Additional Testing for Contaminants in Fish Used by First Nation Members in the Okanagan Basin

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EXECUTIVE SUMMARY

To continue testing for contaminants in fish used by the Okanagan peoples, burbot, rainbow trout, kokanee and whitefish (55 fish in total) were collected in 2007-2009, and analyses for total metals, mercury, methyl mercury, PCBs, PBDEs and pesticides were performed.

This report combines results from two projects, one completed in 2007 and the other in 2008.

For the 2007 project, 7 burbot were collected (1 fish from Skaha Lake, 1 fish from Douglas Lake, 2 fish from Nicola Lake, and 3 fish from Okanagan Lake). Tissue samples were taken from each fish and sent to the labs for a total metals scan, total mercury and methyl mercury, PCBs, PBDEs, and pesticides scan.

For the 2008 project, ONA Fisheries Department received from the Upper Nicola Indian Band 7 burbot (6 from Nicola Lake and 1 from Douglas Lake) and 31 kokanee (8 from Nicola Lake and 23 from Douglas Lake). Tissue samples were taken from each fish and sent to the labs for the same tests as in 2007 - except for methyl mercury which was not performed in 2008 because of budget limitations.

As a second part of the 2008 project, ONA Fisheries Department caught 8 whitefish from Skaha Lake and 2 rainbow trout from Osoyoos Lake, as discussed with the Penticton Indian Band. Tissue samples were taken from each fish and sent to the labs for the same tests as the first part of the 2008 project.

Examining data collected for these two projects reveals that most samples are within Health Canada's safe consumption guidelines for contaminants. There was only one exception: one burbot from Nicola Lake for 2007 had mercury on the same level (0.52-0.54 ppm) as the maximum consumption guideline of 0.5 ppm. All other burbot collected for the 2007 project had a mercury level below the 0.5 ppm, but above the safe frequent consumption recommendation level of 0.2 ppm. For the 2008 project, total mercury was considerably below the 0.5 ppm guideline for all four species, and also below the frequent consumption recommendation level of 0.2 ppm in most of the fish. Only burbot from Douglas Lake (1 fish) and whitefish from Skaha Lake (1 fish out of 8) were at the recommended limit of 0.2 ppm (0.171-0.23 and 0.182-0.23 ppm, respectively).

No fish were found to have arsenic, lead, or PCBs above the safety guidelines. Arsenic was found in very low amounts (0.01-0.2 ppm) in all fish tissue samples, which are well below the guidelines for human health of 3.5 ppm. Lead was also found in very low amounts (<0.01-0.06 ppm), well below the guidelines for human health of 0.5 ppm in all fish tissue samples. Most of PCBs congeners were found in amounts less than the detection limit in all fish tissue samples, and the sum of PCB congeners ranged from 0.026 ppb to 54.568 ppb, which is well below the guidelines for human health of 2.0 ppm.

Levels of PBDEs were also low compared with limited data on other freshwater fish. There are no consumption guidelines for PBDEs. Total PBDEs (the sum of 8 congeners) were found in very low amounts in Nicola Lake burbot (0.1-0.5 ppb), Douglas Lake kokanee (0.2 ppb), and Nicola Lake kokanee (1.3 ppb). Total PBDEs were higher in

Osoyoos Lake rainbow trout (18.6 ppb), Skaha Lake burbot (25.9 ppb), and Skaha Lake whitefish (5.1-28.7 ppb).
Organochlorine pesticides, including DDT, were found in very low amounts in all fish tissue samples - less than 1 ppm which is well below the guidelines for human health of 5.0 ppm.

No elevated levels of mercury, arsenic, lead, PCBs or pesticides were found when compared with the previous study (Rae and Jensen 2007).

ACKNOWLEDGMENTS

The Okanagan Nation Alliance – Fisheries Department (ONAFD) would like to thank the Upper Nicola Indian Band, Penticton Indian Band, and Okanagan Indian Band for their support and cooperation. We would also like to thank Health Canada - BC Regional First Nations Environmental Contaminants and First Nations & Inuit Health for funding this project.

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1.0 INTRODUCTION

1.1 Project Background

Historically, people of the Okanagan Nation have consumed resident and anadromous fish species and used them for social and ceremonial purposes (Hewes 1998; Ernst 2000). Nation members traditionally consider food, and fish in particular, not only as nourishment for their physical bodies, but for their spiritual beings as well. The Okanagan peoples view hunting and fishing as an opportunity to teach their children survival skills, the virtue of patience and values which will prepare them for life.

Fish, an excellent source of protein and vitamins, has been considered a healthy food source since the publication of pioneering studies demonstrating low rates of death from coronary heart disease among Greenland Eskimos (Bang and Dyerberg 1980). Later, scientific research and clinical studies supported the hypothesis linking the low rate of heart disease and fish, and identified long-chain omega-3 polyunsaturated fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), as the likely active components (Kromhout et al. 1985; Dolecek and Granditis 1991; Albert et al. 1998). Notwithstanding, in recent years, concern has been raised over the potential harm from mercury, dioxins, and polychlorinated biphenyls (PCBs) present in some fish species. This has created widespread confusion regarding the consumption of fish, whether it is healthy or not, since there are both benefits and risks involved in eating this food (EPA 2006a, b, c; US Food and Drug Administration 2006). Contaminants such as metals, pesticides, and industrial chemicals in the environment are a concern, particularly when they enter the aquatic food chain. Certain contaminants such as mercury (especially its most toxic form methylmercury), DDT, PCB's and dioxins/furans can accumulate in aquatic food chains, resulting in increasing concentrations in top level predators (Clarkson 1995; Cabana and Rasmussen 1996; Rae and Jensen 2007).

Nation members continue to harvest resident species such as burbot (*Lota lota*), bass (*Micropterus* spp.) and kokanee (*Oncorhynchus nerka*). Okanagan subsistence fishers have expressed concern regarding high levels of contaminants in food fish, especially shown by the poor tissue quality of harvested fish (Ernst 2000). In addition, the Okanagan traditional territory has experienced exceptional growth in residential, industrial, recreational, and agricultural use in the past few decades. Accompanying increase in related contaminants is to be expected.

Recent analyses and a review of historic contaminants in resident Okanagan Valley fish have been conducted (Rae and Jensen 2007). Test results for salmonids, including kokanee from Osoyoos and Skaha lakes, and rainbow trout (*Oncorhynchus mykiss*) from Okanagan Lake, had some detectable levels of contaminants, although none were above the BC or Canadian Guidelines for protecting human health (Bryan 2006). However, some samples of bass from Skaha and Osoyoos lakes were found to have mercury levels above Health Canada's frequent consumption recommendation of 0.2 ppm (Rae and Jensen 2007).

1.2 Project Objectives

To continue testing for contaminants in fish used by the Okanagan peoples, burbot, rainbow trout, kokanee and whitefish were collected and analyses for total metals, mercury, PCBs, PBDE and pesticides were performed.

This report combines results from two projects, one done in 2007 and the other in 2008.

The original objective for 2007 was to test largemouth and smallmouth bass, known to be consumed by Native fishermen, for lipid %, moisture %, mercury, PCB's and to conduct a pesticide scan. Because of the unsuccessful catch of any largemouth or smallmouth bass in 2007, the project was revised and the species switched to burbot (*Lota lota*) to be obtained from Okanagan Lake and/or Upper Nicola Lake.

Burbot is under active First Nations fishing by the Okanagan Indian Band members and by the Upper Nicola Band members. Both communities consume these species on a regular basis, but there is very little information on contaminant levels for them. Recent investigation (Rae and Jensen 2007) showed that only two burbot were tested in the last 20 years (one in 1986 and one in 2006). The levels of DDT and mercury were below the consumption guidelines of 5 ppm for DDT and 0.5 ppm for mercury, but the mercury concentration during this period had increased and remained at or above the frequent consumption recommendation (0.2 ppm).

Changing the species and lakes in order to complete testing during 2007 was discussed with the Penticton Indian Band (PIB) and they were very willing to have burbot tested from different communities.

The 2008 project consisted of two parts:

1. Testing for contaminants in Nicola and Douglas lakes food fish (Upper Nicola Indian Band (UNIB)).

   The objectives of this part were to test muscle tissue of burbot and kokanee known to be consumed by Native fishermen. Samples were collected from Nicola and Douglas lakes.

2. Testing for contaminants in Okanagan Basin food fish: Additional tests for traditional and introduced species (PIB).

   The original objectives of this part of the project were to test muscle tissue of largemouth and smallmouth bass, burbot and kokanee known to be consumed by Native fishermen. Because of the unsuccessful catch of these fish, it was discussed with PIB (Lynn Kruger – Health Manager) to change the species to rainbow trout and whitefish that were caught by ONA. These fish are also consumed by Okanagan Nation members who are concerned about contaminant levels.

2.0 MATERIALS AND METHODS

For the 2007 project, 7 burbot were collected (1 fish from Skaha Lake, 1 fish from Douglas Lake, 2 fish from Nicola Lake, and 3 fish from Okanagan Lake). Tissue samples were taken from each fish and sent to the labs for a total metals scan, total mercury and methyl mercury, PCBs, PBDEs, and pesticides scan (Table 1). Total metal scan data are presented in mg/kg or ppm (parts per million), total mercury and methyl mercury in ng/g or ppb (parts per billion), PCBs scan data in ng/g or ppb, PBDEs scan data in pg/g or ppt (parts per trillion), and pesticides scan data in ng/g or ppb.

For the 2008 project, ONA Fisheries Department received from UNIB 7 burbot (6 from Nicola Lake and 1 from Douglas Lake) and 31 kokanee (8 from Nicola Lake and 23 from Douglas Lake). Tissue samples were taken from each fish and sent to the labs for the same tests as in 2007 except for methyl mercury which was not performed. All burbot tissues were analyzed separately, and kokanee tissues were pooled in 4 samples because of budget limitation.

For the second part of the project, ONA Fisheries Department caught 8 whitefish from Skaha Lake and 2 rainbow trout from Osoyoos Lake. Tissue samples were taken from each fish and sent to the labs for the same tests as the first part of the 2008 project. All fish tissues were analyzed separately (Table 1).

In February 2009, samples were sent to:

1. Maxxam Analytics http://www.maxxam.ca/index1.asp for total metals scan;
2. Flett Research Ltd. http://www.flettresearch.ca/index.htm for mercury CVAF;
3. Axys http://www.axysanalytical.com for pesticides scan, PCBs, PBDE, lipid, and moisture%.

The laboratories conducting the analyses have strict quality assurance/ quality control checks that include spikes, blanks, blind duplicates, and internal peer review. The labs are accredited by the Canadian Association for Environmental Analytical Laboratories (CAEAL), the Mercury Quality Assurance Program (MQAP) of the Canadian Food Inspection Agency, the Standards Research Council, and/or the BC Ministry of the Environment.

Table 1. Fish sampling summary

Species	Sample location	Date caught	Date processed	Total length (cm)[1]	Total weight (g)[1]	Lipid (%)[1]	Moisture (%)[1]	Number of fish	Type of analyses
Burbot	Skaha Lake	19-Jul-07	March, 2008	N/d	N/d	0.56	80.6	1	Total metals scan, total Hg, methyl Hg, PCBs, PBDE, pesticides scan
Burbot	Douglas Lake	08-Feb-08	March, 2008	N/d	N/d	0.4	82	1	Total metals scan, total Hg, methyl Hg, PCBs, PBDE, pesticides scan
Burbot	Nicola Lake	08-Feb-08	March, 2008	N/d	N/d	0.49 (0.39-0.58)	81.7 (80.9-82.5)	2	Total metals scan, total Hg, methyl Hg, PCBs, PBDE, pesticides scan
Burbot	Okanagan Lake	06-Feb-08	March, 2008	N/d	N/d	1.29 (1.18-1.35)	82.6 (81.6-83.3)	3	Total metals scan, total Hg, methyl Hg, PCBs, PBDE, pesticides scan
Burbot	Douglas Lake	22-Jan-09	16-Feb-09	49	860	0.71	81.2	1	Total metals scan, total Hg, PCBs, PBDE, pesticides scan
Burbot	Nicola Lake	22-Jan-09	16-Feb-09	48.8 (47-50)	818.3 (705-1,010)	0.55 (0.42-0.66)	80.8 (80.2-81.1)	6	Total metals scan, total Hg, PCBs, PBDE, pesticides scan
Rainbow trout	Osoyoos Lake	03-Sep-08	16-Feb-09	44.3 (44-44.5)	742.5 (705-780)	0.51 (0.38-0.64)	81.3 (80.5-82.1)	2	Total metals scan, total Hg, PCBs, PBDE, pesticides scan
Whitefish	Skaha Lake	15-Sep-08	16-Feb-09	41.3 (36-46)	972.5 (550-1,420)	2.6 (1.27-4.69)	77.1 (75.5-79.5)	8	Total metals scan, total Hg, PCBs, PBDE, pesticides scan
Kokanee[2]	Douglas Lake	16-Nov-08	16-Feb-09	N/d	N/d	1.05 (1-1.1)	77.5 (77.4-77.6)	23	Total metals scan, total Hg, PCBs, PBDE, pesticides scan
Kokanee[2]	Nicola Lake	16-Nov-08	16-Feb-09	N/d	N/d	1.95 (1.76-2.14)	76.6	8	Total metals scan, total Hg, PCBs, PBDE, pesticides scan

[1]Values given are averages with ranges shown in parentheses, except where there was only one sample.
[2] Range shown represents two sample pools.
N/d – data not available as fish were received without heads or tails.

3.0 RESULTS AND DISCUSSION OF DATA

It is very important to analyze the load of contaminants in recently sampled fish for the benefit of people currently consuming these fish. We have examined contaminants in four species – burbot, rainbow trout, kokanee, and whitefish - sampled during the period 2007-2009. Fish were caught in Skaha, Nicola, Douglas, and Okanagan lakes (Table 1). The contaminant concentrations are compared with Health Canada's current guidelines for consumption of commercial fish.

We performed a total metal scan of 31 metals on all fish tissue samples, but in this report we consider only those which are of greatest concern such as arsenic, lead, and mercury.

Arsenic is a naturally occurring chemical element widely found throughout the earth's crust. It exists in different chemical forms, from which inorganic arsenic is considered to be the most toxic to human health. Arsenic exposure can be short term (days/weeks) and long term (years). Short term exposure to very high levels of inorganic arsenic can have adverse effects on health which include: skin reactions, nausea, diarrhea, vomiting and numbness to hands and feet. Long term exposure increases the risk of skin cancer and tumors of the bladder, kidney, liver and lung (Health Canada 2006a; ATSDR 2007a). Trace levels of arsenic occur naturally in air, food and water. Exposure to these low levels is not a health concern. Arsenic compounds are used in the manufacture of a variety of products and may enter our environment directly from industrial effluents and indirectly from atmospheric deposition (Health Canada 2008a; CCME 2009a).

As our results show (Fig 1, Appendices E, N, O), arsenic was found in very low amounts (0.01-0.2 ppm) in all fish tissue samples which are well below the safety guidelines for

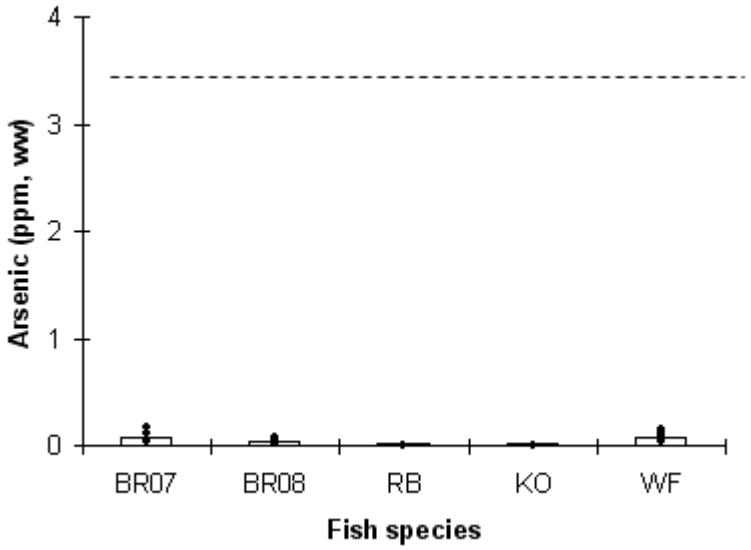

Figure 1. Current status (2007-2009) of arsenic in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average arsenic value. Dotted line indicates Health Canada maximum safe consumption guidelines. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

human health of 3.5 ppm (CFIA 2007; Health Canada 2007a). For the 2007 project, arsenic was found on the same level (0.02 ppm) in burbot from Douglas and Nicola

lakes, and on a slightly higher level (0.1 and 0.2 ppm) in burbot from Skaha and Okanagan lakes, respectively.

For the 2008 project, arsenic was found in the amount of 0.01 ppm and less than the detection limit (<0.01 ppm) in rainbow trout from Osoyoos Lake, 0.02 ppm in kokanee from Douglas and Nicola lakes, 0.02-0.04 ppm in burbot from Nicola Lake, 0.06 ppm in burbot from Douglas Lake, and 0.03-0.17 ppm in whitefish from Skaha Lake.

Lead is a highly toxic metal that occurs naturally in the environment and also has (or had) many industrial uses, including as an ingredient in paint, ceramics, pipes, solders, gasoline, batteries, and cosmetics. Lead is commonly found in soil, especially near roadways, older houses, old orchards, mining areas, and industrial and hazardous waste sites. People may be exposed to lead by breathing air, eating food or drinking water that contains lead or it may be absorbed through their skin (ATSDR 2007b; Health Canada 2006b). The toxic effects of lead include a variety of neurological disorders such as lack of muscular coordination, convulsions and coma, increasing blood pressure, decreasing fertility, cataracts, muscle and joint pain, and memory and concentration problems (ASTDR 1992,2007b; Health Canada 2005, 2006, 2008b).

As shown in Fig 2 and Appendices E, N, O, like arsenic, lead was found in very low amounts (<0.01-0.06 ppm) in all fish tissue samples - levels well below the guidelines for human health of 0.5 ppm (CFIA 2007; Health Canada 2007a). For the 2007 project, lead was found in amounts less than the detection limit (<0.01 ppm) in all fish except in Okanagan Lake burbot where it was found in very low amounts (0.06 ppm). In all fish for the 2008 project, lead was found in amounts less than the detection limit (<0.01 ppm). Low amounts of arsenic and lead are to be expected as we have not seen these two elements elevated in other fish to date in the area.

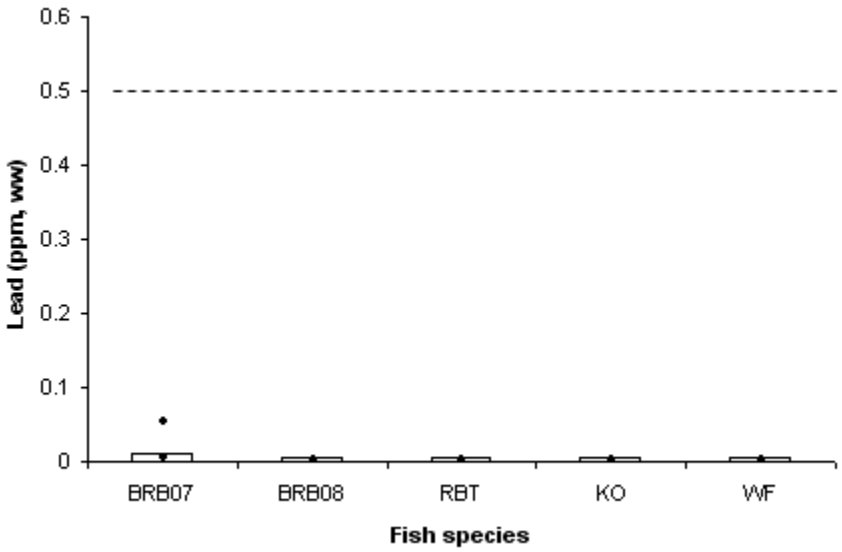

Figure 2. Current status (2007-2009) of lead in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average lead value. Dotted line indicates Health Canada maximum safe consumption guidelines. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

Mercury is a naturally occurring metal in the Earth's crust. It can also be released into the environment as a result of human activities such as coal-fired power generation, metal mining, and waste incineration (ATSDR, 1999; CCME, 2009b). Mercury released from human activities can be converted in water to the highly toxic form, methylmercury, which accumulates and bio-magnifies in fish and other species, and may pose serious health risks, particularly for young children and the developing fetus (Health Canada, 2007c; Environment Canada, 2009). People may be exposed to mercury mostly by eating contaminated fish. Low exposure to mercury may cause problems, such as learning disabilities in children. Women of childbearing age, pregnant women, children, and populations who depend on fish as a traditional food source are most at risk (Health Canada, 2007b; CCME, 2009b).

The Canadian Council of Ministers of the Environment (CCME) is committed to reducing mercury releases to the environment. Since 1998, CCME has set Canada-wide Standards (CWSs) for mercury emissions from base-metal smelters and waste incinerators and mercury emissions from coal-fired power plants, as well as mercury-containing lamps and dental amalgam waste, on which CCME periodically reports (CCME, 2009b).

We have results for mercury estimated by 2 different methods: atomic spectroscopy (ICPMS) for total metals scan (data in mg/kg or ppm) and digestion, purge and trap method for total and methyl mercury (data in ng/g or ppb) (Table 2). After converting to ppm it is clear that the results from both methods are very close. According to the Health Canada guidelines, the safe level of mercury is 0.2 ppm for frequent consumers of fish and 0.5 ppm for commercial sale (Health Canada 2007a).

Table 2. Mercury (Hg) content in fish estimated by different methods

Species	Sample location	Date caught	Number of fish	Hg[1] (mg/kg)=ppm	Hg[1] (ng/g)=ppb	Methyl Hg[1] (ng/g)=ppb
Burbot	Skaha Lake	19-Jul-07	1	0.44	436	447
Burbot	Douglas Lake	08-Feb-08	1	0.2	203	215
Burbot	Nicola Lake	08-Feb-08	2	0.33 (0.12-0.54)	324 (124-523)	317 (105-528)
Burbot	Okanagan Lake	06-Feb-08	3	0.26	265 (180-350)	253 (181-312)
Burbot	Douglas Lake	22-Jan-09	1	0.23	171	N/d
Burbot	Nicola Lake	22-Jan-09	6	0.07 (0.06-0.09)	55.3 (45.5-69.6)	N/d
Rainbow trout	Osoyoos Lake	03-Sep-08	2	0.1 (0.09-0.10)	81.6 (73.9-89.2)	N/d
Whitefish	Skaha Lake	15-Sep-08	8	0.14 (0.06-0.23)	105 (37.6-182)	N/d
Kokanee[2]	Douglas Lake	16-Nov-08	23	0.11 (0.10-0.11)	97 (94-99.9)	N/d
Kokanee[2]	Nicola Lake	16-Nov-08	8	0.07	56 (52.1-59.9)	N/d

[1]Values given are averages with ranges shown in parentheses, except where there was only one sample
[2]Range shown represents two sample pools
N/d – data not available as fish were received without heads or tails

As our results show (Table 2, Fig 3), total mercury was below 0.5 ppm in all fish, except one, and above the safe frequent consumption recommendation level of 0.2 ppm in most of the fish collected for the 2007 project. Levels were the highest (0.523-0.54 ppm) in Nicola Lake burbot (1 fish). This amount is just over the guidelines for human health of 0.5 ppm and is within the range of recent BC Center for Disease Control advice of 2-4 servings a week for women of childbearing age (CFIA 2007; Health Canada 2007). The second burbot from Nicola Lake contained smaller amounts of mercury (0.12-0.124

ppm). The next highest mercury level was in Skaha lake burbot (0.436-0.447 ppm), which is higher than the previous record of 0.29 ppm in 1986 (Rae and Jensen 2007). Levels of mercury in Douglas Lake burbot (1 fish) were 0.2-0.203 ppm, and in Okanagan Lake burbot (3 fish), they were in the range of 0.18-0.35 ppm. Levels of methyl mercury reflected the changes of total mercury (Table 2). Although the number of tests were limited (7 burbot for the 2007 project only), it appears that total and methyl mercury are highly correlated and it is likely that mercury in these fish is largely in the form of methyl mercury.

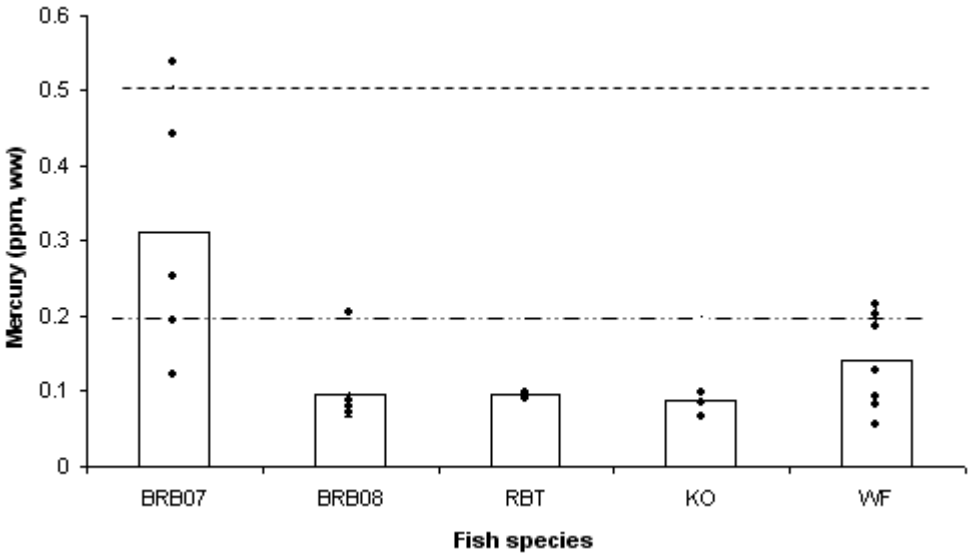

Figure 3. Current status (2007-2009) of mercury in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average mercury value. Dotted line indicates Health Canada maximum safe consumption guidelines; dashed/dotted line indicates maximum safe recommendation for frequent consumption. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

For the 2008 project, total mercury was well below the 0.5 ppm guideline for all four species, and it was also below the frequent consumption recommendation level of 0.2 ppm in most of the fish. Only burbot from Douglas Lake (1 fish) and whitefish from Skaha Lake (1 fish out of 8) were at the recommended limit of 0.2 ppm (0.171-0.23 and 0.182-0.23 ppm, respectively). Another 3 whitefish were in range of 0.119-0.158 ppm, and the remaining 4 whitefish were at less than 0.1 ppm. Mercury levels were less than 0.1 ppm in all burbot from Nicola Lake. Kokanee from Nicola Lake also had mercury levels less than 0.1 ppm, while kokanee from Douglas Lake and rainbow trout from Osoyoos Lake were on the level of 0.1 ppm.

Polychlorinated biphenyls (PCBs) are man-made chemicals that were banned from manufacture in North America in 1977 (Health Canada 2008d). PCBs have been widely used in industrial applications because of their excellent thermal stability, strong resistance to both acid and base hydrolysis, solubility in organic solvents, excellent dielectric properties, resistance to oxidation and non-flammability (CCME 2001). Because of their high resistance to decomposition, PCBs are still present on a widespread basis in the environment. They can be accumulated by various life forms and passed up the food chain, through freshwater and marine plants, birds, fish and other animals, to man.

We performed a PCBs scan of 209 congeners on all fish tissue samples (Fig 4, Appendices A, H, I). Most of PCBs congeners were found in amounts less than the

detection limit in all fish tissue samples, and the sum of PCB congeners ranged from 0.026 ppb to 54.568 ppb which is well below the safety guidelines for human health of 2.0 ppm (CFIA 2007; Health Canada 2007a).

For the 2007 project, the highest concentration of total PCBs (the sum of detectable PCBs congeners), which was 54.6 ppb, was found in Okanagan Lake burbot (1 fish out of 3). The highest number of congeners on a detectable level was also found in this same fish. Total PCBs in the other two Okanagan Lake burbot ranged from 3.9 to 9.9 ppb. The second highest concentration of total PCBs, 16.2 ppb, was found in Skaha Lake burbot. The most abundant PCBs in the samples analyzed were PCBs nos. 138/163/164 (9.78 ppb in Okanagan Lake burbot and 2.92 ppb in Skaha Lake burbot) and 153 (2.06 and 2.91 ppb in Okanagan Lake burbot and Skaha Lake burbot, respectively). Only one PCB congener (number 137) was found on a detectable level in all 7 fish. In Douglas Lake burbot, PCB137 was the only detectable congener present (0.076 ppb); all of the other 208 congeners were less than the detectable level. The same results occurred in the Nicola Lake burbot: PCB137 was the only detectable congener present (0.067 ppb). The second burbot from Nicola Lake showed 3 congeners on a detectable level: 137 (0.059 ppb), 138/163/149 (0.040 ppb), and 153 (0.067 ppb).

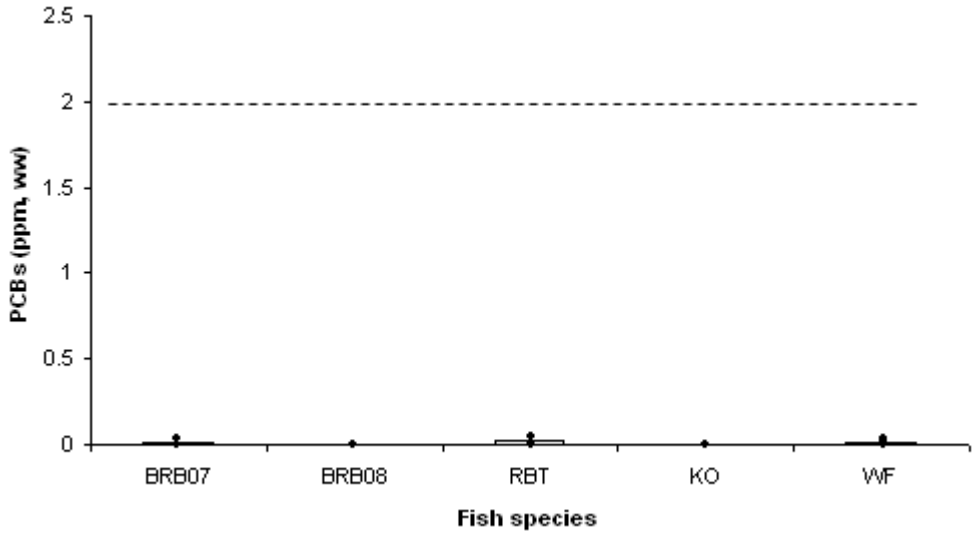

Figure 4. Current status (2007-2009) of PCBs in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average PCBs value. Dotted line indicates Health Canada maximum safe consumption guidelines. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

For the 2008 project, the highest concentration of total PCBs was found in one rainbow trout (41.4 ppb) while the second rainbow trout had only 6.6 ppb. The second highest concentration of total PCBs was found in whitefish (mean 8.85 ppb, range 4.47- 21.28 ppb). Among all studied fish, kokanee and burbot appeared to have the least concentration of total PCBs. Kokanee and burbot from Nicola Lake had lower PCBs concentrations (0.29 and 0.083 ppb, respectively) compared with kokanee and burbot from Douglas Lake (0.65 and 0.344 ppb, respectively). The most abundant PCBs in rainbow trout were PCBs nos. 138/163/164 and 153 (5.81 and 5.37 ppb, respectively). In whitefish, they ranged from 0.5 to 3.3 ppb. In kokanee and burbot, all detectable congeners were less than 0.1 ppb.

Polybrominated diphenyl ethers (PBDEs) have been routinely added to consumer products for several decades in a successful effort to reduce fire-related injury and property damage. Recently, concern has arisen because of the widespread occurrence of several classes of PBDEs in the environment and in human biota (Health Canada 2009). The release of PBDEs into the environment can occur during their production, use and disposal. The main source of PBDE exposure to humans appears to be through food (i.e. some fatty fish), human breast milk, and dust. Although human data on health effects are limited, animal studies have found PBDEs to be neurodevelopmental toxins, disruptors of thyroid function and liver toxins (ATSDR 2007c; Health Canada 2009).

In every fish, eight PBDEs were detected, including PBDE congeners 28/33, 47, 99, 100, 153, 154, 183, and 209 (Appendices B, P). Data are reported in units of ppt (pg/g). After converting to ppb (ng/g), total PBDEs (the sum of 8 congeners) were found in very low amounts in Nicola Lake burbot (0.1-0.5 ppb), Douglas Lake kokanee (0.2 ppb), and Nicola Lake kokanee (1.3 ppb). Total PBDEs were higher in Osoyoos Lake rainbow trout (18.6 ppb), Skaha Lake burbot (25.9 ppb), and Skaha Lake whitefish (5.1-28.7 ppb) (Fig 5).

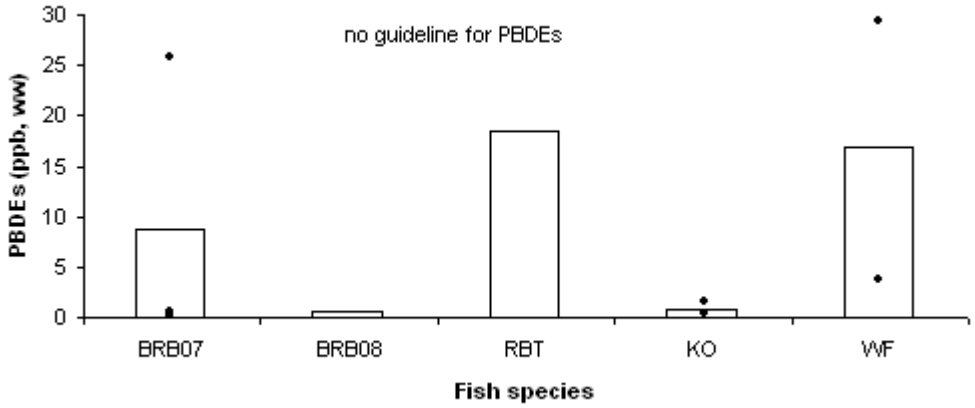

Figure 5. Current status (2007-2009) of PBDEs in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average PBDEs value. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

Because there are no PBDE safe consumption guidelines, we compare these data with other available freshwater fish data. In a study of contaminants in Okanagan fish (Rae and Jensen 2007), bass had concentrations ranging from <1 to 3.7 ppb and rainbow trout from 9.0 to 26.4 ppb. In a study of the Columbia River, British Columbia, mountain whitefish had concentrations of <1 to 131 ppb (Rayne et al. 2003). In a study of Lake Michigan tributaries, Coho and Chinook salmon had the average concentration across all samples of 80.1 ppb (Manchester-Neesvig et al. 2001). In a study of Spokane River, Washington, rainbow trout had concentrations of 297 ppb, and mountain whitefish of 1250 ppb (Johnson and Olson 2001). Compared with these data, the PBDE level in Okanagan Valley fish is at the lower end of the spectrum. Also, rainbow trout have the same concentrations as in the previous study (Rae and Jensen 2007.

Pesticides are among the most widely used chemicals in the world. A pesticide is any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. DDT is one of the most well-known organochlorine pesticides, and it was widely used against the mosquito that spreads malaria, and lice that carry typhus. The use of DDT was restricted in the 1970s and banned in 1985 in Canada (CCME 1999) although it is still in use in some other parts of the world. DDT has caused chronic

effect on the nervous system, liver, kidneys, immune system, and reproductive system in experimental animals (Health Canada 2007d). The chemical stability of DDT and its fat solubility compounded the problem. DDT is not metabolized very rapidly by animals; instead, it is deposited and stored in the fatty tissues.

Levels of organochlorine pesticides such as hexachlorobenzene (HCB), hexachlorocyclohexane isomers (HCHs), chlordane compounds (CHLs, including trans-chlordane, cis- chlordane, oxychlordane, heptachlor epoxide, trans-nonachlor, and cis-nonachlor), and dichlorodiphenyltrichloroethane (DDT) and its metabolites (DDTs, including o,p'-DDE, p,p'-DDE, o,p'-DDD, p,p'-DDD, o,p'-DDT, and p,p'-DDT), mirex, dieldrin, endrin, methoxychlor, and endosulphan were analyzed (Appendices C, D, J, K, L, M). All pesticides tested for, including DDT (Fig 6), were found in very low amounts in all fish tissue samples (less than 1 ppm) which were well below safety guidelines for human health of 5.0 ppm (CFIA 2007; Health Canada 2007a).

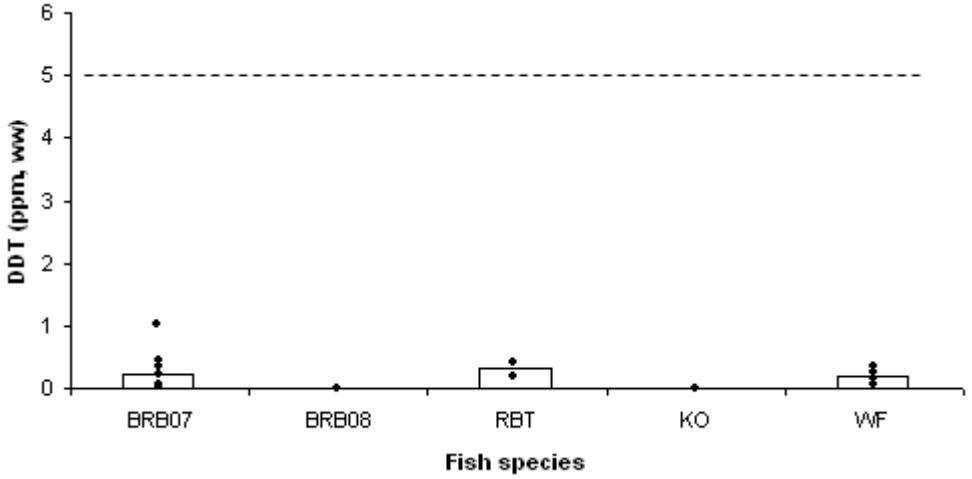

Figure 6. Current status (2007-2009) of DDT in four species of fish from Skaha, Okanagan, Nicola, Douglas, and Osoyoos lakes.
Symbols show individual fish, and bars show average DDT value. Dotted line indicates Health Canada maximum safe consumption guidelines. BR07 = burbot (2007 project), BR08 = burbot (2008 project), RB = rainbow trout, KO = kokanee, WF = whitefish

For the 2007 project, the highest concentration of total DDTs (sum of concentrations of all DDT detected compounds), 1017.5 ppb, was found in Okanagan Lake burbot (1 fish out of 3) (Table 3). Total DDTs in two other Okanagan Lake burbot ranged from 61.065 to150.08 ppb. The second highest concentration of total DDTs, 305.27 ppb, was found in Skaha Lake burbot. Total DDTs in Nicola Lake burbot ranged between 0.391 and 1.427 ppb, and in Douglas Lake burbot it was 0.941 ppb. HCHs were less than the detection limit, and HCB was found to be less than 0.3 ppb in all fish samples. CHLs were found to be the highest, 5.28 ppb, in Okanagan Lake burbot (1 fish out of 3), and two other Okanagan Lake burbot contained 1.566 and 0.548 ppb, respectively. The second highest concentration of CHLs, 1.734 ppb, was found in Skaha Lake burbot while in Nicola and Douglas lakes burbot, CHLs were found in amounts less than the detection limit.

Table 3. Mean congener concentration (ng/g, wet weight) for major organochlorine groups in all sampled fish

	Burbot Skaha Lake (2007 project)	Burbot Douglas Lake (2007 project)	Burbot Nicola Lake (2007 project)	Burbot Okanagan Lake (2007 project)	Burbot Douglas Lake (2008 project)	Burbot Nicola Lake (2008 project)	Rainbow trout Osoyoos Lake (2008 project)	Whitefish Skaha Lake (2008 project)	Kokanee Douglas Lake (2008 project)	Kokanee Nicola Lake (2008 project)
ΣPCB	16.149	0.076	0.117 (0.07-0.17)	22.7 (3.89-54.57)	0.344	0.097 (0.03-0.16)	23.99 (6.62-41.35)	8.85 (3.69-21.28)	0.647	0.295
HexaCB	0.267	<0.14	0.088	0.29 (0.267-0.329)	0.143	0.104 (0.09-0.13)	0.083 (0.065-0.101)	0.258 (0.109-0.437)	0.128	0.31
ΣDDT	305.27	0.941	0.909 (0.39-1.43)	409.5 (61.07-1017.5)	2.274	0.974 (0.4-1.7)	323.8 (151.4-496.1)	175.4 (86.57-439.9)	3.25	2.58
p,p'-DDE	285	0.871	0.86 (0.39-1.32)	396.9 (56.7-993)	1.93	0.878 (0.4-1.5)	299.5 (141-458)	154.3 (58.6-412)	2.5	1.84
p,p'-DDD	14.8	0.07	0.107 (<0.07-0.11)	5.157 (2.16-8.48)	0.281	0.114 (0.06-0.206)	17.99 (8.37-27.6)	15.72 (2.95-26.6)	0.476	0.474
p,p'-DDT	4.11	<DL	<DL	6.52 (1.59-14.4)	0.063	<DL	4.5 (1.25-7.75)	3.23 (0.68-7.2)	0.165	0.154
ΣCHL	1.839	<DL	<DL	2.53 (0.55-5.38)	0.024	<DL	0.79 (0.24-1.34)	1.358 (0.3-4.2)	0.081	0.105
ΣHCH	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL	<DL
Mirex	0.164	<DL	<DL	0.23 (0.137-0.328)	<DL	<DL	0.08 (0.04-0.13)	0.103 (0.02-0.3)	<DL	<DL

ΣDDT= p,p'-DDE, p,p'-DDD, p,p'-DDT, o,p'-DDE, o,p'-DDD, o,p'-DDT; ΣCHL= sum of all technical chlordane compounds and related metabolites; ΣHCH= alpha, beta, gamma, and delta isomers; ΣPCB= all congeners except those with <detection limit

Ranges are shown in parentheses, except where there was only one sample and in the case of kokanee where all samples were pooled in one

Mirex was only found near the detection limit in Okanagan Lake burbot (0.328-0.137 ppb) and Skaha Lake burbot (0.164 ppb), and less than the detection limit in Nicola and Douglas lakes burbot. Only heptachlor epoxide and dieldrin were found on a detectable level in Okanagan and Skaha lakes burbot ranging from 0.1 to 0.2 ppb, while less than the detection limit in Nicola and Douglas lakes burbot. Endrin, methoxychlor, and endosulphan were less than detection limit in all analyzed fish.

For the 2008 project, the highest concentration of total DDTs, 496.136 ppb, was found in one of two Osoyoos Lake rainbow trout, while in the second it was 151.404 ppb (Table 3). The second highest concentration of total DDTs was found in Skaha Lake whitefish (mean 175.43 ppb, range 70.96-439.9 ppb). Total DDTs were present in smaller amounts in burbot (mean 1.159 ppb, range 0.4-2.3 ppb) and kokanee (2.6 ppb in Nicola Lake kokanee and 3.3 ppb in Douglas Lake kokanee). HCHs were less than the detection limit in all fish samples, except in one whitefish (0.061 ppb). HCB was found less than 0.5 ppb in all fish samples. CHLs were found to be the highest in whitefish (mean 1.36 ppb, range 0.3-4.2 ppb) and in rainbow trout (1.34 ppb). Burbot and kokanee contained smaller amounts of CHLs, ranging between less than detection level and 0.1 ppb. Mirex was found on a detectable level only in rainbow trout (0.132-0.035 ppb) and whitefish (mean 0.103 ppb, range 0.02-0.3 ppb). Mirex was found less than the detection limit in burbot and kokanee. Conversely, only dieldrin (0.031-0.343 ppb) and endosulphan (0.068-0.083 ppb) were found on a detectable level in rainbow trout, while heptachlor epoxide, endrin, and methoxychlor were less than the detection limit. In whitefish, heptachlor epoxide, dieldrin, endrin, and endosulphan were found in amounts less than 0.4 ppb, and methoxychlor was less than the detection limit. In burbot and kokanee, only dieldrin (<0.05 ppb) and endosulphan (<0.1 ppb) were found on a detectable level while heptachlor epoxide, endrin, and methoxychlor were less than the detection limit.

Examining data collected for these two projects reveals that most samples are within Health Canada's maximum safe consumption guidelines for contaminants. There was only one exception: one burbot from Nicola Lake for the 2007 project had mercury on the same level (0.52-0.54 ppm) as the maximum consumption guideline of 0.5 ppm. No elevated levels of mercury, arsenic, lead, PCBs, or pesticides were found compared with the previous study (Rae and Jensen 2007). Organochlorine concentrations varied between location and over fish species in the study of Nicola, Douglas, Okanagan, Skaha and Osoyoos lakes. Burbot from Okanagan and Skaha lakes had higher concentrations of PCBs, PBDEs, and pesticides compared with burbot from Nicola and Douglas lakes (Table 3). Previous studies have shown that lipid content is a major factor influencing the levels of organochlorine concentrations in fish (Larsson et al. 1993; Ruus et al. 2002; Ryan et al. 2005). The present study also observed that lipids were a significant predictor of organochlorine variability among fish of the same species. For instance, in eight analyzed whitefish, PCBs concentrations varied from 3.69 to 21.28 ppb which correlated directly with their lipid content (Fig 7). The same tendency was observed with DDT and other organochlorine components. Whitefish with the highest lipids (4.69%) contained the highest organochlorine contaminants.

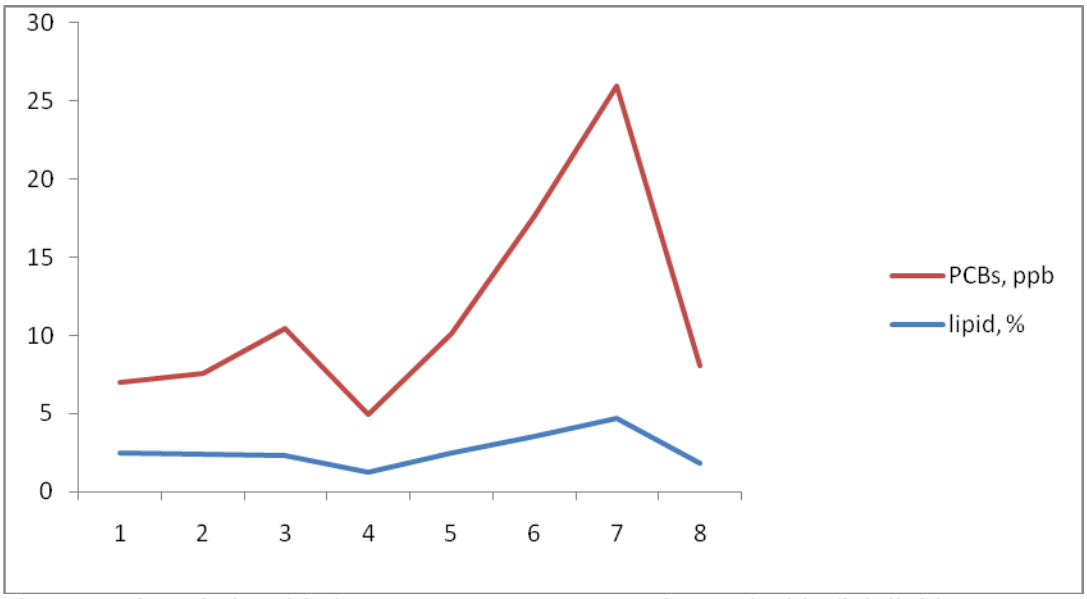

Figure 7. The relationship between PCBs concentration and whitefish lipid content.

Conversely, two rainbow trout that were caught in Osoyoos Lake differed from each other by 7 times in PCBs and 4 times in DDT concentrations, even though they had the same lipid content (0.4 and 0.6%). They were also the same size, but unfortunately it was not possible to ascertain if they were of different ages. It is known that age, growth and size are other parameters that need to be assessed (Larsson et al. 1992; Kidd 1996; Ruus et al. 2002) which are in turn affected by changes within the fish food web. Much of the lake-to-lake variations in fish organochlorine concentration can probably derive from the physical and biological characteristics of each lake.

4.0 CONCLUSION

Levels of contaminants including metals, PCBs, PBDEs, and organochlorine pesticides were analyzed in burbot, kokanee, rainbow trout, and whitefish (55 fish in total) from Skaha, Okanagan, Osoyoos, Nicola, and Douglas lakes during 2007-2009. No elevated levels of mercury, arsenic, lead, PCBs, or pesticides were found compared to the previous study (Rae and Jensen 2007). Arsenic and lead in all fish tissue samples were significantly below the maximum safe consumption guidelines for human health of 3.5 and 0.5 ppm, respectively. Mercury in all fish, except for one burbot from Nicola Lake for the 2007 project, were below the maximum consumption guideline of 0.5 ppm; and in most fish (i.e. burbot from Nicola Lake (6 fish for 2008 project), kokanee from Nicola and Douglas lakes, rainbow trout and most whitefish (7 fish out of 8)), mercury was below the maximum recommendation level for frequent consumption of 0.2 ppm. Most PCBs congeners were found in amounts less than the detection limit in all fish tissue samples. The sum of PCB congeners was well below the safety guidelines for human health of 2.0 ppm. Also, organochlorine pesticides, including DDT, were found in very low amounts in all fish tissue samples (less than 1 ppm) which were considerably below the maximum consumption guidelines for human health of 5.0 ppm. There are no consumption guidelines for PBDEs. Concentrations of PBDEs were also low when compared to the previous study (Rae and Jensen 2007) and to published data for other freshwater fish.

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Appendix A. Fish codes

SA-01-B	Burbot from Skaha Lake (2007 project)
NC-01(02)-B	Burbot from Nicola Lake (2007 project)
DG-01-B	Burbot from Douglas Lake (2007 project)
OK-01(02, 03)-B	Burbot from Okanagan Lake (2007 project)
W1…W8	Whitefish from Skaha Lake (2008 project)
RBT1, RBT2	Rainbow trout from Osoyoos Lake (2008 project)
B1	Burbot from Douglas Lake (2008 project)
B2…B7	Burbot from Nicola Lake (2008 project)
KD1, KD2	Kokanee from Douglas Lake (pooled samples) (2008 project)
KN1, KN2	Kokanee from Nicola Lake (pooled samples) (2008 project)

Appendix B. PCBs in burbot (2007 project)

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 1	< 0.032	< 0.085	< 0.026	< 0.047	< 0.038	< 0.028	< 0.046	< 0.053	94.2	< 0.030
PCB 2	< 0.032	< 0.087	< 0.027	< 0.048	< 0.039	< 0.028	< 0.047	< 0.054		< 0.030
PCB 3	< 0.032	< 0.087	< 0.027	< 0.048	< 0.039	< 0.028	< 0.047	< 0.054	95.9	< 0.030
PCB 4/10	< 0.055	< 0.13	< 0.079	< 0.13	< 0.046	< 0.050	< 0.10	< 0.095	90.5	< 0.076
PCB 5/8	< 0.029	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050	95.9	< 0.040
PCB 6	< 0.029	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050		< 0.040
PCB 7/9	K 0.038	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050		< 0.040
PCB 11	K 0.094	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050		< 0.040
PCB 12/13	< 0.029	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050		< 0.040
PCB 14	< 0.029	< 0.067	< 0.042	< 0.070	< 0.024	< 0.026	< 0.054	< 0.050		< 0.040
PCB 15	< 0.030	< 0.069	< 0.043	< 0.072	< 0.025	< 0.027	< 0.055	< 0.052	92	< 0.041
PCB 16/32	< 0.062	< 0.11	< 0.12	< 0.062	< 0.074	< 0.048	< 0.11	< 0.12		< 0.071
PCB 17	< 0.062	< 0.11	< 0.12	< 0.062	< 0.074	< 0.048	< 0.11	< 0.12		< 0.071
PCB 18	< 0.062	< 0.11	< 0.12	< 0.062	< 0.074	< 0.048	< 0.11	< 0.12	93.5	< 0.071
PCB 19	< 0.068	< 0.12	< 0.13	< 0.069	< 0.081	< 0.053	< 0.12	< 0.13	92.1	< 0.079
PCB 20/21/33	< 0.035	< 0.086	< 0.043	< 0.049	< 0.038	< 0.041	< 0.065	< 0.056		< 0.047
PCB 22	< 0.035	< 0.086	< 0.043	< 0.049	< 0.038	< 0.041	< 0.065	< 0.056		< 0.047
PCB 23/34	< 0.037	< 0.066	< 0.069	< 0.037	< 0.044	< 0.029	< 0.063	< 0.069	92.8	< 0.043
PCB 24/27	< 0.062	< 0.11	< 0.12	< 0.062	< 0.074	< 0.048	< 0.11	< 0.12		< 0.071
PCB 25	< 0.037	< 0.066	< 0.069	< 0.037	< 0.044	< 0.029	< 0.063	< 0.069		< 0.043
PCB 26	< 0.037	< 0.066	< 0.069	< 0.037	< 0.044	< 0.029	< 0.063	< 0.069		< 0.043
PCB 28	< 0.038	< 0.069	< 0.071	< 0.038	0.046	K 0.034	< 0.065	< 0.071	100	< 0.044

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 29	< 0.037	< 0.066	< 0.069	< 0.037	< 0.044	< 0.029	< 0.063	< 0.069		< 0.043
PCB 30	< 0.062	< 0.11	< 0.12	< 0.062	< 0.074	< 0.048	< 0.11	< 0.12		< 0.071
PCB 31	K 0.085	< 0.066	< 0.069	< 0.037	< 0.044	< 0.029	< 0.063	< 0.069	96.7	< 0.043
PCB 35	< 0.036	< 0.088	< 0.044	< 0.050	< 0.039	< 0.043	< 0.067	< 0.057		< 0.048
PCB 36	< 0.035	< 0.086	< 0.043	< 0.049	< 0.038	< 0.041	< 0.065	< 0.056		< 0.047
PCB 37	< 0.036	< 0.088	< 0.044	< 0.050	< 0.039	< 0.043	< 0.067	< 0.057	92.5	< 0.048
PCB 38	< 0.036	< 0.088	< 0.044	< 0.050	< 0.039	< 0.043	< 0.067	< 0.057		< 0.048
PCB 39	< 0.035	< 0.086	< 0.043	< 0.049	< 0.038	< 0.041	< 0.065	< 0.056		< 0.047
PCB 40	< 0.081	< 0.092	< 0.085	< 0.076	< 0.13	< 0.082	< 0.13	< 0.067	97.7	< 0.093
PCB 41/64/68/71	0.074	< 0.068	< 0.071	< 0.053	0.126	< 0.060	< 0.066	< 0.063		< 0.069
PCB 42/59	< 0.053	< 0.068	< 0.071	< 0.053	< 0.061	< 0.060	< 0.066	< 0.063		< 0.069
PCB 43/49	< 0.040	< 0.051	< 0.054	< 0.040	0.07	< 0.045	< 0.050	< 0.047	90.5	< 0.052
PCB 44	< 0.053	< 0.068	< 0.071	< 0.053	< 0.061	< 0.060	< 0.066	< 0.063	91.7	< 0.069
PCB 45	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 46	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 47/48/75	0.081	< 0.056	< 0.059	< 0.044	0.161	0.056	< 0.055	< 0.052		< 0.057
PCB 50	< 0.037	< 0.047	< 0.050	< 0.037	< 0.043	< 0.042	< 0.046	< 0.044		< 0.048
PCB 51	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 52/73	0.09	< 0.056	< 0.059	< 0.044	0.164	0.097	< 0.055	< 0.052	91.1	< 0.057
PCB 53	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 54	< 0.037	< 0.047	< 0.050	< 0.037	< 0.043	< 0.042	< 0.046	< 0.044	85.6	< 0.048
PCB 55	< 0.038	< 0.044	< 0.040	< 0.036	< 0.061	< 0.039	< 0.063	< 0.032		< 0.044
PCB 56/60	0.056	< 0.044	< 0.040	< 0.036	0.091	< 0.039	< 0.063	< 0.032	98.2	< 0.044
PCB 57	< 0.081	< 0.092	< 0.085	< 0.076	< 0.13	< 0.082	< 0.13	< 0.067		< 0.093

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 58	< 0.081	< 0.092	< 0.085	< 0.076	< 0.13	< 0.082	< 0.13	< 0.067		< 0.093
PCB 61/74	0.176	< 0.043	< 0.040	< 0.036	0.29	0.07	< 0.063	< 0.031		< 0.043
PCB 62/65	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 63	< 0.038	< 0.043	< 0.040	< 0.036	< 0.060	< 0.039	< 0.063	< 0.031		< 0.043
PCB 66/80	K 0.244	< 0.043	< 0.040	< 0.036	0.433	0.128	< 0.063	< 0.031	95.1	< 0.043
PCB 67	< 0.081	< 0.092	< 0.085	< 0.076	< 0.13	< 0.082	< 0.13	< 0.067		< 0.093
PCB 69	< 0.044	< 0.056	< 0.059	< 0.044	< 0.051	< 0.050	< 0.055	< 0.052		< 0.057
PCB 70/76	0.231	< 0.043	< 0.040	< 0.036	0.202	0.082	< 0.063	< 0.031		< 0.043
PCB 72	< 0.053	< 0.068	< 0.071	< 0.053	< 0.061	< 0.060	< 0.066	< 0.063		< 0.069
PCB 77	< 0.033	< 0.040	< 0.039	< 0.038	< 0.038	< 0.043	< 0.039	< 0.028	97.1	< 0.044
PCB 78	< 0.033	< 0.040	< 0.039	< 0.038	< 0.038	< 0.043	< 0.039	< 0.028		< 0.044
PCB 79	< 0.033	< 0.040	< 0.039	< 0.038	K 0.079	< 0.043	< 0.039	< 0.028		< 0.044
PCB 81	< 0.033	< 0.040	< 0.039	< 0.038	< 0.038	< 0.043	< 0.039	< 0.028	96.6	< 0.044
PCB 82	< 0.048	< 0.049	< 0.057	< 0.065	< 0.088	< 0.069	< 0.092	< 0.062		< 0.075
PCB 83/108	< 0.049	< 0.064	< 0.055	< 0.049	< 0.064	< 0.059	< 0.073	< 0.061		< 0.047
PCB 84	< 0.043	< 0.056	< 0.048	< 0.043	< 0.056	< 0.051	< 0.064	< 0.053		< 0.041
PCB 85/120	K 0.353	< 0.049	< 0.057	< 0.065	K 1.59	K 0.228	K 0.118	< 0.062		< 0.075
PCB 86/97	0.147	< 0.049	< 0.057	< 0.065	0.226	< 0.069	< 0.092	< 0.062		< 0.075
PCB 87/115/116	0.187	< 0.049	< 0.057	< 0.065	0.361	K 0.107	< 0.092	< 0.062	99	< 0.075
PCB 88/121	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 89/90/101	0.402	< 0.056	< 0.048	< 0.043	0.866	0.397	0.171	< 0.053	99.3	< 0.041
PCB 91	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 92	0.107	< 0.056	< 0.048	< 0.043	0.32	0.09	0.066	< 0.053		< 0.041

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 93/95	< 0.051	< 0.066	< 0.057	< 0.050	0.139	< 0.061	< 0.075	< 0.063	97.3	< 0.049
PCB 94	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 96	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 98/102	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 99	0.79	< 0.053	< 0.046	< 0.040	3.12	0.535	0.225	< 0.050	100	< 0.039
PCB 100	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 103	< 0.051	< 0.066	< 0.057	< 0.050	< 0.066	< 0.061	< 0.075	< 0.063		< 0.049
PCB 104	< 0.036	< 0.046	< 0.040	< 0.035	< 0.046	< 0.043	< 0.053	< 0.044	93.5	< 0.034
PCB 105/127	0.53	< 0.033	< 0.039	< 0.043	1.95	0.296	0.146	< 0.042	97.2	< 0.050
PCB 106/118	1.77	< 0.043	< 0.053	< 0.051	5.53	0.978	0.417	< 0.061	95.6	< 0.064
PCB 107/109	0.196	< 0.034	< 0.040	< 0.046	0.492	K 0.053	< 0.064	< 0.044		< 0.053
PCB 110	0.386	< 0.034	< 0.040	< 0.046	0.62	0.209	0.134	< 0.044	102	< 0.053
PCB 111/117	< 0.048	< 0.049	< 0.057	< 0.065	0.157	< 0.069	< 0.092	< 0.062		< 0.075
PCB 112	< 0.049	< 0.064	< 0.055	< 0.049	< 0.064	< 0.059	< 0.073	< 0.061		< 0.047
PCB 113	< 0.043	< 0.056	< 0.048	< 0.043	< 0.056	< 0.051	< 0.064	< 0.053		< 0.041
PCB 114	K 0.049	< 0.033	< 0.039	< 0.044	0.136	< 0.047	< 0.063	< 0.042	96.2	< 0.051
PCB 119	0.049	< 0.053	< 0.046	< 0.040	0.2	< 0.049	< 0.060	< 0.050		< 0.039
PCB 122	< 0.033	< 0.033	< 0.039	< 0.044	< 0.060	< 0.047	< 0.063	< 0.042		< 0.051
PCB 123	< 0.039	< 0.043	< 0.053	< 0.051	0.067	< 0.059	< 0.080	< 0.061	92	< 0.064
PCB 124	< 0.034	< 0.034	< 0.040	< 0.046	< 0.062	< 0.049	< 0.064	< 0.044		< 0.053
PCB 125	< 0.048	< 0.049	< 0.057	< 0.065	< 0.088	< 0.069	< 0.092	< 0.062		< 0.075
PCB 126	< 0.034	< 0.034	< 0.040	< 0.045	< 0.061	< 0.048	< 0.064	< 0.043	89.6	< 0.052
PCB 128	0.369	< 0.073	< 0.039	< 0.048	1.41	0.26	0.091	< 0.077		< 0.060
PCB 129	< 0.053	< 0.073	< 0.039	< 0.048	< 0.069	< 0.053	< 0.074	< 0.077		< 0.060

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 130	< 0.053	< 0.073	< 0.039	< 0.048	< 0.069	< 0.053	< 0.074	< 0.077		< 0.060
PCB 131/142	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 132/168	< 0.046	< 0.064	< 0.034	< 0.042	< 0.060	< 0.046	< 0.065	< 0.067		< 0.052
PCB 133	< 0.049	< 0.057	< 0.036	< 0.051	0.203	< 0.077	< 0.066	< 0.074		< 0.061
PCB 134/143	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 135/144	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 136	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 137	K 0.203	K 0.067	K 0.059	K 0.076	K 0.555	K 0.140	K 0.114	K 0.106		K 0.062
PCB 138/163/164	2.92	< 0.062	K 0.040	< 0.041	9.78	1.65	0.705	< 0.065	103	< 0.051
PCB 139/149	0.117	< 0.057	< 0.036	< 0.051	0.395	0.124	0.08	< 0.074	103	< 0.061
PCB 140	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 141	0.101	< 0.062	< 0.033	< 0.041	0.3	0.086	< 0.063	< 0.065		< 0.051
PCB 145	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 146	0.426	< 0.049	< 0.031	< 0.044	1.04	0.161	0.112	< 0.063		< 0.053
PCB 147	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 148	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 150	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 151	0.064	< 0.062	< 0.039	< 0.055	0.158	< 0.084	< 0.072	< 0.080	106	< 0.067
PCB 152	< 0.049	< 0.057	< 0.036	< 0.051	< 0.067	< 0.077	< 0.066	< 0.074		< 0.061
PCB 153	2.91	< 0.054	0.067	< 0.036	13.2	2.06	0.807	< 0.057	101	< 0.044
PCB 154	< 0.049	< 0.057	< 0.036	< 0.051	0.147	< 0.077	< 0.066	< 0.074		< 0.061
PCB 155	< 0.035	< 0.041	< 0.025	< 0.036	< 0.047	< 0.055	< 0.047	< 0.053	98.3	< 0.044
PCB 156	0.204	< 0.048	< 0.026	< 0.031	0.719	0.124	< 0.048	< 0.050	93.9	< 0.039

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 157	0.042	< 0.048	< 0.026	< 0.032	0.186	< 0.035	< 0.049	< 0.051	96.5	< 0.039
PCB 158/160	0.316	< 0.062	< 0.033	< 0.041	1.15	0.202	0.092	< 0.065		< 0.051
PCB 159	< 0.045	< 0.062	< 0.033	< 0.041	< 0.059	< 0.045	< 0.063	< 0.065		< 0.051
PCB 161	< 0.042	< 0.049	< 0.031	< 0.044	< 0.057	< 0.066	< 0.057	< 0.063		< 0.053
PCB 162	< 0.045	< 0.062	< 0.033	< 0.041	0.099	< 0.045	< 0.063	< 0.065		< 0.051
PCB 165	< 0.042	< 0.049	< 0.031	< 0.044	< 0.057	< 0.066	< 0.057	< 0.063		< 0.053
PCB 166	< 0.045	< 0.062	< 0.033	< 0.041	0.062	< 0.045	< 0.063	< 0.065		< 0.051
PCB 167	< 0.035	< 0.048	< 0.026	< 0.032	< 0.046	< 0.035	< 0.049	< 0.051	93.3	< 0.039
PCB 169	< 0.035	< 0.049	< 0.026	< 0.032	< 0.046	< 0.035	< 0.049	< 0.051	94.3	< 0.040
PCB 170/190	0.329	< 0.095	< 0.062	< 0.083	1.06	0.317	0.144	< 0.077	103	< 0.060
PCB 171	< 0.11	< 0.085	< 0.056	< 0.074	0.303	< 0.071	< 0.068	< 0.069		< 0.054
PCB 172/192	< 0.11	< 0.085	< 0.056	< 0.074	0.169	< 0.071	< 0.068	< 0.069		< 0.054
PCB 173	< 0.11	< 0.085	< 0.056	< 0.074	< 0.070	< 0.071	< 0.068	< 0.069		< 0.054
PCB 174/181	< 0.10	< 0.081	< 0.053	< 0.071	< 0.067	< 0.068	< 0.065	< 0.066		< 0.052
PCB 175	< 0.10	< 0.081	< 0.053	< 0.071	< 0.067	< 0.068	< 0.065	< 0.066		< 0.052
PCB 176	< 0.078	< 0.062	< 0.040	< 0.054	< 0.051	< 0.052	< 0.050	< 0.050		< 0.039
PCB 177	< 0.10	< 0.081	< 0.053	< 0.071	< 0.067	< 0.068	< 0.065	< 0.066		< 0.052
PCB 178	< 0.10	< 0.081	< 0.053	< 0.071	0.301	< 0.068	< 0.065	< 0.066		< 0.052
PCB 179	< 0.078	< 0.062	< 0.040	< 0.054	< 0.051	< 0.052	< 0.050	< 0.050		< 0.039
PCB 180	0.892	< 0.085	< 0.056	< 0.074	3.02	0.742	0.291	< 0.069	100	< 0.054
PCB 182/187	0.318	< 0.081	< 0.053	< 0.071	0.342	0.081	0.083	< 0.066	99.8	< 0.052
PCB 183	0.317	< 0.081	< 0.053	< 0.071	1.11	0.227	0.091	< 0.066	106	< 0.052
PCB 184	< 0.078	< 0.062	< 0.040	< 0.054	< 0.051	< 0.052	< 0.050	< 0.050		< 0.039
PCB 185	< 0.10	< 0.081	< 0.053	< 0.071	< 0.067	< 0.068	< 0.065	< 0.066		< 0.052

Appendix B. Continued

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
PCB 186	< 0.10	< 0.081	< 0.053	< 0.071	< 0.067	< 0.068	< 0.065	< 0.066		< 0.052
PCB 188	< 0.078	< 0.062	< 0.040	< 0.054	< 0.051	< 0.052	< 0.050	< 0.050	101	< 0.039
PCB 189	< 0.082	< 0.065	< 0.043	< 0.057	< 0.054	< 0.055	< 0.052	< 0.053	97.1	< 0.041
PCB 191	< 0.11	< 0.085	< 0.056	< 0.074	< 0.070	< 0.071	< 0.068	< 0.069		< 0.054
PCB 193	< 0.11	< 0.085	< 0.056	< 0.074	0.251	< 0.071	< 0.068	< 0.069		< 0.054
PCB 194	K 0.162	< 0.11	< 0.079	< 0.070	0.327	< 0.17	< 0.089	< 0.079	97.4	< 0.070
PCB 195	< 0.12	< 0.11	< 0.079	< 0.070	K 0.112	< 0.17	< 0.089	< 0.079		< 0.070
PCB 196/203	0.202	< 0.12	< 0.080	< 0.071	0.422	0.18	< 0.090	< 0.080	102	< 0.071
PCB 197	< 0.085	< 0.082	< 0.057	< 0.051	< 0.067	< 0.12	< 0.064	< 0.057		< 0.050
PCB 198	< 0.12	< 0.12	< 0.080	< 0.071	< 0.094	< 0.17	< 0.090	< 0.080		< 0.071
PCB 199	K 0.122	< 0.12	< 0.080	< 0.071	0.18	< 0.17	< 0.090	< 0.080		< 0.071
PCB 200	< 0.085	< 0.082	< 0.057	< 0.051	< 0.067	< 0.12	< 0.064	< 0.057		< 0.050
PCB 201	< 0.085	< 0.082	< 0.057	< 0.051	< 0.067	< 0.12	< 0.064	< 0.057		< 0.050
PCB 202	< 0.094	< 0.091	< 0.063	< 0.056	0.131	< 0.14	< 0.071	< 0.063	100	< 0.056
PCB 204	< 0.085	< 0.082	< 0.057	< 0.051	< 0.067	< 0.12	< 0.064	< 0.057		< 0.050
PCB 205	< 0.092	< 0.089	< 0.061	< 0.055	< 0.072	< 0.13	< 0.069	< 0.061	100	< 0.055
PCB 206	< 0.073	< 0.080	< 0.039	< 0.063	< 0.088	< 0.079	< 0.076	< 0.078	96.7	< 0.078
PCB 207	< 0.059	< 0.065	< 0.032	< 0.051	< 0.072	< 0.064	< 0.062	< 0.064		< 0.064
PCB 208	< 0.059	< 0.065	< 0.032	< 0.051	< 0.072	< 0.064	< 0.062	< 0.064	101	< 0.064
PCB 209	< 0.024	< 0.044	< 0.025	< 0.023	< 0.031	< 0.027	< 0.034	< 0.044	95.1	< 0.040
% Moisture	80.6	82.5	80.9	82	81.6	83	83.3			80.4
% Lipid	0.56	0.39	0.58	0.4	1.35	1.34	1.18			0.33

Appendix C. PBDEs in burbot (2007 project)

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	Lab Blank	Lab Blank	Lab Blank	Spiked Matrix
AXYS ID	L10985-1	L10985-2	L10985-3	WG24834-101	WG24834-102	WG24834-103	WG24834-104
WORKGROUP	WG24834	WG24834	WG24834	WG24834	WG24834	WG24834	WG24834
Sample Size	10.2 g (wet)	10.1 g (wet)	10.3 g (wet)	10.0 g	10.0 g	10.0 g	
UNITS	pg/g (wet weight basis)	pg/g (wet weight basis)	pg/g (wet weight basis)	pg/g	pg/g	pg/g	% Recov
Br3-DPE-28/33	379	0.482	5.07	0.174	0.113	K 0.132	86.1
Br4-DPE-47	14200	13	142	16.4	2.56	3.61	93.5
Br5-DPE-99	6960	7.72	34.2	26.9	2.93	3.7	93.4
Br5-DPE-100	2990	2.53	25	5.16	K 0.558	0.884	89.1
Br6-DPE-153	508	1.61	6.67	3.45	0.159	K 0.538	87.3
Br6-DPE-154	814	1.38	8.11	2.63	0.382	0.315	87.4
Br7-DPE-183	6.37	0.898	K 1.01	K 0.542	K 0.284	K 0.289	89.9
Br10-DPE-209	K 63.4	80.7	83.3	148	55.4	68.3	102

Appendix D. Organochlorine pesticides in burbot (2007 project)

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
HexaCB	0.267	< 0.11	0.088	< 0.14	0.329	0.267	0.275	< 0.073	98.9	< 0.089
alpha-HCH	< 0.24	< 1.6	< 0.19	< 0.13	< 0.12	< 0.17	< 0.17	< 0.15	99.2	< 0.089
beta-HCH	< 0.39	< 0.24	< 0.31	< 0.19	< 0.25	< 0.22	< 0.39	< 0.34	99	< 0.29
gamma-HCH	< 0.23	< 1.2	< 0.15	< 0.17	< 0.14	< 0.18	< 0.16	< 0.15	106	< 0.18
Heptachlor	K 0.145	< 0.90	< 0.21	< 0.24	< 0.23	< 0.22	< 0.16	< 0.11	106	< 0.29
Aldrin	< 0.099	< 0.19	< 0.18	< 0.16	< 0.16	< 0.17	< 0.21	< 0.11	97.6	< 0.18
trans-Chlordane	< 0.069	< 0.11	< 0.083	< 0.082	< 0.15	< 0.084	< 0.12	< 0.071	98.5	< 0.078
cis-Chlordane	< 0.081	< 0.13	< 0.097	< 0.096	< 0.17	< 0.098	< 0.14	< 0.083	101	< 0.092
Oxychlordane	0.481	< 0.33	< 0.23	< 0.30	1.16	0.437	< 0.73	< 0.36	96.2	< 0.34
trans-Nonachlor	0.668	< 0.041	< 0.042	< 0.040	1.78	0.668	0.316	< 0.054	96.3	< 0.030
cis-Nonachlor	0.44	< 0.046	< 0.047	< 0.045	2.34	0.461	0.232	< 0.061	95.4	< 0.034
Mirex	0.164	< 0.039	< 0.032	< 0.049	0.328	0.137	< 0.069	< 0.047	99	< 0.056
o,p'-DDE	0.177	< 0.026	< 0.034	< 0.033	0.165	K 0.092	0.11	< 0.037	95.9	< 0.031
p,p'-DDE	285	0.391	1.32	0.871	993	141	56.7	< 0.045	91.7	0.348
o,p'-DDD	0.776	< 0.10	< 0.036	< 0.047	0.545	0.26	0.19	< 0.048	85.7	< 0.030
p,p'-DDD	14.8	< 0.067	0.107	0.07	8.48	4.83	2.16	< 0.041	79.9	0.046
o,p'-DDT	0.41	< 0.093	< 0.054	< 0.034	0.858	0.332	0.315	< 0.058	105	< 0.026
p,p'-DDT	4.11	< 0.11	< 0.063	< 0.039	14.4	3.57	1.59	< 0.066	95.4	< 0.030

Appendix E. Organochlorine pesticides in burbot (2007 project)

CLIENT ID	SA-01-B	NC-01-B	NC-02-B	DG-01-B	OK-01-B	OK-02-B	OK-03-B	Lab Blank	Spiked Matrix	NC-01-B (Duplicate)
AXYS ID	L10985-1	L10985-2 (A)	L10985-3	L10985-4	L10985-5	L10985-6	L10985-7	WG24898-101	WG24898-102	WG24898-103 (DUP L10985-2)
WORKGROUP	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898	WG24898
Sample Size	10.2 g (wet)	9.68 g (wet)	10.0 g (wet)	10.2 g (wet)	8.30 g (wet)	8.46 g (wet)	7.67 g (wet)	10.0 g		10.4 g (wet)
UNITS	ng/g (wet weight basis)							ng/g	% Recov	ng/g (wet weight basis)
delta-HCH	< 0.059	< 0.015	< 0.045	< 0.032	< 0.10	< 0.086	< 0.085	< 0.015	72.7	< 0.031
Heptachlor epoxide	0.105	< 0.007	< 0.046	< 0.020	0.103	Q 0.078	< 0.074	< 0.018	66.2	< 0.014
Dieldrin	Q 0.212	< 0.010	< 0.011	< 0.009	Q 0.251	Q 0.197	Q 0.201	< 0.009	75.6	< 0.006
Endrin	< 0.024	< 0.009	< 0.015	< 0.028	< 0.047	< 0.044	< 0.070	< 0.010	78	< 0.015
Endrin aldehyde	< 0.033	< 0.013	< 0.021	< 0.039	< 0.064	< 0.061	< 0.096	< 0.012	21.7	< 0.021
Endrin ketone	< 0.004	< 0.002	< 0.007	< 0.006	< 0.011	< 0.008	< 0.009	< 0.025	69.4	< 0.004
Methoxychlor	< 0.010	< 0.005	< 0.015	< 0.014	< 0.023	< 0.024	< 0.020	< 0.067	75.9	< 0.008
alpha-Endosulphan	< 0.019	< 0.011	< 0.016	< 0.028	< 0.047	< 0.043	< 0.063	< 0.008	91.7	< 0.017
beta-Endosulphan	< 0.024	< 0.012	< 0.019	< 0.032	< 0.057	< 0.051	< 0.080	< 0.012	90.4	< 0.019
Endosulphan sulphate	< 0.026	< 0.013	< 0.020	< 0.035	< 0.062	< 0.055	< 0.087	< 0.013	97.2	< 0.020

Appendix F. Total metals scan in burbot (2007 project)

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Maxxam ID		J15665		J15666		J15667		J15668		J15669			
Sampling Date		7/19/2007		7/19/2007		7/19/2007		7/19/2007		7/19/2007			
COC Number		8204292		8204292		8204292		8204292		8204292			
	Units	**SA-01-C**	**MU**	**DG-01-C**	**MU**	**OK-02-C**	**MU**	**NC-01-C**	**MU**	**NC-02-C**	**MU**	**RDL**	**QC Batch**
Total Metals by ICPMS													
Total Aluminum (Al)	mg/kg	<1	N/A	<1	N/A	9	N/A	<1	N/A	<1	N/A	1	2212305
Total Antimony (Sb)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Arsenic (As)	mg/kg	0.2	N/A	0.02	N/A	0.1	N/A	0.02	N/A	0.02	N/A	0.01	2212305
Total Barium (Ba)	mg/kg	<0.1	N/A	<0.1	N/A	0.2	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Beryllium (Be)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Bismuth (Bi)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Boron (B)	mg/kg	<5	N/A	<5	N/A	<5	N/A	<5	N/A	<5	N/A	5	2212305
Total Cadmium (Cd)	mg/kg	<0.01	N/A	<0.01	N/A	<0.01	N/A	<0.01	N/A	<0.01	N/A	0.01	2212305
Total Calcium (Ca)	mg/kg	135	N/A	71	N/A	218	N/A	109	N/A	103	N/A	10	2212305
Total Chromium (Cr)	mg/kg	<0.5	N/A	<0.5	N/A	<0.5	N/A	<0.5	N/A	<0.5	N/A	0.5	2212305
Total Cobalt (Co)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Copper (Cu)	mg/kg	<0.5	N/A	<0.5	N/A	0.6	N/A	<0.5	N/A	<0.5	N/A	0.5	2212305
Total Iron (Fe)	mg/kg	<10	N/A	<10	N/A	24	N/A	<10	N/A	<10	N/A	10	2212305
Total Lead (Pb)	mg/kg	<0.01	N/A	<0.01	N/A	0.06	N/A	<0.01	N/A	<0.01	N/A	0.01	2212305
Total Magnesium (Mg)	mg/kg	272	N/A	214	N/A	137	N/A	250	N/A	272	N/A	10	2212305
Total Manganese (Mn)	mg/kg	0.2	N/A	0.2	N/A	0.5	N/A	0.2	N/A	0.3	N/A	0.1	2212305
Total Mercury (Hg)	mg/kg	0.44	N/A	0.2	N/A	0.26	N/A	0.54	N/A	0.12	N/A	0.01	2212305
Total Molybdenum (Mo)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Nickel (Ni)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Phosphorus (P)	mg/kg	1880	N/A	1780	N/A	1350	N/A	1880	N/A	2010	N/A	10	2212305
Total Potassium (K)	mg/kg	3530	N/A	3410	N/A	2090	N/A	3680	N/A	3880	N/A	10	2212305
Total Selenium (Se)	mg/kg	1.06	N/A	0.24	N/A	0.9	N/A	0.3	N/A	0.2	N/A	0.01	2212305
Total Silver (Ag)	mg/kg	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	0.05	2212305

Appendix F. Continued

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Maxxam ID		J15665		J15666		J15667		J15668		J15669			
Sampling Date		7/19/2007		7/19/2007		7/19/2007		7/19/2007		7/19/2007			
COC Number		8204292		8204292		8204292		8204292		8204292			
	Units	**SA-01-C**	**MU**	**DG-01-C**	**MU**	**OK-02-C**	**MU**	**NC-01-C**	**MU**	**NC-02-C**	**MU**	**RDL**	**QC Batch**
Total Metals by ICPMS													
Total Sodium (Na)	mg/kg	537	N/A	410	N/A	1470	N/A	548	N/A	358	N/A	10	2212305
Total Strontium (Sr)	mg/kg	0.4	N/A	<0.1	N/A	0.6	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Thallium (Tl)	mg/kg	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	0.05	2212305
Total Tin (Sn)	mg/kg	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	<0.1	N/A	0.1	2212305
Total Titanium (Ti)	mg/kg	<1	N/A	<1	N/A	<1	N/A	<1	N/A	<1	N/A	1	2212305
Total Uranium (U)	mg/kg	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	<0.05	N/A	0.05	2212305
Total Vanadium (V)	mg/kg	<2	N/A	<2	N/A	<2	N/A	<2	N/A	<2	N/A	2	2212305
Total Zinc (Zn)	mg/kg	4.4	N/A	5	N/A	12.6	N/A	4.4	N/A	3.6	N/A	0.1	2212305

N/A = Not Applicable
MU = Measurement Uncertainty
RDL = Reportable Detection Limit

Appendix G. Total mercury (Hg) concentration in burbot (2007 project)

Sampling Details	Sample ID	Date Sampled	Sample Type	Gross Peak Area	Sample Weight Added to Digestion Tube (g wet wt)	Net Total Hg Conc. (ng/g wet wt) (recovery corrected)
Skaha	SA-01-A	19-Jul-07		1483692	0.208	436
Douglas	DG-01-A	8-Feb-08		934706	0.281	203
Douglas	DG-01-A	8-Feb-08	Duplicate	758716	0.239	193
Okanagan	OK-01-A	6-Feb-08		954662	0.219	266
Okanagan	OK-02-A	Feb-08		1221267	0.213	350
Okanagan	OK-03-A	Feb-08		655946	0.222	180
Nicola	NC-01-A	Feb-08		1941707	0.227	523
Nicola	NC-02-A	8-Feb-08		438559	0.215	124

Appendix H. Methyl mercury concentration in burbot (2007 project)

Sampling Details	Sample ID	Date Sampled	Sample Type	Gross Peak Area	%CH3Hg Recovery Used for Calculations	Net CH3Hg as Hg (ng/g)Wet wt (recovery corrected)
Skaha	SA-01-A	19-Jul-07		1192723	81.9	447
Douglas	DG-01-A	8-Feb-08		573204	81.9	215
Douglas	DG-01-A	8-Feb-08	Duplicate	581456	81.9	211
Okanagan	OK-01-A	6-Feb-08		584538	81.9	267
Okanagan	OK-02-A	Feb-08		696677	81.9	312
Okanagan	OK-03-A	Feb-08		416758	81.9	181
Nicola	NC-01-A	Feb-08		1192254	81.9	528
Nicola	NC-02-A	8-Feb-08		249165	81.9	105

Appendix I. PCBs in whitefish and rainbow trout (2008 project)

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 1	K 0.015	K 0.065	K 0.020	K 0.032	K 0.030	K 0.049	K 0.034	K 0.049	K 0.033	K 0.111	K 0.008	82	K 0.086
PCB 2	< 0.007	< 0.006	< 0.014	< 0.008	< 0.015	< 0.008	< 0.011	< 0.009	< 0.004	< 0.008	< 0.007		< 0.008
PCB 3	K 0.016	K 0.062	K 0.031	K 0.046	K 0.036	K 0.058	K 0.042	K 0.071	K 0.046	K 0.128	K 0.010	96.4	K 0.110
PCB 4/10	< 0.009	< 0.010	< 0.026	< 0.022	< 0.025	< 0.017	< 0.015	K 0.015	< 0.016	< 0.018	< 0.014	80.8	< 0.014
PCB 5/8	< 0.005	< 0.005	< 0.014	K 0.022	< 0.014	< 0.009	< 0.008	< 0.008	< 0.009	< 0.010	< 0.007	100	< 0.007
PCB 6	< 0.005	< 0.005	< 0.014	< 0.012	< 0.014	< 0.009	< 0.008	< 0.008	< 0.009	< 0.010	< 0.007		< 0.007
PCB 7/9	K 0.026	K 0.021	K 0.025	K 0.022	K 0.044	K 0.038	K 0.028	< 0.008	K 0.022	K 0.026	K 0.017		K 0.020
PCB 11	< 0.005	K 0.119	K 0.129	K 0.146	K 0.137	K 0.137	K 0.131	K 0.136	K 0.112	< 0.010	K 0.113		< 0.007
PCB 12/13	K 0.006	< 0.005	< 0.014	< 0.012	< 0.014	< 0.009	< 0.008	< 0.008	< 0.009	< 0.010	< 0.007		< 0.007
PCB 14	< 0.005	< 0.005	K 0.016	< 0.012	< 0.014	< 0.009	< 0.008	< 0.008	K 0.015	K 0.025	< 0.007		< 0.007
PCB 15	< 0.005	< 0.006	< 0.015	< 0.012	< 0.014	K 0.011	< 0.009	< 0.008	< 0.009	K 0.024	< 0.008	116	< 0.008
PCB 16/32	< 0.022	< 0.017	< 0.023	< 0.017	< 0.014	< 0.012	< 0.011	< 0.014	< 0.013	< 0.017	< 0.016		< 0.004
PCB 17	< 0.022	< 0.017	< 0.023	< 0.017	< 0.014	< 0.012	< 0.011	< 0.014	< 0.013	K 0.029	< 0.016		< 0.004
PCB 18	< 0.022	< 0.017	< 0.023	< 0.017	< 0.014	< 0.012	< 0.011	K 0.018	< 0.013	K 0.023	< 0.016	85.8	K 0.014
PCB 19	< 0.023	< 0.019	< 0.025	< 0.018	< 0.015	< 0.013	< 0.012	< 0.015	< 0.014	< 0.018	< 0.017	74.8	K 0.007
PCB 20/21/33	< 0.013	< 0.011	< 0.017	K 0.008	< 0.011	< 0.012	< 0.006	< 0.012	< 0.007	< 0.029	< 0.007		< 0.010
PCB 22	< 0.013	< 0.011	< 0.017	< 0.005	< 0.011	< 0.012	< 0.006	< 0.012	K 0.015	< 0.029	< 0.007		K 0.028
PCB 23/34	K 0.015	< 0.011	< 0.015	< 0.010	< 0.008	< 0.007	< 0.007	< 0.009	< 0.008	< 0.010	< 0.010	94.7	K 0.008
PCB 24/27	< 0.022	< 0.017	< 0.023	< 0.017	< 0.014	< 0.012	< 0.011	< 0.014	< 0.013	< 0.017	< 0.016		K 0.005
PCB 25	< 0.013	< 0.011	< 0.015	< 0.010	< 0.008	K 0.008	< 0.007	< 0.009	< 0.008	< 0.010	< 0.010		K 0.005
PCB 26	K 0.016	< 0.011	< 0.015	< 0.010	< 0.008	K 0.008	< 0.007	< 0.009	< 0.008	K 0.021	< 0.010		K 0.014
PCB 28	K 0.020	K 0.044	K 0.017	K 0.034	0.033	K 0.041	K 0.028	K 0.055	0.104	K 0.153	< 0.009	95.7	0.158
PCB 29	K 0.015	< 0.011	< 0.015	< 0.010	< 0.008	< 0.007	< 0.007	< 0.009	< 0.008	< 0.010	< 0.010		K 0.004

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 30	< 0.022	< 0.017	< 0.023	< 0.017	< 0.014	< 0.012	< 0.011	< 0.014	< 0.013	< 0.017	< 0.016		< 0.004
PCB 31	K 0.017	K 0.022	< 0.015	K 0.018	K 0.018	K 0.034	K 0.019	K 0.039	0.054	< 0.010	< 0.010	106	0.083
PCB 35	< 0.013	< 0.011	< 0.018	K 0.006	< 0.012	< 0.013	< 0.007	< 0.012	< 0.008	< 0.031	< 0.008		K 0.018
PCB 36	< 0.013	< 0.011	< 0.017	K 0.006	< 0.011	< 0.012	< 0.006	< 0.012	< 0.007	< 0.029	< 0.007		< 0.010
PCB 37	< 0.013	< 0.011	< 0.018	K 0.007	< 0.012	< 0.013	< 0.007	K 0.023	< 0.008	< 0.031	< 0.008	119	< 0.011
PCB 38	< 0.013	< 0.011	< 0.018	K 0.010	< 0.012	< 0.013	K 0.007	< 0.012	< 0.008	< 0.031	< 0.008		< 0.011
PCB 39	< 0.013	< 0.011	< 0.017	< 0.005	< 0.011	< 0.012	< 0.006	K 0.023	< 0.007	K 0.034	< 0.007		K 0.011
PCB 40	< 0.013	< 0.024	< 0.014	< 0.011	< 0.024	< 0.024	< 0.008	< 0.014	< 0.018	< 0.024	< 0.013	93.3	< 0.011
PCB 41/64/68/71	0.128	K 0.042	K 0.015	K 0.031	K 0.036	0.044	K 0.035	K 0.054	K 0.085	0.142	< 0.010		0.111
PCB 42/59	< 0.018	< 0.007	< 0.010	< 0.008	< 0.009	< 0.006	< 0.012	< 0.011	< 0.008	< 0.012	< 0.010		< 0.005
PCB 43/49	0.105	K 0.006	K 0.025	K 0.028	0.023	0.03	< 0.009	K 0.031	< 0.006	K 0.036	< 0.007	87.2	0.029
PCB 44	0.062	K 0.015	K 0.018	K 0.019	K 0.039	0.038	< 0.012	0.045	K 0.011	K 0.054	< 0.010	91.3	0.039
PCB 45	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 46	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 47/48/75	0.065	0.039	K 0.013	K 0.030	K 0.024	0.051	K 0.026	0.042	0.067	0.121	< 0.008		0.123
PCB 50	< 0.012	< 0.005	< 0.007	< 0.006	< 0.006	< 0.004	< 0.008	< 0.007	< 0.005	< 0.008	< 0.007		< 0.003
PCB 51	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 52/73	0.229	0.02	0.039	0.055	0.048	0.079	K 0.013	0.091	0.038	K 0.061	< 0.008	86.2	0.058
PCB 53	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	K 0.008	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 54	< 0.012	< 0.005	< 0.007	< 0.006	< 0.006	< 0.004	< 0.008	< 0.007	< 0.005	< 0.008	< 0.007	68.8	< 0.003
PCB 55	< 0.007	< 0.012	< 0.007	< 0.006	< 0.012	< 0.012	< 0.004	< 0.007	< 0.009	< 0.012	< 0.006		< 0.005
PCB 56/60	0.067	< 0.012	0.014	K 0.034	K 0.016	0.062	0.024	K 0.043	0.087	0.159	< 0.006	104	0.129
PCB 57	< 0.013	< 0.024	< 0.014	< 0.011	< 0.024	< 0.024	< 0.008	< 0.014	< 0.018	< 0.024	< 0.013		< 0.011
PCB 58	< 0.013	< 0.024	< 0.014	< 0.011	< 0.024	< 0.024	< 0.008	< 0.014	< 0.018	< 0.024	< 0.013		< 0.011

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 61/74	0.243	0.077	0.029	0.054	0.05	0.101	0.045	K 0.068	0.174	0.307	< 0.006		0.291
PCB 62/65	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 63	K 0.013	< 0.012	< 0.007	< 0.006	< 0.012	< 0.012	K 0.006	K 0.009	K 0.016	< 0.012	< 0.006		K 0.019
PCB 66/80	0.368	0.125	0.049	0.07	< 0.012	0.131	0.07	0.119	0.263	0.435	< 0.006	101	0.436
PCB 67	< 0.013	< 0.024	< 0.014	< 0.011	< 0.024	< 0.024	0.008	< 0.014	< 0.018	< 0.024	< 0.013		< 0.011
PCB 69	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.010	< 0.009	< 0.006	< 0.010	< 0.008		< 0.004
PCB 70/76	0.419	0.145	0.051	0.085	0.126	0.184	0.075	0.139	0.286	0.473	< 0.006		0.466
PCB 72	< 0.018	< 0.007	< 0.010	< 0.008	K 0.010	< 0.006	< 0.012	< 0.011	< 0.008	< 0.012	< 0.010		K 0.013
PCB 77	K 0.052	< 0.014	K 0.009	< 0.008	< 0.008	< 0.012	< 0.006	K 0.008	< 0.006	K 0.018	< 0.004	110	< 0.011
PCB 78	K 0.009	< 0.014	< 0.006	< 0.008	< 0.008	< 0.012	< 0.006	< 0.006	< 0.006	< 0.018	< 0.004		< 0.011
PCB 79	K 0.005	< 0.014	0.008	< 0.008	< 0.008	< 0.012	< 0.006	K 0.011	K 0.018	K 0.034	< 0.004		K 0.033
PCB 81	K 0.026	< 0.014	< 0.006	< 0.008	< 0.008	< 0.012	< 0.006	< 0.006	< 0.006	< 0.018	< 0.004	104	< 0.011
PCB 82	K 0.016	< 0.014	< 0.011	K 0.010	< 0.020	K 0.009	< 0.011	< 0.006	< 0.012	< 0.010	< 0.012		K 0.011
PCB 83/108	K 0.027	< 0.015	K 0.007	< 0.014	< 0.014	< 0.010	< 0.011	K 0.010	K 0.026	K 0.030	< 0.008		K 0.019
PCB 84	K 0.038	< 0.012	< 0.006	< 0.012	K 0.013	K 0.014	< 0.009	K 0.021	K 0.007	K 0.013	< 0.007		< 0.009
PCB 85/120	K 0.714	K 0.117	K 0.073	K 0.035	K 0.088	K 0.186	K 0.042	K 0.105	K 0.392	K 0.615	< 0.012		K 0.638
PCB 86/97	0.527	K 0.036	K 0.036	K 0.031	K 0.039	0.065	K 0.014	0.053	0.078	K 0.090	< 0.012		0.107
PCB 87/115/116	0.856	K 0.026	0.088	K 0.069	K 0.064	K 0.094	K 0.030	0.11	K 0.202	K 0.129	< 0.012	104	K 0.184
PCB 88/121	K 0.011	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	K 0.005	K 0.009	< 0.008		< 0.011
PCB 89/90/101	2.86	0.108	0.368	0.201	0.207	0.309	K 0.059	0.313	0.193	0.266	< 0.007	97.3	0.263
PCB 91	K 0.123	< 0.015	< 0.007	< 0.014	< 0.014	K 0.025	< 0.011	K 0.022	0.026	K 0.020	< 0.008		K 0.018
PCB 92	0.333	K 0.020	0.048	0.04	0.049	0.075	K 0.013	0.058	0.084	0.122	< 0.007		0.115
PCB 93/95	0.699	K 0.021	0.074	K 0.077	0.076	0.096	K 0.023	0.139	0.038	K 0.053	< 0.008	96.7	K 0.051

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 94	< 0.011	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	K 0.013	< 0.008		< 0.011
PCB 96	< 0.011	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	< 0.003	< 0.008		< 0.011
PCB 98/102	K 0.016	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	K 0.006	< 0.008		< 0.011
PCB 99	1.44	0.253	0.21	0.183	0.232	0.414	0.156	0.245	0.554	0.971	< 0.007	98.9	0.962
PCB 100	< 0.011	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	K 0.012	< 0.008		< 0.011
PCB 103	< 0.011	< 0.015	< 0.007	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	< 0.003	< 0.008		< 0.011
PCB 104	< 0.008	< 0.010	< 0.005	< 0.010	< 0.010	< 0.007	< 0.007	< 0.004	< 0.004	K 0.004	< 0.006	82.5	< 0.007
PCB 105/127	1.02	0.18	0.136	0.108	0.144	0.237	0.104	0.161	0.389	0.667	< 0.008	102	0.664
PCB 106/118	3.12	0.584	0.411	0.372	0.481	0.797	0.329	0.5	1.22	2.03	< 0.008	96.7	2.05
PCB 107/109	0.273	0.062	K 0.041	0.04	K 0.057	0.082	K 0.029	0.048	0.133	0.243	< 0.008		0.258
PCB 110	1.93	0.176	0.261	0.126	0.211	0.24	K 0.092	0.27	0.358	0.47	< 0.008	102	0.503
PCB 111/117	K 0.100	K 0.031	K 0.014	< 0.004	< 0.020	K 0.010	K 0.012	K 0.017	K 0.025	K 0.084	< 0.012		< 0.011
PCB 112	< 0.011	< 0.015	K 0.008	< 0.014	< 0.014	< 0.010	< 0.011	< 0.006	< 0.005	K 0.010	< 0.008		< 0.011
PCB 113	< 0.009	< 0.012	< 0.006	< 0.012	< 0.012	< 0.009	< 0.009	K 0.007	< 0.004	K 0.009	< 0.007		< 0.009
PCB 114	0.093	< 0.010	< 0.008	K 0.010	< 0.014	K 0.020	< 0.008	K 0.016	K 0.025	K 0.030	< 0.008	104	0.045
PCB 119	0.064	< 0.012	< 0.006	< 0.011	< 0.011	K 0.013	< 0.009	K 0.009	K 0.027	K 0.052	< 0.007		K 0.033
PCB 122	< 0.007	< 0.010	< 0.008	< 0.002	< 0.014	< 0.006	< 0.008	< 0.004	< 0.008	K 0.008	< 0.008		K 0.011
PCB 123	0.092	K 0.010	K 0.008	K 0.003	< 0.014	K 0.016	K 0.009	K 0.014	K 0.021	K 0.020	< 0.008	91.9	K 0.022
PCB 124	0.071	< 0.009	K 0.012	K 0.006	< 0.014	< 0.006	< 0.008	K 0.011	K 0.020	K 0.021	< 0.008		K 0.022
PCB 125	< 0.011	< 0.014	< 0.011	< 0.004	< 0.020	< 0.009	< 0.011	< 0.006	< 0.012	< 0.010	< 0.012		< 0.011
PCB 126	K 0.024	< 0.010	K 0.014	K 0.006	< 0.014	K 0.008	< 0.008	K 0.006	K 0.010	K 0.044	< 0.008	107	0.031
PCB 128	0.827	0.093	0.132	0.07	0.073	0.122	K 0.045	0.121	0.192	0.315	< 0.015		0.299
PCB 129	K 0.058	< 0.016	< 0.017	< 0.007	< 0.008	< 0.008	< 0.010	< 0.006	K 0.009	< 0.019	< 0.015		K 0.009
PCB 130	0.299	0.054	0.039	K 0.026	0.041	0.069	K 0.027	K 0.039	0.122	0.204	< 0.015		0.197
PCB 131/142	< 0.012	< 0.009	< 0.009	< 0.006	K 0.015	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 132/168	0.417	K 0.043	0.048	0.035	0.039	0.049	K 0.014	0.049	0.058	< 0.017	< 0.014		0.085
PCB 133	K 0.048	K 0.013	K 0.011	< 0.006	K 0.015	K 0.027	K 0.007	K 0.017	K 0.035	K 0.048	< 0.007		K 0.016
PCB 134/143	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014
PCB 135/144	0.354	0.052	K 0.045	0.036	K 0.041	K 0.066	K 0.025	0.07	0.099	0.151	< 0.007		0.167
PCB 136	K 0.073	< 0.009	< 0.009	K 0.010	K 0.011	< 0.010	< 0.006	0.036	K 0.009	< 0.019	< 0.007		< 0.014
PCB 137	0.29	0.037	0.045	K 0.020	K 0.017	0.038	K 0.022	0.036	0.068	K 0.111	< 0.013		0.118
PCB 138/163/164	5.81	0.904	0.952	0.568	0.665	1.15	0.509	0.937	2	3.3	< 0.013	100	3.3
PCB 139/149	1.96	0.121	0.253	0.102	0.136	0.152	0.061	0.212	0.232	0.294	< 0.007	103	0.318
PCB 140	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	K 0.010	< 0.019	< 0.007		< 0.014
PCB 141	0.569	0.031	0.09	K 0.020	K 0.027	0.044	K 0.014	0.058	0.055	K 0.054	< 0.013		0.065
PCB 145	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014
PCB 146	0.79	0.147	0.131	0.093	0.13	0.19	0.093	0.156	0.37	0.604	< 0.006		0.625
PCB 147	0.088	0.017	K 0.012	K 0.011	< 0.009	K 0.019	K 0.012	K 0.017	K 0.031	K 0.039	< 0.007		0.05
PCB 148	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014
PCB 150	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014
PCB 151	0.463	K 0.020	K 0.065	0.045	K 0.038	K 0.052	K 0.015	0.081	0.033	K 0.032	< 0.007	102	K 0.033
PCB 152	< 0.012	< 0.009	< 0.009	< 0.006	< 0.009	< 0.010	< 0.006	< 0.005	< 0.009	< 0.019	< 0.007		< 0.014
PCB 153	5.37	0.885	0.969	0.508	0.639	1.06	0.494	0.887	2.01	3.24	< 0.012	98.5	3.28
PCB 154	0.062	K 0.012	K 0.011	< 0.006	K 0.014	K 0.011	K 0.011	K 0.012	0.021	K 0.034	< 0.007		K 0.035
PCB 155	0.022	< 0.006	< 0.006	< 0.004	K 0.007	K 0.008	< 0.004	< 0.003	0.006	< 0.013	< 0.005	92.5	< 0.010
PCB 156	0.434	0.064	0.062	0.042	0.038	0.069	0.037	0.051	0.135	0.213	< 0.010	97.9	0.197
PCB 157	0.101	K 0.020	< 0.012	K 0.006	K 0.006	0.017	K 0.012	K 0.024	0.038	K 0.074	< 0.011	102	K 0.068
PCB 158/160	0.525	0.091	0.092	0.055	0.067	0.113	0.056	0.09	0.21	0.333	< 0.013		0.324
PCB 159	K 0.029	< 0.014	< 0.015	< 0.006	K 0.010	K 0.013	< 0.008	K 0.019	K 0.021	K 0.028	< 0.013		K 0.022

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 161	< 0.010	< 0.008	< 0.008	< 0.005	< 0.008	< 0.009	< 0.005	< 0.004	< 0.008	< 0.016	< 0.006		< 0.013
PCB 162	K 0.018	< 0.014	< 0.015	< 0.006	< 0.007	< 0.007	< 0.008	K 0.008	K 0.026	K 0.045	< 0.013		K 0.018
PCB 165	< 0.010	< 0.008	< 0.008	< 0.005	< 0.008	< 0.009	< 0.005	< 0.004	< 0.008	< 0.016	< 0.006		< 0.013
PCB 166	K 0.008	< 0.014	< 0.015	< 0.006	K 0.008	K 0.013	< 0.008	< 0.005	K 0.007	< 0.016	< 0.013		K 0.007
PCB 167	0.186	K 0.035	0.036	0.021	0.027	0.036	0.02	0.032	0.074	0.111	< 0.011	100	0.111
PCB 169	< 0.006	< 0.011	< 0.012	< 0.005	< 0.006	< 0.006	< 0.007	< 0.004	< 0.005	< 0.013	< 0.011	103	< 0.005
PCB 170/190	0.759	0.101	0.155	0.082	0.065	0.107	0.049	0.139	0.219	0.285	< 0.006	102	0.272
PCB 171	0.148	0.029	0.035	< 0.010	K 0.020	K 0.024	K 0.013	K 0.032	0.056	0.078	< 0.006		0.088
PCB 172/192	0.126	K 0.027	0.03	< 0.010	K 0.015	K 0.020	K 0.011	K 0.021	0.049	0.061	< 0.006		K 0.078
PCB 173	< 0.008	< 0.006	< 0.013	< 0.010	< 0.013	< 0.008	< 0.004	< 0.006	< 0.009	< 0.019	< 0.006		< 0.004
PCB 174/181	< 0.008	< 0.005	< 0.012	< 0.010	< 0.012	< 0.008	< 0.004	< 0.006	< 0.008	< 0.019	< 0.005		< 0.004
PCB 175	0.031	< 0.005	< 0.012	< 0.010	< 0.012	< 0.008	< 0.004	K 0.007	K 0.013	K 0.028	< 0.005		K 0.016
PCB 176	K 0.023	< 0.004	< 0.009	< 0.007	< 0.009	< 0.006	< 0.003	K 0.004	< 0.006	< 0.014	< 0.004		< 0.003
PCB 177	0.298	0.046	0.061	0.034	K 0.041	0.05	0.022	0.055	0.095	0.112	< 0.005		0.13
PCB 178	0.143	K 0.027	K 0.028	K 0.012	0.026	0.032	K 0.021	0.041	0.071	0.11	< 0.005		0.1
PCB 179	0.074	K 0.007	K 0.010	< 0.007	0.009	0.012	K 0.003	0.031	0.013	K 0.014	< 0.004		K 0.006
PCB 180	1.66	0.301	0.324	0.187	0.184	0.259	0.173	0.357	0.762	0.97	< 0.006	101	1.01
PCB 182/187	1.06	0.276	0.217	0.127	0.165	0.237	0.174	0.275	0.669	0.978	< 0.005	95.9	0.976
PCB 183	0.477	0.103	0.087	0.053	0.071	0.101	0.056	0.111	0.242	0.327	< 0.005	104	0.345
PCB 184	K 0.023	K 0.008	< 0.009	< 0.007	< 0.009	K 0.007	< 0.003	< 0.004	< 0.006	< 0.014	< 0.004		K 0.006
PCB 185	0.05	< 0.005	< 0.012	< 0.010	< 0.012	< 0.008	< 0.004	< 0.006	< 0.008	< 0.019	< 0.005		< 0.004
PCB 186	< 0.008	< 0.005	< 0.012	< 0.010	< 0.012	< 0.008	< 0.004	< 0.006	< 0.008	< 0.018	< 0.005		< 0.004
PCB 188	< 0.006	< 0.004	< 0.009	< 0.007	< 0.009	< 0.006	< 0.003	< 0.004	< 0.006	< 0.014	< 0.004	95.5	K 0.005
PCB 189	0.032	< 0.005	< 0.010	< 0.008	< 0.010	K 0.008	K 0.006	K 0.009	K 0.012	< 0.016	< 0.005	104	K 0.018
PCB 191	K 0.035	K 0.009	< 0.013	< 0.010	< 0.013	< 0.008	K 0.004	< 0.006	K 0.018	< 0.019	< 0.006		K 0.015

Appendix I. Continued

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g (wet weight basis)	ng/g	% Recov	ng/g (wet weight basis)
PCB 193	0.108	0.023	0.021	0.012	K 0.017	0.021	K 0.009	K 0.017	0.055	0.07	< 0.006		0.065
PCB 194	0.178	K 0.047	0.058	K 0.041	K 0.030	K 0.038	K 0.036	0.067	0.119	0.109	K 0.010	107	0.106
PCB 195	K 0.064	K 0.015	K 0.015	< 0.013	< 0.012	K 0.018	< 0.008	K 0.019	K 0.023	< 0.030	< 0.008		K 0.018
PCB 196/203	0.311	K 0.061	0.09	K 0.053	K 0.054	K 0.047	K 0.045	K 0.087	0.161	0.17	< 0.008	103	0.159
PCB 197	K 0.014	< 0.010	< 0.008	< 0.009	< 0.008	< 0.011	< 0.005	K 0.006	K 0.009	< 0.020	< 0.006		K 0.013
PCB 198	K 0.015	< 0.014	< 0.012	< 0.013	< 0.012	< 0.015	< 0.007	< 0.004	K 0.011	< 0.029	< 0.008		K 0.009
PCB 199	0.256	K 0.044	0.084	K 0.045	K 0.056	K 0.042	K 0.041	K 0.077	0.155	K 0.139	< 0.008		0.142
PCB 200	< 0.009	< 0.010	< 0.008	< 0.009	< 0.008	< 0.011	< 0.005	K 0.003	< 0.007	< 0.020	< 0.006		< 0.006
PCB 201	K 0.029	K 0.012	K 0.010	< 0.009	< 0.008	< 0.011	K 0.010	K 0.015	K 0.033	K 0.028	< 0.006		K 0.032
PCB 202	K 0.068	< 0.010	K 0.019	K 0.012	K 0.012	0.019	K 0.011	0.03	0.051	K 0.056	< 0.006	99.6	0.061
PCB 204	< 0.009	< 0.010	< 0.008	< 0.009	< 0.008	< 0.011	< 0.005	< 0.003	< 0.007	< 0.020	< 0.006		< 0.006
PCB 205	K 0.018	< 0.011	< 0.010	< 0.010	K 0.017	< 0.012	K 0.007	K 0.007	K 0.008	< 0.023	< 0.006	107	K 0.007
PCB 206	0.084	< 0.021	K 0.037	K 0.040	0.022	< 0.020	K 0.011	K 0.023	0.05	K 0.028	< 0.022	93.3	K 0.044
PCB 207	K 0.018	< 0.017	K 0.008	< 0.006	< 0.013	< 0.016	< 0.008	< 0.007	K 0.011	K 0.024	< 0.018		K 0.012
PCB 208	K 0.041	< 0.017	K 0.012	K 0.009	< 0.013	< 0.016	< 0.008	0.011	K 0.027	< 0.022	< 0.018	96.5	K 0.023
PCB 209	K 0.025	< 0.007	0.013	0.011	K 0.013	K 0.008	K 0.011	0.012	0.018	0.012	< 0.006	99.2	0.014
% Moisture	82.1	77.3	80.5	77.3	77.8	76.3	79.5	76.9	76.5	75.5			75.6
% Lipid	0.38	1.87	0.64	2.53	2.39	2.3	1.27	2.48	3.58	4.69			4.56

Appendix J. PCBs in burbot and kokanee (2008 project)

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 1	< 0.025	< 0.029	< 0.011	< 0.011	< 0.030	< 0.012	< 0.006	< 0.006	< 0.009	K 0.013	< 0.008	< 0.007	91.1	< 0.013
PCB 2	< 0.026	< 0.030	< 0.011	< 0.011	< 0.031	< 0.012	< 0.006	< 0.006	< 0.010	< 0.007	< 0.008	< 0.007		< 0.014
PCB 3	< 0.026	< 0.030	< 0.011	< 0.011	< 0.031	< 0.012	< 0.006	< 0.006	< 0.010	< 0.007	< 0.008	< 0.007	94	< 0.014
PCB 4/10	< 0.020	< 0.032	< 0.023	< 0.025	< 0.051	< 0.048	< 0.021	< 0.019	< 0.019	< 0.014	< 0.019	< 0.026	93	< 0.051
PCB 5/8	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	< 0.011	< 0.010	< 0.010	< 0.007	< 0.010	< 0.014	97.3	< 0.028
PCB 6	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	< 0.011	< 0.010	< 0.010	< 0.007	< 0.010	< 0.014		< 0.028
PCB 7/9	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	K 0.016	K 0.112	K 0.016	K 0.017	K 0.011	< 0.014		< 0.028
PCB 11	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	< 0.011	< 0.010	< 0.010	< 0.007	< 0.010	< 0.014		< 0.028
PCB 12/13	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	< 0.011	< 0.010	< 0.010	< 0.007	< 0.010	< 0.014		< 0.028
PCB 14	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.025	< 0.011	< 0.010	< 0.010	< 0.007	< 0.010	< 0.014		< 0.028
PCB 15	< 0.011	< 0.017	< 0.012	< 0.013	< 0.027	< 0.026	< 0.012	< 0.011	< 0.011	< 0.008	< 0.011	< 0.014	97.6	< 0.029
PCB 16/32	< 0.011	< 0.019	< 0.022	< 0.017	< 0.041	< 0.019	< 0.012	< 0.013	< 0.015	< 0.016	< 0.016	< 0.017		< 0.027
PCB 17	< 0.011	< 0.019	< 0.022	< 0.017	< 0.041	< 0.019	< 0.012	< 0.013	< 0.015	< 0.016	< 0.016	< 0.017		< 0.027
PCB 18	< 0.011	< 0.019	< 0.022	< 0.017	< 0.041	< 0.019	< 0.012	< 0.013	< 0.015	< 0.016	< 0.016	< 0.017	94.5	< 0.027
PCB 19	< 0.012	< 0.021	< 0.024	< 0.018	< 0.044	< 0.021	< 0.013	< 0.014	< 0.016	< 0.018	< 0.017	< 0.018	91.9	< 0.029
PCB 20/21/33	< 0.019	< 0.018	< 0.013	< 0.013	< 0.033	< 0.016	< 0.011	< 0.013	< 0.014	< 0.011	< 0.019	< 0.015		< 0.011
PCB 22	< 0.019	< 0.018	< 0.013	< 0.013	< 0.033	< 0.016	< 0.011	< 0.013	< 0.014	< 0.011	< 0.019	< 0.015		< 0.011
PCB 23/34	< 0.007	< 0.011	< 0.013	< 0.010	< 0.024	< 0.011	< 0.008	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010	90.2	< 0.017
PCB 24/27	< 0.011	< 0.019	< 0.022	< 0.017	< 0.041	< 0.019	< 0.012	< 0.013	< 0.015	< 0.016	< 0.016	< 0.017		< 0.027
PCB 25	< 0.007	< 0.011	< 0.013	< 0.010	< 0.024	< 0.011	< 0.008	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010		< 0.017
PCB 26	< 0.007	< 0.011	< 0.013	< 0.010	< 0.024	< 0.011	< 0.008	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010		< 0.017
PCB 28	< 0.007	< 0.012	< 0.013	< 0.010	< 0.025	< 0.011	< 0.007	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010	100	< 0.016
PCB 29	< 0.007	< 0.011	< 0.013	< 0.010	< 0.024	< 0.011	< 0.008	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010		< 0.017

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 30	< 0.011	< 0.019	< 0.022	< 0.017	< 0.041	< 0.019	< 0.012	< 0.013	< 0.015	< 0.016	< 0.016	< 0.017		< 0.027
PCB 31	< 0.007	< 0.011	< 0.013	< 0.010	< 0.024	< 0.011	< 0.008	< 0.008	< 0.009	< 0.010	< 0.010	< 0.010	92.8	< 0.017
PCB 35	< 0.020	< 0.018	< 0.014	< 0.013	< 0.034	< 0.017	< 0.011	< 0.014	< 0.015	< 0.012	< 0.020	< 0.015		< 0.012
PCB 36	< 0.019	< 0.018	< 0.013	< 0.013	< 0.033	< 0.016	< 0.011	< 0.013	< 0.014	< 0.011	< 0.019	< 0.015		< 0.011
PCB 37	< 0.020	< 0.018	< 0.014	< 0.013	< 0.034	< 0.017	< 0.011	< 0.014	< 0.015	< 0.012	< 0.020	< 0.015	97.6	< 0.012
PCB 38	< 0.020	< 0.018	< 0.014	< 0.013	< 0.034	< 0.017	< 0.011	< 0.014	< 0.015	< 0.012	< 0.020	< 0.015		< 0.012
PCB 39	< 0.019	< 0.018	< 0.013	< 0.013	< 0.033	< 0.016	< 0.011	< 0.013	< 0.014	< 0.011	< 0.019	< 0.015		< 0.011
PCB 40	< 0.023	< 0.023	< 0.022	< 0.024	< 0.059	< 0.034	< 0.017	< 0.015	< 0.028	< 0.024	< 0.022	< 0.034	98	< 0.030
PCB 41/64/68/71	< 0.013	< 0.019	< 0.020	< 0.022	< 0.053	< 0.035	< 0.013	< 0.009	< 0.012	< 0.017	< 0.012	< 0.023		< 0.025
PCB 42/59	< 0.013	< 0.019	< 0.020	< 0.022	< 0.053	< 0.035	< 0.013	< 0.009	< 0.012	< 0.017	< 0.012	< 0.023		< 0.025
PCB 43/49	< 0.010	< 0.015	< 0.015	< 0.017	< 0.040	< 0.027	< 0.009	< 0.006	< 0.009	< 0.012	< 0.009	< 0.018	93	< 0.019
PCB 44	< 0.013	< 0.019	< 0.020	< 0.022	< 0.053	< 0.035	< 0.013	< 0.009	< 0.012	< 0.017	< 0.012	< 0.023	93.7	< 0.025
PCB 45	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 46	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 47/48/75	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 50	< 0.009	< 0.014	< 0.014	< 0.015	< 0.037	< 0.025	< 0.009	< 0.006	< 0.008	< 0.011	< 0.008	< 0.016		< 0.017
PCB 51	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 52/73	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	0.012	K 0.010	0.016	0.017	< 0.020	90.5	< 0.021
PCB 53	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 54	< 0.009	< 0.014	< 0.014	< 0.015	< 0.037	< 0.025	< 0.009	< 0.006	< 0.008	< 0.011	< 0.008	< 0.016	86.5	< 0.017
PCB 55	< 0.012	< 0.011	< 0.011	< 0.012	< 0.029	< 0.017	< 0.008	< 0.007	< 0.014	< 0.012	< 0.011	< 0.017		< 0.015
PCB 56/60	< 0.012	< 0.011	< 0.011	< 0.012	< 0.029	< 0.017	< 0.008	< 0.007	< 0.014	< 0.012	< 0.011	< 0.017	98.7	< 0.015
PCB 57	< 0.023	< 0.023	< 0.022	< 0.024	< 0.059	< 0.034	< 0.017	< 0.015	< 0.028	< 0.024	< 0.022	< 0.034		< 0.030

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 58	< 0.023	< 0.023	< 0.022	< 0.024	< 0.059	< 0.034	< 0.017	< 0.015	< 0.028	< 0.024	< 0.022	< 0.034		< 0.030
PCB 61/74	< 0.011	< 0.011	< 0.010	< 0.011	< 0.028	< 0.016	< 0.008	< 0.008	< 0.014	< 0.012	< 0.011	< 0.016		< 0.015
PCB 62/65	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 63	< 0.011	< 0.011	< 0.010	< 0.011	< 0.028	< 0.016	< 0.008	< 0.008	< 0.014	< 0.012	< 0.011	< 0.016		< 0.015
PCB 66/80	< 0.011	< 0.011	< 0.010	< 0.011	< 0.028	< 0.016	< 0.008	< 0.008	< 0.014	< 0.012	< 0.011	< 0.016	93.3	< 0.015
PCB 67	< 0.023	< 0.023	< 0.022	< 0.024	< 0.059	< 0.034	< 0.017	< 0.015	< 0.028	< 0.024	< 0.022	< 0.034		< 0.030
PCB 69	< 0.011	< 0.017	< 0.017	< 0.019	< 0.045	< 0.030	< 0.010	< 0.007	< 0.010	< 0.014	< 0.010	< 0.020		< 0.021
PCB 70/76	< 0.011	< 0.011	< 0.010	< 0.011	< 0.028	< 0.016	< 0.008	< 0.008	< 0.014	< 0.012	< 0.011	< 0.016		< 0.015
PCB 72	< 0.013	< 0.019	< 0.020	< 0.022	< 0.053	< 0.035	< 0.013	< 0.009	< 0.012	< 0.017	< 0.012	< 0.023		< 0.025
PCB 77	< 0.020	< 0.012	< 0.008	< 0.024	< 0.030	< 0.014	< 0.008	< 0.018	< 0.013	< 0.010	< 0.009	< 0.018	104	< 0.011
PCB 78	< 0.020	< 0.012	< 0.008	< 0.024	< 0.030	< 0.014	< 0.008	< 0.018	< 0.013	< 0.010	< 0.009	< 0.018		< 0.011
PCB 79	< 0.020	< 0.012	< 0.008	< 0.024	< 0.030	< 0.014	< 0.008	< 0.018	< 0.013	< 0.010	< 0.009	< 0.018		< 0.011
PCB 81	< 0.020	< 0.012	< 0.008	< 0.024	< 0.030	< 0.014	< 0.008	< 0.018	< 0.013	< 0.010	< 0.009	< 0.018	101	< 0.011
PCB 82	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	< 0.007	< 0.013	< 0.010	< 0.010	< 0.019		< 0.020
PCB 83/108	< 0.020	< 0.032	< 0.010	< 0.019	< 0.025	< 0.021	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 84	< 0.017	< 0.028	< 0.009	< 0.017	< 0.022	< 0.018	< 0.007	< 0.010	< 0.009	< 0.008	< 0.005	< 0.016		< 0.020
PCB 85/120	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	< 0.007	< 0.013	< 0.010	< 0.010	< 0.019		< 0.020
PCB 86/97	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	< 0.007	< 0.013	< 0.010	< 0.010	< 0.019		< 0.020
PCB 87/115/116	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	0.009	< 0.013	< 0.010	< 0.010	< 0.019	94.8	< 0.020
PCB 88/121	< 0.021	< 0.034	K 0.029	< 0.020	K 0.047	K 0.023	K 0.017	K 0.020	K 0.024	K 0.022	K 0.027	< 0.019		K 0.026
PCB 89/90/101	0.019	< 0.028	0.01	< 0.017	< 0.022	< 0.018	0.012	0.032	0.041	0.027	0.032	< 0.016	95.8	< 0.020
PCB 91	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 92	< 0.017	< 0.028	< 0.009	< 0.017	< 0.022	< 0.018	< 0.007	< 0.010	< 0.009	< 0.008	K 0.006	< 0.016		< 0.020

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 93/95	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	0.017	0.026	0.024	0.021	< 0.019	96.9	< 0.024
PCB 94	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 96	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 98/102	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 99	< 0.016	< 0.026	0.009	< 0.016	< 0.021	< 0.017	0.01	0.014	0.015	0.012	0.011	< 0.015	97.8	< 0.020
PCB 100	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 103	< 0.021	< 0.034	< 0.011	< 0.020	< 0.027	< 0.022	< 0.009	< 0.012	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 104	< 0.014	< 0.023	< 0.007	< 0.014	< 0.018	< 0.015	< 0.006	< 0.008	< 0.007	< 0.007	< 0.005	< 0.013	91.5	< 0.017
PCB 105/127	< 0.013	< 0.017	< 0.010	< 0.011	< 0.021	< 0.012	< 0.009	< 0.005	< 0.009	< 0.007	K 0.009	< 0.013	96.4	< 0.014
PCB 106/118	0.015	< 0.016	< 0.010	< 0.012	< 0.023	0.022	0.011	0.017	0.021	K 0.014	0.013	< 0.014	95.8	< 0.014
PCB 107/109	< 0.013	< 0.017	< 0.010	< 0.012	< 0.021	< 0.012	< 0.009	< 0.005	< 0.009	< 0.007	< 0.007	< 0.013		< 0.014
PCB 110	< 0.013	< 0.017	< 0.010	< 0.012	< 0.021	< 0.012	< 0.009	0.02	0.024	0.015	K 0.021	< 0.013	96.4	< 0.014
PCB 111/117	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	< 0.007	< 0.013	< 0.010	< 0.010	< 0.019		< 0.020
PCB 112	< 0.020	< 0.032	< 0.010	< 0.019	< 0.025	< 0.021	< 0.009	K 0.013	< 0.010	< 0.010	< 0.007	< 0.019		< 0.024
PCB 113	< 0.017	< 0.028	< 0.009	< 0.017	< 0.022	< 0.018	< 0.007	< 0.010	< 0.009	< 0.008	< 0.005	< 0.016		< 0.020
PCB 114	< 0.013	< 0.017	< 0.010	< 0.011	< 0.021	< 0.012	< 0.009	< 0.005	< 0.009	< 0.007	< 0.007	< 0.013	95.3	< 0.014
PCB 119	< 0.016	< 0.026	< 0.008	< 0.016	< 0.021	< 0.017	< 0.007	< 0.009	< 0.008	< 0.008	< 0.005	< 0.015		< 0.020
PCB 122	< 0.013	< 0.017	< 0.010	< 0.011	< 0.021	< 0.012	< 0.009	< 0.005	< 0.009	< 0.007	< 0.007	< 0.013		< 0.014
PCB 123	< 0.014	< 0.016	< 0.010	< 0.012	< 0.023	< 0.013	< 0.009	< 0.005	< 0.009	< 0.007	< 0.006	< 0.014	90.2	< 0.014
PCB 124	< 0.013	< 0.017	< 0.010	< 0.012	< 0.021	< 0.012	< 0.009	< 0.005	< 0.009	< 0.007	< 0.007	< 0.013		< 0.014
PCB 125	< 0.019	< 0.025	< 0.015	< 0.017	< 0.031	< 0.018	< 0.014	< 0.007	< 0.013	< 0.010	< 0.010	< 0.019		< 0.020
PCB 126	< 0.013	< 0.017	< 0.010	< 0.012	< 0.021	< 0.012	< 0.010	< 0.005	< 0.010	< 0.007	< 0.007	< 0.013	94.5	< 0.014
PCB 128	< 0.016	< 0.019	< 0.011	< 0.017	< 0.055	< 0.016	< 0.017	< 0.008	< 0.012	< 0.008	< 0.010	< 0.022		< 0.012
PCB 129	< 0.016	< 0.019	< 0.011	< 0.017	< 0.055	< 0.016	< 0.017	< 0.008	< 0.012	< 0.008	< 0.010	< 0.022		< 0.012

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 130	< 0.016	< 0.019	< 0.011	< 0.017	< 0.055	< 0.016	< 0.017	< 0.008	< 0.012	< 0.008	< 0.010	< 0.022		< 0.012
PCB 131/142	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 132/168	< 0.014	< 0.017	< 0.010	< 0.016	< 0.049	< 0.015	< 0.015	0.007	< 0.011	< 0.007	< 0.009	< 0.020		< 0.011
PCB 133	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 134/143	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 135/144	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 136	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 137	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	< 0.006	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 138/163/164	0.082	< 0.016	0.029	K 0.021	< 0.046	0.039	0.03	0.061	0.09	0.029	0.028	< 0.019	97.4	0.029
PCB 139/149	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	0.044	0.054	0.021	K 0.026	< 0.021	101	< 0.009
PCB 140	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 141	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	0.008	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 145	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 146	< 0.011	< 0.009	< 0.007	< 0.012	< 0.021	< 0.012	< 0.007	0.009	0.012	< 0.005	< 0.010	< 0.018		< 0.008
PCB 147	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 148	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 150	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 151	< 0.013	< 0.011	< 0.009	< 0.015	< 0.026	< 0.015	< 0.009	0.014	0.02	0.009	< 0.012	< 0.022	97.1	< 0.010
PCB 152	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 153	0.098	0.026	0.039	0.027	< 0.042	0.049	0.035	0.083	0.09	0.037	0.04	< 0.017	102	K 0.048
PCB 154	< 0.013	< 0.010	< 0.008	< 0.014	< 0.025	< 0.014	< 0.008	< 0.007	< 0.009	< 0.006	< 0.011	< 0.021		< 0.009
PCB 155	< 0.009	< 0.007	< 0.006	< 0.010	< 0.017	< 0.010	< 0.006	< 0.005	< 0.006	< 0.004	< 0.008	< 0.014	90.8	< 0.006
PCB 156	< 0.010	< 0.012	< 0.007	< 0.011	< 0.036	< 0.011	< 0.012	< 0.005	< 0.008	< 0.005	< 0.007	< 0.014	93.7	< 0.008
PCB 157	< 0.011	< 0.013	< 0.007	< 0.012	< 0.037	< 0.011	< 0.012	< 0.005	< 0.009	< 0.005	< 0.007	< 0.015	92.6	< 0.008

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 158/160	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	< 0.006	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 159	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	< 0.006	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 161	< 0.011	< 0.009	< 0.007	< 0.012	< 0.021	< 0.012	< 0.007	< 0.006	< 0.008	< 0.005	< 0.010	< 0.018		< 0.008
PCB 162	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	< 0.006	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 165	< 0.011	< 0.009	< 0.007	< 0.012	< 0.021	< 0.012	< 0.007	< 0.006	< 0.008	< 0.005	< 0.010	< 0.018		< 0.008
PCB 166	< 0.013	< 0.016	< 0.009	< 0.015	< 0.046	< 0.014	< 0.015	< 0.006	< 0.011	< 0.006	< 0.009	< 0.019		< 0.010
PCB 167	< 0.011	< 0.013	< 0.007	< 0.012	< 0.037	< 0.011	< 0.012	< 0.005	< 0.009	< 0.005	< 0.007	< 0.015	94.6	< 0.008
PCB 169	< 0.011	< 0.013	< 0.007	< 0.012	< 0.037	< 0.011	< 0.012	< 0.005	< 0.009	< 0.005	< 0.007	< 0.015	97	< 0.008
PCB 170/190	0.028	< 0.015	0.01	< 0.012	< 0.037	< 0.020	< 0.013	0.02	0.023	< 0.006	< 0.009	< 0.018	92	< 0.010
PCB 171	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 172/192	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 173	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 167	< 0.011	< 0.013	< 0.007	< 0.012	< 0.037	< 0.011	< 0.012	< 0.005	< 0.009	< 0.005	< 0.007	< 0.015	94.6	< 0.008
PCB 169	< 0.011	< 0.013	< 0.007	< 0.012	< 0.037	< 0.011	< 0.012	< 0.005	< 0.009	< 0.005	< 0.007	< 0.015	97	< 0.008
PCB 170/190	0.028	< 0.015	0.01	< 0.012	< 0.037	< 0.020	< 0.013	0.02	0.023	< 0.006	< 0.009	< 0.018	92	< 0.010
PCB 171	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 172/192	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 174/181	< 0.011	< 0.013	< 0.007	< 0.010	< 0.031	< 0.017	< 0.011	0.013	< 0.009	< 0.005	< 0.008	< 0.015		< 0.009
PCB 175	< 0.011	< 0.013	< 0.007	< 0.010	< 0.032	< 0.017	< 0.010	< 0.009	< 0.009	< 0.005	< 0.008	< 0.015		< 0.008
PCB 176	< 0.009	< 0.010	< 0.005	< 0.008	< 0.024	< 0.013	< 0.008	< 0.007	< 0.007	< 0.004	< 0.006	< 0.011		< 0.006
PCB 177	< 0.011	< 0.013	< 0.007	< 0.010	< 0.031	< 0.017	< 0.011	< 0.009	0.012	< 0.005	< 0.008	< 0.015		< 0.009
PCB 178	< 0.011	< 0.013	< 0.007	< 0.010	< 0.032	< 0.017	< 0.010	< 0.009	< 0.009	< 0.005	< 0.008	< 0.015		< 0.008
PCB 179	< 0.009	< 0.010	< 0.005	< 0.008	< 0.024	< 0.013	< 0.008	< 0.007	< 0.007	< 0.004	< 0.006	< 0.011		< 0.006
PCB 180	0.068	< 0.013	K 0.024	< 0.011	< 0.032	0.024	K 0.022	0.044	0.065	0.023	0.021	< 0.016	92.3	K 0.027
PCB 182/187	0.015	< 0.013	< 0.007	< 0.010	< 0.032	< 0.017	< 0.010	0.035	0.05	K 0.013	0.014	< 0.015	92.6	< 0.008

Appendix J. Continued

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	KD1	KD2	KN1	KN2	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-18	L12349-19	L12349-20	L12349-21	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.97 g (wet)	10.1 g (wet)	10.0 g (wet)	9.78 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)											ng/g	% Recov	ng/g (wet weight basis)
PCB 183	0.019	< 0.013	< 0.007	< 0.010	< 0.031	< 0.017	< 0.011	0.011	0.017	< 0.005	< 0.008	< 0.015	97	< 0.009
PCB 184	< 0.009	< 0.010	< 0.005	< 0.008	< 0.024	< 0.013	< 0.008	< 0.007	< 0.007	< 0.004	< 0.006	< 0.011		< 0.006
PCB 185	< 0.011	< 0.013	< 0.007	< 0.010	< 0.031	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.015		< 0.009
PCB 186	< 0.011	< 0.013	< 0.007	< 0.010	< 0.032	< 0.017	< 0.010	< 0.009	< 0.009	< 0.005	< 0.008	< 0.015		< 0.008
PCB 188	< 0.009	< 0.010	< 0.005	< 0.008	< 0.024	< 0.013	< 0.008	< 0.007	< 0.007	< 0.004	< 0.006	< 0.011	93.2	< 0.006
PCB 189	< 0.010	< 0.011	< 0.006	< 0.009	< 0.026	< 0.014	< 0.009	< 0.008	< 0.008	< 0.004	< 0.007	< 0.013	92.3	< 0.007
PCB 191	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 193	< 0.012	< 0.013	< 0.007	< 0.011	< 0.032	< 0.017	< 0.011	< 0.009	< 0.009	< 0.005	< 0.008	< 0.016		< 0.009
PCB 194	< 0.030	< 0.023	< 0.007	< 0.027	< 0.027	< 0.009	< 0.018	K 0.007	K 0.013	< 0.011	< 0.012	< 0.017	92.9	< 0.016
PCB 195	< 0.030	< 0.023	< 0.007	< 0.027	< 0.027	< 0.009	< 0.018	< 0.007	< 0.008	< 0.011	< 0.012	< 0.017		< 0.016
PCB 196/203	< 0.030	< 0.023	< 0.007	< 0.027	< 0.026	< 0.009	< 0.017	0.009	0.016	< 0.010	< 0.011	< 0.017	96.8	< 0.016
PCB 197	< 0.021	< 0.016	< 0.005	< 0.019	< 0.019	< 0.006	< 0.012	< 0.005	< 0.005	< 0.007	< 0.008	< 0.012		< 0.011
PCB 198	< 0.030	< 0.023	< 0.007	< 0.027	< 0.026	< 0.009	< 0.017	< 0.007	< 0.008	< 0.010	< 0.011	< 0.017		< 0.016
PCB 199	< 0.030	< 0.023	< 0.007	< 0.027	< 0.026	< 0.009	< 0.017	K 0.011	0.012	< 0.010	< 0.011	< 0.017		< 0.016
PCB 200	< 0.021	< 0.016	< 0.005	< 0.019	< 0.019	< 0.006	< 0.012	< 0.005	< 0.005	< 0.007	< 0.008	< 0.012		< 0.011
PCB 201	< 0.021	< 0.016	< 0.005	< 0.019	< 0.019	< 0.006	< 0.012	< 0.005	< 0.005	< 0.007	< 0.008	< 0.012		< 0.011
PCB 202	< 0.023	< 0.017	< 0.005	< 0.020	< 0.020	< 0.007	< 0.013	< 0.005	< 0.006	< 0.008	< 0.009	< 0.013	88.5	< 0.012
PCB 204	< 0.021	< 0.016	< 0.005	< 0.019	< 0.019	< 0.006	< 0.012	< 0.005	< 0.005	< 0.007	< 0.008	< 0.012		< 0.011
PCB 205	< 0.023	< 0.018	< 0.005	< 0.021	< 0.021	< 0.007	< 0.014	< 0.005	< 0.006	< 0.008	< 0.009	< 0.013	91.3	< 0.012
PCB 206	< 0.023	< 0.041	< 0.021	< 0.022	< 0.068	< 0.022	< 0.015	< 0.029	< 0.018	< 0.017	< 0.017	< 0.037	93.8	< 0.022
PCB 207	< 0.018	< 0.032	< 0.017	< 0.017	< 0.054	< 0.017	< 0.012	< 0.024	< 0.015	< 0.014	< 0.014	< 0.029		< 0.019
PCB 208	< 0.018	< 0.032	< 0.017	< 0.017	< 0.054	< 0.017	< 0.012	< 0.024	< 0.015	< 0.014	< 0.014	< 0.029	92.3	< 0.019
PCB 209	< 0.008	< 0.010	< 0.013	< 0.015	< 0.011	< 0.012	< 0.009	< 0.006	< 0.006	< 0.004	< 0.006	< 0.009	98.6	< 0.009
% Moisture	81.2	80.4	81.1	81.1	81	80.2	81.1	77.4	77.6	76.6	76.6			81
% Lipid	0.71	0.63	0.66	0.51	0.42	0.61	0.49	1	1.1	2.14	1.76			0.65

Appendix K. Organochlorine pesticides in whitefish and rainbow trout (2008 project)

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)										ng/g	% Recov	ng/g (wet weight basis)
Heptachlor epoxide	< 0.013	Q 0.047	< 0.010	Q 0.025	Q 0.031	Q 0.021	Q 0.035	Q 0.051	Q 0.085	Q 0.107	< 0.009	56.2	Q 0.152
Dieldrin	0.343	Q 0.100	Q 0.031	Q 0.101	0.128	Q 0.110	0.113	Q 0.187	Q 0.291	Q 0.304	< 0.003	119	Q 0.346
Endrin	< 0.012	0.015	< 0.012	0.015	0.018	< 0.029	< 0.009	0.022	0.035	0.033	< 0.003	115	0.035
Endrin aldehyde	< 0.016	< 0.017	< 0.016	< 0.015	< 0.023	< 0.039	< 0.012	< 0.023	< 0.028	< 0.027	< 0.005	20.7	< 0.035
Endrin ketone	< 0.002	< 0.004	< 0.002	< 0.001	Q 0.002	< 0.004	< 0.002	< 0.003	< 0.001	< 0.003	< 0.001	86.1	< 0.002
Methoxychlor	< 0.002	< 0.015	< 0.004	< 0.011	< 0.004	< 0.008	< 0.016	< 0.020	< 0.012	< 0.033	< 0.002	61.3	< 0.010
alpha-Endosulphan	Q 0.010	0.014	Q 0.010	0.037	0.052	0.044	0.011	0.018	Q 0.016	0.037	< 0.005	96.8	0.038
beta-Endosulphan	< 0.011	< 0.009	< 0.009	Q 0.008	< 0.013	< 0.022	< 0.010	< 0.012	< 0.027	< 0.016	< 0.058	96.3	< 0.016
Endosulphan sulphate	0.068	0.148	0.083	0.355	0.281	0.275	0.126	0.326	0.238	0.352	0.012	84	0.345
% Moisture	82.1	77.3	80.5	77.3	77.8	76.3	79.5	76.9	76.5	75.5			75.6
% Lipid	0.38	1.87	0.64	2.53	2.39	2.3	1.27	2.48	3.58	4.69			4.56

Appendix L. Organochlorine pesticides in burbot and kokanee (2008 project)

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	(KD1+KD2)	(KN1+KN2)	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-22	L12349-27	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.77 g (wet)	9.67 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)									ng/g	% Recov	ng/g (wet weight basis)
delta-HCH	< 0.031	< 0.034	< 0.036	< 0.051	< 0.028	< 0.033	< 0.052	< 0.15	< 0.12	< 0.003	67.9	< 0.045
Heptachlor epoxide	< 0.039	< 0.025	< 0.034	< 0.023	< 0.027	< 0.015	< 0.047	< 0.079	< 0.077	0.086	95.2	< 0.073
Dieldrin	< 0.012	< 0.010	< 0.015	< 0.006	< 0.012	0.014	< 0.071	0.027	0.053	< 0.005	106	0.014
Endrin	< 0.014	< 0.012	< 0.015	< 0.010	< 0.014	< 0.007	< 0.081	< 0.022	< 0.019	< 0.006	115	< 0.011
Endrin aldehyde	< 0.019	< 0.015	< 0.020	< 0.014	< 0.018	< 0.009	< 0.11	< 0.029	< 0.025	< 0.008	64.7	< 0.014
Endrin ketone	< 0.003	< 0.003	< 0.002	< 0.004	< 0.003	< 0.005	< 0.039	< 0.014	< 0.005	0.001	99.7	< 0.004
Methoxychlor	< 0.007	< 0.009	< 0.005	< 0.009	< 0.006	< 0.012	< 0.085	< 0.031	< 0.010	0.003	96.9	< 0.009
alpha-Endosulphan	< 0.011	< 0.008	< 0.012	< 0.007	< 0.009	< 0.006	< 0.041	< 0.008	< 0.014	< 0.004	91.1	< 0.008
beta-Endosulphan	< 0.014	< 0.010	< 0.014	< 0.009	< 0.012	< 0.007	< 0.058	< 0.012	< 0.018	< 0.006	91.8	< 0.010
Endosulphan sulphate	0.131	0.042	0.057	0.05	0.041	0.057	< 0.060	0.068	0.067	< 0.006	91.3	0.06
% Moisture	81.2	80.4	81.1	81.1	81	80.2	81.1	77.4	76.1			81
% Lipid	0.71	0.63	0.66	0.51	0.42	0.61	0.49	0.95	2.2			0.65

Appendix M. Organochlorine pesticides in whitefish and rainbow trout (2008)

CLIENT ID	RBT1	W8	RBT2	W1	W2	W3	W4	W5	W6	W7	Lab Blank	Spiked Matrix	W7 (Duplicate)
AXYS ID	L12349-1	L12349-10	L12349-2	L12349-3	L12349-4	L12349-5	L12349-6	L12349-7	L12349-8	L12349-9 (A)	WG28034-101	WG28034-102	WG28034-103 (DUP L12349-9)
WORKGROUP	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034	WG28034
Sample Size	10.1 g (wet)	10.0 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g (wet)	10.2 g (wet)	10.3 g (wet)	10.1 g (wet)	10.3 g (wet)	10.1 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)										ng/g	% Recov	ng/g (wet weight basis)
HexaCB	0.065	0.157	0.101	0.262	0.192	0.217	0.109	0.343	0.344	0.437	< 0.017	102	0.437
alpha-HCH	< 0.070	< 0.060	< 0.040	< 0.049	< 0.043	< 0.039	< 0.029	< 0.034	K 0.061	< 0.14	< 0.030	80.3	< 0.074
beta-HCH	< 0.078	< 0.084	< 0.053	< 0.047	< 0.057	< 0.040	< 0.032	< 0.052	< 0.039	< 0.089	< 0.056	99.8	< 0.074
gamma-HCH	< 0.081	< 0.080	< 0.048	< 0.043	< 0.034	< 0.043	< 0.022	< 0.025	< 0.034	< 0.063	< 0.045	97.8	< 0.039
delta-HCH	< 0.083	< 0.082	< 0.049	< 0.044	< 0.035	< 0.044	< 0.023	< 0.025	< 0.035	< 0.064	< 0.046	117	< 0.040
Heptachlor	< 0.11	< 0.044	< 0.053	< 0.042	K 0.075	K 0.174	< 0.042	K 0.135	< 0.028	< 0.18	K 0.208	103	< 0.045
Aldrin	< 0.061	< 0.058	< 0.032	< 0.039	< 0.055	K 0.065	K 0.045	< 0.052	K 0.040	< 0.051	< 0.044	94.6	< 0.056
trans-Chlordane	0.068	< 0.016	< 0.024	< 0.023	< 0.019	< 0.017	< 0.022	0.054	< 0.019	< 0.015	< 0.020	96.7	< 0.021
cis-Chlordane	0.147	0.039	0.056	< 0.027	K 0.050	K 0.048	K 0.028	0.107	0.085	K 0.076	< 0.023	98.2	K 0.078
Oxychlordane	< 0.33	K 0.285	< 0.12	< 0.16	< 0.12	0.222	K 0.174	< 0.22	0.762	K 2.00	< 0.086	96.2	0.983
trans-Nonachlor	0.756	0.409	0.115	0.148	0.189	0.354	0.217	0.513	0.872	1.29	< 0.011	98.8	1.33
cis-Nonachlor	0.369	0.226	0.071	0.119	0.127	0.202	0.142	0.287	0.515	0.789	< 0.013	109	0.854
Mirex	0.132	K 0.060	K 0.035	K 0.024	K 0.031	K 0.037	0.073	K 0.076	0.246	K 0.277	< 0.017	105	K 0.270
o,p'-DDE	< 0.010	0.29	0.051	0.249	0.359	0.242	0.169	0.288	0.651	0.906	< 0.007	95.1	0.881
p,p'-DDE	458	116	141	58.6	78.1	132	65.8	105	267	412	K 0.036	94.1	395
o,p'-DDD	0.266	0.178	0.298	0.335	0.459	0.241	0.105	0.504	0.373	0.481	< 0.008	94.9	0.483
p,p'-DDD	27.6	5.44	8.37	26.6	23	23.3	2.95	18.7	10.4	16.3	< 0.009	100	17.1
o,p'-DDT	2.52	0.522	0.435	0.111	0.215	0.326	0.283	1.04	1.09	1.44	< 0.009	94.8	1.49
p,p'-DDT	7.75	2.95	1.25	0.675	1.38	2.27	1.65	7.2	6.5	8.77	< 0.010	97.2	9.1
% Moisture	82.1	77.3	80.5	77.3	77.8	76.3	79.5	76.9	76.5	75.5			75.6
% Lipid	0.38	1.87	0.64	2.53	2.39	2.3	1.27	2.48	3.58	4.69			4.56

Appendix N. Organochlorine pesticides in burbot and kokanee (2008)

CLIENT ID	B1	B2	B3	B4	B5	B6	B7	(KD1+KD2)	(KN1+KN2)	Lab Blank	Spiked Matrix	B6 (Duplicate)
AXYS ID	L12349-11	L12349-12	L12349-13	L12349-14	L12349-15	L12349-16 (A)	L12349-17	L12349-22	L12349-27	WG28041-101	WG28041-102	WG28041-103 (DUP L12349-16)
WORKGROUP	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041	WG28041
Sample Size	10.0 g (wet)	9.90 g (wet)	10.1 g (wet)	10.1 g (wet)	10.2 g (wet)	10.1 g (wet)	10.2 g (wet)	9.00 g (wet)	9.67 g (wet)	10.0 g		10.0 g (wet)
UNITS	ng/g (wet weight basis)									ng/g	% Recov	ng/g (wet weight basis)
HexaCB	0.143	0.086	0.131	0.11	0.092	0.118	K 0.086	0.128	0.31	< 0.017	90.3	0.12
alpha-HCH	< 0.049	< 0.042	< 0.045	< 0.045	< 0.053	< 0.063	< 0.037	< 0.038	< 0.068	< 0.043	87.8	< 0.051
beta-HCH	< 0.061	< 0.057	< 0.057	< 0.051	< 0.11	< 0.081	< 0.044	< 0.039	< 0.044	< 0.058	92.3	< 0.070
gamma-HCH	< 0.054	< 0.055	< 0.052	< 0.045	< 0.085	< 0.048	< 0.052	< 0.037	< 0.061	< 0.044	90.8	< 0.066
Heptachlor	< 0.10	< 0.073	< 0.074	< 0.074	< 0.14	< 0.084	K 0.130	< 0.079	< 0.076	< 0.073	93.9	< 0.12
Aldrin	< 0.059	< 0.069	< 0.042	< 0.059	< 0.062	< 0.056	< 0.044	< 0.050	< 0.039	< 0.037	91.9	< 0.13
trans-Chlordane	< 0.021	< 0.017	< 0.014	< 0.019	< 0.036	< 0.013	< 0.016	< 0.013	< 0.014	< 0.035	97.4	< 0.029
cis-Chlordane	< 0.024	< 0.021	< 0.017	< 0.022	< 0.043	< 0.016	< 0.019	0.028	K 0.035	< 0.041	94.8	< 0.035
Oxychlordane	< 0.20	< 0.16	< 0.23	< 0.12	< 0.44	< 0.22	< 0.20	< 0.21	< 0.19	< 0.080	95.2	< 0.17
trans-Nonachlor	0.024	< 0.013	< 0.013	< 0.015	< 0.038	< 0.013	< 0.009	0.053	0.055	< 0.011	92.3	< 0.018
cis-Nonachlor	< 0.009	< 0.015	< 0.015	< 0.017	< 0.044	< 0.015	< 0.011	< 0.015	0.015	< 0.012	94.2	< 0.021
Mirex	< 0.027	< 0.022	< 0.020	< 0.031	< 0.038	< 0.028	< 0.018	< 0.028	< 0.028	< 0.024	99	< 0.035
o,p'-DDE	< 0.015	< 0.016	< 0.004	< 0.010	< 0.024	< 0.017	< 0.014	K 0.020	K 0.017	< 0.016	94.8	< 0.010
p,p'-DDE	1.93	0.513	0.968	0.545	0.414	1.46	1.37	2.5	1.84	< 0.019	87.4	1.48
o,p'-DDD	< 0.022	< 0.021	< 0.010	< 0.011	< 0.023	< 0.019	< 0.023	0.063	0.063	< 0.023	105	< 0.012
p,p'-DDD	0.281	0.075	0.121	0.055	< 0.058	0.206	0.115	0.476	0.474	< 0.016	99.4	0.21
o,p'-DDT	< 0.022	< 0.029	< 0.017	< 0.024	< 0.066	< 0.029	< 0.028	0.026	0.028	< 0.018	118	< 0.022
p,p'-DDT	0.063	< 0.030	< 0.017	< 0.024	< 0.067	< 0.029	< 0.032	0.165	0.154	< 0.018	97.3	< 0.026
% Moisture	81.2	80.4	81.1	81.1	81	80.2	81.1	77.4	76.1			81
% Lipid	0.71	0.63	0.66	0.51	0.42	0.61	0.49	0.95	2.2			0.65

Appendix O. Total metals scan in whitefish and rainbow trout (2008 project)

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Maxxam ID		N83675	N83676	N83677	N83678	N83679	N83680	N83681	N83682	N83683	N83684		
Sampling Date													
COC Number		F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109		
	Units	**RBT 1**	**RBT 2**	**W1**	**W2**	**W3**	**W4**	**W5**	**W6**	**W7**	**W8**	**RDL**	**QC Batch**
Total Metals by ICPMS													
Total Aluminum (Al)	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	2958574
Total Antimony (Sb)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Arsenic (As)	mg/kg	0.01	<0.01	0.03	0.04	0.06	0.10	0.04	0.10	0.11	0.17	0	2958574
Total Barium (Ba)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Bismuth (Bi)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Boron (B)	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	5	2958574
Total Cadmium (Cd)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	2958574
Total Calcium (Ca)	mg/kg	64	1850	609	124	365	371	957	702	593	151	10	2958574
Total Chromium (Cr)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	2958574
Total Cobalt (Co)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	2958574
Total Iron (Fe)	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	2958574
Total Lead (Pb)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	2958574
Total Magnesium (Mg)	mg/kg	234	295	300	275	306	255	313	289	293	273	10	2958574
Total Manganese (Mn)	mg/kg	<0.1	0.3	0.5	<0.1	0.3	0.2	0.3	0.3	0.2	0.1	0.1	2958574
Total Mercury (Hg)	mg/kg	0.09	0.10	0.06	0.09	0.11	0.21	0.09	0.23	0.19	0.14	0	2958574
Total Molybdenum (Mo)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Nickel (Ni)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Phosphorus (P)	mg/kg	2280	3810	2850	2620	2680	2560	3000	2970	3020	2740	10	2958574
Total Potassium (K)	mg/kg	3760	4100	3980	4010	4020	3460	3290	3550	3640	3490	10	2958574
Total Selenium (Se)	mg/kg	0.61	0.57	1.66	1.57	1.16	1.18	1.15	1.33	1.20	1.21	0	2958574
Total Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Sodium (Na)	mg/kg	416	399	422	397	445	689	522	558	533	528	10	2958574
Total Strontium (Sr)	mg/kg	0.1	2.4	1.8	0.3	1.0	1.1	2.8	2.1	2.0	0.4	0.1	2958574

Appendix O. Continued

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Maxxam ID		N83675	N83676	N83677	N83678	N83679	N83680	N83681	N83682	N83683	N83684		
Sampling Date													
COC Number		F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109	F128109		
	Units	**RBT 1**	**RBT 2**	**W1**	**W2**	**W3**	**W4**	**W5**	**W6**	**W7**	**W8**	**RDL**	**QC Batch**
Total Metals by ICPMS													
Total Thallium (Tl)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Tin (Sn)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Titanium (Ti)	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	2958574
Total Uranium (U)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Vanadium (V)	mg/kg	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	2958574
Total Zinc (Zn)	mg/kg	5.6	10.4	4.0	3.8	3.6	4.1	3.7	4.1	3.7	5.4	0.1	2958574

RDL = Reportable Detection Limit

Appendix P. Total metal scan in burbot and kokanee (2008 project)

ELEMENTS BY ATOMIC SPECTROSCOPY (TISSUE)

Maxxam ID		N83747	N83748	N83749	N83750	N83756	N83757	N83758	N83759	N83760	N83761	N83762		
Sampling Date														
COC Number		F128110	F128110	F128110	F128110	F128110	F128110	F128110	F128110	F128110	F128110	F128110		
	Units	**B1**	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**KD1**	**KD2**	**KN1**	**KN2**	**RDL**	**QC Batch**
Total Metals by ICPMS														
Total Aluminum (Al)	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	2958574
Total Antimony (Sb)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Arsenic (As)	mg/kg	0.06	0.03	0.04	0.02	0.02	0.04	0.03	0.02	0.02	0.03	0.02	0	2958574
Total Barium (Ba)	mg/kg	<0.1	<0.1	0.1	0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Beryllium (Be)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Bismuth (Bi)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Boron (B)	mg/kg	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	5	2958574
Total Cadmium (Cd)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	2958574
Total Calcium (Ca)	mg/kg	93	107	995	1250	114	166	1000	589	265	503	125	10	2958574
Total Chromium (Cr)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	2958574
Total Cobalt (Co)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Copper (Cu)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.5	2958574
Total Iron (Fe)	mg/kg	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	10	2958574
Total Lead (Pb)	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	2958574
Total Magnesium (Mg)	mg/kg	256	252	290	311	266	266	306	312	317	289	300	10	2958574
Total Manganese (Mn)	mg/kg	0.2	0.2	0.8	0.8	0.2	0.2	0.9	0.2	0.1	0.1	0.1	0.1	2958574
Total Mercury (Hg)	mg/kg	0.23	0.07	0.08	0.09	0.07	0.07	0.06	0.10	0.11	0.07	0.07	0	2958574
Total Molybdenum (Mo)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Nickel (Ni)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Phosphorus (P)	mg/kg	2210	2090	2750	3070	2200	2270	2820	3300	3080	2980	2990	10	2958574
Total Potassium (K)	mg/kg	3950	3610	3950	3940	3800	4010	3960	4450	4800	3970	4380	10	2958574
Total Selenium (Se)	mg/kg	0.46	0.31	0.31	0.30	0.33	0.32	0.30	0.50	0.47	0.25	0.28	0	2958574
Total Silver (Ag)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Sodium (Na)	mg/kg	477	537	657	545	555	490	460	596	602	508	482	10	2958574
Total Strontium (Sr)	mg/kg	0.1	0.1	1.7	2.1	0.2	0.2	1.7	0.7	0.3	0.6	0.1	0.1	2958574
Total Thallium (Tl)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Tin (Sn)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	2958574
Total Titanium (Ti)	mg/kg	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	2958574
Total Uranium (U)	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1	2958574
Total Vanadium (V)	mg/kg	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	2958574
Total Zinc (Zn)	mg/kg	6.0	3.9	5.1	4.4	4.9	5.2	4.0	5.2	4.9	8.0	5.3	0.1	2958574

RDL = Reportable Detection Limit

Appendix Q. PBDEs in kokanee, burbot, rainbow trout and whitefish (2008 project)

CLIENT ID	(KD1+KD2)	(B1+B2+B3+B4+B5+B6)	(RBT1+RBT2)	(W1+W2+W3+W4)	(W5+W6+W7+W8)	(KN1+KN2)	Lab Blank	Spiked Matrix	(B1+B2+B3+B4+B5+B6) (Duplicate)
AXYS ID	L12349-22	L12349-23 (A)	L12349-24	L12349-25	L12349-26	L12349-27	WG28042-101	WG28042-103	WG28042-104 (DUP L12349-23)
WORKGROUP	WG28042	WG28042	WG28042	WG28042	WG28042	WG28042	WG28042	WG28042	WG28042
Sample Size	7.29 g (wet)	10.2 g (wet)	10.3 g (wet)	10.5 g (wet)	10.6 g (wet)	7.56 g (wet)	10.0 g		10.1 g (wet)
UNITS	pg/g (wet weight basis)						pg/g	% Recov	pg/g (wet weight basis)
Br3-DPE-28/33	2.45	5.37	150	94.1	398	14.7	K 0.236	107	5.21
Br4-DPE-47	56.1	318	7440	2310	12200	556	6.44	108	295
Br5-DPE-99	37.8	21.4	6840	1680	10300	508	K 6.05	110	17.9
Br5-DPE-100	12.2	32.6	2650	620	3800	106	1.37	105	30.8
Br6-DPE-153	3.57	10.1	656	103	671	29.6	K 0.666	99.6	8.99
Br6-DPE-154	3.71	7.73	742	189	1200	30.9	0.683	103	7.35
Br7-DPE-183	0.919	0.888	4.53	K 2.20	6.39	K 0.942	0.545	101	0.867
Br10-DPE-209	101	108	76.7	K 72.8	136	K 97.5	101	115	108
% Moisture	86.7	79.8	81.7	77.3	76.8	76.5			80
% Lipid	0.95	0.55	0.45	2.09	3.05	2.2			0.58

Appendix R. Total mercury (Hg) concentration in burbot, whitefish, and rainbow trout (2008 project)

Sample ID	Date Sampled	Sample Type	Hg (ng)	Sample Wet Weight Added to Boat (g)	Net Total Hg Conc. (ng/g wet wt) (recovery corrected)
RBT1		sample	4.8	0.05089	89.2
RBT2		DupA1	4.51	0.05779	73.9
RBT2		DupA2	4.39	0.05682	73.2
W1		sample	2.12	0.05324	37.6
W2		sample	3.81	0.05472	65.9
W3		sample	3.81	0.05046	71.5
W4		sample	8.44	0.05117	156
W5		sample 1-US	2.88	0.05249	52
W6		DupC1	10.79	0.05618	182
W7		sample	8.64	0.05176	158
W8		sample	6.56	0.05203	119
B1		DupB1	8.67	0.04798	171
B1		DupB2	8.54	0.048	169
B2		sample	2.56	0.05157	47
B3		sample	3.35	0.05136	61.8
B4		sample	3.38	0.04606	69.6
B5		sample	3	0.05439	52.3
B6		sample	3	0.05117	55.6
B7		sample	2.42	0.05041	45.5
W6		DupC2	10.25	0.05667	171

Appendix S. Total mercury (Hg) concentration in kokanee (2008 project)

Sample ID	Date Sampled	Sample Type	Hg (ng)	Sample Dry Weight Added to Boat (g)	% wt Loss on Freeze-Drying	g Dry/g Wet	% Hg Recovery Used for Calculations	Hg Conc. (ng/g dry wt)	Net Total Hg Conc.(ng/g dry wt) (recovery corrected)	Net Total Hg Conc. (ng/g wet wt) (recovery corrected)
KD1		sample 1-US	4.13	0.01006	77.84	0.2216	97	410.96	424	94
KD2		sample	5.14	0.01177	77.8	0.222	97	436.89	450	99.9
KN1		DupA1	2.09	0.00962	76.74	0.2326	97	217.07	224	52.1
KN2		sample	2.65	0.01065	76.62	0.2338	97	248.7	256	59.9
KN1		DupA2	2.03	0.0096	76.74	0.2326	97	211.19	218	50.7