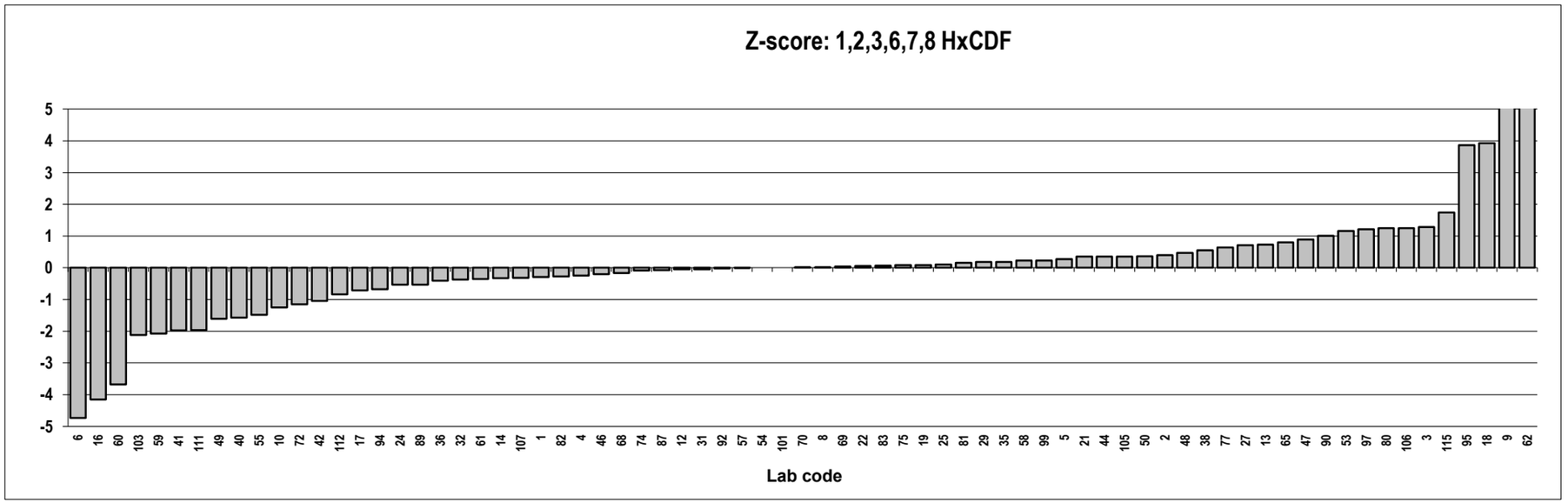
Congener: 1,2,3,6,7,8 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.53		65	0.65	
2	0.61		68	0.54	
3	0.70		69	0.56	
4	0.53		70	0.56	
5	0.59		72	0.43	
6	0.030	ND	74	0.55	
8	0.56		75	0.57	
9	1.5	Outlier	77	0.63	
10	0.42		80	0.70	
12	0.55		81	0.58	
13	0.64		82	0.53	
14	0.52		83	0.57	
16	0.095	ND	87	0.55	
17	0.48		89	0.50	
18	1.0	ND	90	0.67	
19	0.57		92	0.56	
21	0.60		94	0.48	
22	0.57		95	0.99	
24	0.50		97	0.70	
25	0.57		99	0.59	
27	0.64		101	0.56	
29	0.58		103	0.32	
31	0.55		105	0.60	
32	0.52		106	0.70	
35	0.58		107	0.52	
36	0.51		111	0.34	ND
38	0.62		112	0.47	
40	0.38		115	0.76	
41	0.34				
42	0.44				
44	0.60				
46	0.54				
47	0.66				
48	0.61				
49	0.38	ND			
50	0.60				
53	0.69				
54	0.56				
55	0.39				
57	0.56				
58	0.59				
59	0.33				
60	0.15				
61	0.52				
62	2.9	Outlier			

Consenus statistics

Consensus median, pg/g	0.56
Median all values pg/g	0.56
Consensus mean, pg/g	0.54
Standard deviation, pg/g	0.15
Relative standard deviation, %	28
No. of values reported	73
No. of values removed	2
No. of reported non-detects	5


1,2,3,6,7,8 HxCDF
pg/g fw
1.122
0.922
0.722
0.522
0.322
0.122
-0.078
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code

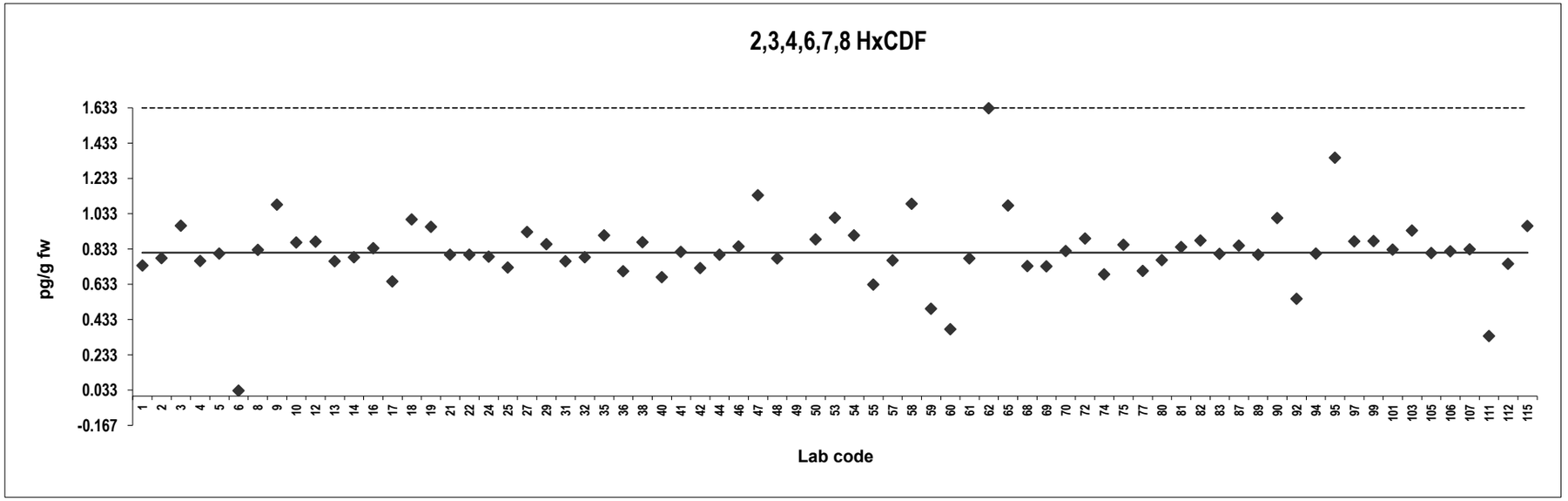

Z-score: 1,2,3,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 16 60 103 59 41 111 49 40 55 10 72 42 112 17 94 24 89 36 32 61 14 107 1 82 4 46 68 74 87 12 31 92 57 54 101 70 8 69 22 83 75 19 25 81 29 35 58 99 5 21 44 105 50 2 48 38 77 27 13 65 47 90 53 97 80 106 3 115 95 18 9 62
Lab code

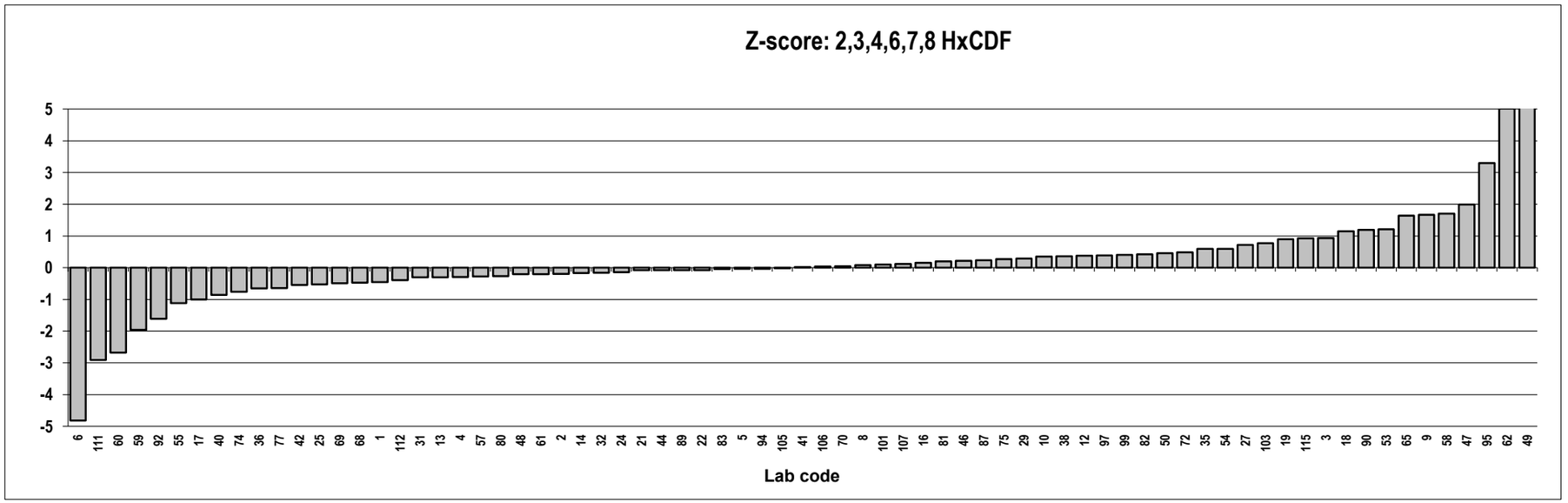
Fish oil

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

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.74		65	1.1	
2	0.78		68	0.74	
3	0.96		69	0.73	
4	0.77		70	0.82	
5	0.81		72	0.89	
6	0.030	ND	74	0.69	
8	0.83		75	0.86	
9	1.1		77	0.71	
10	0.87		80	0.77	
12	0.88		81	0.85	
13	0.76		82	0.88	
14	0.79		83	0.81	
16	0.84		87	0.85	
17	0.65		89	0.80	
18	1.0	ND	90	1.0	
19	0.96		92	0.55	
21	0.80		94	0.81	
22	0.80		95	1.4	
24	0.79		97	0.88	
25	0.73		99	0.88	
27	0.93		101	0.83	
29	0.86		103	0.94	
31	0.76		105	0.81	
32	0.79		106	0.82	
35	0.91		107	0.83	
36	0.71		111	0.34	ND
38	0.87		112	0.75	
40	0.67		115	0.96	
41	0.82				
42	0.72				
44	0.80				
46	0.85				
47	1.1				
48	0.78				
49	1.7	Outlier			
50	0.89				
53	1.0				
54	0.91				
55	0.63				
57	0.77				
58	1.1				
59	0.50				
60	0.38				
61	0.78				
62	1.6	ND			

Consenus statistics	
Consensus median, pg/g	0.81
Median all values pg/g	0.82
Consensus mean, pg/g	0.82
Standard deviation, pg/g	0.20
Relative standard deviation, %	25
No. of values reported	73
No. of values removed	1
No. of reported non-detects	4


2,3,4,6,7,8 HxCDF
pg/g fw
1.633
1.433
1.233
1.033
0.833
0.633
0.433
0.233
0.033
-0.167
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 2,3,4,6,7,8 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 111 60 59 92 55 17 40 74 36 77 42 25 69 68 1 112 31 13 4 57 80 48 61 2 14 32 24 21 44 89 22 83 5 94 105 41 106 70 8 101 107 16 81 46 87 75 29 10 38 12 97 99 82 50 72 35 54 27 103 19 115 3 18 90 53 65 9 58 47 95 62 49
Lab code

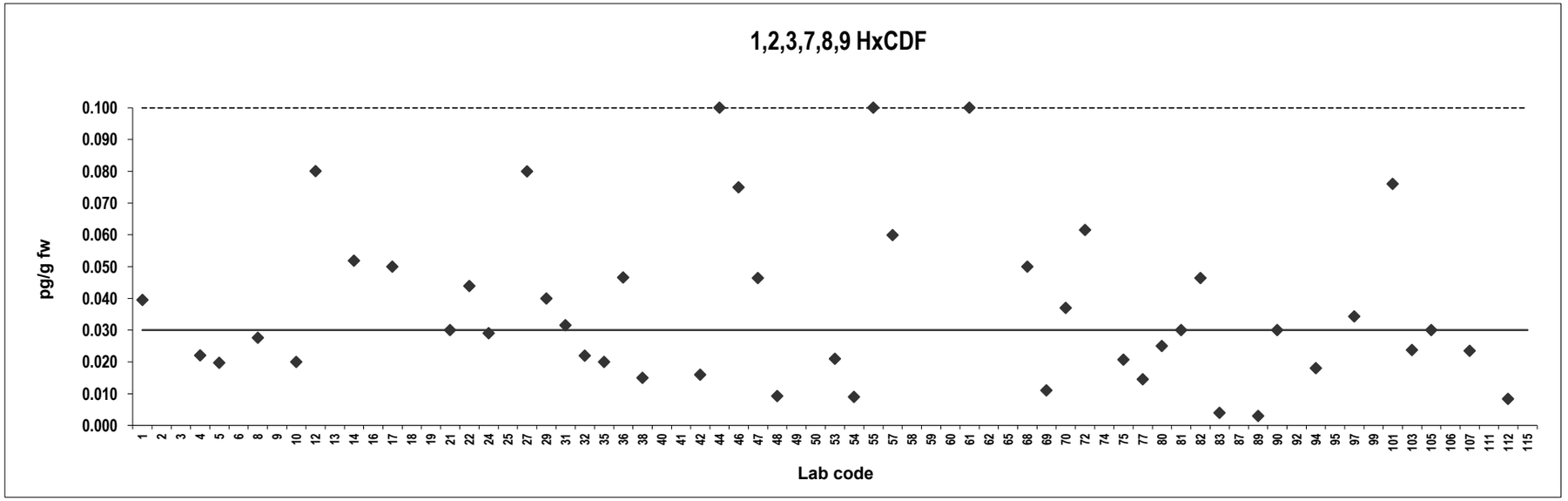
Fish oil

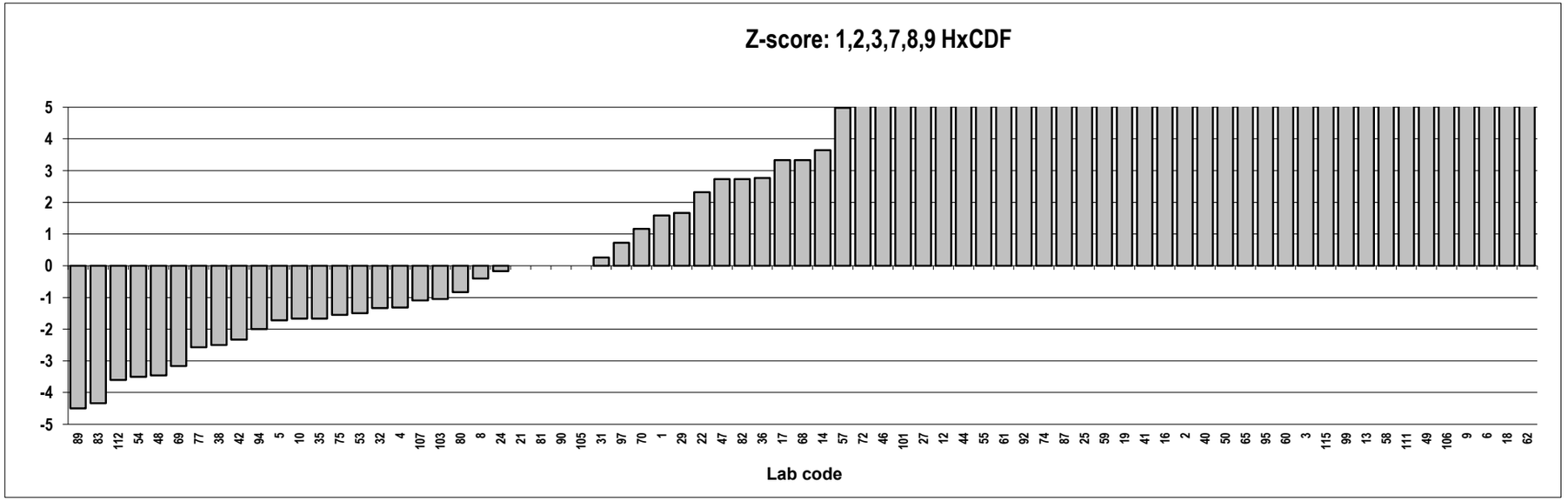
Congener: 1,2,3,7,8,9 HxCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.040	ND	65	0.19	Outlier
2	0.15	Outlier	68	0.050	ND
3	0.21	Outlier,ND	69	0.011	
4	0.022		70	0.037	
5	0.020		72	0.062	ND
6	0.78	Outlier	74	0.11	Outlier
8	0.028	ND	75	0.021	ND
9	0.61	Outlier	77	0.015	
10	0.020	ND	80	0.025	ND
12	0.080	ND	81	0.030	ND
13	0.25	Outlier,ND	82	0.046	ND
14	0.052		83	0.0040	ND
16	0.13	Outlier,ND	87	0.11	Outlier,ND
17	0.050	ND	89	0.0030	ND
18	1.0	Outlier,ND	90	0.030	ND
19	0.12	Outlier,ND	92	0.11	Outlier
21	0.030	ND	94	0.018	
22	0.044	ND	95	0.19	Outlier
24	0.029	ND	97	0.034	ND
25	0.12	Outlier,ND	99	0.24	Outlier
27	0.080	ND	101	0.076	ND
29	0.040	ND	103	0.024	
31	0.032	ND	105	0.030	ND
32	0.022		106	0.54	Outlier,ND
35	0.020		107	0.023	ND
36	0.047	ND	111	0.34	Outlier,ND
38	0.015	ND	112	0.0084	ND
40	0.15	Outlier,ND	115	0.22	Outlier,ND
41	0.13	Outlier,ND			
42	0.016	ND			
44	0.10	ND			
46	0.075	ND			
47	0.046	ND			
48	0.0093				
49	0.53	Outlier,ND			
50	0.18	Outlier			
53	0.021				
54	0.0090	ND			
55	0.10	ND			
57	0.060				
58	0.28	Outlier			
59	0.12	Outlier,ND			
60	0.20	Outlier			
61	0.10	ND			
62	1.9	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.030
Median all values pg/g	0.050
Consensus mean, pg/g	0.037
Standard deviation, pg/g	0.026
Relative standard deviation, %	69
No. of values reported	73
No. of values removed	26
No. of reported non-detects	49


1,2,3,7,8,9 HxCDF
pg/g fw
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code

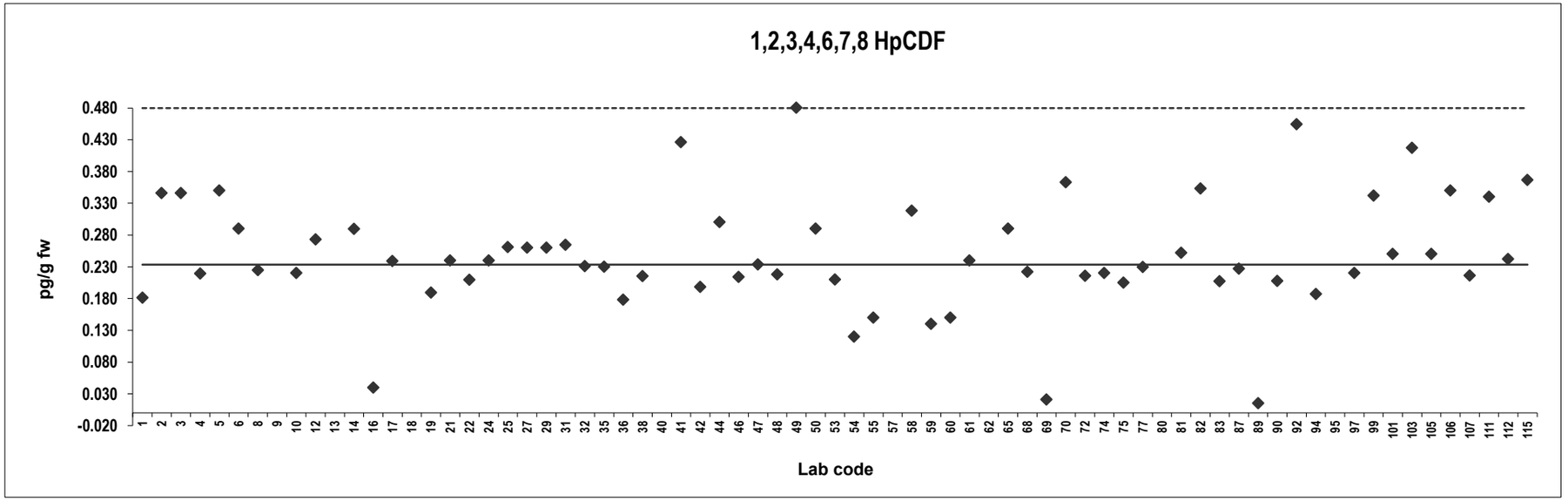

Z-score: 1,2,3,7,8,9 HxCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 83 112 54 48 69 77 38 42 94 5 10 35 75 53 32 4 107 103 80 8 24 21 81 90 105 31 97 70 1 29 22 47 82 36 17 68 14 57 72 46 101 27 12 44 55 61 92 74 87 25 59 19 41 16 2 40 50 65 95 60 3 115 99 13 58 111 49 106 9 6 18 62
Lab code

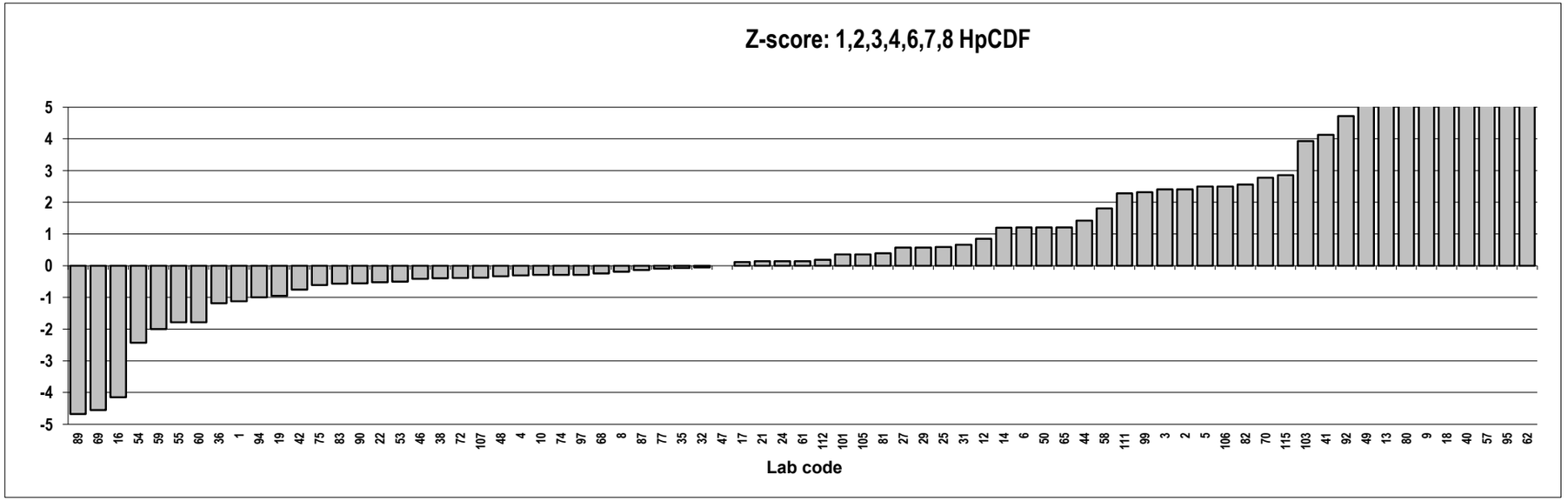
Fish oil

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

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.18		65	0.29	
2	0.35		68	0.22	
3	0.35		69	0.021	
4	0.22		70	0.36	
5	0.35		72	0.22	
6	0.29		74	0.22	
8	0.22		75	0.21	
9	0.68	Outlier	77	0.23	
10	0.22		80	0.58	Outlier
12	0.27		81	0.25	
13	0.50	Outlier,ND	82	0.35	
14	0.29		83	0.21	
16	0.040	ND	87	0.23	
17	0.24		89	0.015	ND
18	1.0	Outlier,ND	90	0.21	
19	0.19		92	0.45	
21	0.24		94	0.19	
22	0.21		95	2.7	Outlier
24	0.24		97	0.22	
25	0.26		99	0.34	
27	0.26		101	0.25	ND
29	0.26		103	0.42	
31	0.26		105	0.25	
32	0.23		106	0.35	
35	0.23		107	0.22	
36	0.18		111	0.34	ND
38	0.22		112	0.24	
40	1.0	Outlier,ND	115	0.37	
41	0.43				
42	0.20				
44	0.30				
46	0.21				
47	0.23				
48	0.22				
49	0.48	ND			
50	0.29				
53	0.21				
54	0.12				
55	0.15	ND			
57	1.0	Outlier			
58	0.32				
59	0.14				
60	0.15				
61	0.24				
62	14	Outlier			

Consenus statistics	
Consensus median, pg/g	0.23
Median all values pg/g	0.24
Consensus mean, pg/g	0.25
Standard deviation, pg/g	0.089
Relative standard deviation, %	36
No. of values reported	73
No. of values removed	8
No. of reported non-detects	9


1,2,3,4,6,7,8 HpCDF
pg/g fw
0.480
0.430
0.380
0.330
0.280
0.230
0.180
0.130
0.080
0.030
-0.020
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,4,6,7,8 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 69 16 54 59 55 60 36 1 94 19 42 75 83 90 22 53 46 38 72 107 48 4 10 74 97 68 8 87 77 35 32 47 17 21 24 61 112 101 105 81 27 29 25 31 12 14 6 50 65 44 58 111 99 3 2 5 106 82 70 115 103 41 92 49 13 80 9 18 40 57 95 62
Lab code

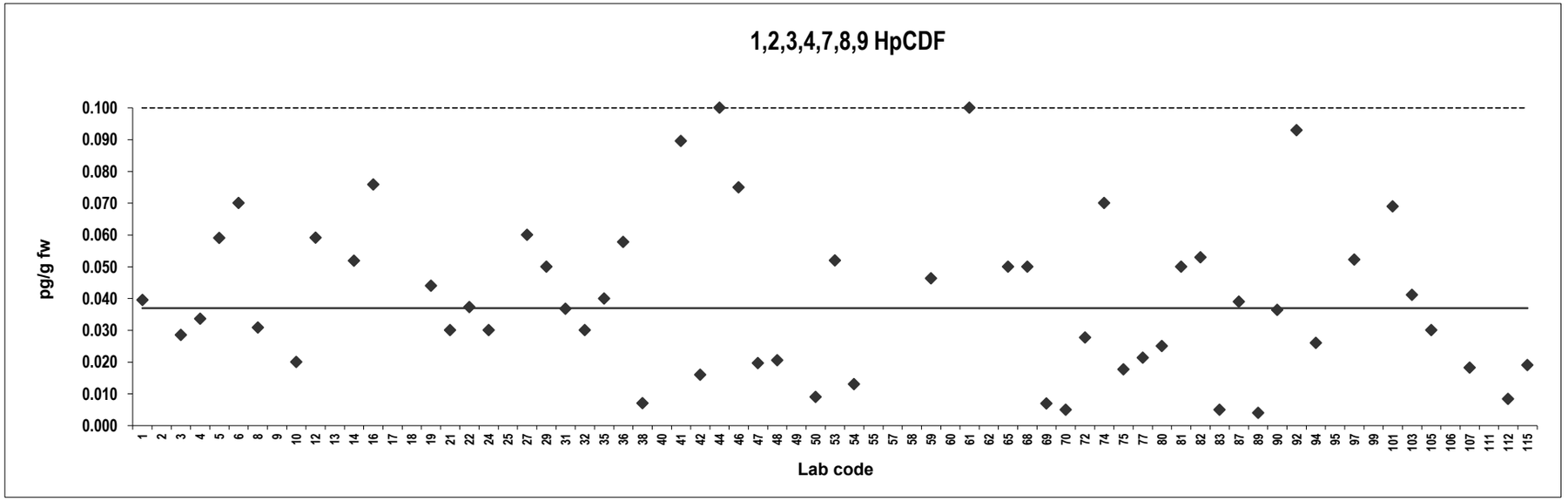
Fish oil

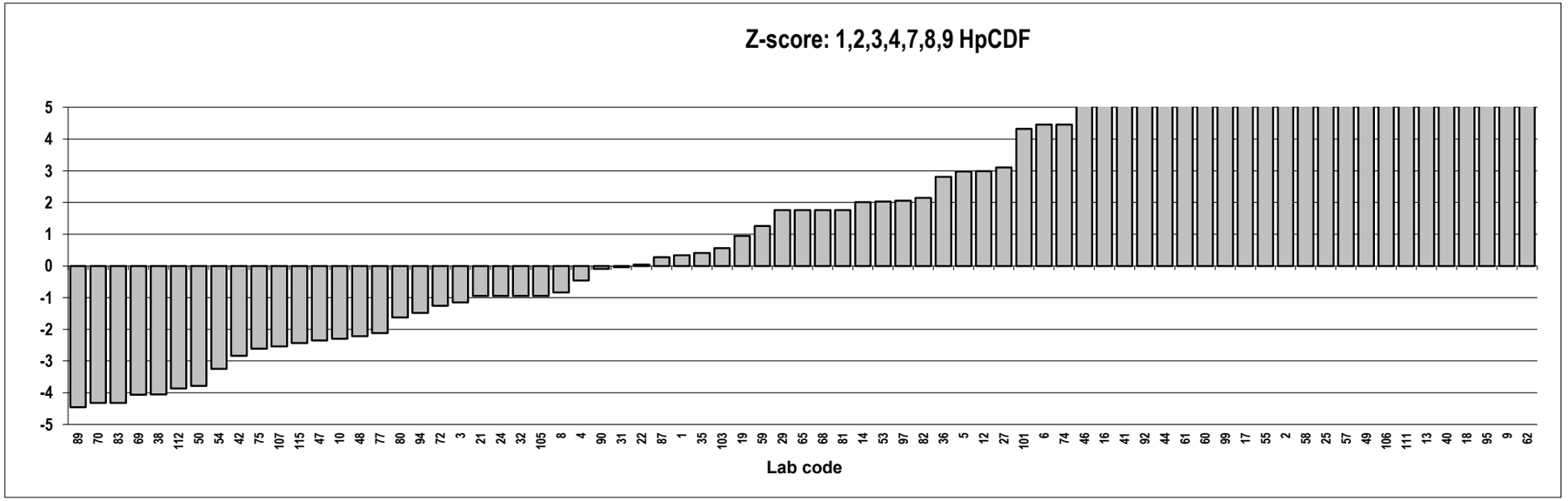
Congener: 1,2,3,4,7,8,9 HpCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.040	ND	65	0.050	ND
2	0.15	Outlier	68	0.050	ND
3	0.029		69	0.0070	
4	0.034		70	0.0050	ND
5	0.059		72	0.028	ND
6	0.070	ND	74	0.070	
8	0.031	ND	75	0.018	
9	1.3	Outlier	77	0.021	
10	0.020	ND	80	0.025	ND
12	0.059	ND	81	0.050	ND
13	0.50	Outlier,ND	82	0.053	ND
14	0.052		83	0.0050	ND
16	0.076	ND	87	0.039	ND
17	0.15	Outlier,ND	89	0.0040	ND
18	1.0	Outlier,ND	90	0.036	
19	0.044	ND	92	0.093	
21	0.030	ND	94	0.026	
22	0.037	ND	95	1.1	Outlier
24	0.030	ND	97	0.052	
25	0.18	Outlier,ND	99	0.15	Outlier
27	0.060	ND	101	0.069	ND
29	0.050	ND	103	0.041	
31	0.037	ND	105	0.030	ND
32	0.030		106	0.32	Outlier,ND
35	0.040		107	0.018	
36	0.058	ND	111	0.34	Outlier,ND
38	0.0070	ND	112	0.0084	ND
40	0.50	Outlier,ND	115	0.019	
41	0.090	ND			
42	0.016	ND			
44	0.10	ND			
46	0.075	ND			
47	0.020				
48	0.021				
49	0.22	Outlier,ND			
50	0.0090				
53	0.052				
54	0.013				
55	0.15	Outlier,ND			
57	0.22	Outlier			
58	0.16	Outlier			
59	0.046	ND			
60	0.14	Outlier			
61	0.10	ND			
62	1.6	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.037
Median all values pg/g	0.050
Consensus mean, pg/g	0.040
Standard deviation, pg/g	0.025
Relative standard deviation, %	61
No. of values reported	73
No. of values removed	17
No. of reported non-detects	44


1,2,3,4,7,8,9 HpCDF
pg/g fw
0.100
0.090
0.080
0.070
0.060
0.050
0.040
0.030
0.020
0.010
0.000
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 62 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: 1,2,3,4,7,8,9 HpCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
89 70 83 69 38 112 50 54 42 75 107 115 47 10 48 77 80 94 72 3 21 24 32 105 8 4 90 31 22 87 1 35 103 19 59 29 65 68 81 14 53 97 82 36 5 12 27 101 6 74 46 16 41 92 44 61 60 99 17 55 2 58 25 57 49 106 111 13 40 18 95 9 62
Lab code

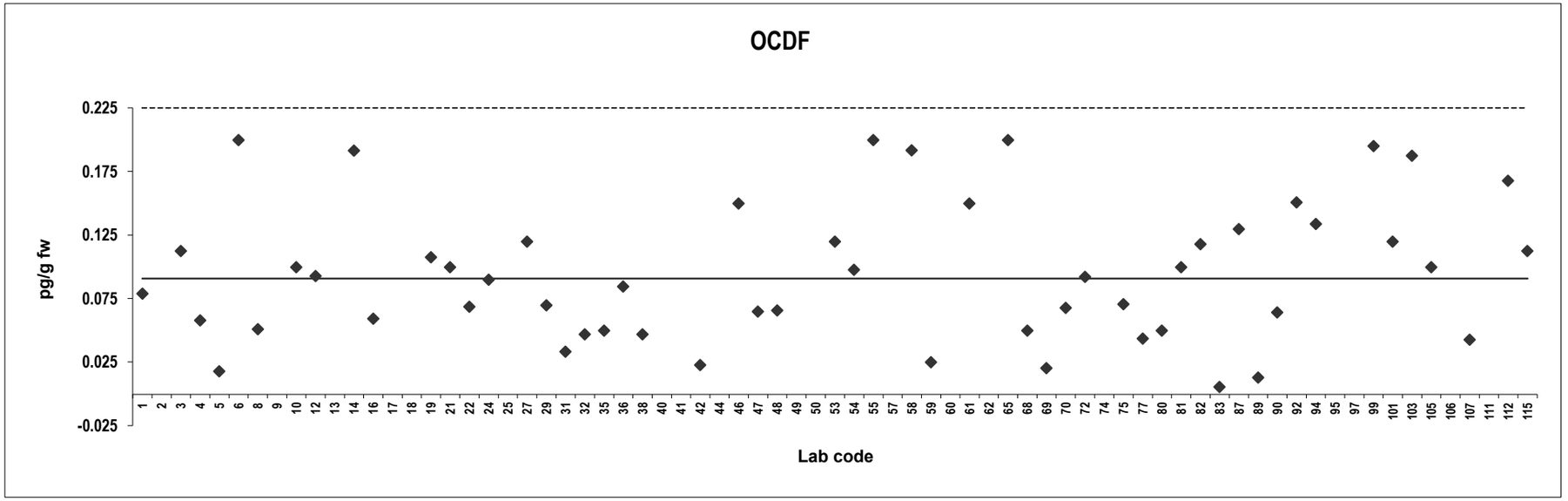
Fish oil

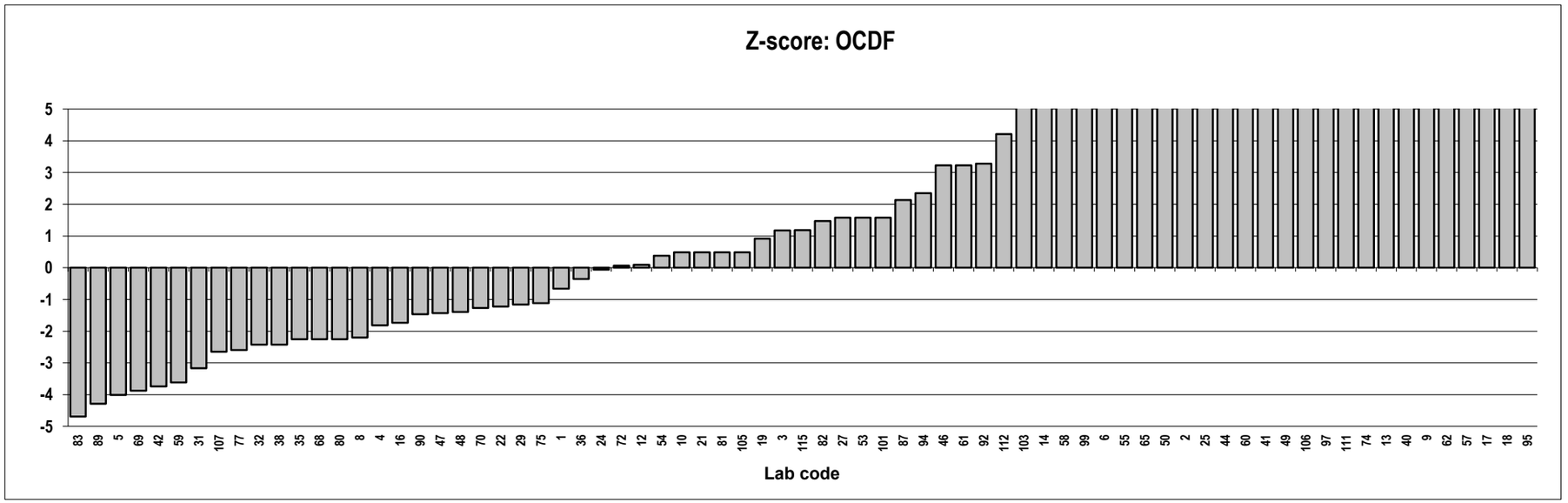
Congener: OCDF

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	0.079	ND	65	0.20	ND
2	0.25	Outlier	68	0.050	ND
3	0.11	ND	69	0.020	
4	0.058		70	0.068	
5	0.018		72	0.092	
6	0.20	ND	74	0.69	Outlier
8	0.051	ND	75	0.071	
9	1.4	Outlier	77	0.044	
10	0.10	ND	80	0.050	ND
12	0.093	ND	81	0.10	ND
13	1.0	Outlier,ND	82	0.12	
14	0.19		83	0.0056	
16	0.060	ND	87	0.13	ND
17	2.0	Outlier,ND	89	0.013	ND
18	2.0	Outlier,ND	90	0.064	
19	0.11	ND	92	0.15	
21	0.10	ND	94	0.13	
22	0.069		95	4.9	Outlier
24	0.090	ND	97	0.62	Outlier
25	0.28	Outlier,ND	99	0.20	
27	0.12	ND	101	0.12	ND
29	0.070	ND	103	0.19	
31	0.033	ND	105	0.10	ND
32	0.047		106	0.50	Outlier,ND
35	0.050		107	0.043	
36	0.085	ND	111	0.68	Outlier,ND
38	0.047	ND	112	0.17	ND
40	1.0	Outlier,ND	115	0.11	ND
41	0.47	Outlier			
42	0.023	ND			
44	0.30	Outlier,ND			
46	0.15	ND			
47	0.065				
48	0.066				
49	0.48	Outlier			
50	0.23	Outlier			
53	0.12				
54	0.098				
55	0.20	ND			
57	2.0	Outlier			
58	0.19				
59	0.025	ND			
60	0.39	Outlier			
61	0.15	ND			
62	1.6	Outlier,ND			

Consenus statistics

Consensus median, pg/g	0.091
Median all values pg/g	0.11
Consensus mean, pg/g	0.095
Standard deviation, pg/g	0.054
Relative standard deviation, %	58
No. of values reported	73
No. of values removed	19
No. of reported non-detects	39


OCDF
pg/g fw
0.225
0.175
0.125
0.075
0.025
-0.025
Lab code


Z-score: OCDF
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

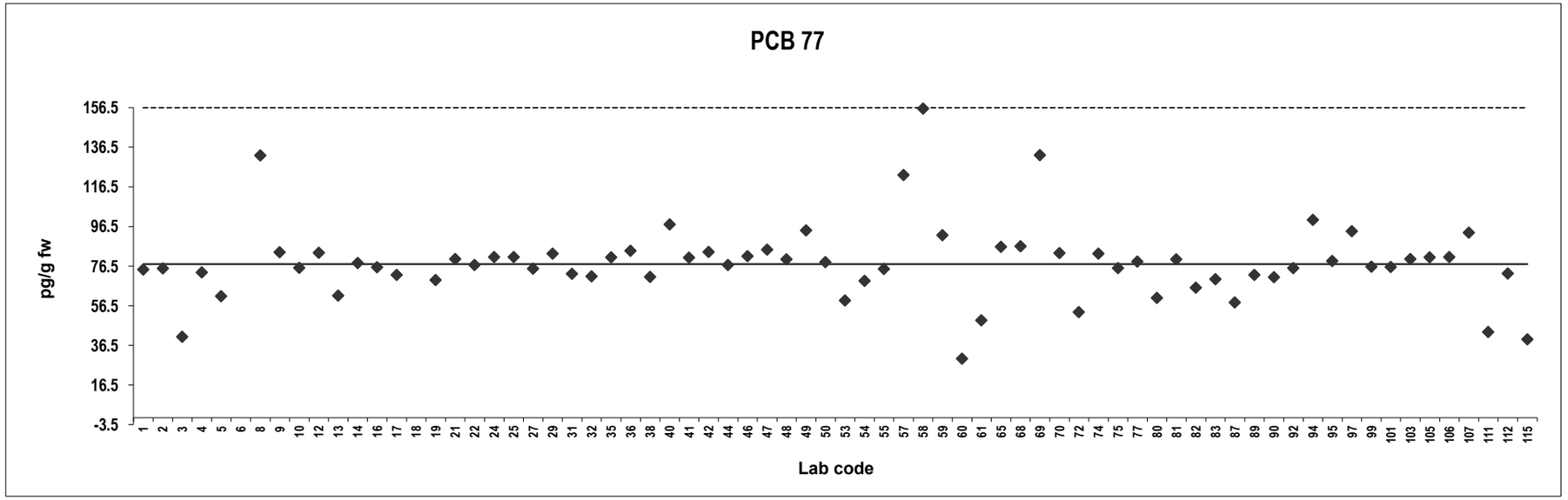
Fish oil

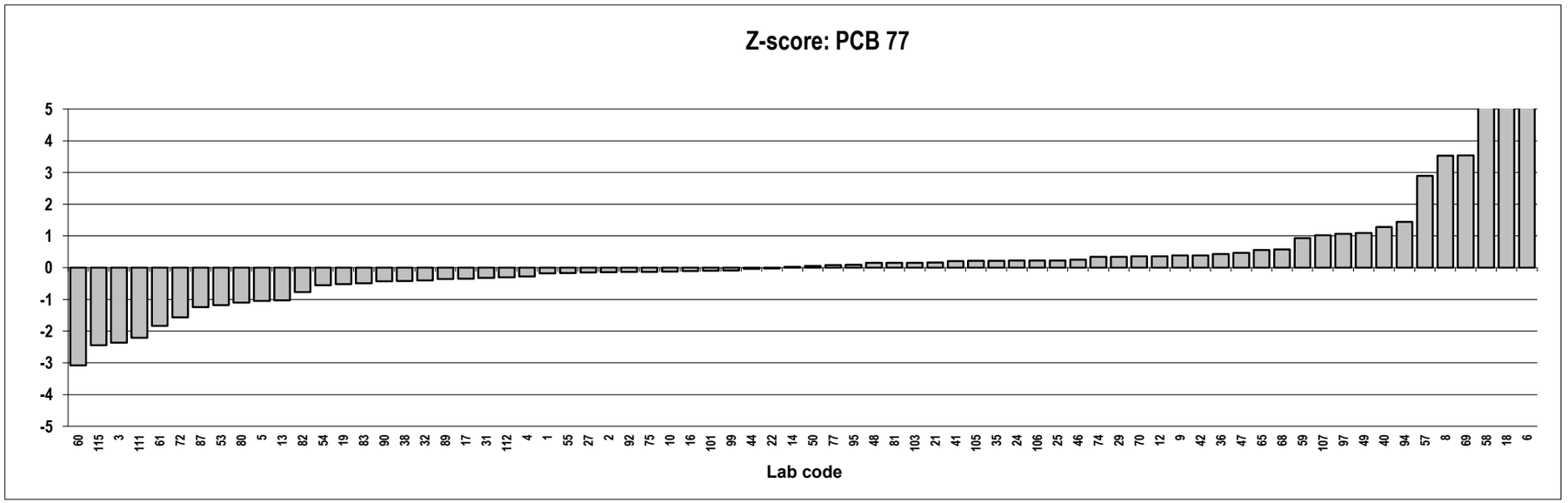
Congener: PCB 77

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	75		68	87	
2	75		69	132	
3	41		70	83	
4	73		72	53	
5	61		74	83	
6	353	Outlier	75	75	
8	132		77	79	
9	84		80	60	
10	76		81	80	
12	83		82	66	
13	62		83	70	
14	78		87	58	
16	76		89	72	
17	72		90	71	
18	220	Outlier	92	75	
19	69		94	100	
21	80		95	79	
22	77		97	94	
24	81		99	76	
25	81		101	76	
27	75		103	80	
29	83		105	81	
31	73		106	81	
32	71		107	93	
35	81		111	43	
36	84		112	73	
38	71		115	40	
40	98				
41	81				
42	84				
44	77				
46	82				
47	85				
48	80				
49	95				
50	78				
53	59				
54	69				
55	75				
57	122				
58	156				
59	92				
60	30				
61	49				
65	86				

Consenus statistics

Consensus median, pg/g	78
Median all values pg/g	78
Consensus mean, pg/g	78
Standard deviation, pg/g	20
Relative standard deviation, %	25
No. of values reported	72
No. of values removed	2
No. of reported non-detects	0


PCB 77
pg/g fw
156.5
136.5
116.5
96.5
76.5
56.5
36.5
16.5
-3.5
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 77
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 115 3 111 61 72 87 53 80 5 13 82 54 19 83 90 38 32 89 17 31 112 4 1 55 27 2 92 75 10 16 101 99 44 22 14 50 77 95 48 81 103 21 41 105 35 24 106 25 46 74 29 70 12 9 42 36 47 65 68 59 107 97 49 40 94 57 8 69 58 18 6
Lab code

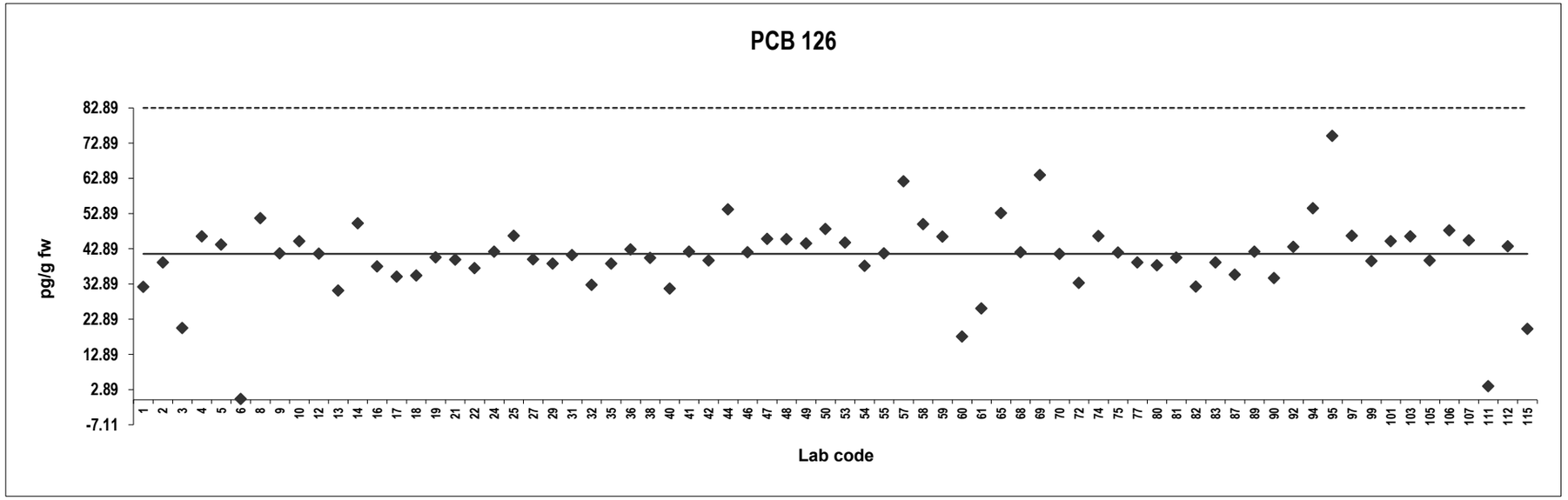
Fish oil

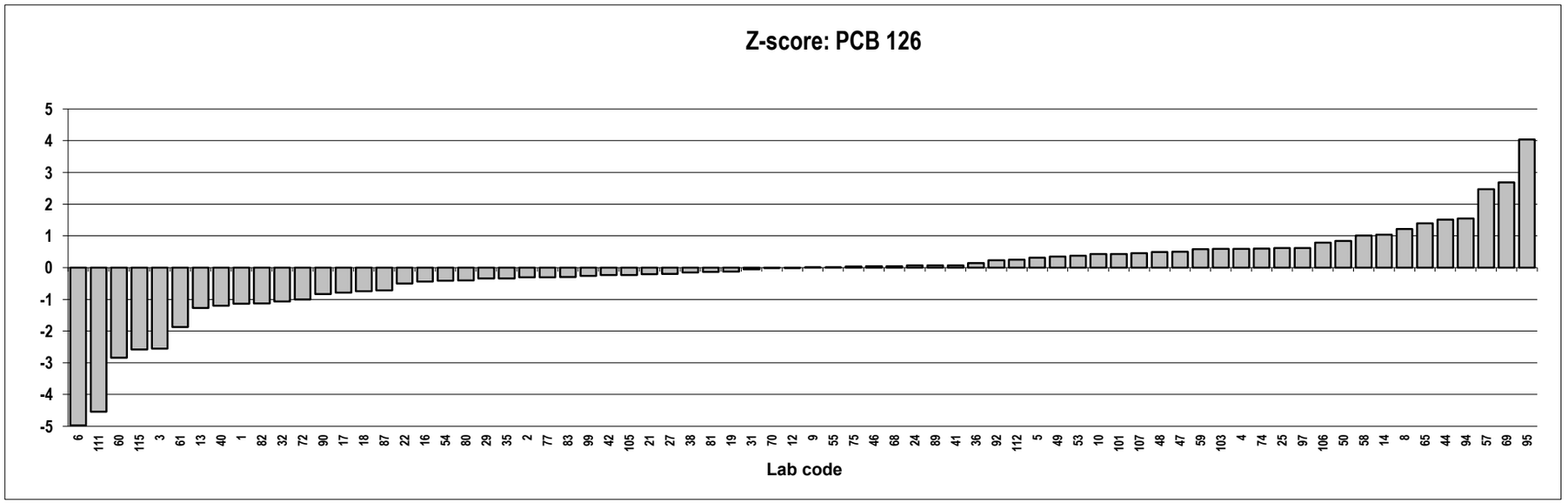
Congener: PCB 126

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	32		68	42	
2	39		69	64	
3	20		70	41	
4	46		72	33	
5	44		74	46	
6	0.20	ND	75	42	
8	52		77	39	
9	41		80	38	
10	45		81	40	
12	41		82	32	
13	31		83	39	
14	50		87	36	
16	38		89	42	
17	35		90	35	
18	35		92	43	
19	40		94	54	
21	40		95	75	
22	37		97	47	
24	42		99	39	
25	47		101	45	
27	40		103	46	
29	39		105	40	
31	41		106	48	
32	33		107	45	
35	39		111	3.8	ND
36	43		112	44	
38	40		115	20	
40	32				
41	42				
42	39				
44	54				
46	42				
47	46				
48	46				
49	44				
50	48				
53	45				
54	38				
55	42				
57	62				
58	50				
59	46				
60	18				
61	26				
65	53				

Consenus statistics

Consensus median, pg/g	41
Median all values pg/g	41
Consensus mean, pg/g	41
Standard deviation, pg/g	11
Relative standard deviation, %	27
No. of values reported	72
No. of values removed	0
No. of reported non-detects	2


PCB 126
82.89
72.89
62.89
52.89
42.89
32.89
22.89
12.89
2.89
-7.11
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 126
5
4
3
2
1
0
-1
-2
-3
-4
-5
6 111 60 115 3 61 13 40 1 82 32 72 90 17 18 87 22 16 54 80 29 35 2 77 83 99 42 105 21 27 38 81 19 31 70 12 9 55 75 46 68 24 89 41 36 92 112 5 49 53 10 101 107 48 47 59 103 4 74 25 97 106 50 58 14 8 65 44 94 57 69 95
Lab code

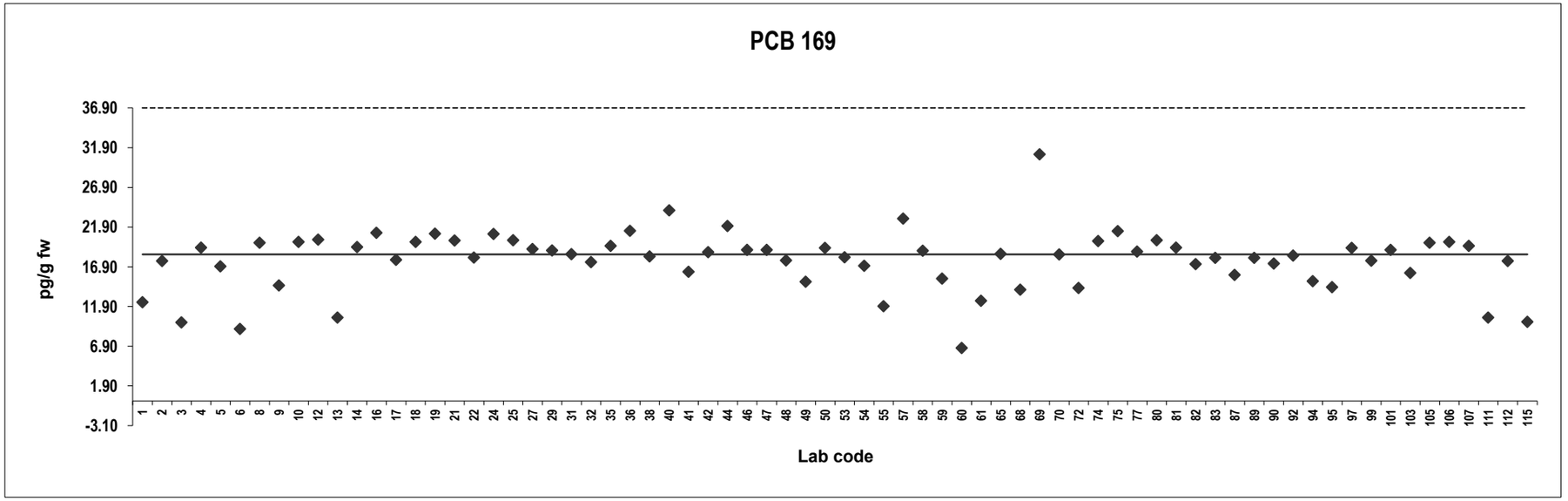
Fish oil

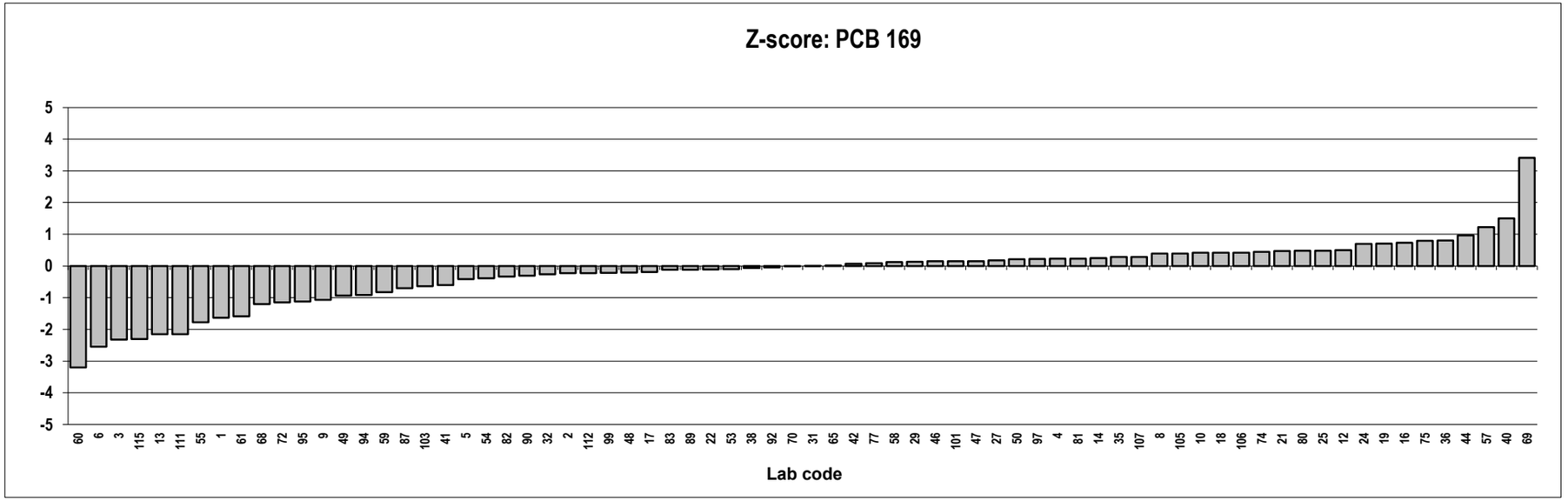
Congener: PCB 169

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	12		68	14	
2	18		69	31	
3	9.9		70	18	
4	19		72	14	
5	17		74	20	
6	9.0		75	21	
8	20		77	19	
9	15		80	20	
10	20		81	19	
12	20		82	17	
13	10		83	18	
14	19		87	16	
16	21		89	18	
17	18		90	17	
18	20	ND	92	18	
19	21		94	15	
21	20		95	14	
22	18		97	19	
24	21		99	18	
25	20		101	19	
27	19		103	16	
29	19		105	20	
31	18		106	20	
32	17		107	20	
35	19		111	11	
36	21		112	18	
38	18		115	9.9	
40	24				
41	16				
42	19				
44	22				
46	19				
47	19				
48	18				
49	15				
50	19				
53	18				
54	17				
55	12				
57	23				
58	19				
59	15				
60	6.6				
61	13				
65	19				

Consenus statistics

Consensus median, pg/g	18
Median all values pg/g	18
Consensus mean, pg/g	18
Standard deviation, pg/g	3.8
Relative standard deviation, %	21
No. of values reported	72
No. of values removed	0
No. of reported non-detects	1


PCB 169
36.90
31.90
26.90
21.90
16.90
11.90
6.90
1.90
-3.10
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 169
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 6 3 115 13 111 55 1 61 68 72 95 9 49 94 59 87 103 41 5 54 82 90 32 2 112 99 48 17 83 89 22 53 38 92 70 31 65 42 77 58 29 46 101 47 27 50 97 4 81 14 35 107 8 105 10 18 106 74 21 80 25 12 24 19 16 75 36 44 57 40 69
Lab code

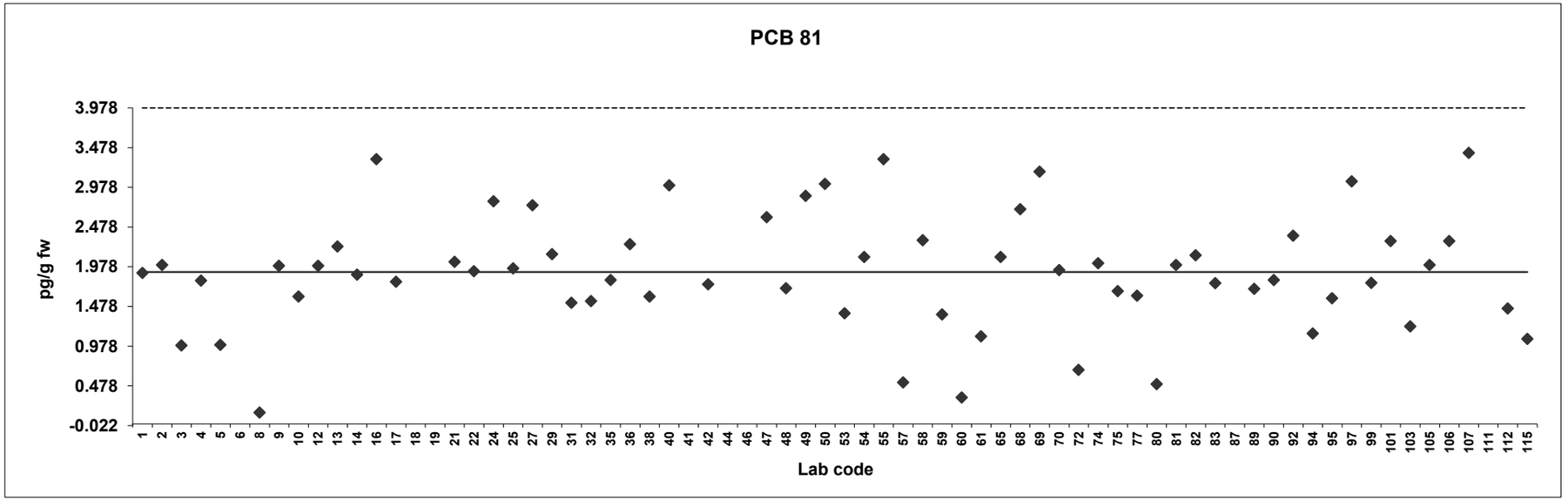
Fish oil

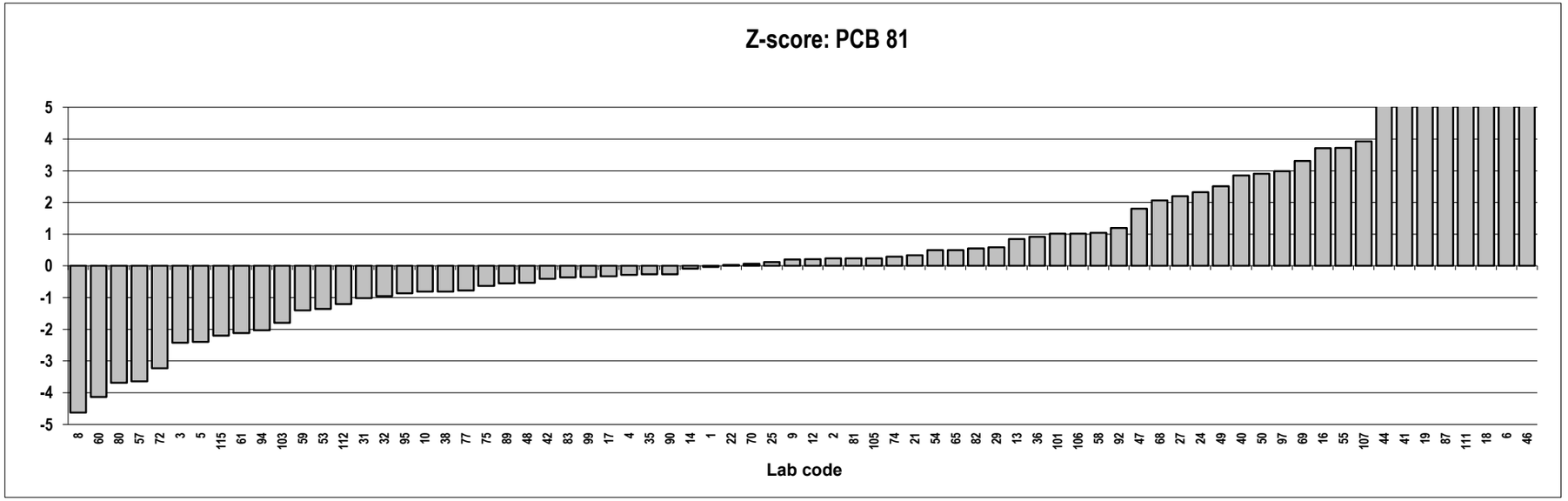
Congener: PCB 81

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	1.9		68	2.7	
2	2.0		69	3.2	
3	0.98		70	1.9	
4	1.8		72	0.68	
5	0.99		74	2.0	
6	58	Outlier	75	1.7	
8	0.14	ND	77	1.6	
9	2.0		80	0.50	ND
10	1.6		81	2.0	
12	2.0		82	2.1	
13	2.2		83	1.8	
14	1.9		87	9.0	Outlier
16	3.3		89	1.7	
17	1.8		90	1.8	
18	20	Outlier,ND	92	2.4	
19	7.9	Outlier,ND	94	1.1	
21	2.0		95	1.6	
22	1.9		97	3.1	
24	2.8		99	1.8	
25	2.0		101	2.3	
27	2.8		103	1.2	
29	2.1		105	2.0	
31	1.5		106	2.3	
32	1.5		107	3.4	
35	1.8		111	16	Outlier
36	2.3		112	1.5	
38	1.6	ND	115	1.1	
40	3.0	ND			
41	5.7	Outlier			
42	1.8				
44	4.0	Outlier			
46	83	Outlier			
47	2.6				
48	1.7				
49	2.9				
50	3.0				
53	1.4				
54	2.1				
55	3.3				
57	0.52	ND			
58	2.3				
59	1.4				
60	0.33				
61	1.1				
65	2.1				

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	0.73
Relative standard deviation, %	38
No. of values reported	72
No. of values removed	8
No. of reported non-detects	7


PCB 81
3.978
3.478
2.978
2.478
1.978
1.478
0.978
0.478
-0.022
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 81
5
4
3
2
1
0
-1
-2
-3
-4
-5
8 60 80 57 72 3 5 115 61 94 103 59 53 112 31 32 95 10 38 77 75 89 48 42 83 99 17 4 35 90 14 1 22 70 25 9 12 2 81 105 74 21 54 65 82 29 13 36 101 106 58 92 47 68 27 24 49 40 50 97 69 16 55 107 44 41 19 87 111 18 6 46
Lab code

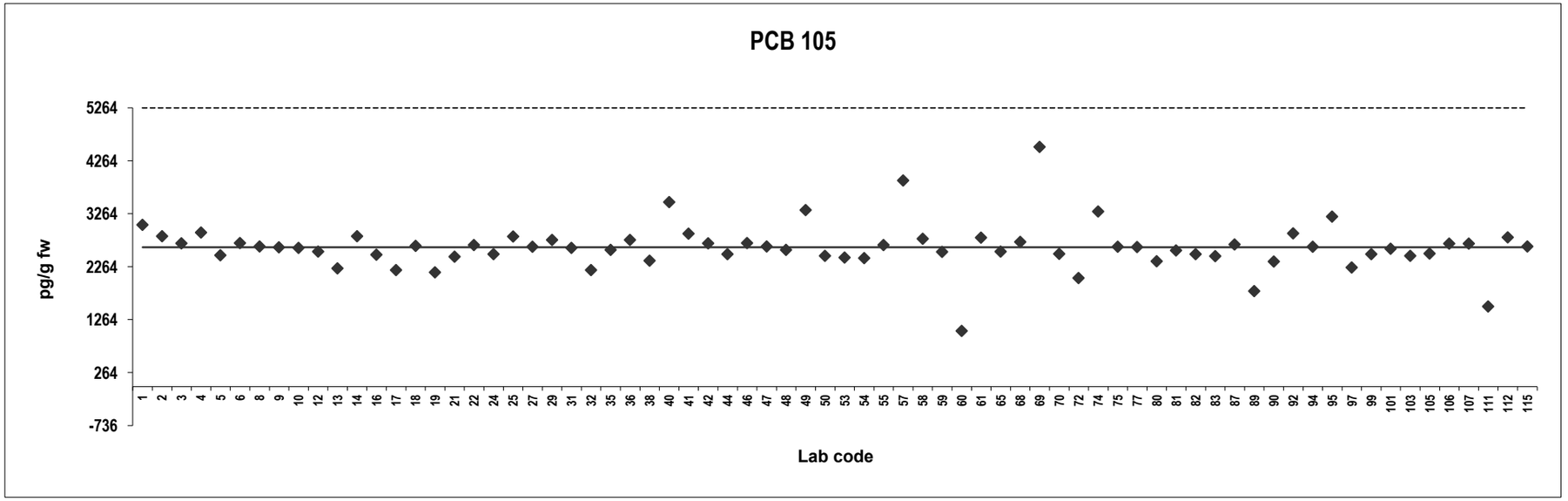
Fish oil

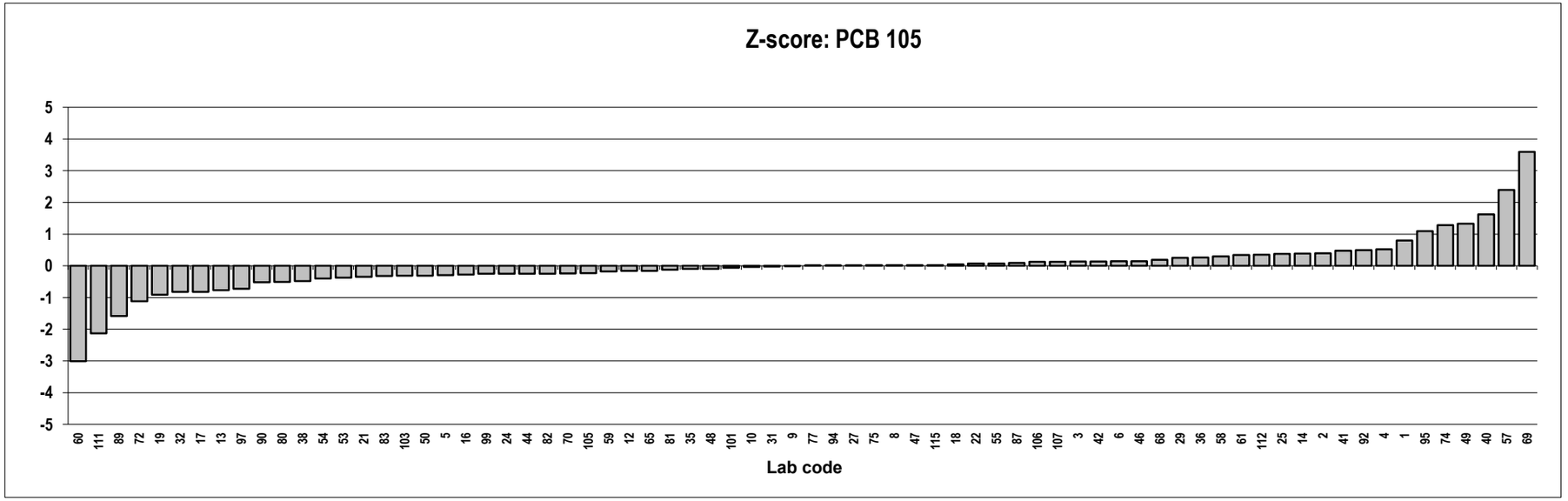
Congener: PCB 105

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	3055		68	2730	
2	2840		69	4523	
3	2702		70	2504	
4	2908		72	2046	
5	2478		74	3306	
6	2709		75	2641	
8	2644		77	2634	
9	2630		80	2364	
10	2615		81	2567	
12	2550		82	2500	
13	2229		83	2461	
14	2836		87	2680	
16	2488		89	1800	
17	2200		90	2360	
18	2655		92	2891	
19	2154		94	2639	
21	2450		95	3210	
22	2672		97	2249	
24	2500		99	2499	
25	2831		101	2600	
27	2640		103	2467	
29	2767		105	2510	
31	2619		106	2700	
32	2199		107	2700	
35	2580		111	1511	
36	2770		112	2815	
38	2376		115	2644	
40	3485				
41	2884				
42	2703				
44	2500				
46	2710				
47	2644				
48	2581				
49	3330				
50	2469				
53	2436				
54	2422				
55	2672				
57	3891				
58	2787				
59	2540				
60	1047				
61	2813				
65	2550				

Consenus statistics

Consensus median, pg/g	2632
Median all values pg/g	2632
Consensus mean, pg/g	2627
Standard deviation, pg/g	446
Relative standard deviation, %	17
No. of values reported	72
No. of values removed	0
No. of reported non-detects	0


PCB 105
5264
4264
3264
2264
1264
264
-736
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 105
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 89 72 19 32 17 13 97 90 80 38 54 53 21 83 103 50 5 16 99 24 44 82 70 105 59 12 65 81 35 48 101 10 31 9 77 94 27 75 8 47 115 18 22 55 87 106 107 3 42 6 46 68 29 36 58 61 112 25 14 2 41 92 4 1 95 74 49 40 57 69
Lab code

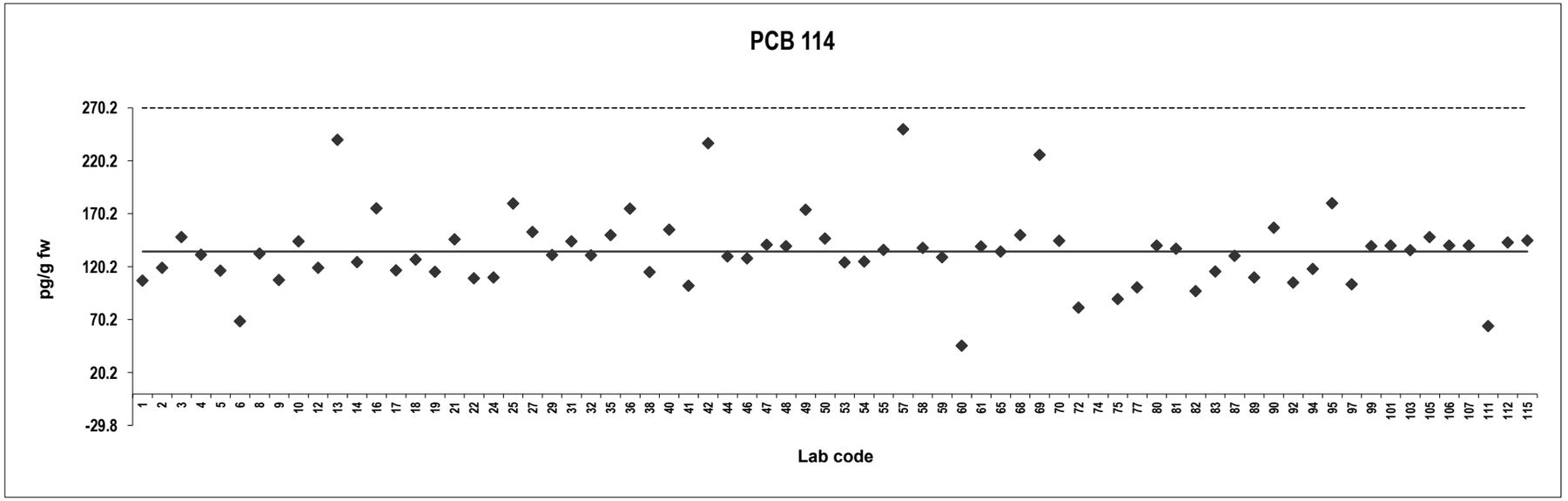
Fish oil

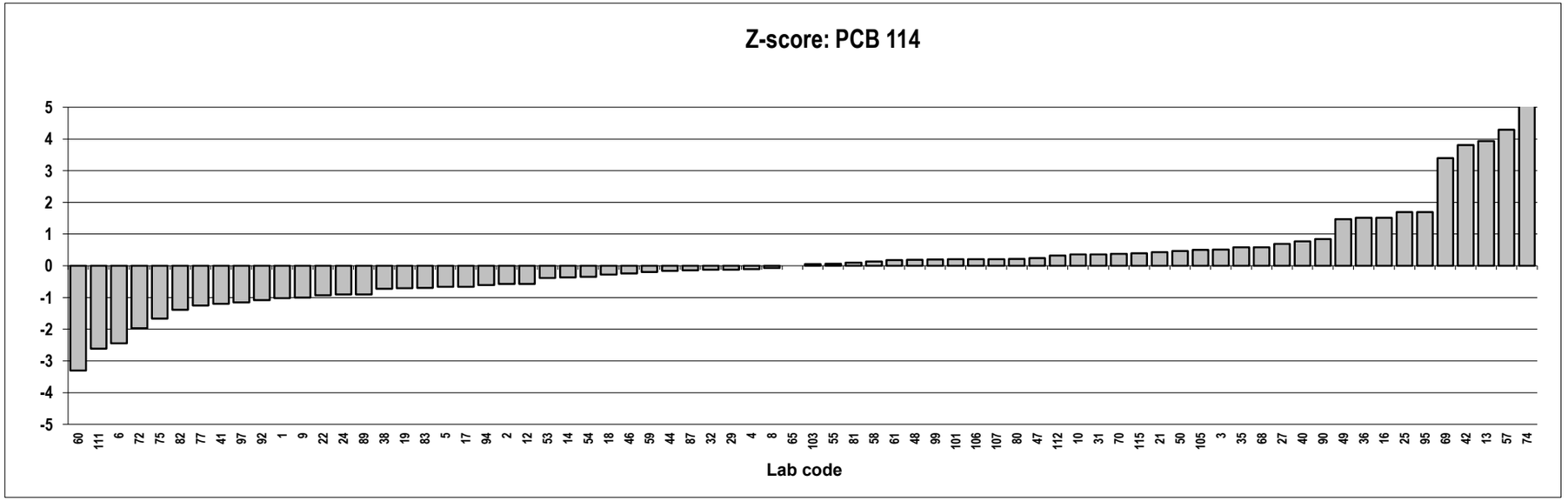
Congener: PCB 114

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	107		68	150	
2	119		69	226	
3	148		70	145	
4	132		72	82	
5	116		74	329	Outlier
6	69		75	90	
8	132		77	101	
9	108		80	140	
10	144		81	137	
12	119		82	97	
13	240		83	116	
14	124		87	131	
16	175		89	110	
17	117		90	157	
18	127		92	105	
19	115		94	118	
21	146		95	180	
22	109		97	103	
24	110		99	140	
25	180		101	140	
27	153		103	136	
29	131		105	148	
31	144		106	140	
32	131		107	140	
35	150		111	64	
36	175		112	143	
38	115		115	145	
40	155				
41	102				
42	237				
44	130				
46	128				
47	141				
48	140				
49	174				
50	147				
53	124				
54	125				
55	136				
57	250				
58	138				
59	129				
60	45				
61	139				
65	134				

Consenus statistics

Consensus median, pg/g	134
Median all values pg/g	135
Consensus mean, pg/g	135
Standard deviation, pg/g	36
Relative standard deviation, %	26
No. of values reported	72
No. of values removed	1
No. of reported non-detects	0


PCB 114
270.2
220.2
170.2
120.2
70.2
20.2
-29.8
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 114
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 6 72 75 82 77 41 97 92 1 9 22 24 89 38 19 83 5 17 94 2 12 53 14 54 18 46 59 44 87 32 29 4 8 65 103 55 81 58 61 48 99 101 106 107 80 47 112 10 31 70 115 21 50 105 3 35 68 27 40 90 49 36 16 25 95 69 42 13 57 74
Lab code

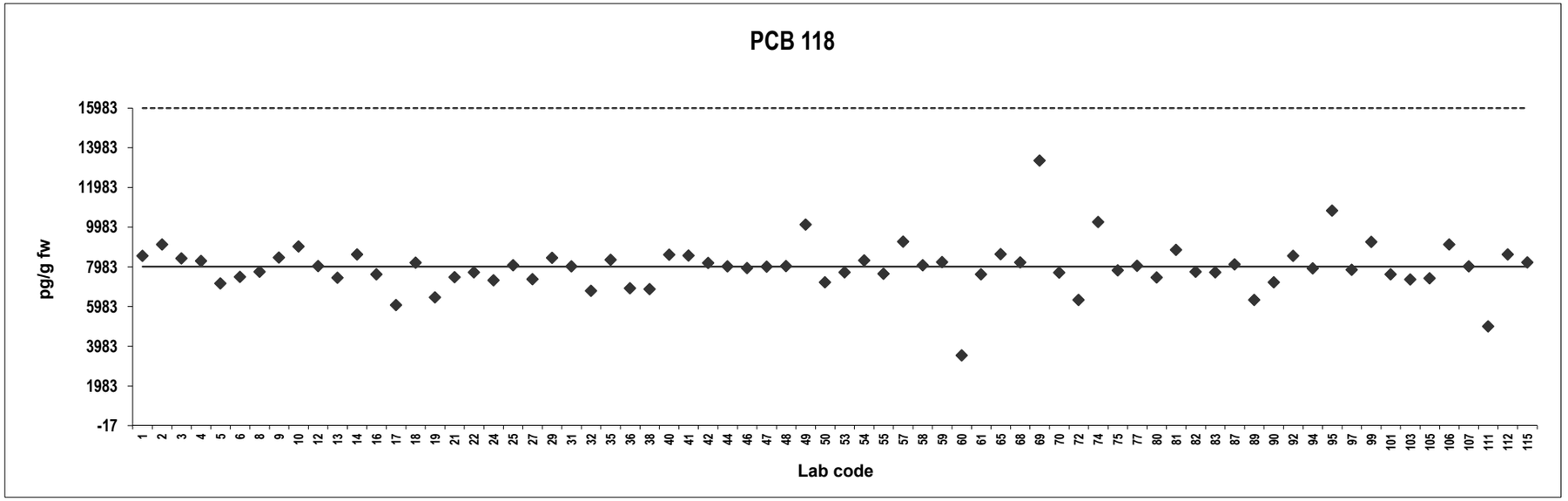
Fish oil

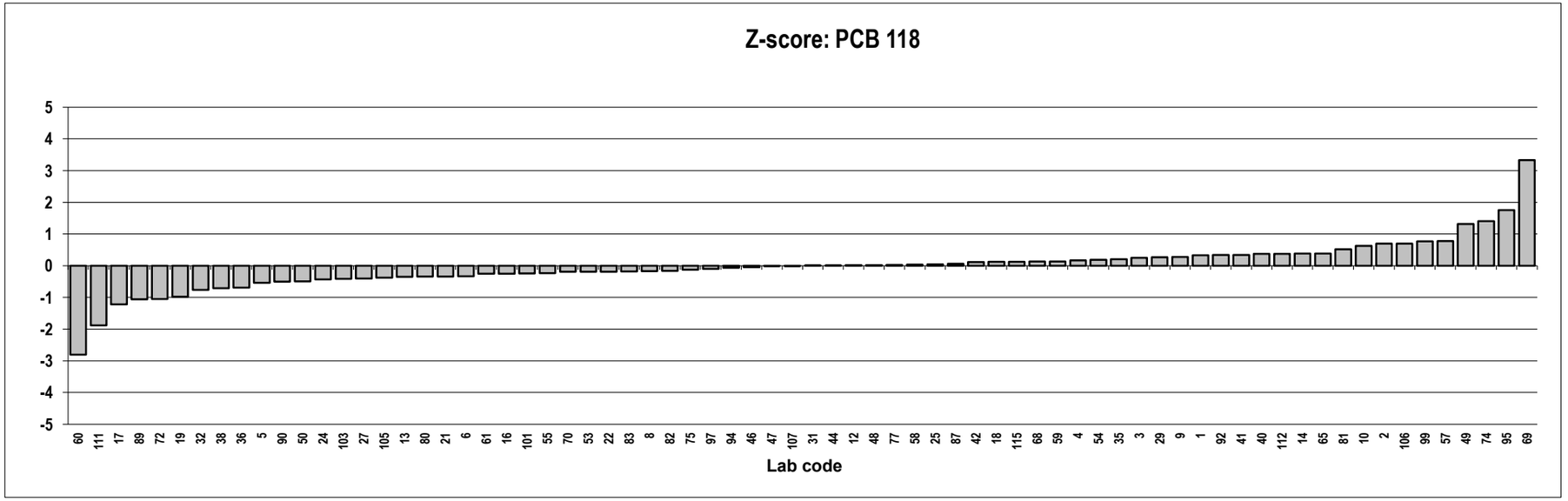
Congener: PCB 118

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	8523		68	8200	
2	9100		69	13317	
3	8391		70	7685	
4	8265		72	6311	
5	7136		74	10236	
6	7461		75	7791	
8	7718		77	8029	
9	8435		80	7441	
10	8996		81	8819	
12	8010		82	7730	
13	7425		83	7700	
14	8600		87	8095	
16	7594		89	6300	
17	6043		90	7191	
18	8185		92	8528	
19	6431		94	7892	
21	7450		95	10800	
22	7690		97	7827	
24	7300		99	9224	
25	8058		101	7600	
27	7350		103	7333	
29	8425		105	7390	
31	7993		106	9100	
32	6769		107	7990	
35	8320		111	4976	
36	6890		112	8596	
38	6855		115	8193	
40	8586				
41	8535				
42	8171				
44	8000				
46	7910				
47	7987				
48	8016				
49	10100				
50	7195				
53	7688				
54	8292				
55	7621				
57	9238				
58	8051				
59	8206				
60	3513				
61	7594				
65	8611				

Consenus statistics

Consensus median, pg/g	7991
Median all values pg/g	7991
Consensus mean, pg/g	7959
Standard deviation, pg/g	1230
Relative standard deviation, %	15
No. of values reported	72
No. of values removed	0
No. of reported non-detects	0


PCB 118
15983
13983
11983
9983
7983
5983
3983
1983
-17
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 118
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 17 89 72 19 32 38 36 5 90 50 24 103 27 105 13 80 21 6 61 16 101 55 70 53 22 83 8 82 75 97 94 46 47 107 31 44 12 48 77 58 25 87 42 18 115 68 59 4 54 35 3 29 9 1 92 41 40 112 14 65 81 10 2 106 99 57 49 74 95 69
Lab code

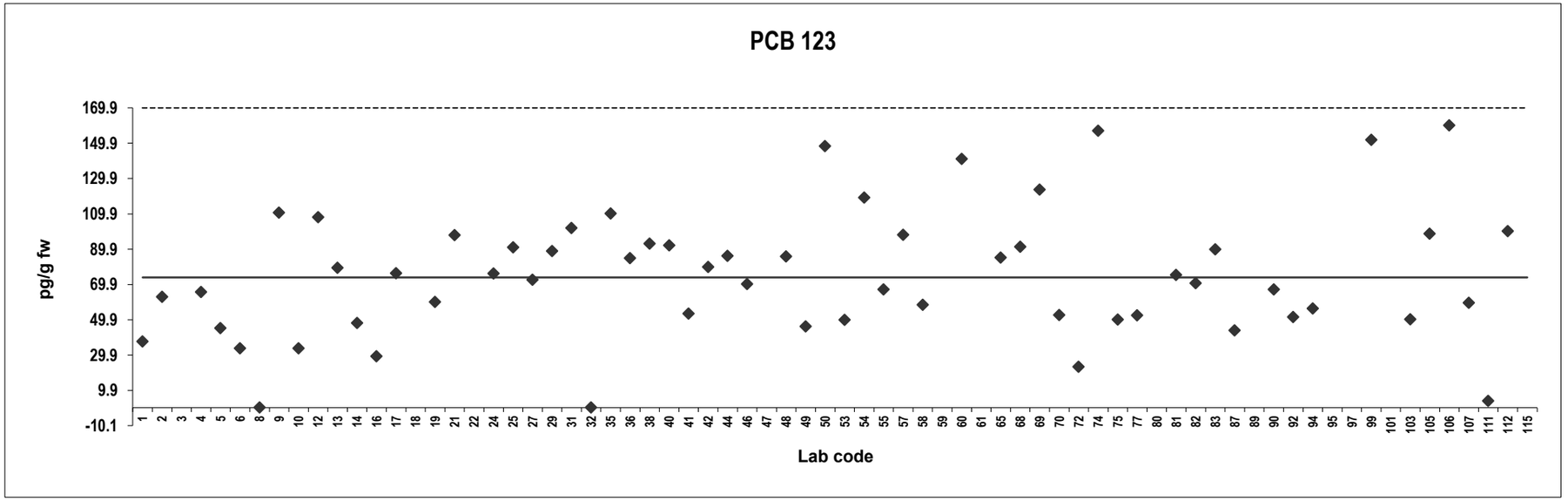
Fish oil

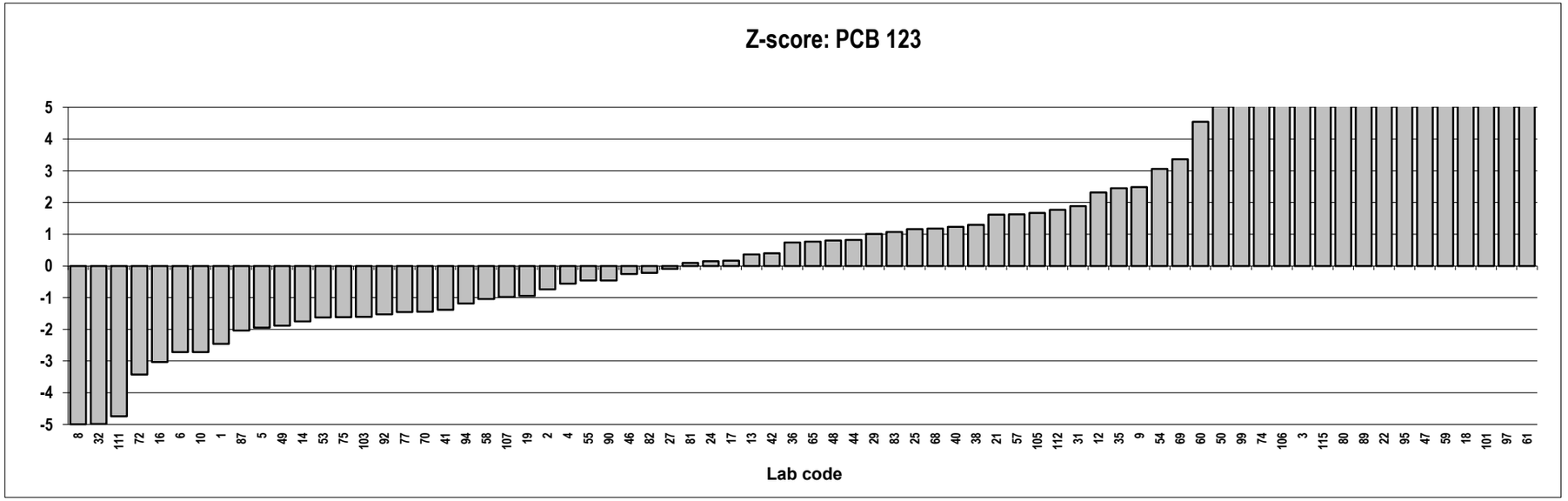
Congener: PCB 123

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	37		68	91	
2	63		69	124	
3	181	Outlier	70	53	
4	66		72	23	
5	45		74	157	
6	34		75	50	
8	0.077	ND	77	52	
9	111		80	185	Outlier
10	34		81	75	
12	108		82	71	
13	79		83	90	
14	48		87	44	
16	29		89	200	Outlier
17	76		90	67	
18	368	Outlier	92	51	
19	60		94	56	
21	98		95	251	Outlier
22	247	Outlier	97	455	Outlier
24	76		99	152	
25	91		101	440	Outlier,ND
27	73		103	50	
29	89		105	99	
31	102		106	160	
32	0.20	ND	107	59	
35	110		111	3.8	ND
36	85		112	100	
38	93		115	182	Outlier
40	92				
41	53				
42	80				
44	86				
46	70				
47	295	Outlier			
48	86				
49	46				
50	148				
53	50				
54	119				
55	67				
57	98				
58	58				
59	303	Outlier			
60	141				
61	1552	Outlier			
65	85				

Consenus statistics

Consensus median, pg/g	74
Median all values pg/g	85
Consensus mean, pg/g	75
Standard deviation, pg/g	36
Relative standard deviation, %	48
No. of values reported	72
No. of values removed	12
No. of reported non-detects	4


PCB 123
pg/g fw
169.9
149.9
129.9
109.9
89.9
69.9
49.9
29.9
9.9
-10.1
Lab code


Z-score: PCB 123
5
4
3
2
1
0
-1
-2
-3
-4
-5
Lab code

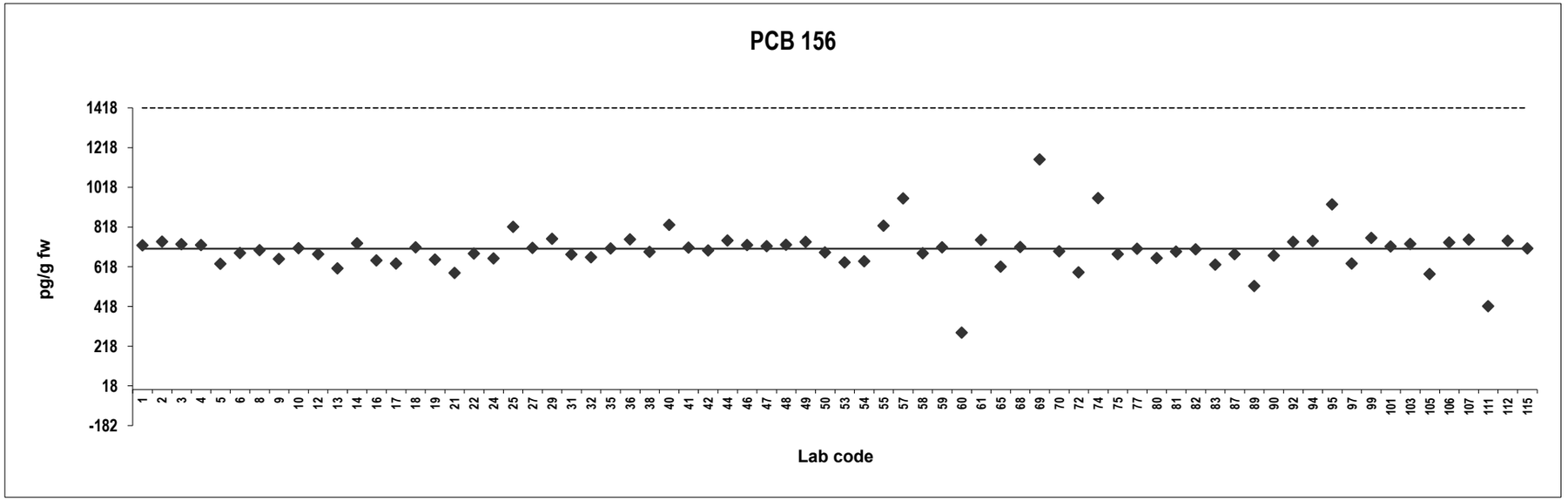
Fish oil

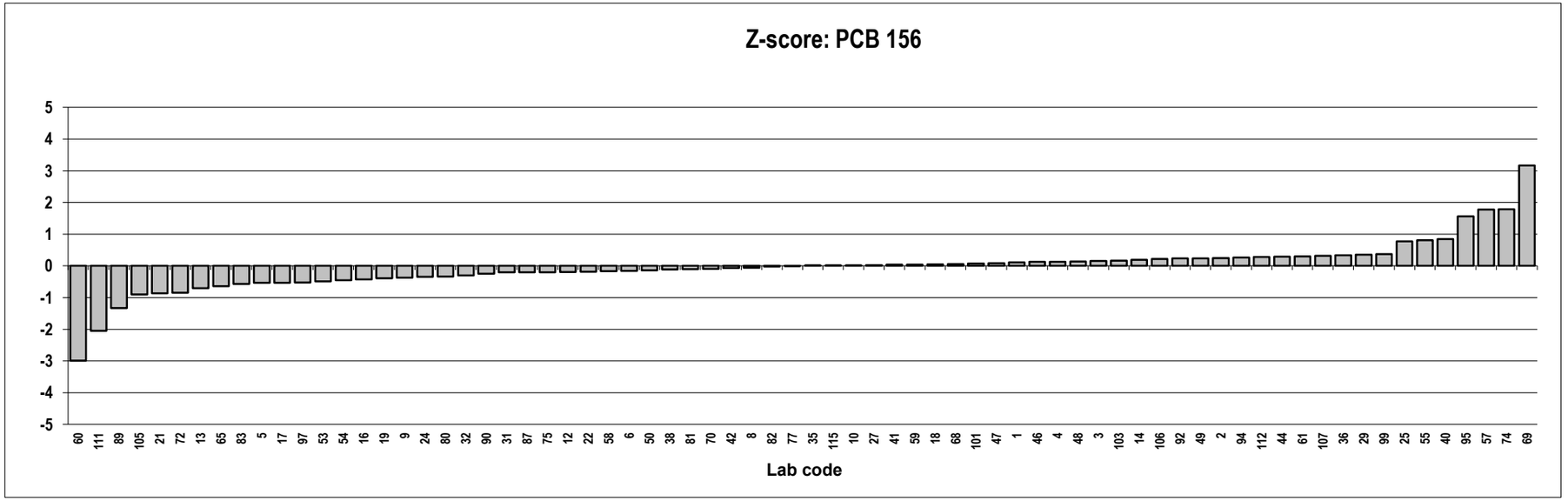
Congener: PCB 156

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	725		68	717	
2	744		69	1158	
3	731		70	696	
4	727		72	589	
5	633		74	963	
6	687		75	681	
8	701		77	708	
9	656		80	661	
10	711		81	694	
12	681		82	706	
13	609		83	629	
14	736		87	681	
16	649		89	520	
17	634		90	674	
18	716		92	742	
19	654		94	746	
21	586		95	931	
22	684		97	634	
24	660		99	762	
25	819		101	720	
27	712		103	733	
29	759		105	581	
31	680		106	740	
32	666		107	754	
35	710		111	419	
36	756		112	749	
38	693		115	710	
40	829				
41	714				
42	700				
44	750				
46	727				
47	721				
48	729				
49	743				
50	689				
53	640				
54	645				
55	824				
57	961				
58	685				
59	715				
60	286				
61	752				
65	618				

Consenus statistics

Consensus median, pg/g	709
Median all values pg/g	709
Consensus mean, pg/g	705
Standard deviation, pg/g	110
Relative standard deviation, %	16
No. of values reported	72
No. of values removed	0
No. of reported non-detects	0


PCB 156
pg/g fw
1418
1218
1018
818
618
418
218
18
-182
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 156
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 89 105 21 72 13 65 83 5 17 97 53 54 16 19 9 24 80 32 90 31 87 75 12 22 58 6 50 38 81 70 42 8 82 77 35 115 10 27 41 59 18 68 101 47 1 46 4 48 3 103 14 106 92 49 2 94 112 44 61 107 36 29 99 25 55 40 95 57 74 69
Lab code

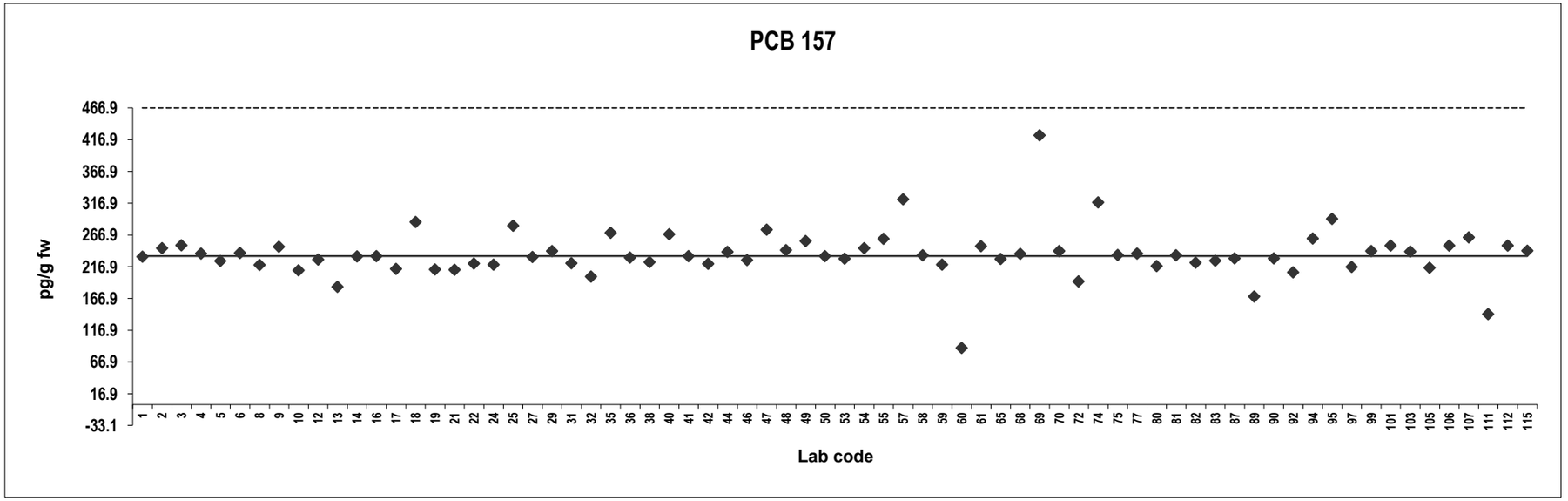
Fish oil

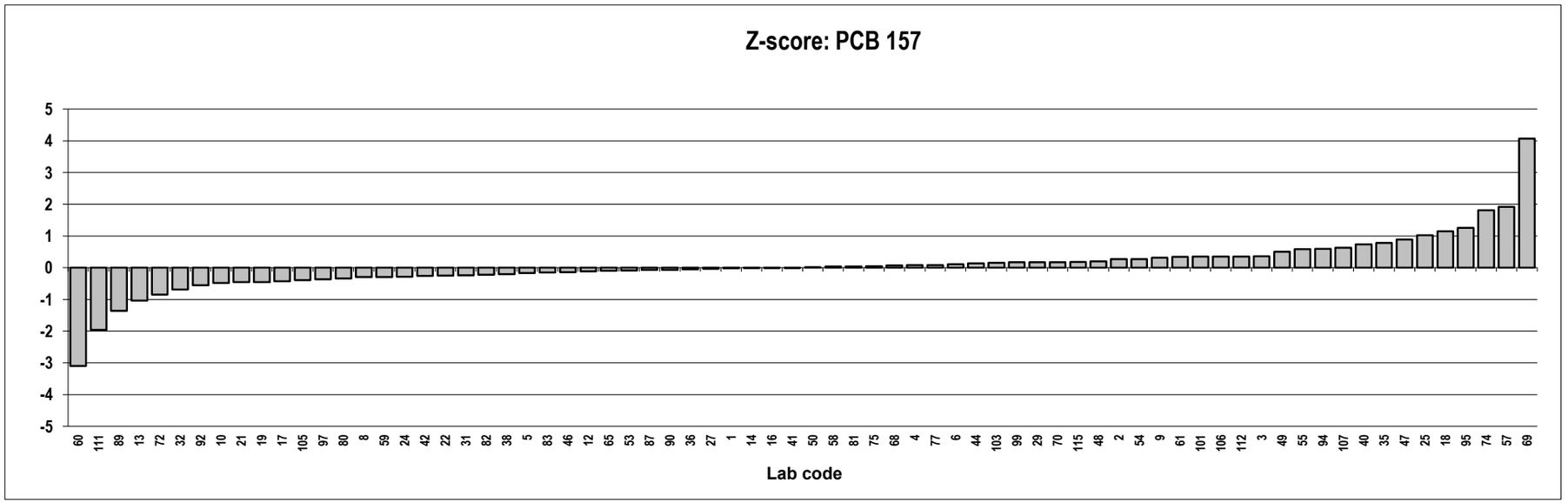
Congener: PCB 157

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	233		68	237	
2	246		69	423	
3	250		70	242	
4	237		72	194	
5	226		74	318	
6	239		75	235	
8	220		77	237	
9	248		80	218	
10	211		81	235	
12	228		82	223	
13	185		83	227	
14	233		87	230	
16	233		89	170	
17	213		90	230	
18	287		92	208	
19	212		94	261	
21	212		95	292	
22	222		97	216	
24	220		99	241	
25	281		101	250	
27	232		103	241	
29	241		105	215	
31	222		106	250	
32	201		107	263	
35	270		111	142	
36	231		112	250	
38	224		115	242	
40	268				
41	233				
42	221				
44	240				
46	227				
47	275				
48	243				
49	257				
50	234				
53	229				
54	246				
55	261				
57	323				
58	235				
59	220				
60	89				
61	249				
65	229				

Consenus statistics

Consensus median, pg/g	233
Median all values pg/g	233
Consensus mean, pg/g	236
Standard deviation, pg/g	40
Relative standard deviation, %	17
No. of values reported	72
No. of values removed	0
No. of reported non-detects	0


PCB 157
pg/g fw
466.9
416.9
366.9
316.9
266.9
216.9
166.9
116.9
66.9
16.9
-33.1
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 157
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 111 89 13 72 32 92 10 21 19 17 105 97 80 8 59 24 42 22 31 82 38 5 83 46 12 65 53 87 90 36 27 1 14 16 41 50 58 81 75 68 4 77 6 44 103 99 29 70 115 48 2 54 9 61 101 106 112 3 49 55 94 107 40 35 47 25 18 95 74 57 69
Lab code

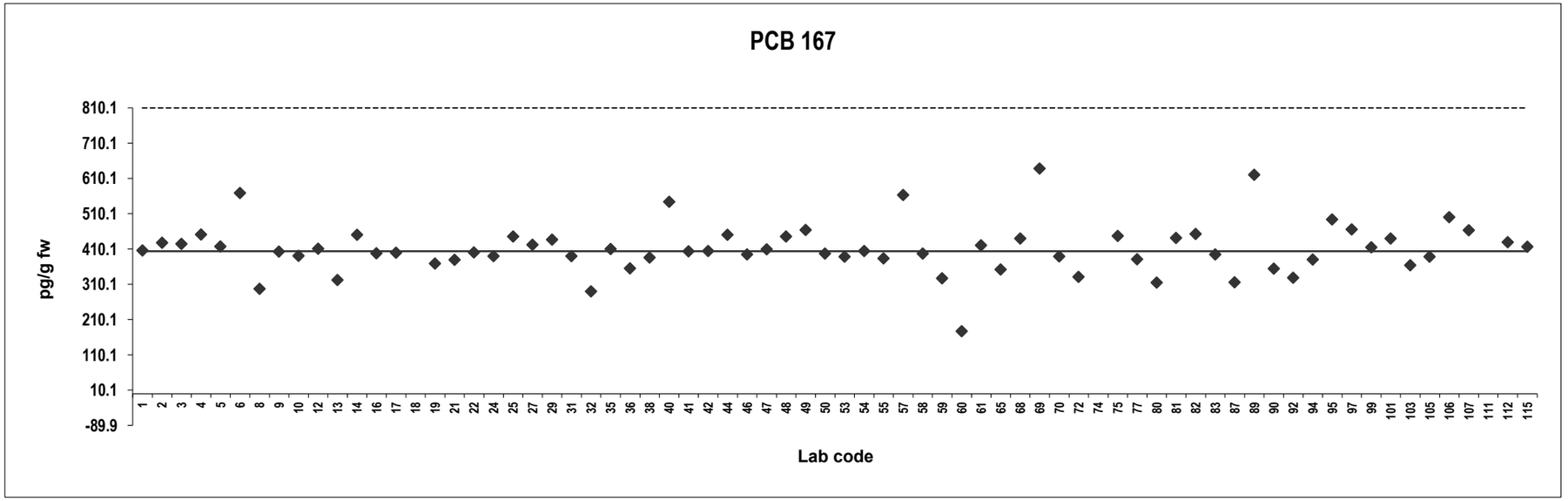
Fish oil

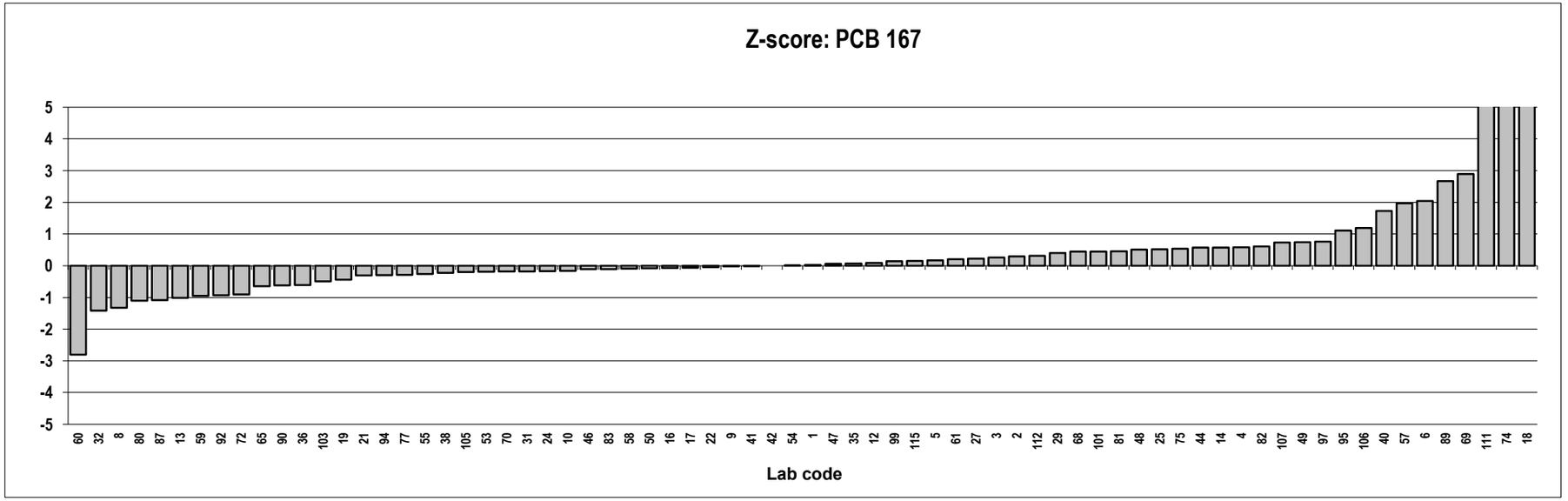
Congener: PCB 167

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	406		68	440	
2	428		69	638	
3	425		70	389	
4	451		72	331	
5	417		74	1454	Outlier
6	569		75	447	
8	297		77	381	
9	402		80	315	
10	391		81	441	
12	411		82	453	
13	322		83	395	
14	451		87	316	
16	398		89	620	
17	399		90	354	
18	1970	Outlier	92	329	
19	369		94	380	
21	379		95	494	
22	400		97	465	
24	390		99	415	
25	446		101	440	
27	422		103	364	
29	437		105	388	
31	390		106	500	
32	290		107	463	
35	410		111	1221	Outlier
36	355		112	429	
38	386		115	416	
40	544				
41	404				
42	404				
44	450				
46	395				
47	409				
48	445				
49	464				
50	397				
53	389				
54	404				
55	383				
57	563				
58	397				
59	327				
60	177				
61	421				
65	352				

Consenus statistics

Consensus median, pg/g	404
Median all values pg/g	405
Consensus mean, pg/g	411
Standard deviation, pg/g	72
Relative standard deviation, %	17
No. of values reported	72
No. of values removed	3
No. of reported non-detects	0


PCB 167
pg/g fw
810.1
710.1
610.1
510.1
410.1
310.1
210.1
110.1
10.1
-89.9
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 167
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 32 8 80 87 13 59 92 72 65 90 36 103 19 21 94 77 55 38 105 53 70 31 24 10 46 83 58 50 16 17 22 9 41 42 54 1 47 35 12 99 115 5 61 27 3 2 112 29 68 101 81 48 25 75 44 14 4 82 107 49 97 95 106 40 57 6 89 69 111 74 18
Lab code

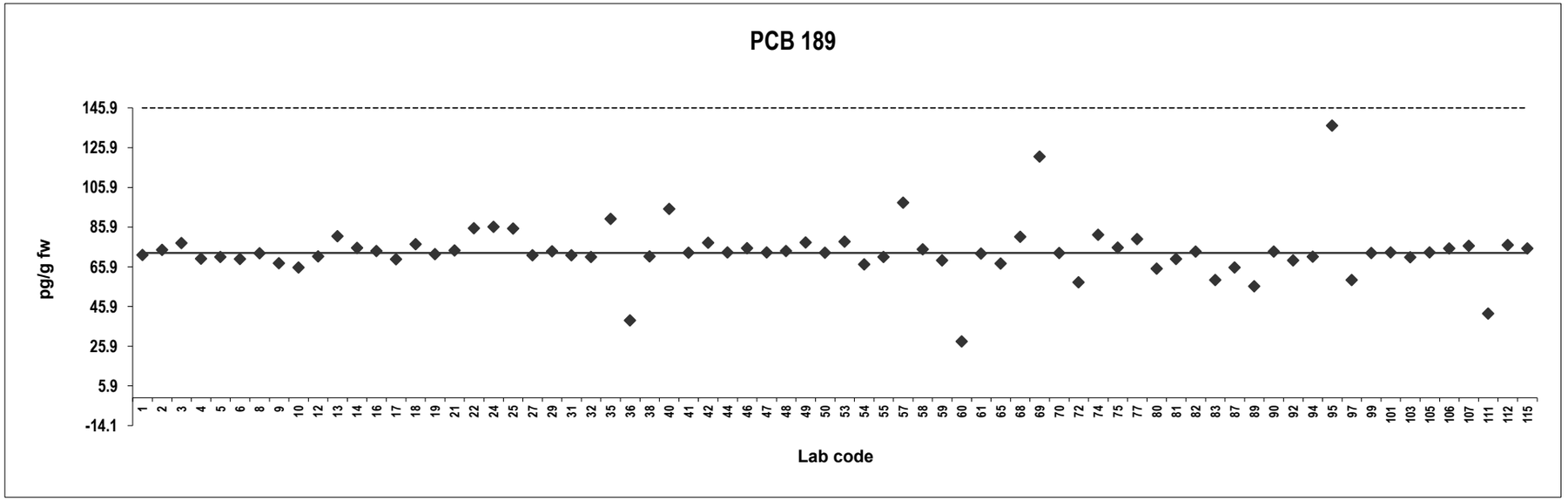
Fish oil

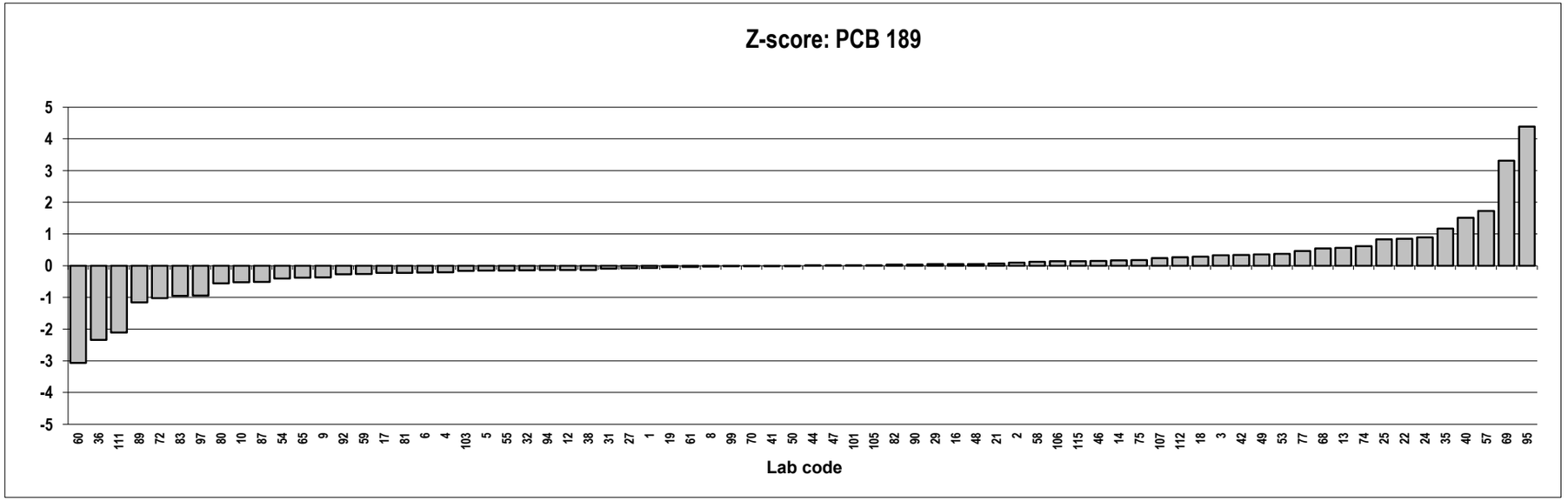
Congener: PCB 189

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	72		68	81	
2	74		69	121	
3	78		70	73	
4	70		72	58	
5	71		74	82	
6	70		75	75	
8	73		77	80	
9	68		80	65	
10	65		81	70	
12	71		82	74	
13	81		83	59	
14	75		87	65	
16	74		89	56	
17	70		90	74	
18	77		92	69	
19	72		94	71	
21	74		95	137	
22	85		97	59	
24	86		99	73	
25	85		101	73	ND
27	72		103	71	
29	74		105	73	
31	72		106	75	
32	71		107	76	
35	90		111	42	
36	39		112	77	
38	71		115	75	
40	95				
41	73				
42	78				
44	73				
46	75				
47	73				
48	74				
49	78				
50	73				
53	78				
54	67				
55	71				
57	98				
58	75				
59	69				
60	28				
61	72				
65	67				

Consenus statistics

Consensus median, pg/g	73
Median all values pg/g	73
Consensus mean, pg/g	74
Standard deviation, pg/g	14
Relative standard deviation, %	19
No. of values reported	72
No. of values removed	0
No. of reported non-detects	1


PCB 189
145.9
125.9
105.9
85.9
65.9
45.9
25.9
5.9
-14.1
pg/g fw
1 2 3 4 5 6 8 9 10 12 13 14 16 17 18 19 21 22 24 25 27 29 31 32 35 36 38 40 41 42 44 46 47 48 49 50 53 54 55 57 58 59 60 61 65 68 69 70 72 74 75 77 80 81 82 83 87 89 90 92 94 95 97 99 101 103 105 106 107 111 112 115
Lab code


Z-score: PCB 189
5
4
3
2
1
0
-1
-2
-3
-4
-5
60 36 111 89 72 83 97 80 10 87 54 65 9 92 59 17 81 6 4 103 5 55 32 94 12 38 31 27 1 19 61 8 99 70 41 50 44 47 101 105 82 90 29 16 48 21 2 58 106 115 46 14 75 107 112 18 3 42 49 53 77 68 13 74 25 22 24 35 40 57 69 95
Lab code

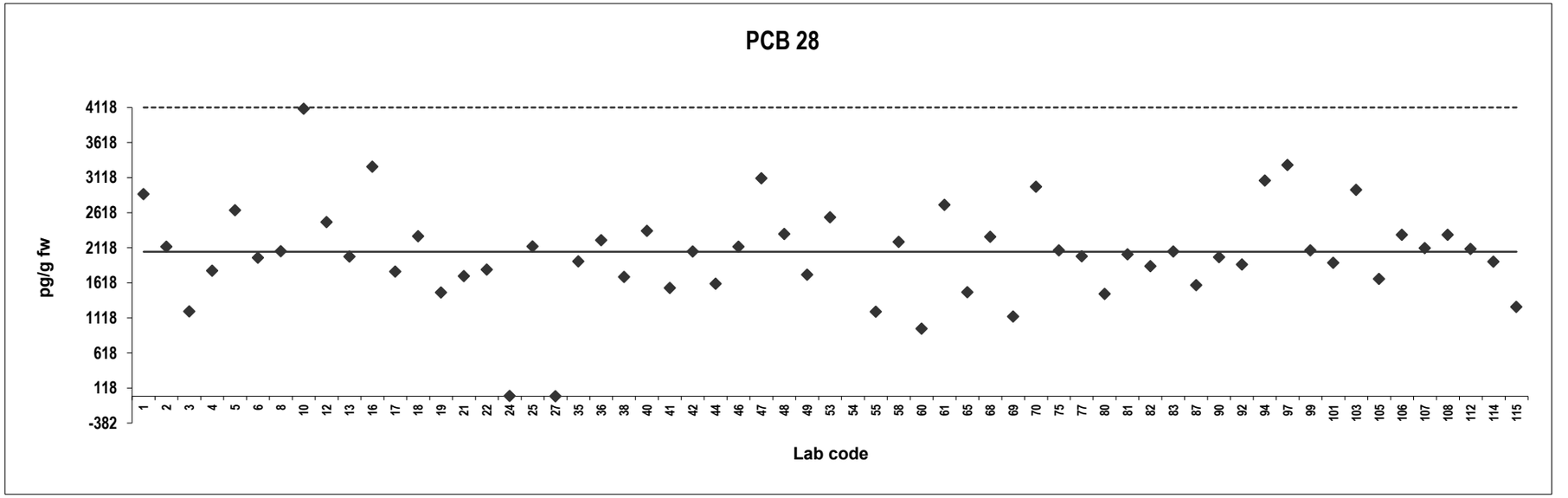
Fish oil

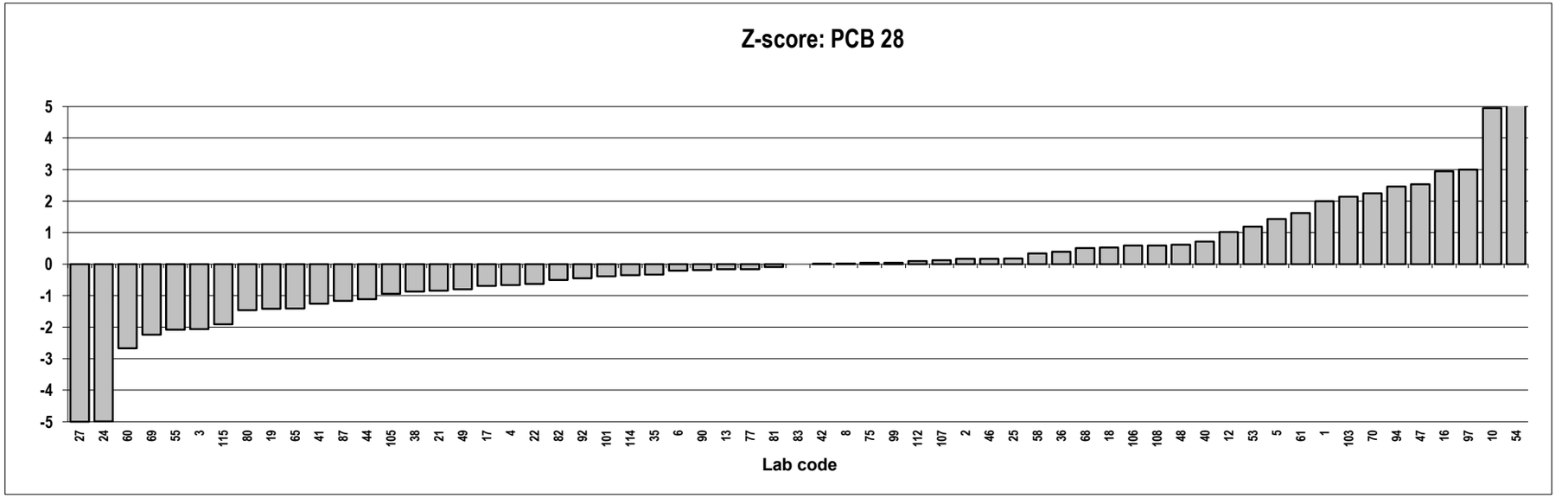
Congener: PCB 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	2881		83	2059	
2	2130		87	1580	
3	1209		90	1981	
4	1786		92	1875	
5	2649		94	3072	
6	1974		97	3293	
8	2067		99	2078	
10	4097		101	1900	
12	2480		103	2938	
13	1990		105	1670	
16	3271		106	2300	
17	1774		107	2108	
18	2277		108	2300	
19	1477		112	2099	
21	1710		114	1914	
22	1802		115	1271	
24	1.9				
25	2131				
27	0.10	ND			
35	1920				
36	2220				
38	1699				
40	2355				
41	1543				
42	2063				
44	1600				
46	2130				
47	3104				
48	2313				
49	1730				
53	2550				
54	7905	Outlier			
55	1201				
58	2199				
60	960				
61	2725				
65	1480				
68	2270				
69	1135				
70	2984				
75	2078				
77	1991				
80	1455				
81	2020				
82	1850				

Consenus statistics

Consensus median, pg/g	2059
Median all values pg/g	2059
Consensus mean, pg/g	2029
Standard deviation, pg/g	694
Relative standard deviation, %	34
No. of values reported	61
No. of values removed	1
No. of reported non-detects	1


PCB 28
pg/g fw
4118
3618
3118
2618
2118
1618
1118
618
118
-382
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
27 24 60 69 55 3 115 80 19 65 41 87 44 105 38 21 49 17 4 22 82 92 101 114 35 6 90 13 77 81 83 42 8 75 99 112 107 2 46 25 58 36 68 18 106 108 48 40 12 53 5 61 1 103 70 94 47 16 97 10 54
Lab code

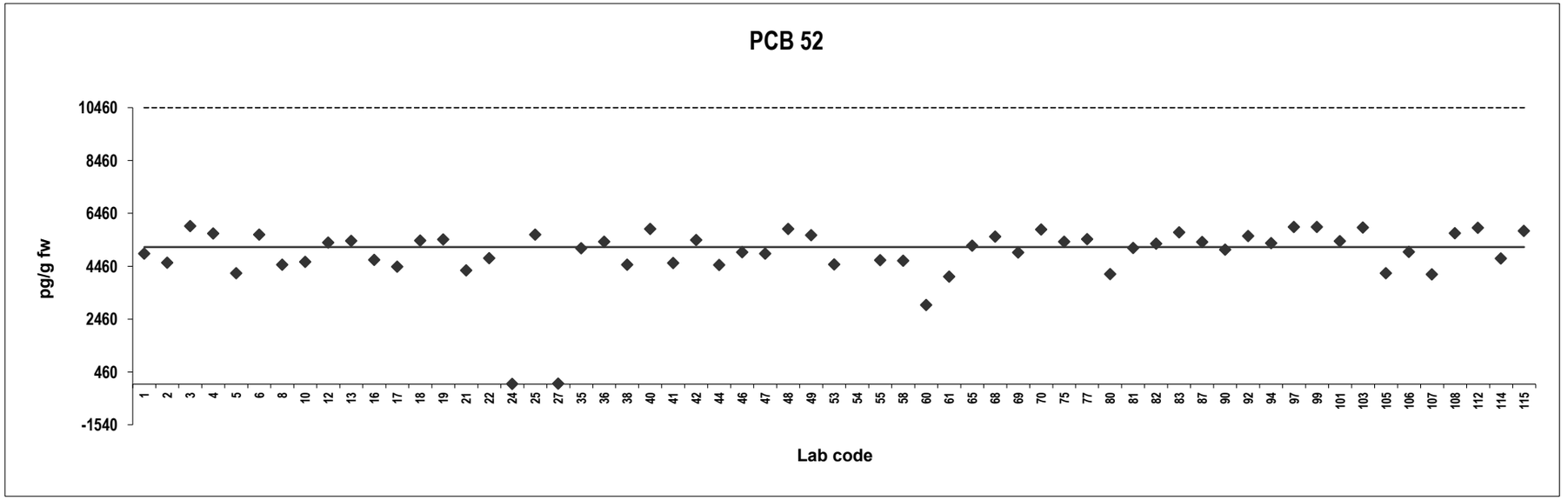
Fish oil

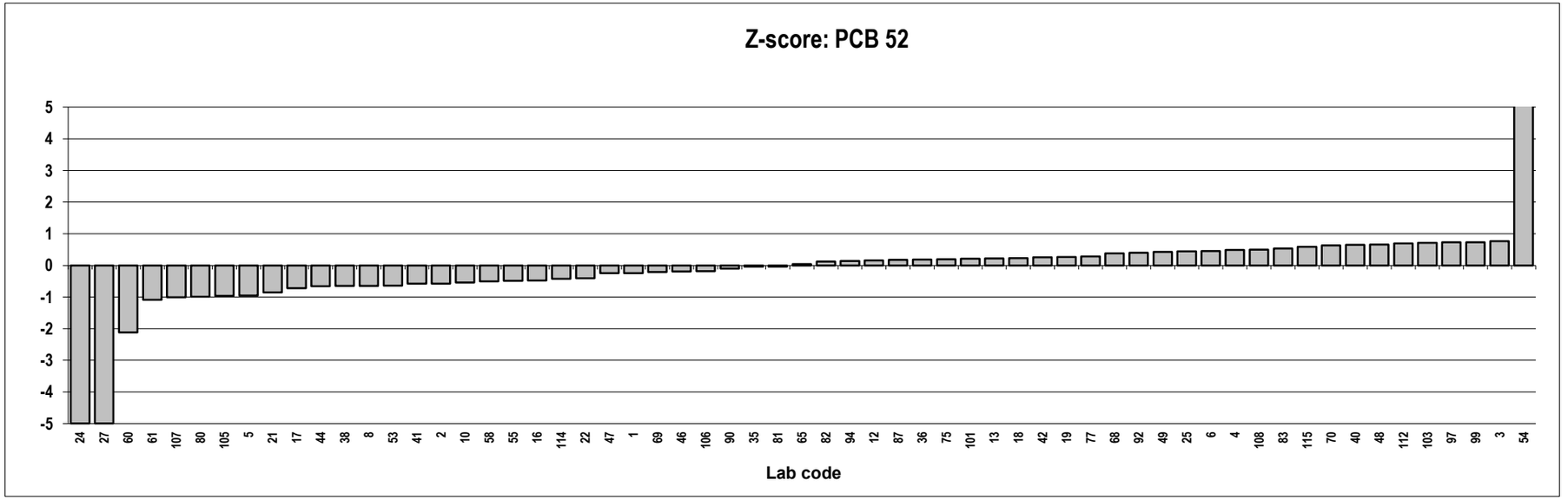
Congener: PCB 52

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	4935		83	5735	
2	4590		87	5370	
3	5977		90	5083	
4	5692		92	5599	
5	4192		94	5333	
6	5655		97	5944	
8	4515		99	5944	
10	4620		101	5400	
12	5350		103	5922	
13	5410		105	4190	
16	4691		106	5000	
17	4435		107	4144	
18	5424		108	5700	
19	5464		112	5906	
21	4300		114	4744	
22	4765		115	5796	
24	5.4				
25	5647				
27	9.0				
35	5140				
36	5380				
38	4509				
40	5864				
41	4582				
42	5450				
44	4500				
46	4990				
47	4929				
48	5865				
49	5630				
53	4523				
54	847391	Outlier			
55	4679				
58	4660				
60	2985				
61	4059				
65	5230				
68	5580				
69	4972				
70	5845				
75	5384				
77	5483				
80	4159				
81	5141				
82	5310				

Consenus statistics

Consensus median, pg/g	5186
Median all values pg/g	5230
Consensus mean, pg/g	4939
Standard deviation, pg/g	1110
Relative standard deviation, %	22
No. of values reported	61
No. of values removed	1
No. of reported non-detects	0


PCB 52
10460
8460
6460
4460
2460
460
-1540
pg/g fw
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 52
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 27 60 61 107 80 105 5 21 17 44 38 8 53 41 2 10 58 55 16 114 22 47 1 69 46 106 90 35 81 65 82 94 12 87 36 75 101 13 18 42 19 77 68 92 49 25 6 4 108 83 115 70 40 48 112 103 97 99 3 54
Lab code

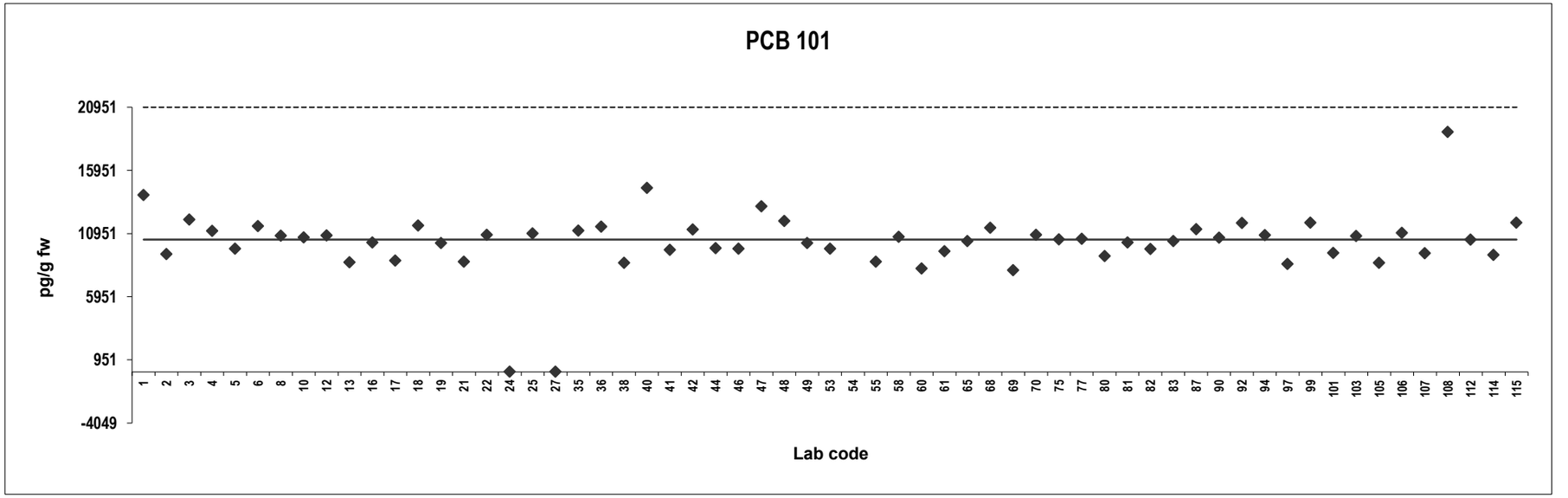
Fish oil

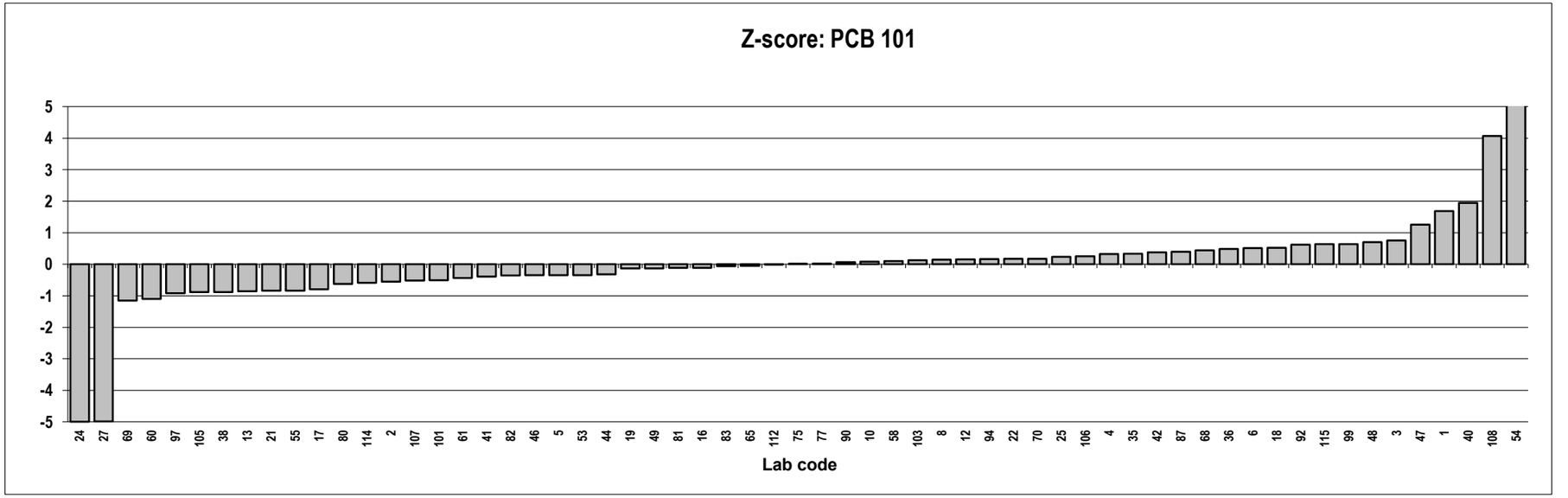
Congener: PCB 101

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	14005		83	10350	
2	9320		87	11300	
3	12049		90	10610	
4	11160		92	11773	
5	9746		94	10815	
6	11541		97	8546	
8	10780		99	11815	
10	10643		101	9400	
12	10800		103	10743	
13	8680		105	8620	
16	10243		106	11000	
17	8815		107	9390	
18	11575		108	19000	
19	10198		112	10469	
21	8710		114	9246	
22	10834		115	11812	
24	10				
25	10962				
27	19				
35	11170				
36	11500				
38	8627				
40	14559				
41	9647				
42	11258				
44	9800				
46	9740				
47	13109				
48	11935				
49	10200				
53	9755				
54	2219604	Outlier			
55	8719				
58	10680				
60	8177				
61	9550				
65	10360				
68	11400				
69	8054				
70	10836				
75	10475				
77	10519				
80	9169				
81	10228				
82	9730				

Consenus statistics

Consensus median, pg/g	10472
Median all values pg/g	10475
Consensus mean, pg/g	10236
Standard deviation, pg/g	2561
Relative standard deviation, %	25
No. of values reported	61
No. of values removed	1
No. of reported non-detects	0


PCB 101
20951
15951
10951
5951
951
-4049
pg/g fw
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 101
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 27 69 60 97 105 38 13 21 55 17 80 114 2 107 101 61 41 82 46 5 53 44 19 49 81 16 83 65 112 75 77 90 10 58 103 8 12 94 22 70 25 106 4 35 42 87 68 36 6 18 92 115 99 48 3 47 1 40 108 54
Lab code

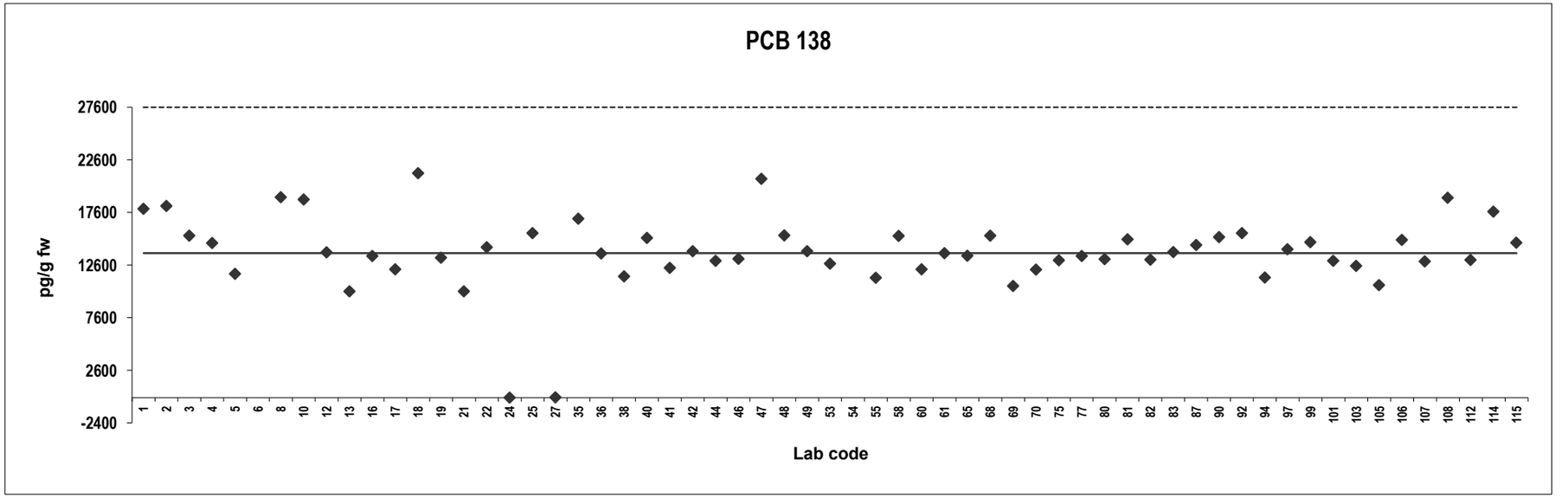
Fish oil

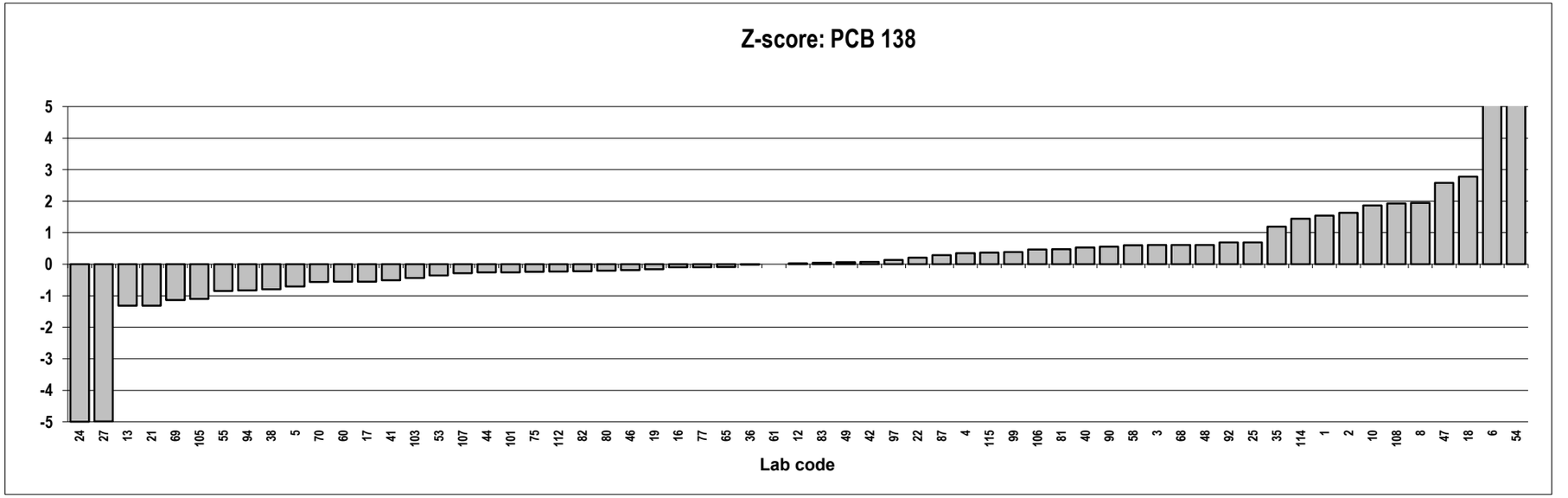
Congener: PCB 138

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	17941		83	13840	
2	18200		87	14500	
3	15382		90	15253	
4	14691		92	15627	
5	11769		94	11427	
6	56670	Outlier	97	14094	
8	19054		99	14781	
10	18827		101	13000	
12	13800		103	12506	
13	10100		105	10700	
16	13443		106	15000	
17	12197		107	12945	
18	21335		108	19000	
19	13285		112	13078	
21	10100		114	17684	
22	14279		115	14727	
24	13				
25	15627				
27	25				
35	17000				
36	13700				
38	11533				
40	15164				
41	12316				
42	13923				
44	13000				
46	13200				
47	20795				
48	15406				
49	13900				
53	12743				
54	1923595	Outlier			
55	11388				
58	15360				
60	12190				
61	13719				
65	13470				
68	15400				
69	10600				
70	12168				
75	13053				
77	13454				
80	13163				
81	15031				
82	13100				

Consenus statistics

Consensus median, pg/g	13719
Median all values pg/g	13800
Consensus mean, pg/g	13780
Standard deviation, pg/g	3572
Relative standard deviation, %	26
No. of values reported	61
No. of values removed	2
No. of reported non-detects	0


PCB 138
27600
22600
17600
12600
7600
2600
-2400
pg/g fw
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 138
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 27 13 21 69 105 55 94 38 5 70 60 17 41 103 53 107 44 101 75 112 82 80 46 19 16 77 65 36 61 12 83 49 42 97 22 87 4 115 99 106 81 40 90 58 3 68 48 92 25 35 114 1 2 10 108 8 47 18 6 54
Lab code

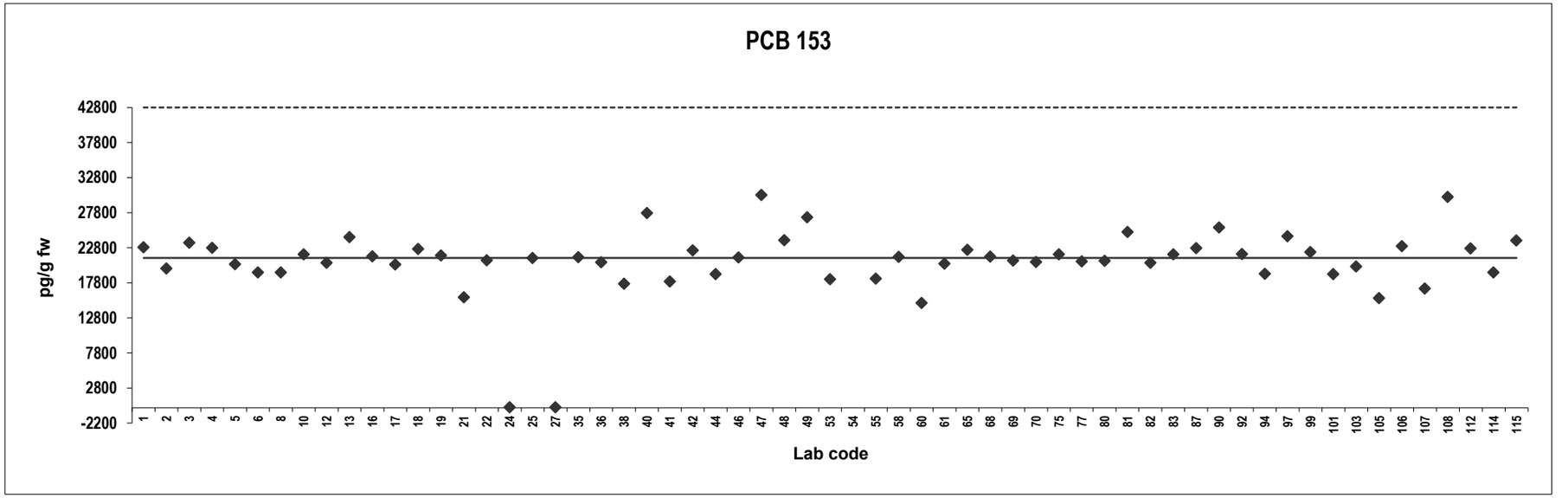
Fish oil

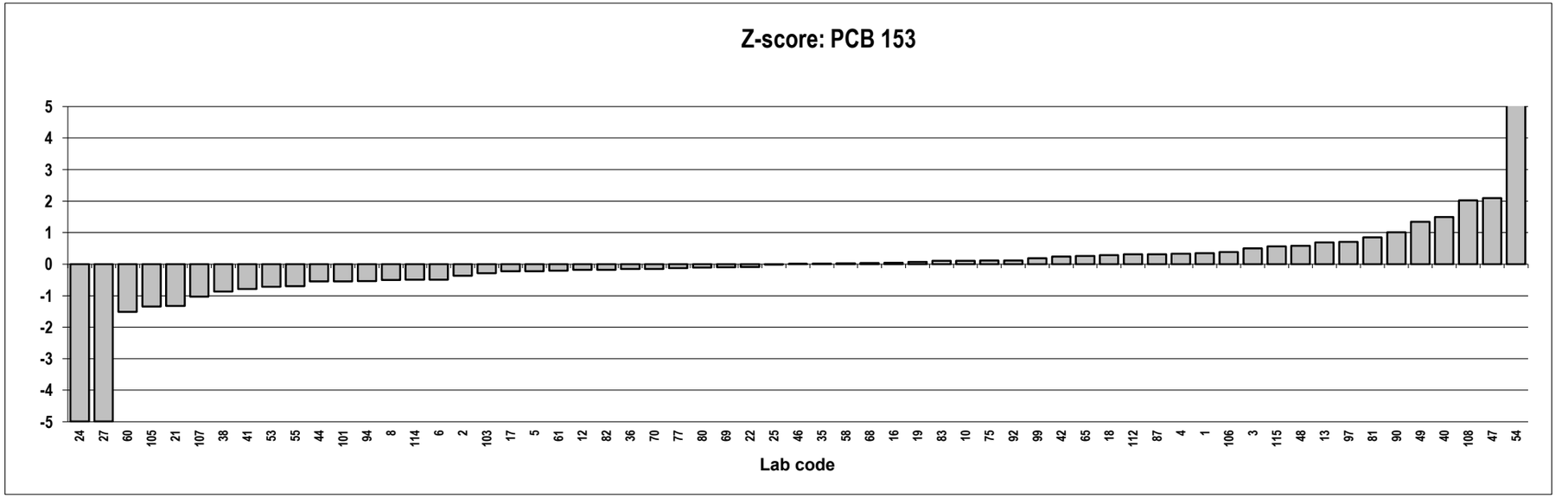
Congener: PCB 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	22839		83	21820	
2	19800		87	22700	
3	23486		90	25666	
4	22751		92	21869	
5	20413		94	19064	
6	19251		97	24392	
8	19228		99	22140	
10	21828		101	19000	
12	20600		103	20112	
13	24300		105	15600	
16	21528		106	23000	
17	20380		107	16969	
18	22595		108	30000	
19	21654		112	22679	
21	15700		114	19230	
22	20971		115	23780	
24	22				
25	21313				
27	28				
35	21420				
36	20700				
38	17641				
40	27726				
41	17975				
42	22391				
44	19000				
46	21400				
47	30296				
48	23854				
49	27100				
53	18293				
54	3668348	Outlier			
55	18354				
58	21470				
60	14880				
61	20483				
65	22470				
68	21500				
69	20941				
70	20721				
75	21838				
77	20800				
80	20887				
81	25001				
82	20600				

Consenus statistics

Consensus median, pg/g	21356
Median all values pg/g	21400
Consensus mean, pg/g	20741
Standard deviation, pg/g	4883
Relative standard deviation, %	24
No. of values reported	61
No. of values removed	1
No. of reported non-detects	0


PCB 153
pg/g fw
42800
37800
32800
27800
22800
17800
12800
7800
2800
-2200
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 27 60 105 21 107 38 41 53 55 44 101 94 8 114 6 2 103 17 5 61 12 82 36 70 77 80 69 22 25 46 35 58 68 16 19 83 10 75 92 99 42 65 18 112 87 4 1 106 3 115 48 13 97 81 90 49 40 108 47 54
Lab code

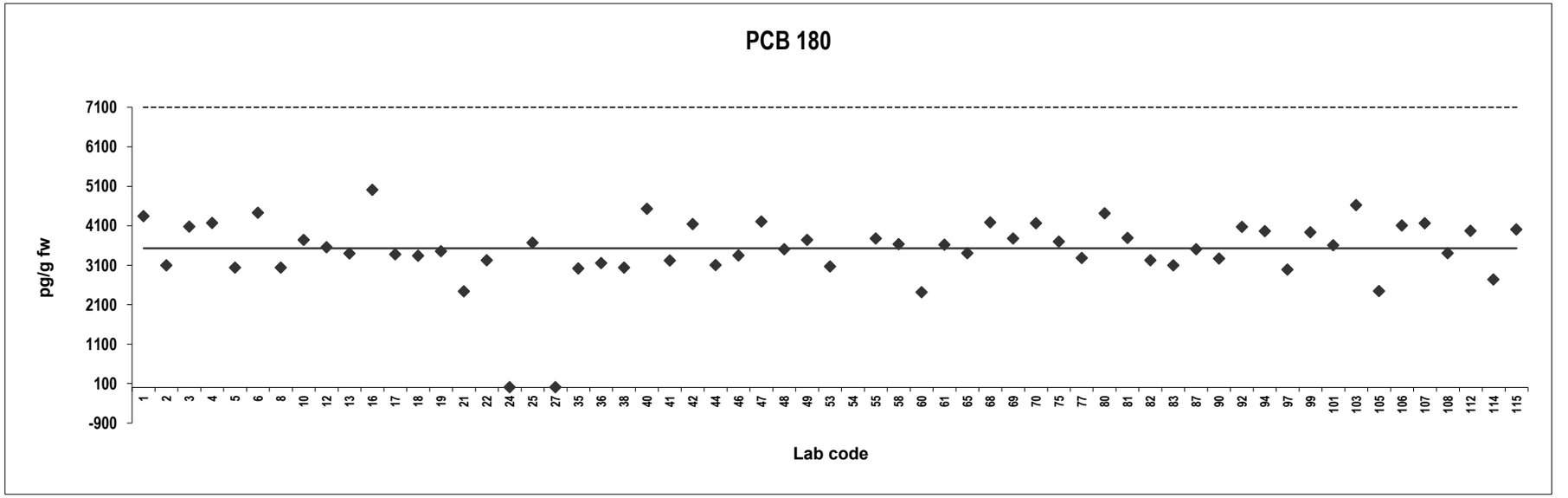
Fish oil

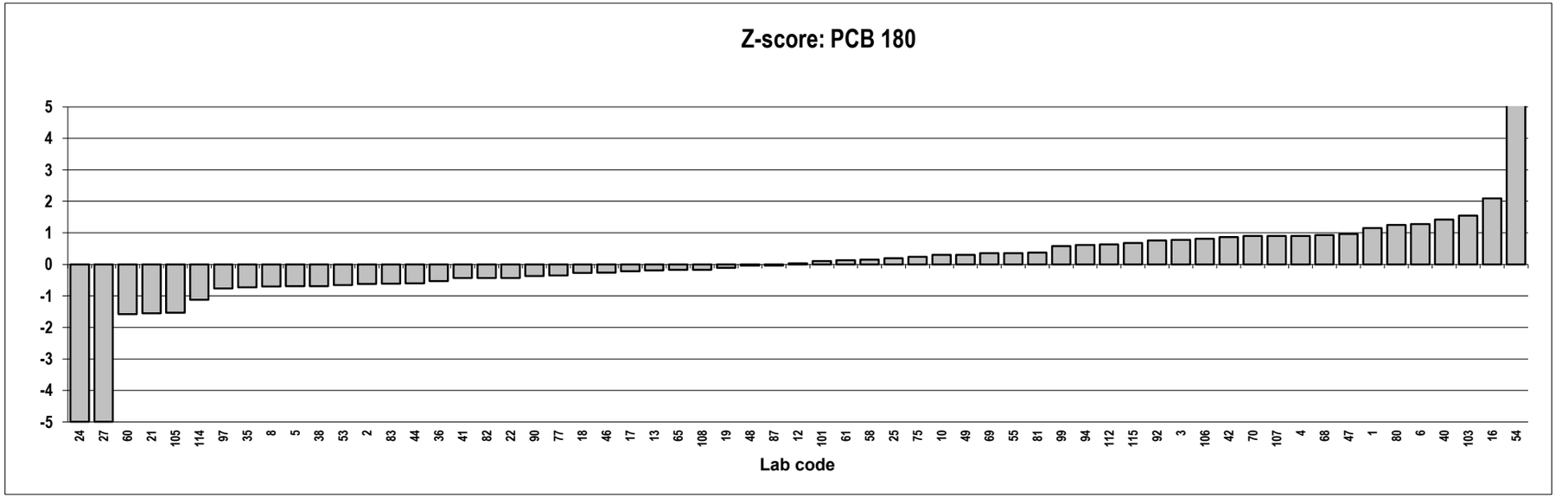
Congener: PCB 180

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
1	4337		83	3093	
2	3090		87	3500	
3	4072		90	3267	
4	4163		92	4063	
5	3034		94	3958	
6	4427		97	2988	
8	3032		99	3933	
10	3740		101	3600	
12	3550		103	4617	
13	3390		105	2440	
16	5004		106	4100	
17	3372		107	4162	
18	3335		108	3400	
19	3450		112	3969	
21	2430		114	2736	
22	3220		115	4004	
24	3.1				
25	3662				
27	4.0				
35	3010				
36	3150				
38	3038				
40	4525				
41	3217				
42	4135				
44	3100				
46	3340				
47	4203				
48	3499				
49	3740				
53	3064				
54	636195	Outlier			
55	3774				
58	3630				
60	2413				
61	3616				
65	3400				
68	4180				
69	3773				
70	4160				
75	3696				
77	3278				
80	4410				
81	3786				
82	3220				

Consenus statistics

Consensus median, pg/g	3525
Median all values pg/g	3550
Consensus mean, pg/g	3475
Standard deviation, pg/g	852
Relative standard deviation, %	25
No. of values reported	61
No. of values removed	1
No. of reported non-detects	0


PCB 180
pg/g fw
7100
6100
5100
4100
3100
2100
1100
100
-900
1 2 3 4 5 6 8 10 12 13 16 17 18 19 21 22 24 25 27 35 36 38 40 41 42 44 46 47 48 49 53 54 55 58 60 61 65 68 69 70 75 77 80 81 82 83 87 90 92 94 97 99 101 103 105 106 107 108 112 114 115
Lab code


Z-score: PCB 180
5
4
3
2
1
0
-1
-2
-3
-4
-5
24 27 60 21 105 114 97 35 8 5 38 53 2 83 44 36 41 82 22 90 77 18 46 17 13 65 108 19 48 87 12 101 61 58 25 75 10 49 69 55 81 99 94 112 115 92 3 106 42 70 107 4 68 47 1 80 6 40 103 16 54
Lab code

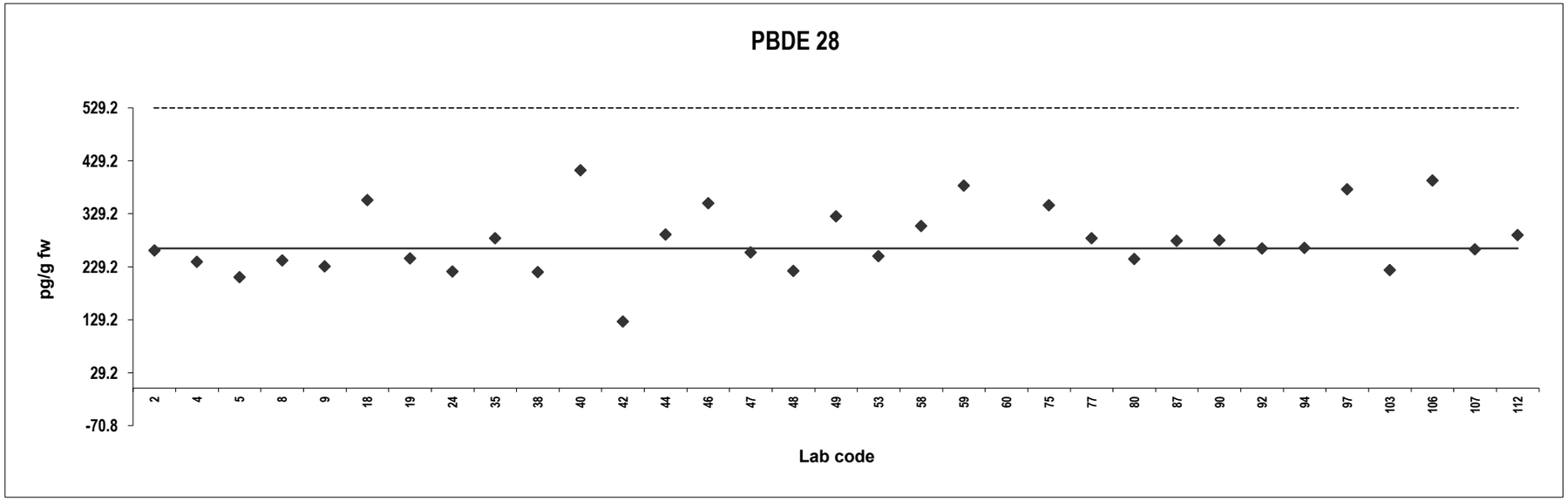
Fish oil

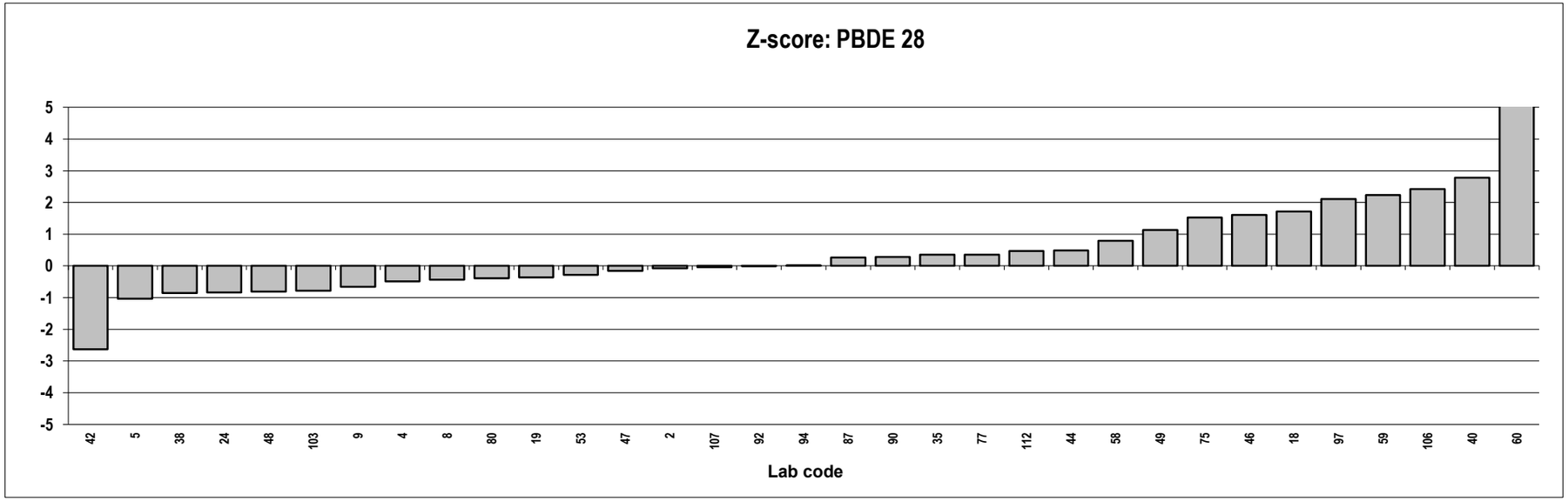
Congener: PBDE 28

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	260				
4	239				
5	210				
8	241				
9	230				
18	355				
19	245				
24	220				
35	283				
38	219				
40	411				
42	125				
44	290				
46	349				
47	256				
48	221				
49	324				
53	249				
58	306				
59	382				
60	602	Outlier			
75	345				
77	283				
80	244				
87	278				
90	279				
92	264				
94	265				
97	375				
103	223				
106	392				
107	262				
112	289				

Consenus statistics

Consensus median, pg/g	264
Median all values pg/g	265
Consensus mean, pg/g	279
Standard deviation, pg/g	62
Relative standard deviation, %	22
No. of values reported	33
No. of values removed	1
No. of reported non-detects	0


PBDE 28
529.2
429.2
329.2
229.2
129.2
29.2
-70.8
pg/g fw
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 28
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 5 38 24 48 103 9 4 8 80 19 53 47 2 107 92 94 87 90 35 77 112 44 58 49 75 46 18 97 59 106 40 60
Lab code

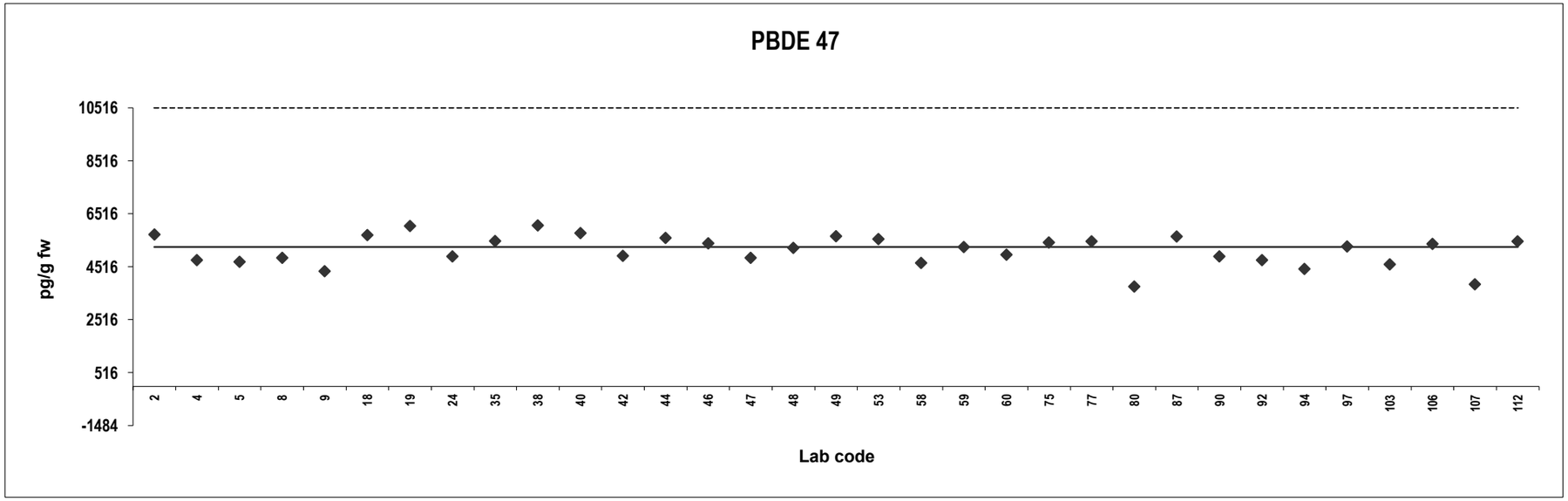
Fish oil

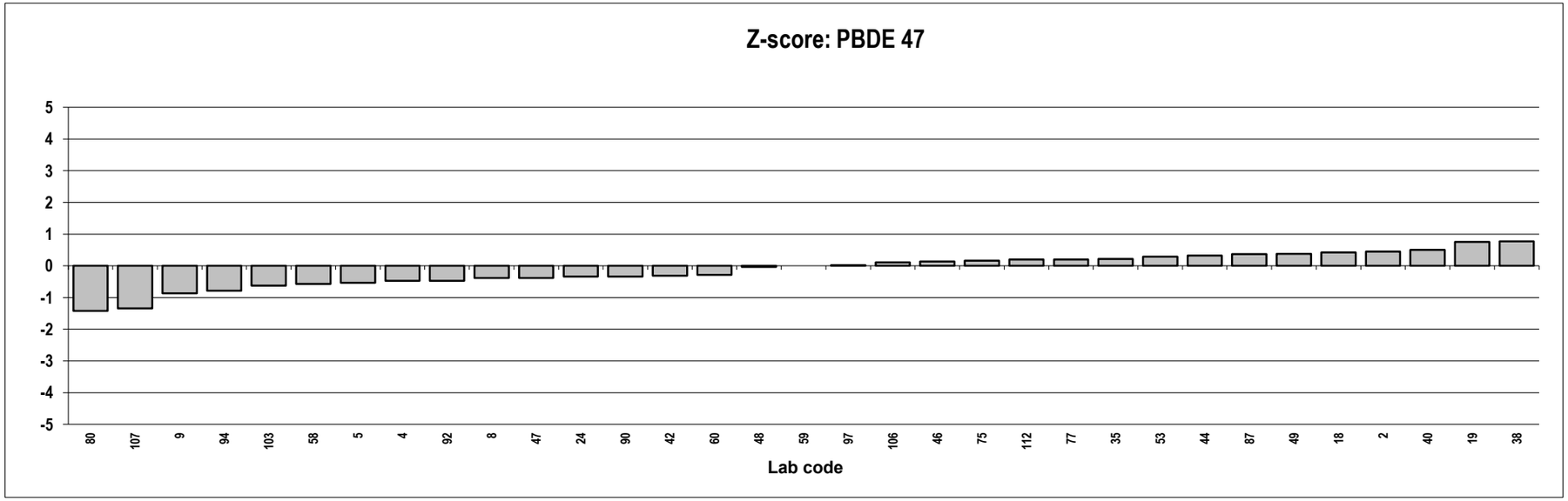
Congener: PBDE 47

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	5730				
4	4759				
5	4694				
8	4851				
9	4346				
18	5708				
19	6053				
24	4900				
35	5483				
38	6075				
40	5787				
42	4927				
44	5600				
46	5400				
47	4852				
48	5219				
49	5660				
53	5561				
58	4660				
59	5258				
60	4962				
75	5430				
77	5469				
80	3758				
87	5650				
90	4900				
92	4760				
94	4429				
97	5278				
103	4602				
106	5370				
107	3850				
112	5468				

Consenus statistics

Consensus median, pg/g	5258
Median all values pg/g	5258
Consensus mean, pg/g	5135
Standard deviation, pg/g	569
Relative standard deviation, %	11
No. of values reported	33
No. of values removed	0
No. of reported non-detects	0


PBDE 47
10516
8516
6516
4516
2516
516
-1484
pg/g fw
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 47
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 107 9 94 103 58 5 4 92 8 47 24 90 42 60 48 59 97 106 46 75 112 77 35 53 44 87 49 18 2 40 19 38
Lab code

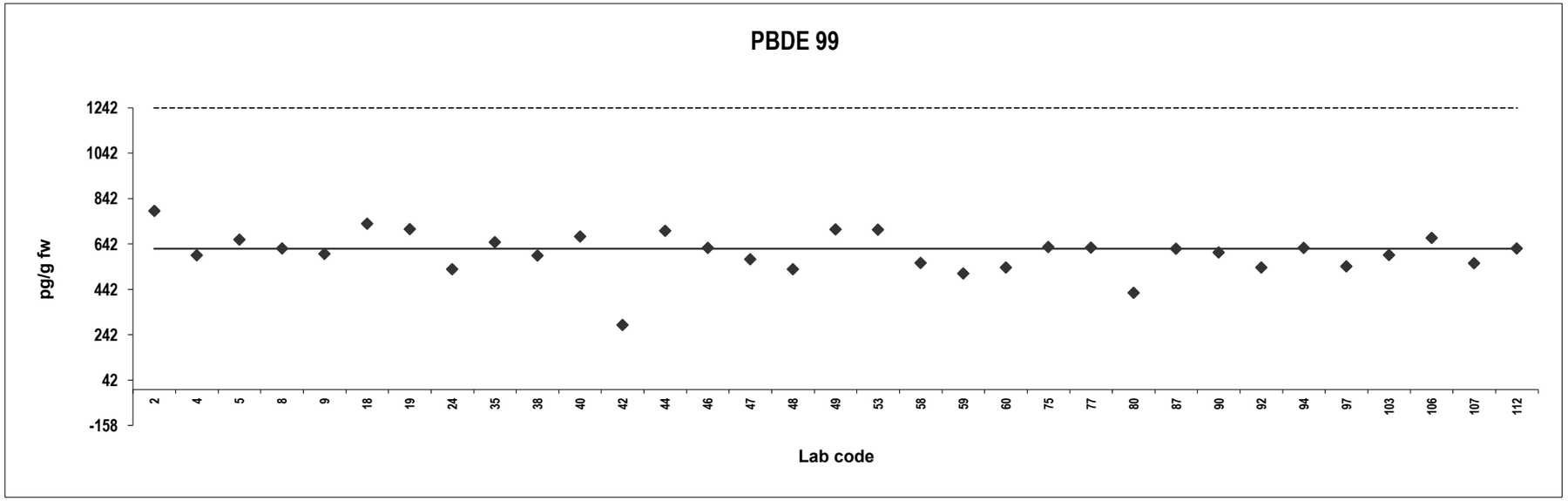
Fish oil

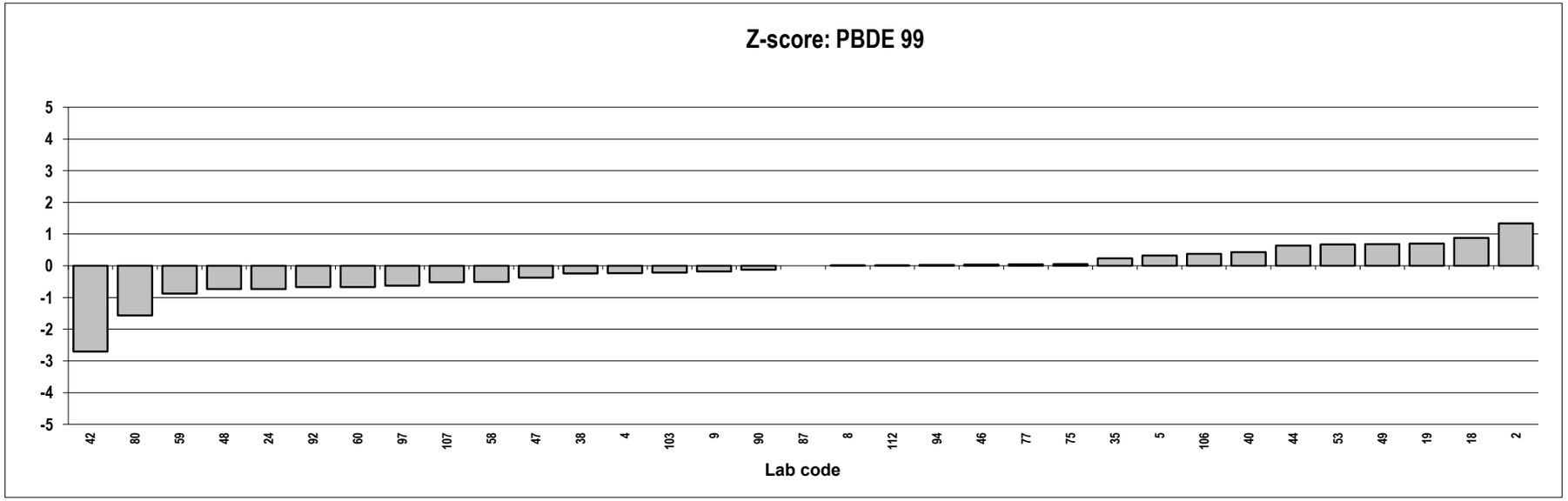
Congener: PBDE 99

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	787				
4	592				
5	661				
8	622				
9	598				
18	731				
19	708				
24	530				
35	650				
38	591				
40	675				
42	286				
44	700				
46	625				
47	574				
48	530				
49	706				
53	704				
58	558				
59	512				
60	538				
75	628				
77	626				
80	426				
87	621				
90	605				
92	538				
94	625				
97	543				
103	594				
106	668				
107	557				
112	622				

Consenus statistics

Consensus median, pg/g	621
Median all values pg/g	621
Consensus mean, pg/g	604
Standard deviation, pg/g	93
Relative standard deviation, %	15
No. of values reported	33
No. of values removed	0
No. of reported non-detects	0


PBDE 99
pg/g fw
1242
1042
842
642
442
242
42
-158
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 99
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 80 59 48 24 92 60 97 107 58 47 38 4 103 9 90 87 8 112 94 46 77 75 35 5 106 40 44 53 49 19 18 2
Lab code

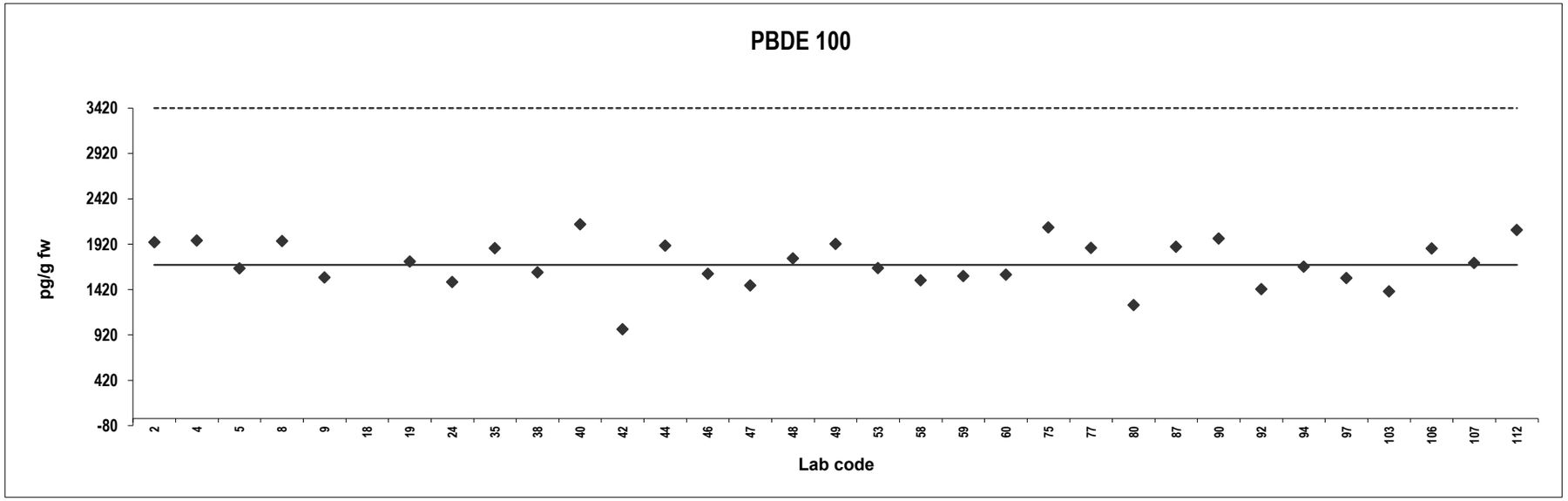
Fish oil

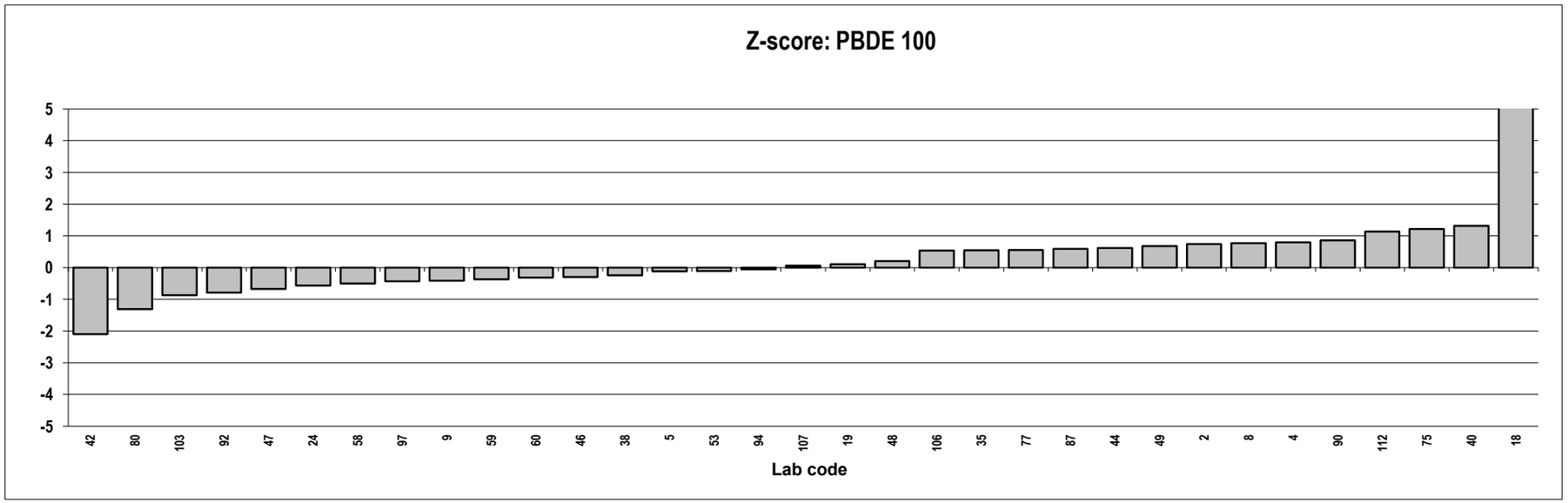
Congener: PBDE 100

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	1940				
4	1958				
5	1650				
8	1951				
9	1551				
18	3777	Outlier			
19	1725				
24	1500				
35	1873				
38	1608				
40	2135				
42	980				
44	1900				
46	1590				
47	1463				
48	1759				
49	1920				
53	1652				
58	1520				
59	1565				
60	1583				
75	2103				
77	1878				
80	1248				
87	1890				
90	1980				
92	1422				
94	1671				
97	1545				
103	1397				
106	1870				
107	1710				
112	2075				

Consenus statistics

Consensus median, pg/g	1690
Median all values pg/g	1710
Consensus mean, pg/g	1707
Standard deviation, pg/g	260
Relative standard deviation, %	15
No. of values reported	33
No. of values removed	1
No. of reported non-detects	0


PBDE 100
3420
2920
2420
1920
1420
920
420
-80
pg/g fw
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 100
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 80 103 92 47 24 58 97 9 59 60 46 38 5 53 94 107 19 48 106 35 77 87 44 49 2 8 4 90 112 75 40 18
Lab code

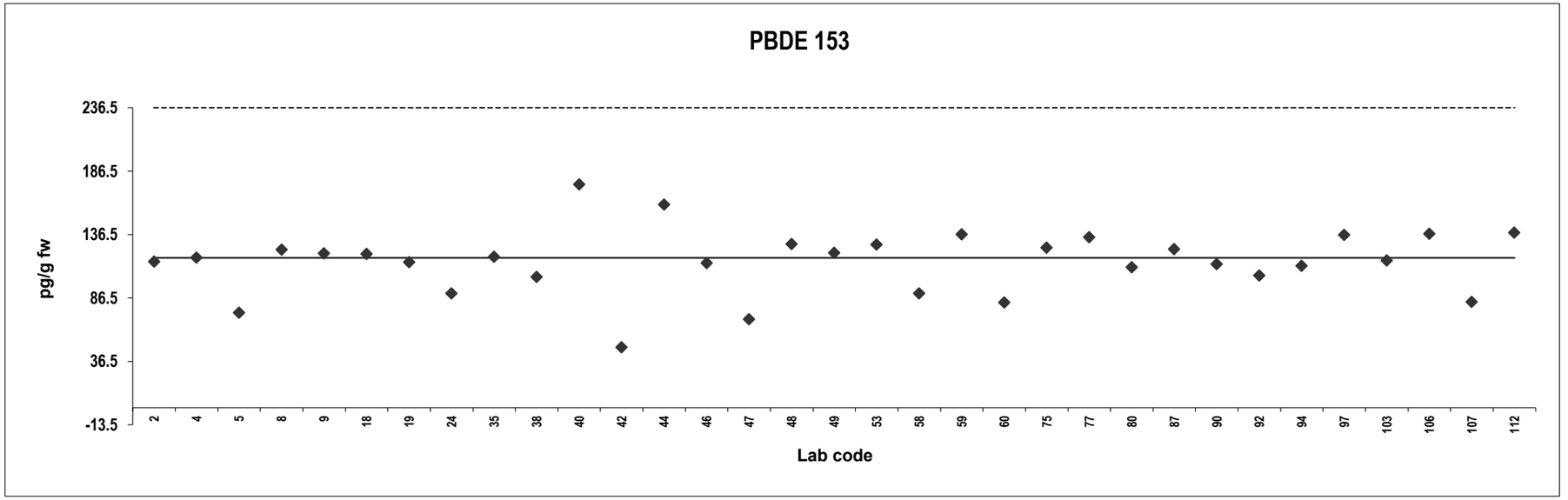
Fish oil

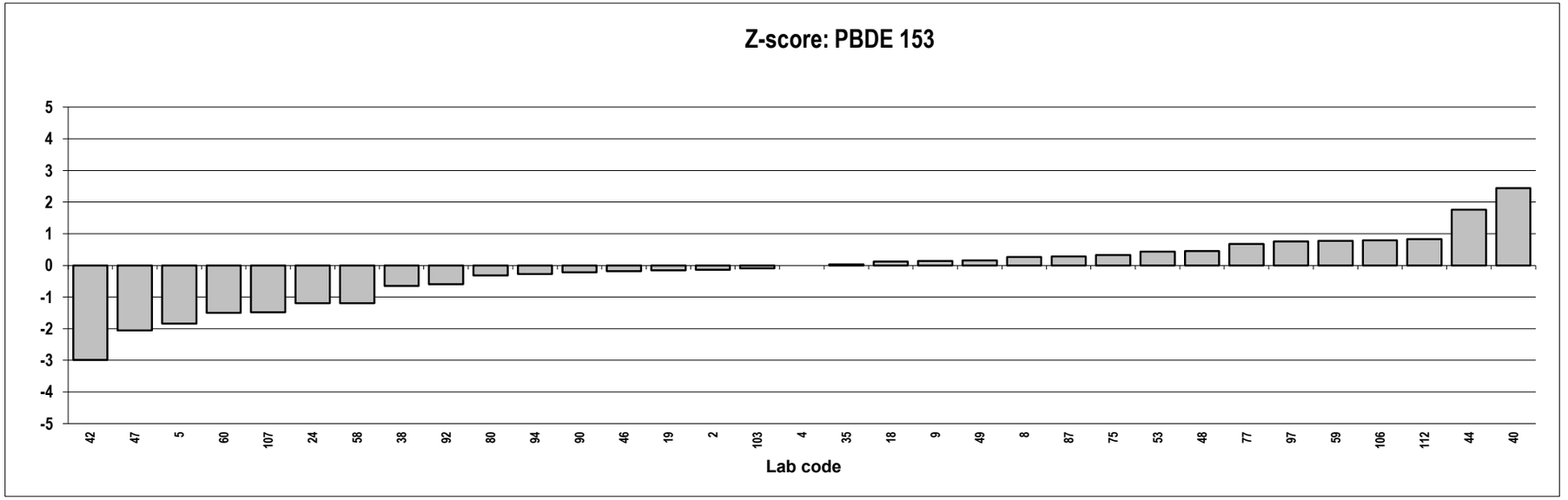
Congener: PBDE 153

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	115				
4	118				
5	75				
8	124				
9	121				
18	121				
19	115				
24	90				
35	119				
38	103				
40	176				
42	48				
44	160				
46	114				
47	70				
48	129				
49	122				
53	129				
58	90				
59	137				
60	83				
75	126				
77	134				
80	111				
87	125				
90	113				
92	104				
94	112				
97	136				
103	116				
106	137				
107	83				
112	138				

Consenus statistics

Consensus median, pg/g	118
Median all values pg/g	118
Consensus mean, pg/g	115
Standard deviation, pg/g	25
Relative standard deviation, %	22
No. of values reported	33
No. of values removed	0
No. of reported non-detects	0


PBDE 153
236.5
186.5
136.5
86.5
36.5
-13.5
pg/g fw
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 153
5
4
3
2
1
0
-1
-2
-3
-4
-5
42 47 5 60 107 24 58 38 92 80 94 90 46 19 2 103 4 35 18 9 49 8 87 75 53 48 77 97 59 106 112 44 40
Lab code

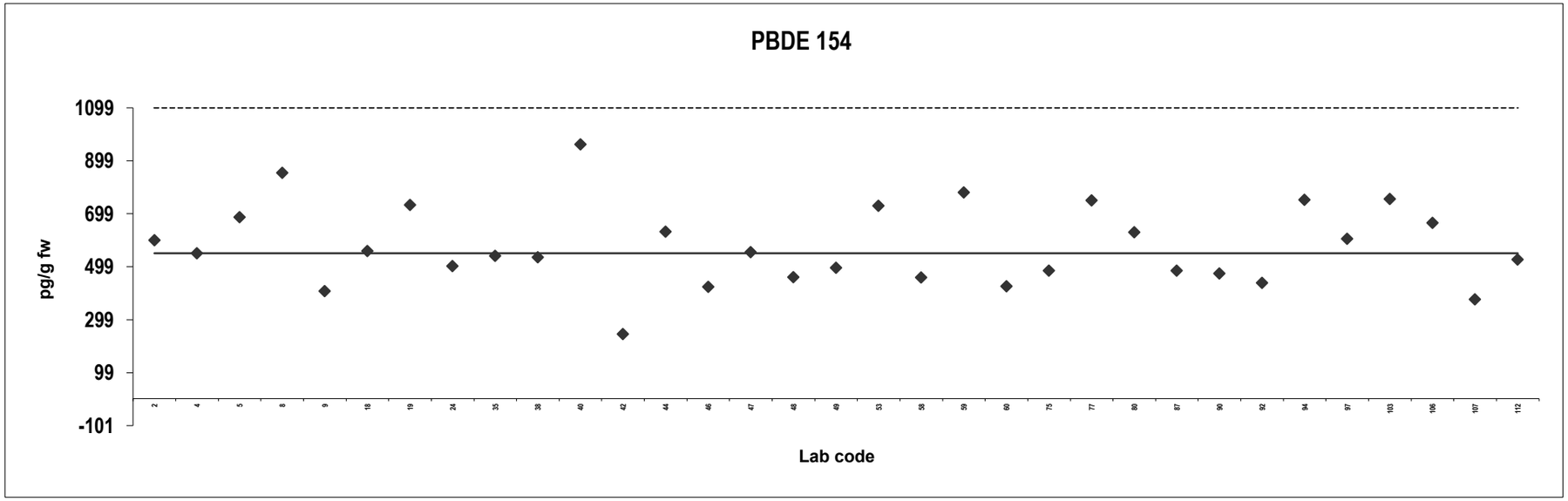
Fish oil

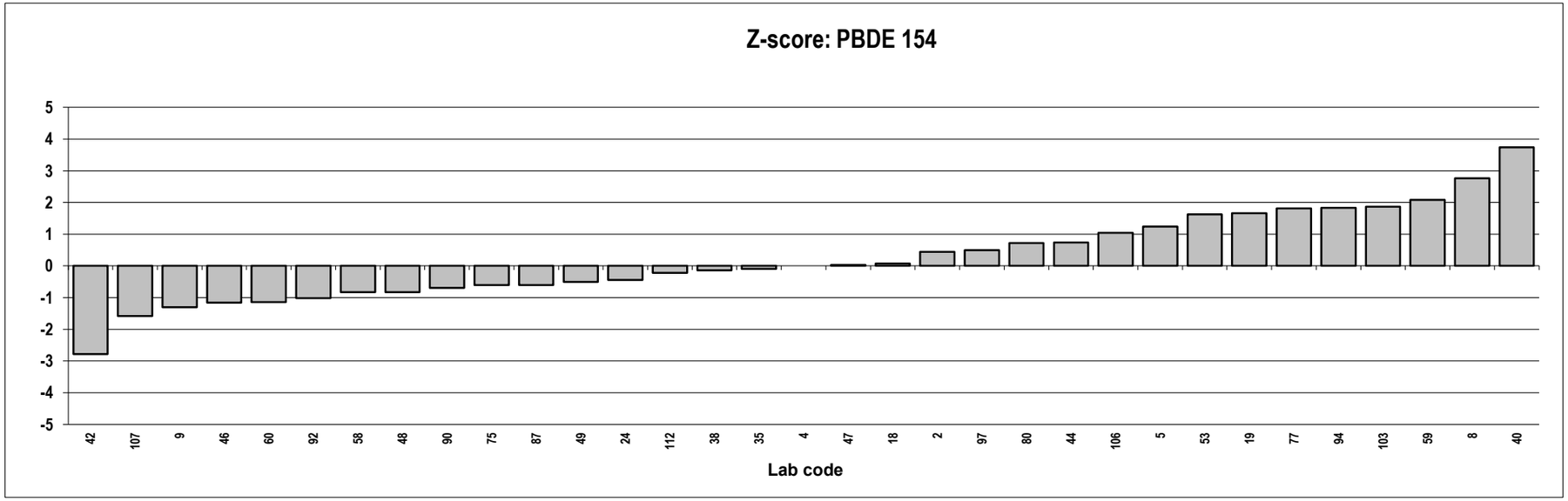
Congener: PBDE 154

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	598				
4	549				
5	685				
8	853				
9	406				
18	558				
19	732				
24	500				
35	539				
38	534				
40	960				
42	244				
44	630				
46	422				
47	553				
48	459				
49	494				
53	728				
58	458				
59	778				
60	424				
75	483				
77	749				
80	629				
87	483				
90	473				
92	437				
94	751				
97	603				
103	755				
106	664				
107	375				
112	525				

Consenus statistics

Consensus median, pg/g	549
Median all values pg/g	549
Consensus mean, pg/g	577
Standard deviation, pg/g	153
Relative standard deviation, %	27
No. of values reported	33
No. of values removed	0
No. of reported non-detects	0


PBDE 154
1099
899
699
499
299
99
-101
pg/g fw
2
4
5
8
9
18
19
24
35
38
40
42
44
46
47
48
49
53
58
59
60
75
77
80
87
90
92
94
97
103
106
107
112
Lab code


Z-score: PBDE 154
5
4
3
2
1
0
-1
-2
-3
-4
-5
42
107
9
46
60
92
58
48
90
75
87
49
24
112
38
35
4
47
18
2
97
80
44
106
5
53
19
77
94
103
59
8
40
Lab code

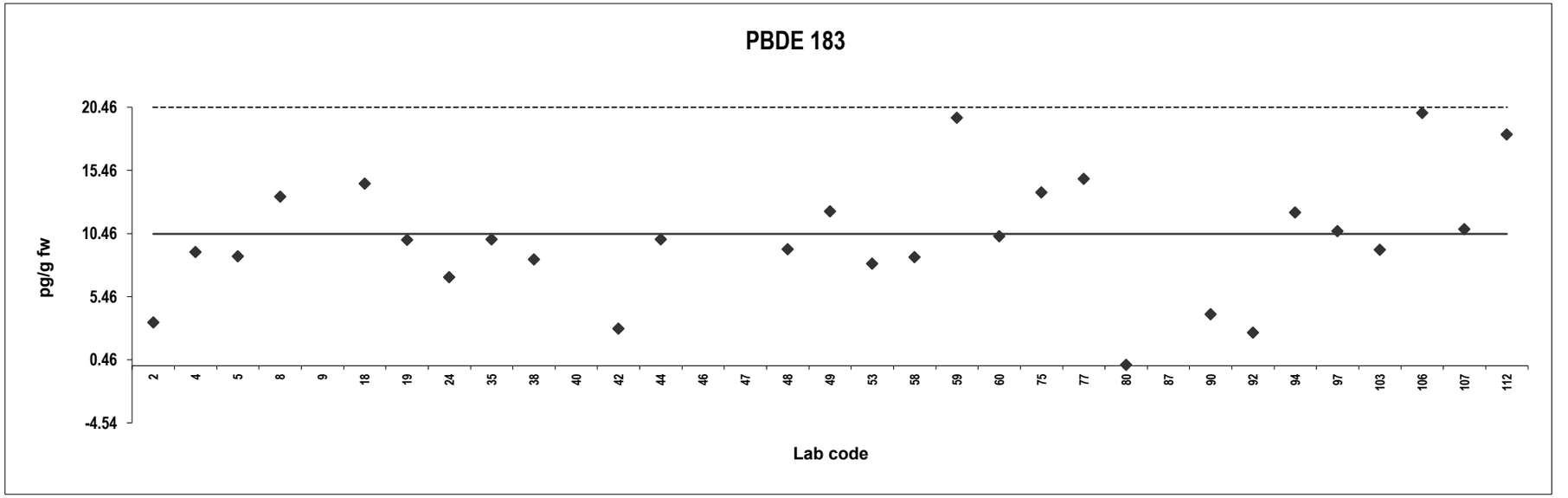
Fish oil

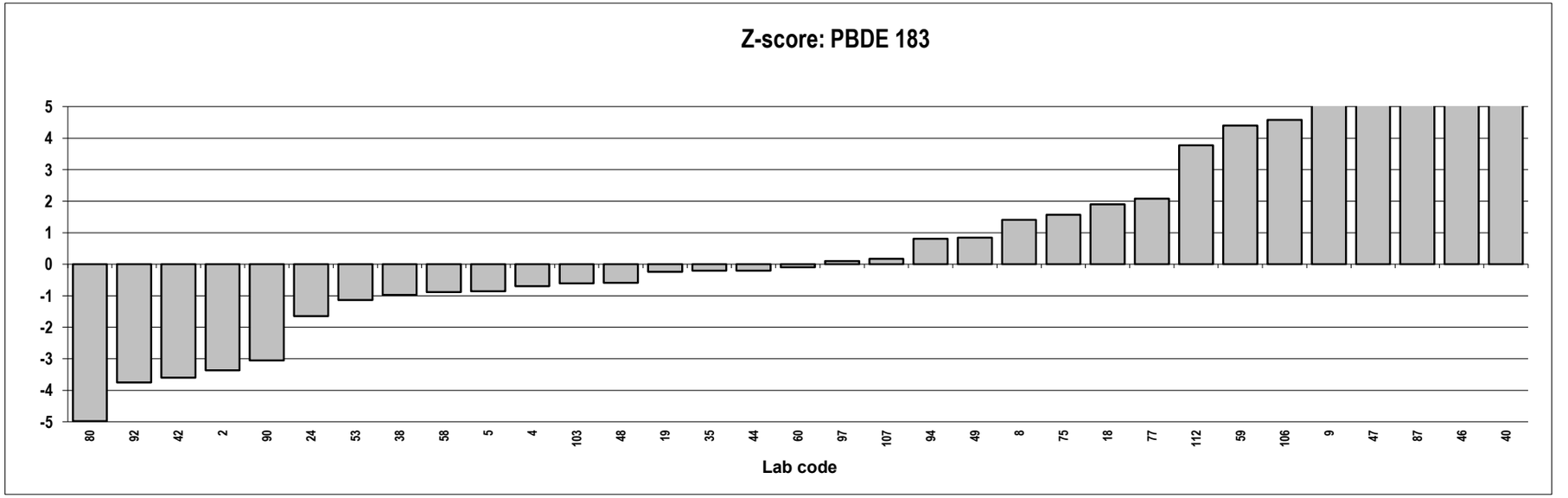
Congener: PBDE 183

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	3.4	ND			
4	9.0				
5	8.6				
8	13				
9	23	Outlier			
18	14				
19	9.9				
24	7.0	ND			
35	10				
38	8.4	ND			
40	247	Outlier			
42	2.9	ND			
44	10	ND			
46	80	Outlier,ND			
47	32	Outlier,ND			
48	9.2				
49	12				
53	8.1				
58	8.6				
59	20				
60	10				
75	14				
77	15				
80	0.050	ND			
87	53	Outlier,ND			
90	4.1				
92	2.6	ND			
94	12				
97	11				
103	9.2				
106	20	ND			
107	11				
112	18				

Consenus statistics

Consensus median, pg/g	10
Median all values pg/g	10
Consensus mean, pg/g	10
Standard deviation, pg/g	4.9
Relative standard deviation, %	49
No. of values reported	33
No. of values removed	5
No. of reported non-detects	11


PBDE 183
20.46
15.46
10.46
5.46
0.46
-4.54
pg/g fw
2 4 5 8 9 18 19 24 35 38 40 42 44 46 47 48 49 53 58 59 60 75 77 80 87 90 92 94 97 103 106 107 112
Lab code


Z-score: PBDE 183
5
4
3
2
1
0
-1
-2
-3
-4
-5
80 92 42 2 90 24 53 38 58 5 4 103 48 19 35 44 60 97 107 94 49 8 75 18 77 112 59 106 9 47 87 46 40
Lab code

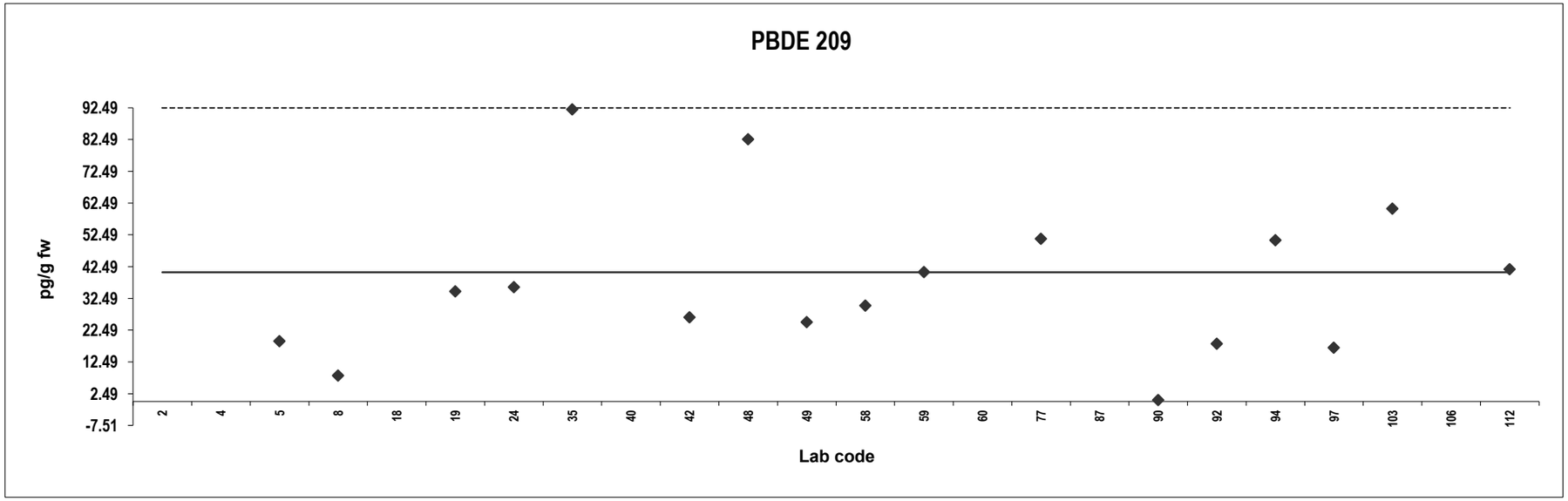
Fish oil

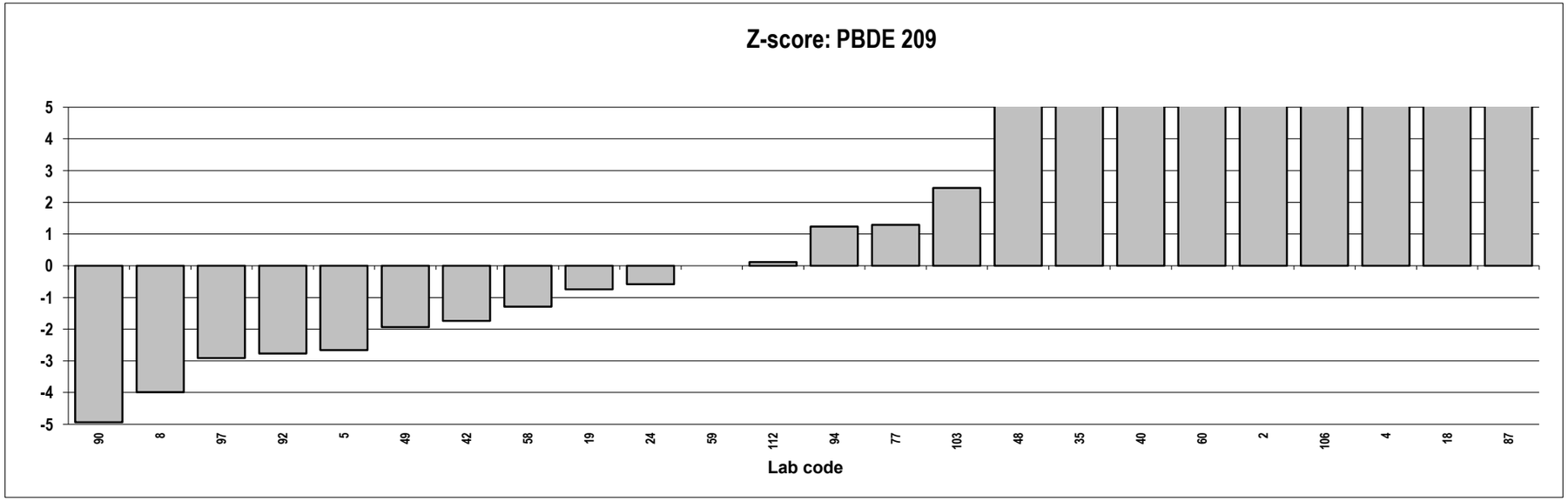
Congener: PBDE 209

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
2	180	Outlier,ND			
4	267	Outlier			
5	19				
8	8.2	ND			
18	511	Outlier			
19	35				
24	36				
35	92				
40	100	Outlier,ND			
42	27	ND			
48	83				
49	25	ND			
58	30				
59	41				
60	153	Outlier			
77	51				
87	970	Outlier,ND			
90	0.50	ND			
92	18	ND			
94	51				
97	17				
103	61				
106	262	Outlier			
112	42	ND			

Consenus statistics

Consensus median, pg/g	41
Median all values pg/g	46
Consensus mean, pg/g	37
Standard deviation, pg/g	25
Relative standard deviation, %	66
No. of values reported	24
No. of values removed	7
No. of reported non-detects	9


PBDE 209
92.49
82.49
72.49
62.49
52.49
42.49
32.49
22.49
12.49
2.49
-7.51
pg/g fw
2
4
5
8
18
19
24
35
40
42
48
49
58
59
60
77
87
90
92
94
97
103
106
112
Lab code


Z-score: PBDE 209
5
4
3
2
1
0
-1
-2
-3
-4
-5
90
8
97
92
5
49
42
58
19
24
59
112
94
77
103
48
35
40
60
2
106
4
18
87
Lab code

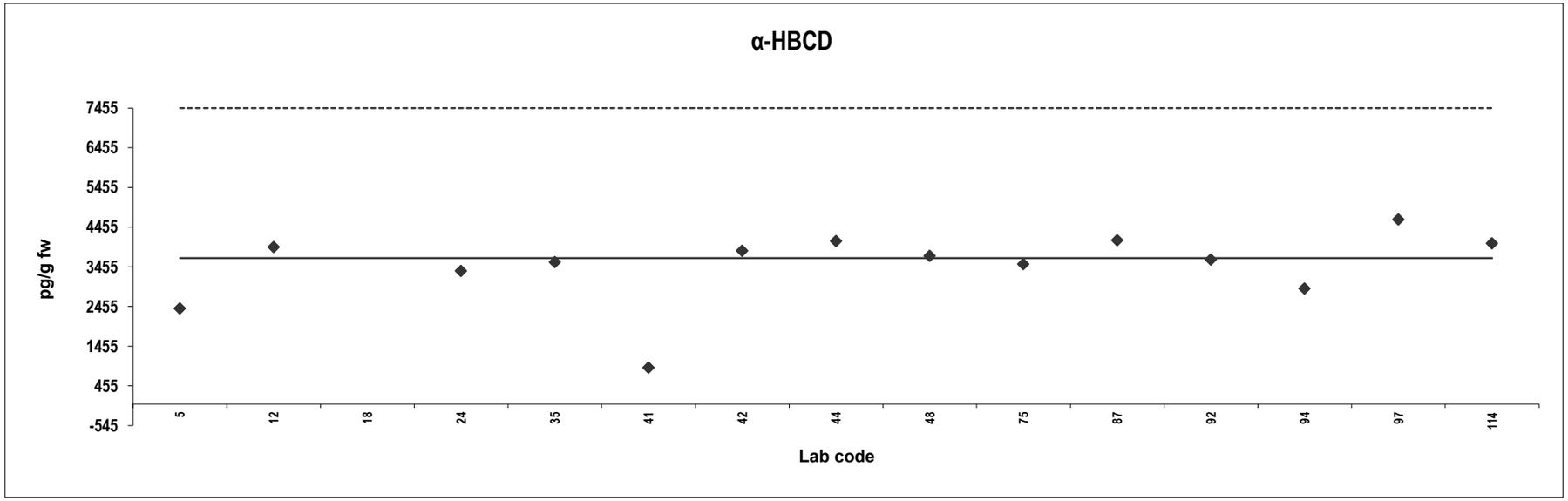
Fish oil

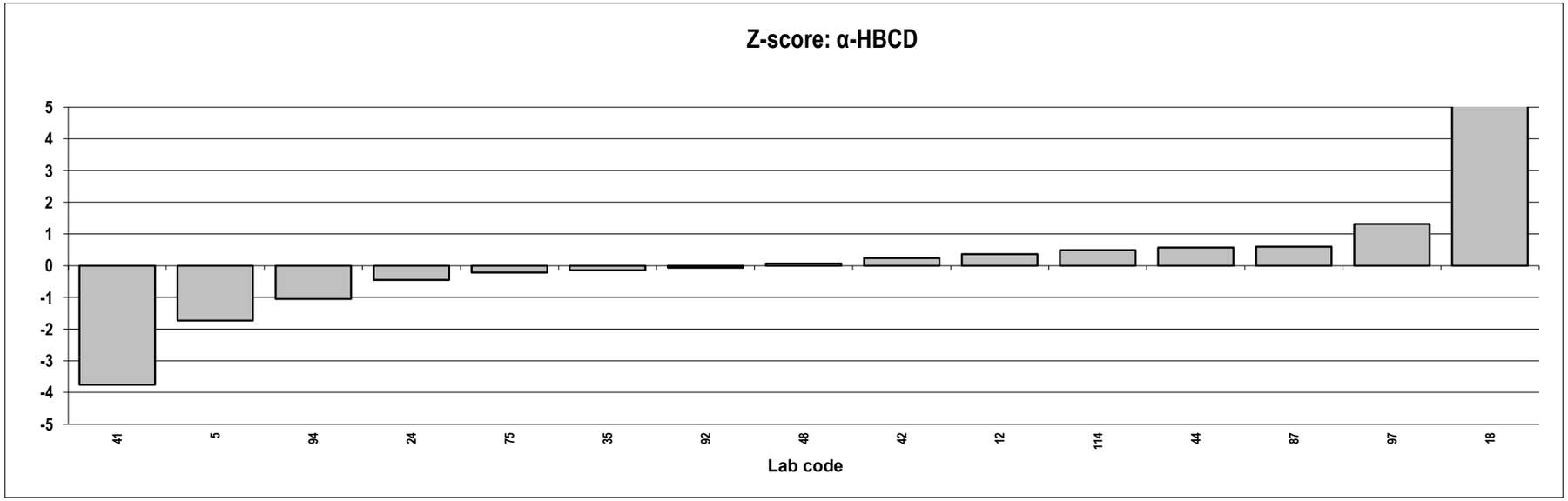
Congener: α-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2404				
12	3950				
18	65178	Outlier			
24	3350				
35	3570				
41	915				
42	3855				
44	4100				
48	3728				
75	3520				
87	4120				
92	3630				
94	2905				
97	4644				
114	4041				

Consenus statistics

Consensus median, pg/g	3679
Median all values pg/g	3728
Consensus mean, pg/g	3481
Standard deviation, pg/g	920
Relative standard deviation, %	26
No. of values reported	15
No. of values removed	1
No. of reported non-detects	0


α-HBCD
7455
6455
5455
4455
3455
2455
1455
455
-545
pg/g fw
5
12
18
24
35
41
42
44
48
75
87
92
94
97
114
Lab code


Z-score: α-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
41
5
94
24
75
35
92
48
42
12
114
44
87
97
18
Lab code

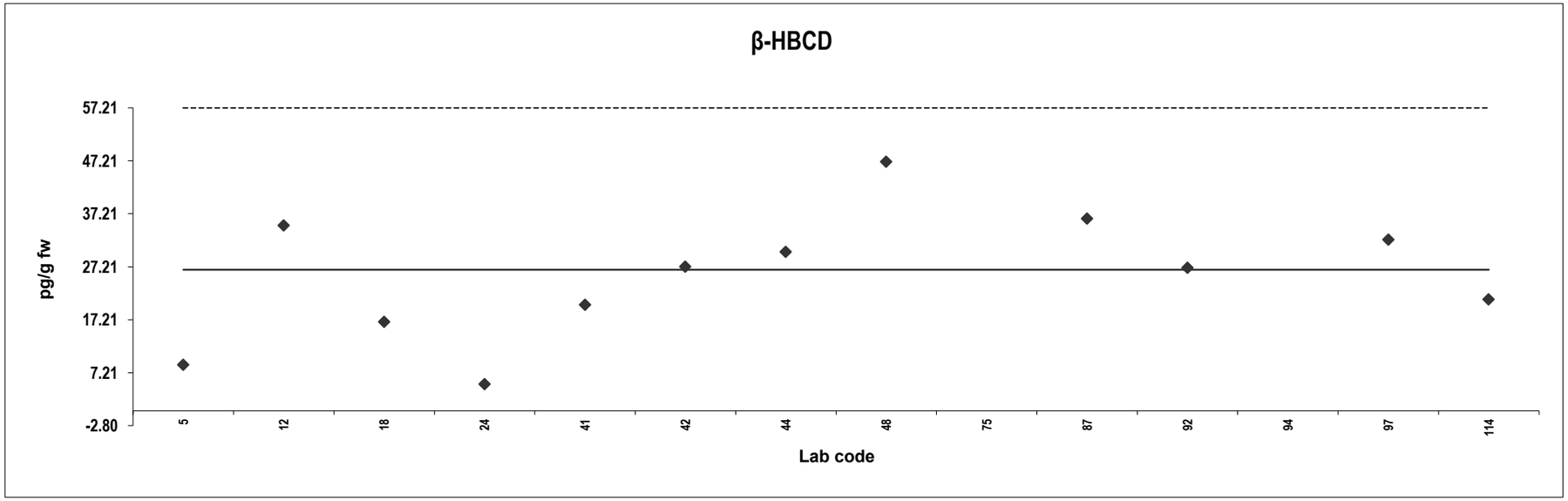
Fish oil

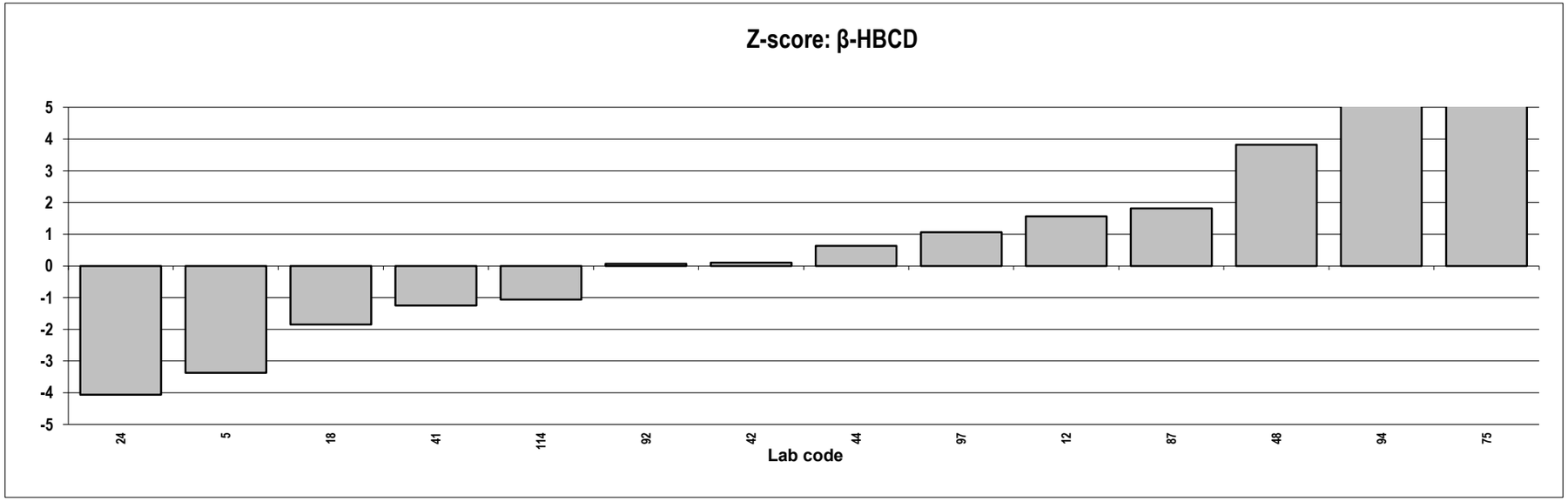
Congener: β-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	8.7				
12	35	ND			
18	17				
24	5.0	ND			
41	20	ND			
42	27	ND			
44	30	ND			
48	47				
75	100	Outlier,ND			
87	36				
92	27	ND			
94	70	Outlier			
97	32				
114	21				

Consenus statistics

Consensus median, pg/g	27
Median all values pg/g	29
Consensus mean, pg/g	26
Standard deviation, pg/g	12
Relative standard deviation, %	47
No. of values reported	14
No. of values removed	2
No. of reported non-detects	7


β-HBCD
57.21
47.21
37.21
27.21
17.21
7.21
-2.80
pg/g fw
5
12
18
24
41
42
44
48
75
87
92
94
97
114
Lab code


Z-score: β-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
24
5
18
41
114
92
42
44
97
12
87
48
94
75
Lab code

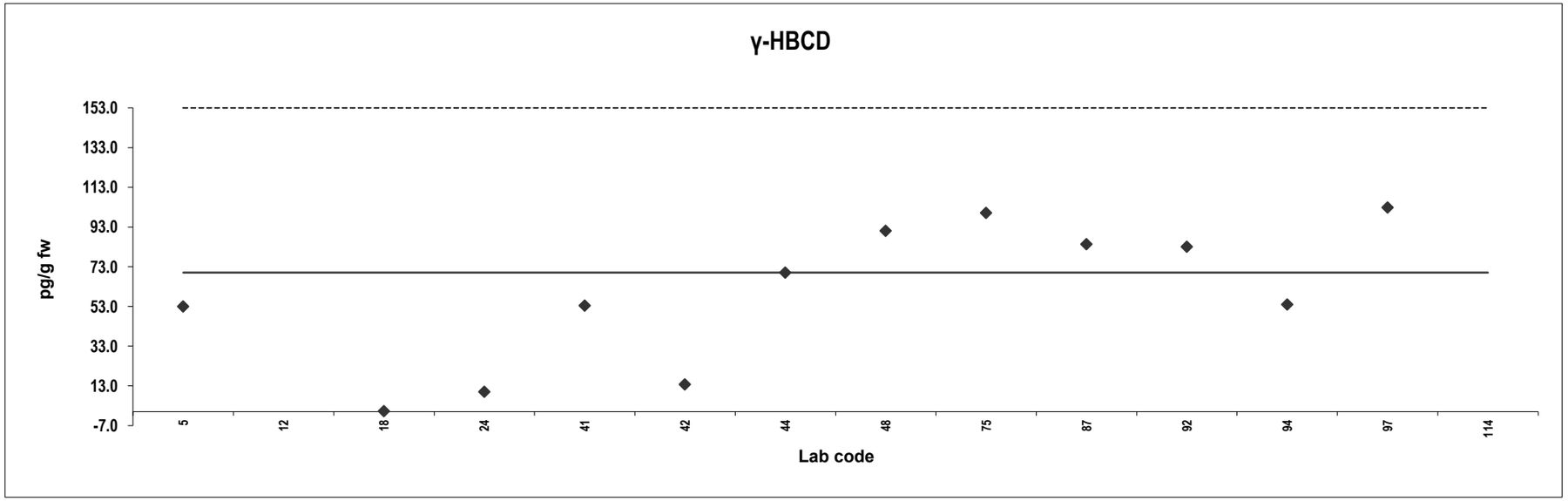
Fish oil

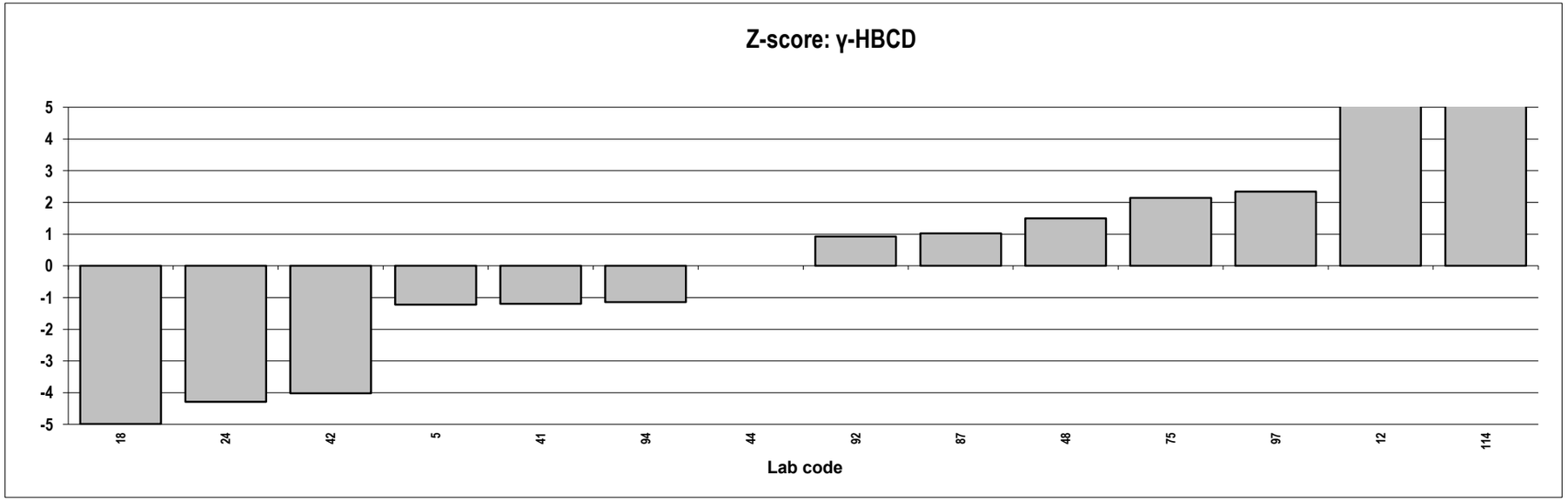
Congener: γ-HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	53				
12	167	Outlier			
18	0.15				
24	10	ND			
41	53				
42	14	ND			
44	70				
48	91				
75	100	ND			
87	84				
92	83				
94	54				
97	103				
114	213	Outlier			

Consenus statistics

Consensus median, pg/g	70
Median all values pg/g	77
Consensus mean, pg/g	60
Standard deviation, pg/g	36
Relative standard deviation, %	60
No. of values reported	14
No. of values removed	2
No. of reported non-detects	3


γ-HBCD
153.0
133.0
113.0
93.0
73.0
53.0
33.0
13.0
-7.0
pg/g fw
5
12
18
24
41
42
44
48
75
87
92
94
97
114
Lab code


Z-score: γ-HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
18
24
42
5
41
94
44
92
87
48
75
97
12
114
Lab code

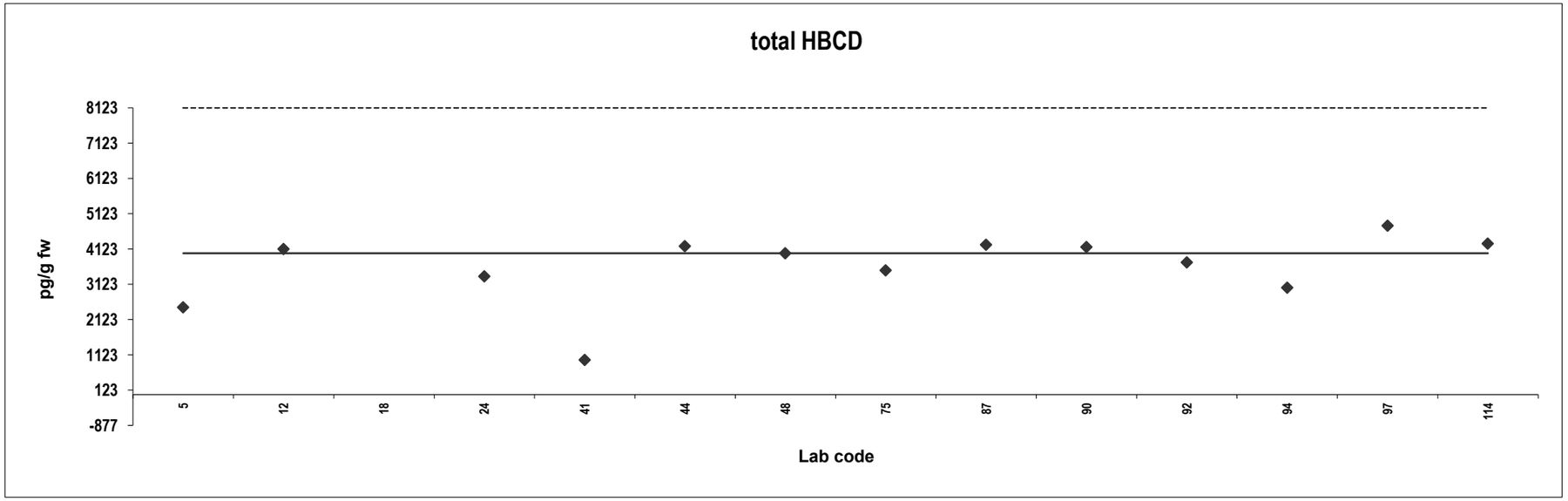
Fish oil

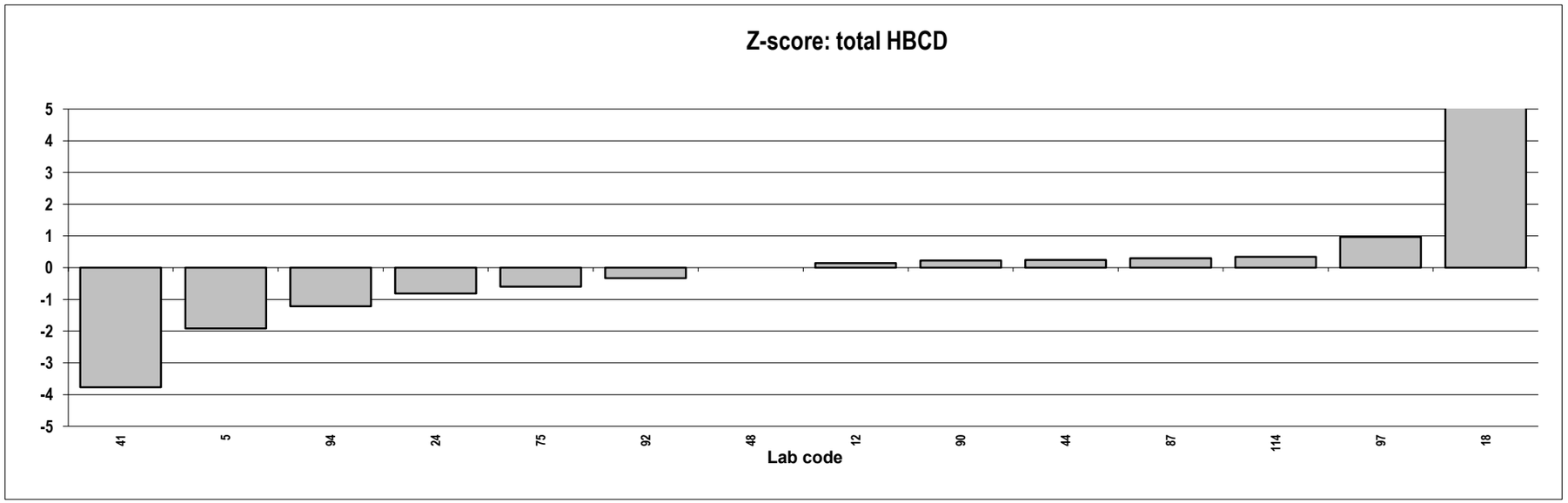
Congener: total HBCD

Lab code	Conc. pg/g fw.	Notes	Lab code	Conc. pg/g fw.	Notes
5	2465				
12	4120				
18	65195	Outlier			
24	3350				
41	981				
44	4200				
48	4003				
75	3520				
87	4240				
90	4180				
92	3740				
94	3029				
97	4779				
114	4275				

Consenus statistics

Consensus median, pg/g	4003
Median all values pg/g	4061
Consensus mean, pg/g	3606
Standard deviation, pg/g	998
Relative standard deviation, %	28
No. of values reported	14
No. of values removed	1
No. of reported non-detects	0


total HBCD
8123
7123
6123
5123
4123
3123
2123
1123
123
-877
pg/g fw
5
12
18
24
41
44
48
75
87
90
92
94
97
114
Lab code


Z-score: total HBCD
5
4
3
2
1
0
-1
-2
-3
-4
-5
41
5
94
24
75
92
48
12
90
44
87
114
97
18
Lab code

Appendix 5:

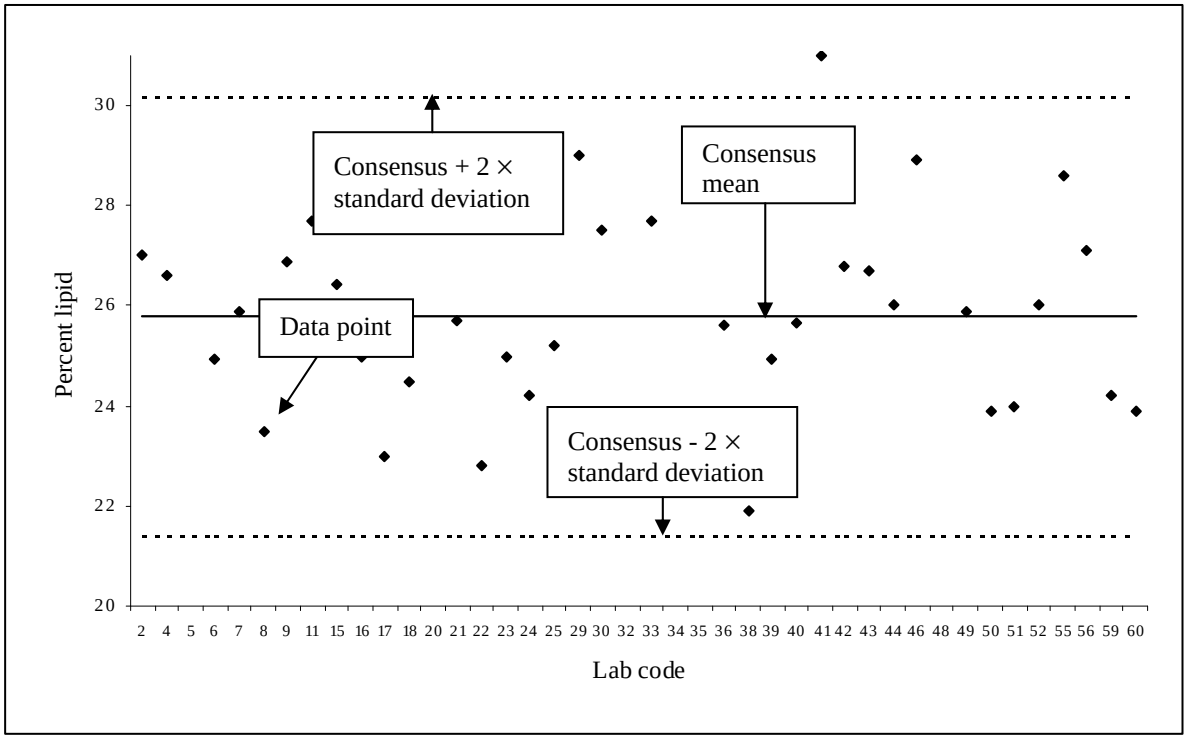
Presentation of results
for lipid determination

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 Sheep liver

Lab code	% lipid	Notes	Lab code	% lipid	Notes	Lab code	% lipid	Notes
1	6.4		**94**	7.6				
2	5.9		**95**	3.1				
4	5.1		**97**	4.9				
5	6.1		**99**	4.3				
6	5.7		**103**	6.6				
8	4.4		**105**	8.4				
10	5.7		**106**	5.8				
12	6.1		**107**	4.4				
17	4.8		**108**	6.4				
19	7.7		**112**	5.2				
21	8.3		**114**	5.1				
22	6.8		**120**	4.6				
23	7.1							
24	5.4							
25	6.9							
26	5.1							
30	5.6							
31	6.4							
32	4.5							
33	6.4							
35	5.0							
36	7.4							
40	3.9							
41	5.6							
42	4.9							
45	1.9							
48	5.7							
49	5.2							
53	3.8							
54	6.4							
57	5.1							
59	20	**outlier**						
61	6.3							
65	7.7							
68	5.9							
69	6.3							
70	5.0							
71	5.6							
72	4.6							
75	5.1							
77	5.6							
80	4.7							
81	7.7							
82	3.6							
87	7.2							
92	7.3							

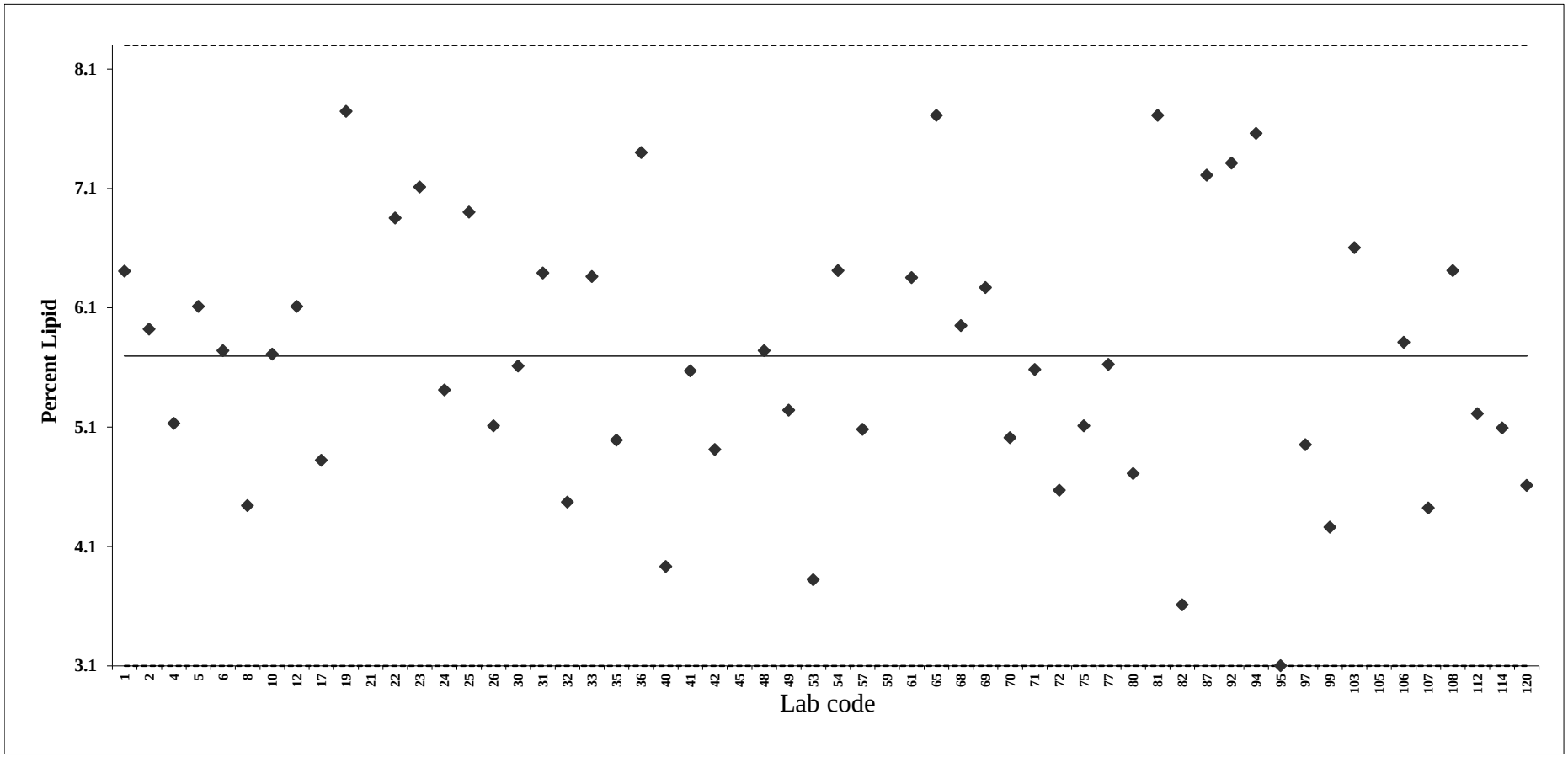
Mean	Standard deviation	Relative standard deviation	Median
5.7	1.3	23	5.6

Lipid determination for Salmon

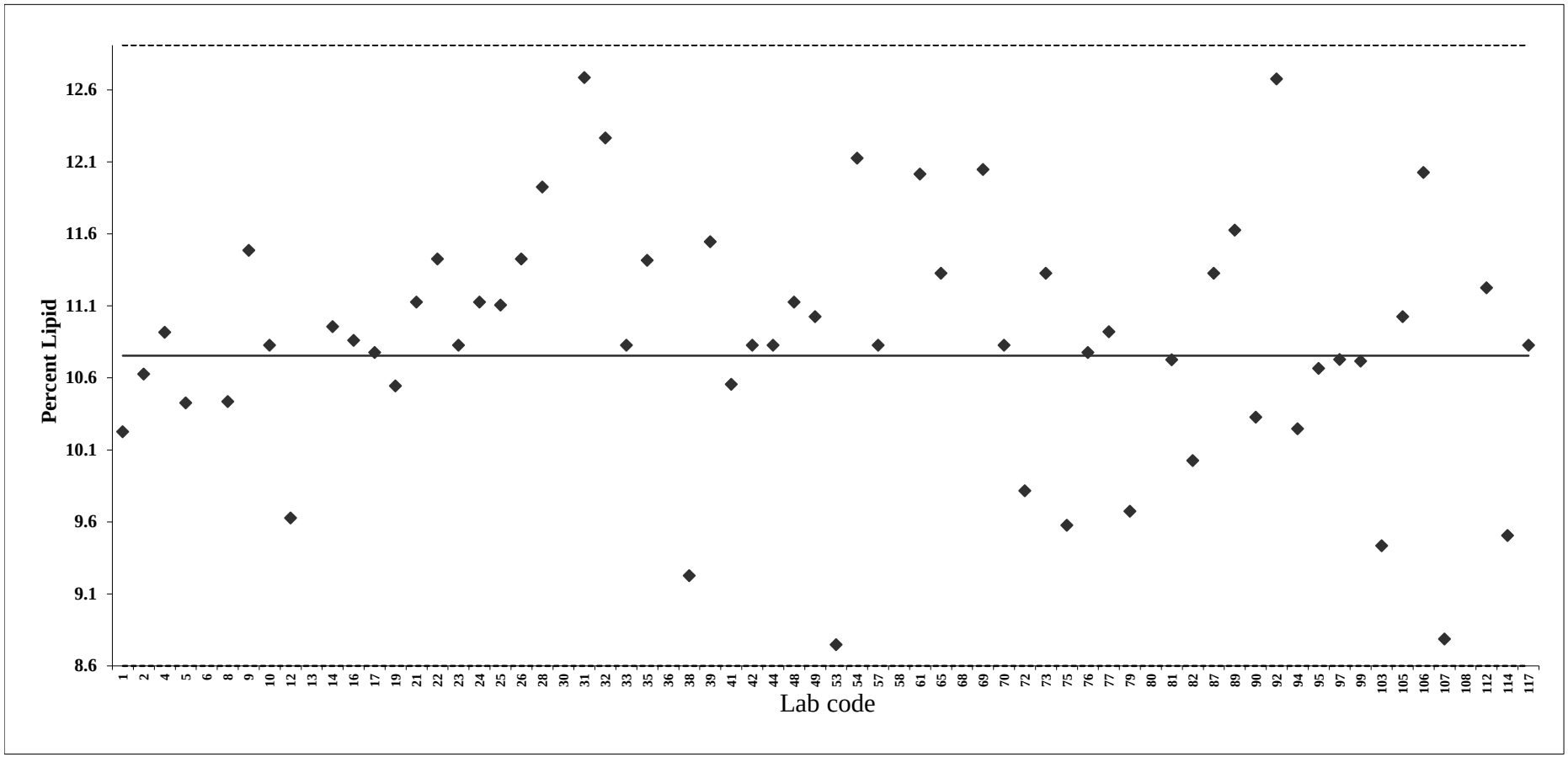
Lab code	% lipid	Notes	Lab code	% lipid	Notes	Lab code	% lipid	Notes
1	10		**76**	11				
2	11		**77**	11				
4	11		**79**	9.6				
5	10		**80**	13				
6	6.6	**outlier**	**81**	11				
8	10		**82**	10				
9	11		**87**	11				
10	11		**89**	12				
12	9.6		**90**	10				
13	7.6		**92**	13				
14	11		**94**	10				
16	11		**95**	11				
17	11		**97**	11				
19	11		**99**	11				
21	11		**103**	9.4				
22	11		**105**	11				
23	11		**106**	12				
24	11		**107**	8.8				
25	11		**108**	4.9	**outlier**			
26	11		**112**	11				
28	12		**114**	9.5				
30	8.5		**117**	11				
31	13							
32	12							
33	11							
35	11							
36	4.0	**outlier**						
38	9.2							
39	12							
41	11							
42	11							
44	11							
48	11							
49	11							
53	8.7							
54	12							
57	11							
58	7.9							
61	12							
65	11							
68	5.0	**outlier**						
69	12							
70	11							
72	9.8							
73	11							
75	9.6							

Mean	Standard deviation	Relative standard deviation	Median
11	1.1	10	11

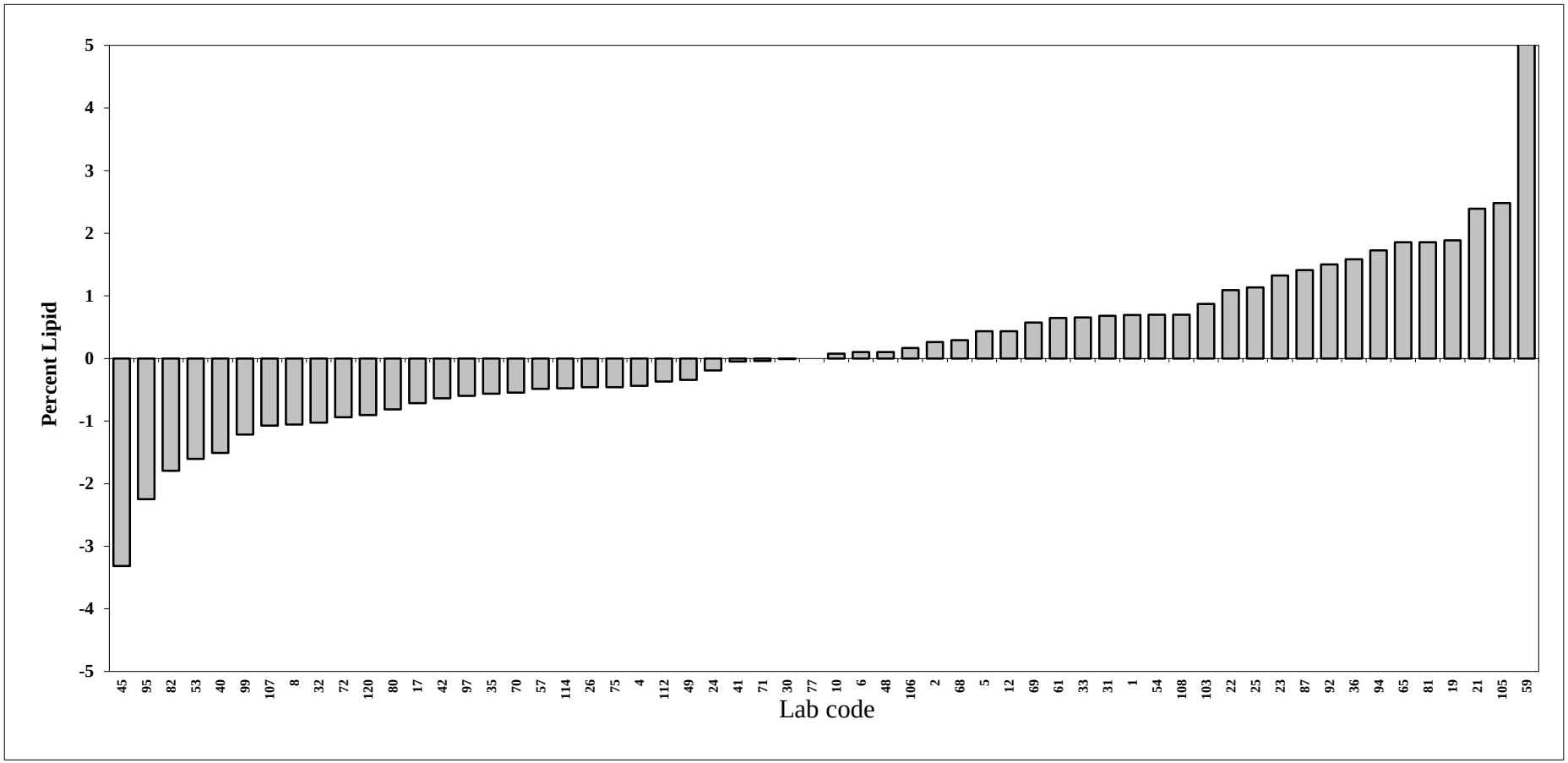
Lipid determination; Sheep liver



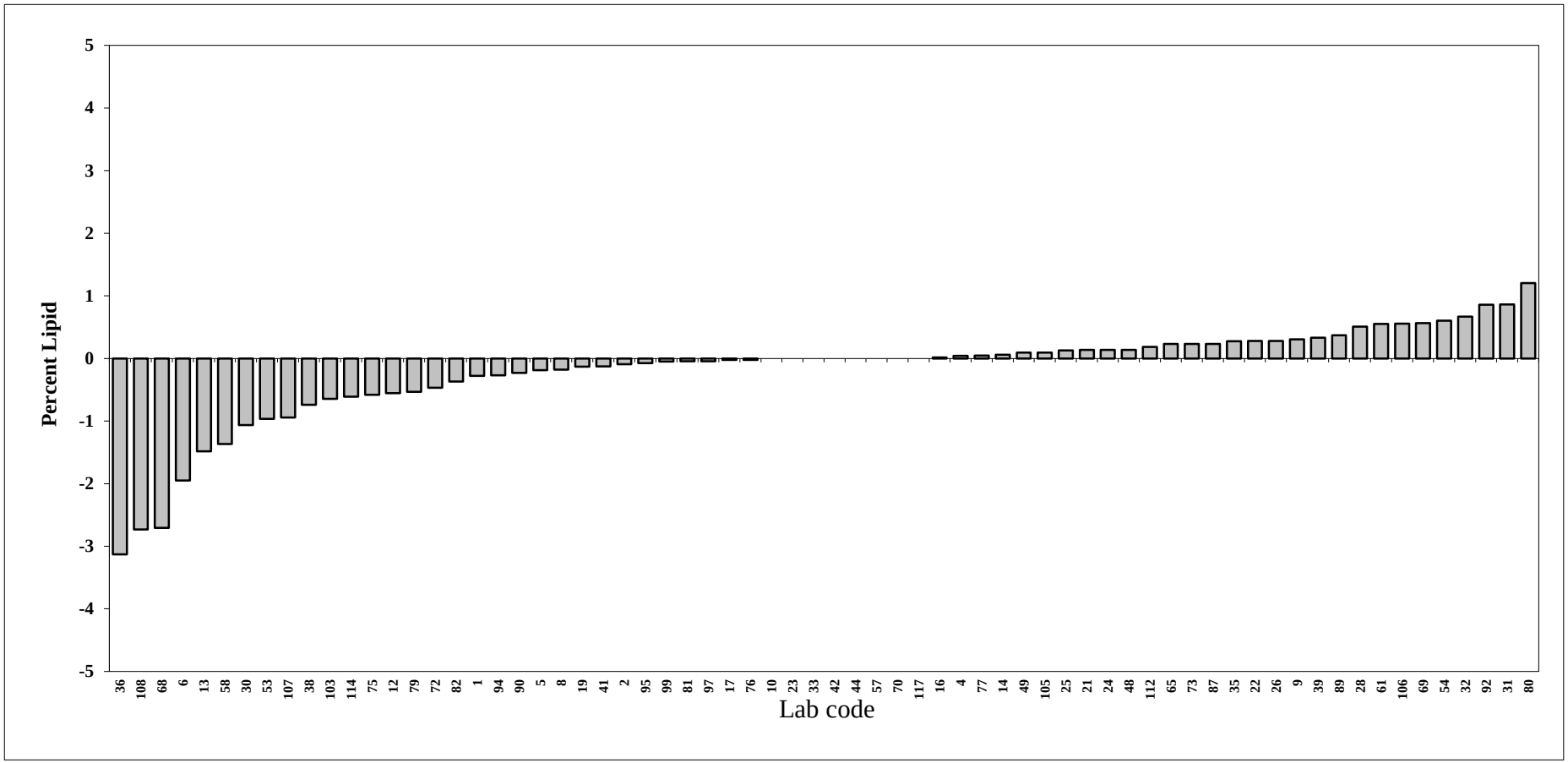
Lipid determination; Salmon



Z-score lipid determination; Sheep liver



Z-score lipid determination; Salmon



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