

CFB Gagetown Fact Finder Task 4

Fish and Freshwater Mussel Sampling

Report Summary

Available at: http://www.forces.gc.ca/site/Reports/defoliant/task4-summary_e.asp

Task 4: Fish and Freshwater Mussel Sampling Summary

- Sampling, analysis, and reporting conducted June through August 2007
- Laboratory analysis for concentrations of dioxins (polychlorinated dibenzo-*p*-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs))
- Focus on species that may accumulate dioxins and have potential to be consumed by people (American Eel, White Sucker, Brook Trout, Chain Pickerel, Eastern Pearlshell (freshwater mussel), and Eastern Elliptio (freshwater mussel))
- Tissues analysed were those normally consumed by people
 - Muscle tissue for fish species (small eels also had skin included)
 - Soft tissue only for freshwater mussels
- Samples collected from areas that are a focus of public attention and at the lower end of watersheds to represent worst case scenarios. These waterbodies were selected because sediment samples had previously been collected and analysed there (Swan Creek lake, Nerepis River and River George, and "Control" area at Brizley Stream (background conditions))

Samples collected and submitted for analysis

Species	Number of Samples Collected and Submitted			Total Submitted
	Swan Creek Lake	Nerepis River - River George	Brizley Stream	
American Eels	10	10	10	30
Chain Pickerel	10			10
Brook Trout		10		10
White Sucker			10	10
Freshwater Mussel (Eastern Eliptio)	10			10
Freshwater Mussel (Eastern Pearlshell)		10		10
Total Samples	30	30	20	80

"Canadian Food Inspection Agency (CFIA) has set 20 pg/g (parts per trillion) for 2,3,7,8-TCDD contaminant as an action level for Canadian fish (the level at which action is taken to remove a food product from the market as consumption of that food could pose a health risk). All samples analysed were well below this action level."

Additional Table prepared by M.E. Sears, using data presented in un-numbered Table in Summary of Full Task 4 report, prepared by G.A Packman & Associates, Environmental Consultants, available at:

http://www.forces.gc.ca/site/Reports/defoliant/FFReports/Task4/Task4_Final_e.pdf

Sampling Location	Species (n=10 for each)	Avg. 2005 PCDD/F TEQ (pg/g ww)	Range (pg/g ww)	Lipid (%)	Avg. Weight (g)	Av. TEQ / lipid (pg/g lipid)
Brizley Stream	American Eel	0.213	0.107 - 0.276	10.6	113	2.01
	White Sucker	0.23	0.218 - 0.272	1	104	23
Nerepis River	American Eel	0.164	0.038 - 0.376	15.3	90	1.07
	Brook Trout	0.143	0.132 - 0.191	2.3	140	6.22
	Eastern Pearlshell	0.098	0.058 - 0.184	0.7		14
Swan Creek Lake	American Eel	1.703	0.222 - 6.198	5.8	418	29.4
	Chain Pickerel	0.154	0.074 - 0.304	0.4	824	38.5
	Eastern Elliptio	0.386	0.203 - 0.641	1		38.6

A standard practice is to report TEQs normalized according to the lipid content of the material. This shows that the Swan Creek Lake is much more contaminated than the other two locations.

It is of note that hexachlorobenzene, and many dioxins of interest (e.g. 2,7-DCDD) were not analysed in this study.

If the fish had not been skinned the results would have been much higher, because dioxins would be concentrated in the fatty layer under the skin. Livers would also have shown much higher levels.