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DIOXIN MONITORING PROGRAM

Including data on Dioxin-like PCBs collected in the Surface Water Ambient Toxics Monitoring Program

2008

REPORT

DEPARTMENT OF ENVIRONMENTAL PROTECTION
AUGUSTA, MAINE

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DEPLW-0963

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GLOSSARY

CTEh=CTEh, 95th UCL - Coplanar PCB toxic equivalents with non-detects at half the detection level calculated at the 95^{th} percentile upper confidence limit on the mean

DMP- Dioxin Monitoring Program

DTEd- Dioxin toxic equivalents with non-detects at the detection level

DTEh=DTEh, 95th UCL -Dioxin toxic equivalents with non-detects at half the detection level calculated at the 95^{th} percentile upper confidence limit on the mean

DTEo- Dioxin toxic equivalents with non-detects as zero

FTAL- Fish Tissue Action Level

MCDC- Maine Center for Disease Control and Prevention (formerly Maine Bureau of Health)

SWAT- Surface Water Ambient Toxics monitoring program

TAG- SWAT Technical Advisory Group

TCDD- 2,3,7,8-tetrachlorodibenzo-p-dioxin, i.e. the most toxic dioxin

TCDF- 2,3,7,8-tetrachlorodibenzofuran

TEF- Toxicity equivalency factor

OVERVIEW

Maine's Dioxin Monitoring Program was enacted in 1988 and extended and modified several times. As a result of legislative changes enacted in 2008 the Dioxin Monitoring Program was merged with the Surface Water Ambient Toxics (SWAT) Monitoring Program (38MRSA § 420-B). Dioxin monitoring is undertaken in order to describe the nature of dioxin contamination in the waters and fisheries of the State and to determine the need for fish consumption advisories on affected waters.

Following attainment of the provisions of the 1997 Dioxin Law and elimination of the measurable discharge of dioxins (includes closely related furans) from the bleached kraft pulp and paper mills in 2003-2005, the Dioxin Monitoring Program is now focused on residual levels of dioxins from historic discharges and how they affect Maine's fish consumption advisories. This report contains the findings from the 2008 Dioxin Monitoring Program with respect to three objectives:

1. Human health assessment, Fish Consumption Advisories
2. Trend evaluation
3. 1997 Dioxin Law, Continued Compliance

This report also contains the (dioxin-like) coplanar polychlorinated biphenyl (PCB) data gathered as part of DEP's Surface Water Ambient Toxics (SWAT) monitoring program. Coplanar PCB data are included to show the total exposure to dioxin-like compounds from consumption of certain fish from several Maine rivers. The Maine Center for Disease Control (MCDC) uses both dioxins and coplanar PCB data, which are have similar toxicity characteristics to dioxins, in order to make a complete assessment of the fish consumption advisories. The coplanar PCB data are distinct from the dioxin data and the reporting requirements of the Dioxin Monitoring Program. Sources of the coplanar PCBs are not known, but likely include historic use and discharge in Maine, and long range transport and atmospheric deposition.

1. HUMAN HEALTH ASSESSMENT, FISH CONSUMPTION ADVISORIES

- MCDC has issued Fish Consumption Advisories for the Androscoggin, Kennebec, Penobscot, Sebasticook, and Salmon Falls rivers, due to dioxins or a combination of dioxins and dioxin-like coplanar PCBs. These advisories are more restrictive than the statewide mercury fish consumption advisory.

- An evaluation of the need for fish consumption advisories due to the presence of dioxin-like compounds in fish requires a comparison to a health benchmark. The MCDC uses a health benchmark that is expressed as a toxicity-weighted concentration of dioxin-like compounds in fish tissue, referred to as a "Fish Tissue Action Level" or FTAL. The MCDC has established two FTALs, a FTALc for dioxin-like compounds of 1.5 parts per trillion (ppt) for protection of cancer-related effects and a FTAL of 0.4 parts per trillion for protection of non-cancer related effects. The FTAL of 1.5 ppt for cancer related effects has been used by MCDC since 1990. The FTAL of 0.4 ppt for non-cancer effects is based on the same toxicity data relied upon since 1990, but was adjusted downward in 2008 to account for the substantial background exposure from the presence of these chemicals in most dietary foods. In this report dioxins and coplanar PCB concentrations in the 2008 samples will be compared to the FTAL of 0.4 ppt since it is the most protective of human health.

- In 2008, concentrations of just dioxins (calculated as DTEh) in fish from most river sampling stations were below the FTAL. However, concentrations exceeded, the FTAL in rainbow trout from the Androscoggin River at Gilead (denoted as AGL in Figure 1 below), in white perch from Androscoggin Lake in Wayne (ALW), in smallmouth bass from the Penobscot River at Woodville (PBW), in largemouth bass from the East Branch of the Sebasticook River at County Road in Newport (SEN), and in smallmouth bass from the main stem of the Sebasticook River at Burnham (SBN) and were at the FTAL in smallmouth bass in the Androscoggin River at Gulf Island Pond (AGI) and in largemouth bass in the Salmon Falls River in South Berwick (SFS) (Figure 1). Concentrations also exceeded the FTAL in white suckers from the Androscoggin River in Gulf Island Pond at Auburn (AGI), from the Penobscot River at Woodville (PBW), Salmon Falls River at South Berwick (SFS), and main stem of the Sebasticook River at Burnham (SBN) and were at the FTAL in suckers from the Presumpscot River at Westbrook (PWB) (Figure 2).

- When the concentrations of dioxin-like coplanar PCBs (calculated as CTEh) were added to the dioxin concentrations, total toxic equivalents increased at all stations and met or exceeded the current FTAL at an additional seven stations (Figures 1 and 2), versus the twelve stations that met or exceeded the FTAL as a result of just the dioxin data. Specific sources of coplanar PCBs are unknown but likely include historic use and discharge in Maine and long-range transport and atmospheric deposition.

Figure 1. Dioxin toxic equivalents (DTEh) and coplanar PCB toxic equivalents (CTEh) in rainbow trout (RBT), smallmouth bass (SMB), white perch (WHP), brown trout (BNT), and largemouth bass (LMB) from Maine rivers, 2008.

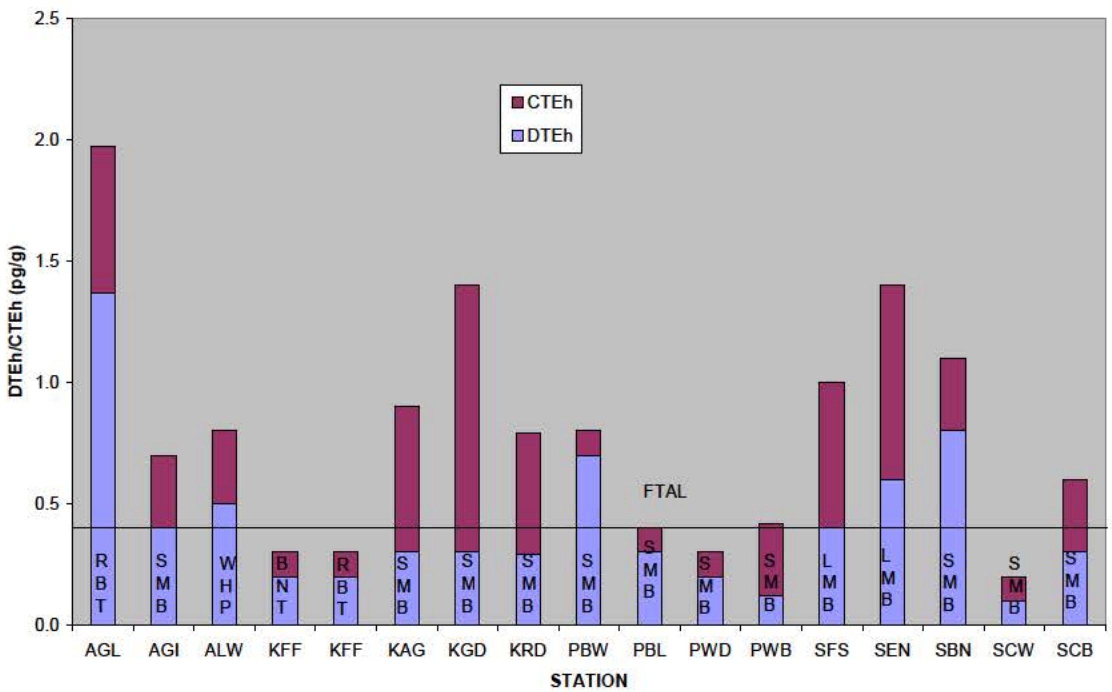
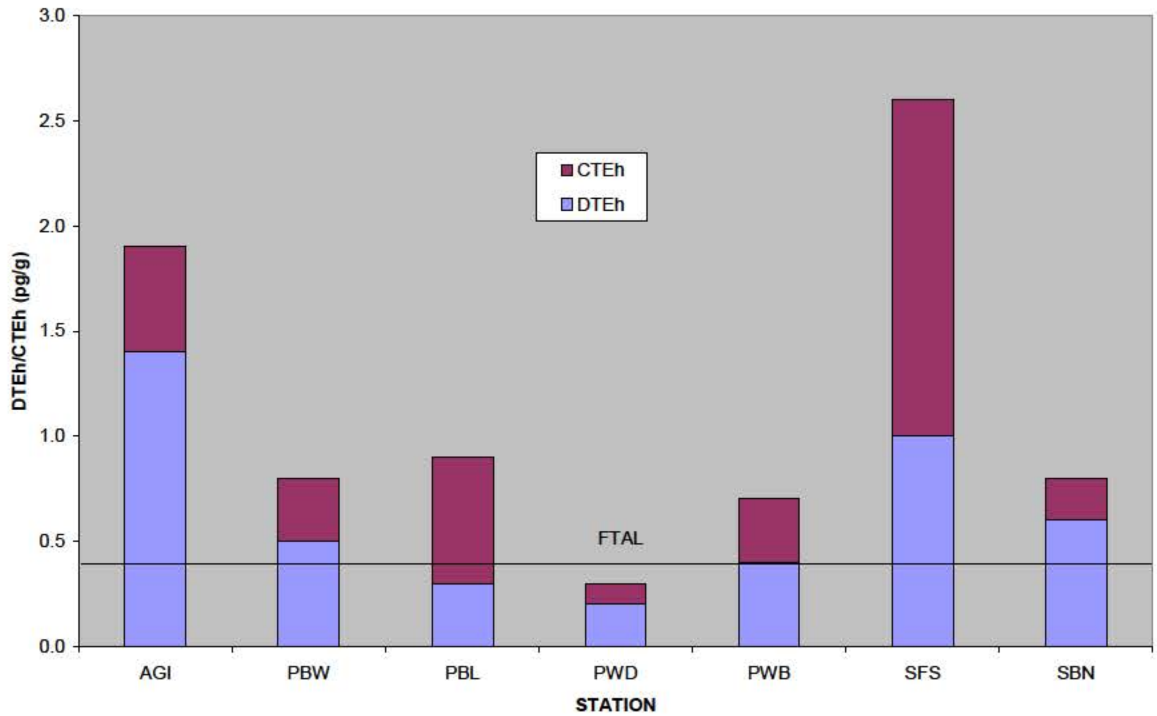


Figure 2. Dioxin toxic equivalents (DTEh) and coplanar PCB toxic equivalents (CTEh) in white suckers from Maine rivers, 2008



2. TRENDS

There is a trend of generally declining concentrations of dioxins in smallmouth bass and white suckers averaged over all stations for each of the Androscoggin, Kennebec and Penobscot rivers since 1997 (Figures 3, 4) no doubt due to reductions in discharges at the mills. Despite the overall declining trend, concentrations sometimes increase from one year to the next, due to variability or unknown cause. Trends at specific locations may not follow the general trend and will be discussed for each in the following sections. Concentrations remain higher in the Androscoggin than in the other two rivers.

Figure 3. Mean dioxin (DTEh, 95th UCL) concentrations in smallmouth bass below bleached kraft pulp and paper mills on the Androscoggin, Kennebec, and Penobscot rivers.

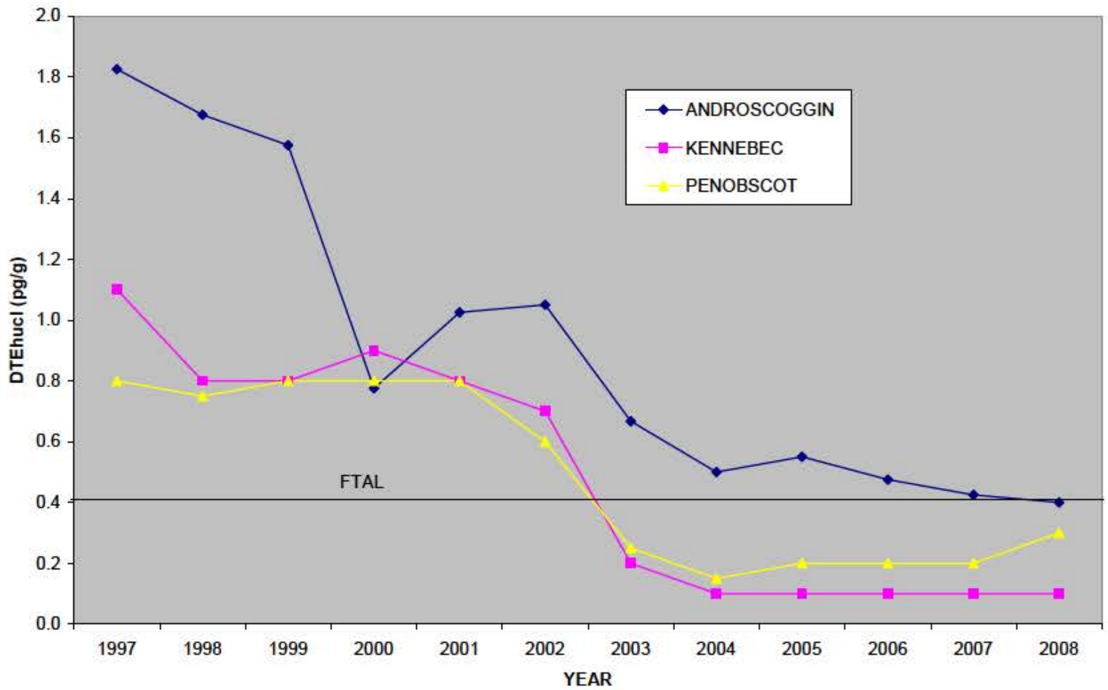
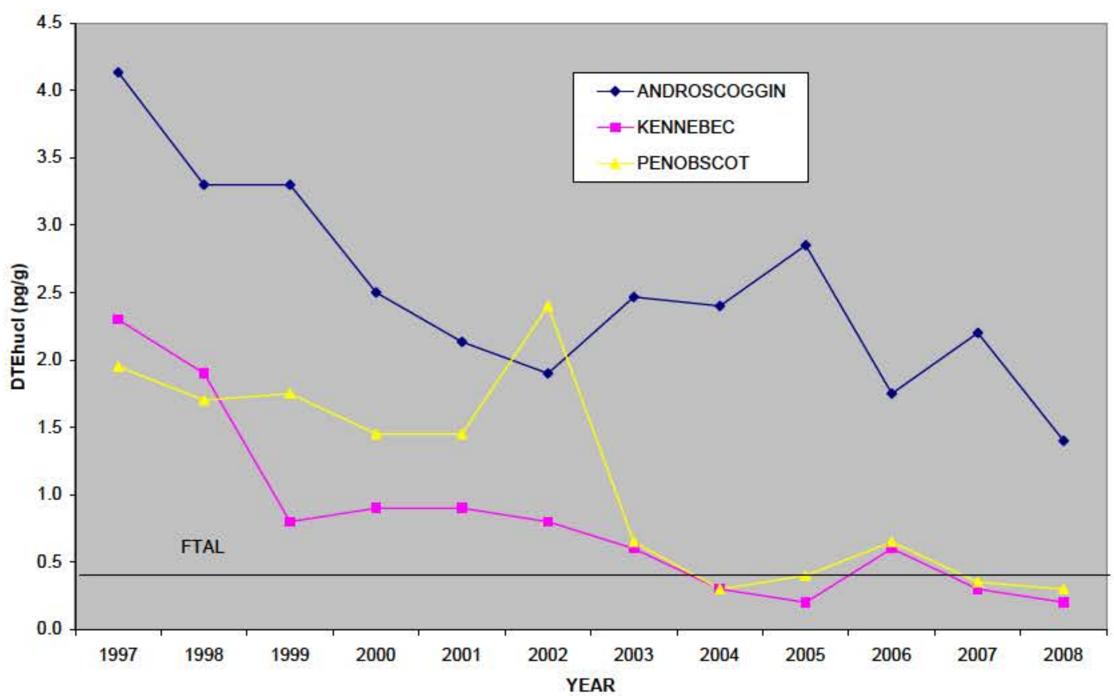


Figure 4. Mean concentrations of dioxins (DTEh, 95th UCL) in white suckers below bleached kraft pulp and paper mills on the Androscoggin, Kennebec, and Penobscot rivers



3. COMPLIANCE WITH THE 1997 DIOXIN LAW'S NO DISCHARGE PROVISION

- The 2003-2005 results indicated that all the mills passed the above and below (A/B) test, where dioxins in fish below the mill were not measurably higher than in fish above the mill, and were no longer discharging measurable amounts of dioxin .

- Continued annual compliance with the no-discharge provision in 38 MRSA section 420 may be demonstrated by one of three methods. 1) Bleach plant effluent concentrations, monitored at quarterly and reported at the actual concentrations rather than the nominal 10 ppq limit, must remain as low as in the years in which a mill demonstrated compliance with the A/B test. 2) Bleach plant effluent concentrations must be tested as above at least once a year. In addition, the mills must provide a certification that the bleach plant and defoamers continue to be operated and used in a manner similar to that in 2003 and 2004. 3) A facility may repeat and must pass the A/B fish test. Continued compliance in 2008 was demonstrated by all mills by methods 1 or 2.

- Continued elevated levels in fish above background at some locations below mills in these rivers are the legacy of the long history of discharges to the rivers.

- Monitoring of fish needs to be continued to allow MCDC periodic review of Fish Consumption Advisories that are due wholly or in part to dioxin. Due to inter-annual variability, the Maine CDC needs at least two consecutive years of monitoring data that show levels of dioxins below the appropriate Fish Tissue Action Level before advisories could potentially be relaxed.

BACKGROUND ON DIOXIN

Due to continuing controversy over the effects of dioxin on human and ecological health, the US Environmental Protection Agency (EPA) announced in 1991 it would begin a thorough scientific reassessment of dioxin. EPA proposed that the process would be open to the public and consequently held several meetings to share information and receive comments. A draft report was issued in 1994 and subsequent review in 1995 by EPA's Science Advisory Board called for revisions of some chapters. Revised drafts published in 2000 indicate that dioxin may exhibit reproductive and developmental effects, immuno-toxic effects, neuro-toxic effects, and cancer. In addition, the report found that concentrations of dioxin in the environment have decreased since the 1970s. Also 'EPA currently estimates that the amount of dioxin in tissues of the general human population approaches, within a factor of 10, the levels at which adverse effects might be expected to occur'. In March 2001 EPA's Scientific Advisory Board published its draft review of EPA's new revisions and is divided on whether or not dioxin is a carcinogen, but does believe EPA has underestimated non-cancer effects. The Scientific Advisory Board also does not agree that there is enough evidence to support EPA's statement about current body burdens and probable adverse health impacts. The reassessment has not yet been completed.

DIOXIN MONITORING PROGRAM

Dioxin was first discovered to be a problem in Maine in 1985, when the results of an analysis of fish collected in 1984 from the Androscoggin River by the Maine Department of Environmental Protection (the Department), used as a reference station for EPA's National Dioxin Study, documented significant concentrations of dioxin. Consequently, the Maine Center for Disease Control and Prevention issued Maine's first fish consumption advisory in 1985. Additional sampling in 1985 and 1986 found similar levels in fish from other rivers below bleached kraft pulp and paper mills, but not from rivers or lakes without such sources. This led to including parts of the Kennebec River and Penobscot River in a revised fish consumption advisory in 1987. As a result there was a bill before the Maine legislature in 1988 to ban the discharge of dioxin. The bill was amended to establish a monitoring program, Maine's Dioxin Monitoring Program (DMP) and enacted into law (38 MRSA section 420-A) to end in 1990. Discovery of continuing significant concentrations in fish from these and other rivers resulted in the DMP being reauthorized in 1990, 1995, 1997, 2002, and most recently in 2008. The Department has issued reports of the results of monitoring annually. Fish consumption advisories have been issued or modified in 1985, 1987, 1990, 1992, 1994, 1997, and 2000.

Maine's Dioxin Monitoring Program has been extended and modified several times since inception. As a result of legislative changes enacted in 2008 the Dioxin Monitoring Program was merged with the Surface Water Ambient Toxics (SWAT) Monitoring Program (38MRSA § 420-B) with the following goal:

1-A. Dioxin monitoring. In order to determine the nature of dioxin contamination in the waters and fisheries of the State, the commissioner shall conduct a monitoring program as described in this subsection. This monitoring must be undertaken to determine the need for fish consumption advisories on affected waters.

Charged with administration of the program, the Department is required to sample fish once a year below no more than 12 bleached pulp mills, municipal wastewater treatment plants, or other known or likely sources of dioxin. Costs for equipment, supplies, and analysis are assessed to the selected facilities annually, and could not exceed $168,000 until 1997 when the limit was raised to $250,000 to incorporate development of the Above/Below (A/B) fish test. In recent years, much less has been spent and the 2008 statutory revision to the program limits fees assessed the bleached kraft pulp and paper mills to $10,000.

The Department is advised by the Surface Water Ambient Toxic (SWAT) Monitoring Program Technical Advisory Group in implementation of the program. An annual report is required to be submitted to the Natural Resources Committee of the Maine Legislature by March 31 with the results from the previous year, including status of continued compliance toward meeting the requirements of the dioxin discharge law

The monitoring program is to be coordinated with other ongoing programs conducted by the Department, US Environmental Protection Agency (EPA), or dischargers of wastewater. The proposed annual monitoring plan must be submitted to the Surface Water Ambient Toxic (SWAT) monitoring program Technical Advisory Group (TAG), created under 38 MRSA section 420-B, for review and advice. The selected facilities must be notified of their inclusion in the proposed program at least 30 days prior to submittal to the TAG. The Department must incorporate the results of all studies into a report due to the Natural Resources Committee by March 31 of the following year. A draft of the report is reviewed by the TAG before completion of the final report. Costs of sample collection and analysis are assessed as a fee to the selected facilities. Payment of the fees is a condition of the waste discharge license granted by the State for continued operation and discharge of wastewater to waters of the State. However, if the selected facility is a publicly owned treatment works (POTW), then the fees may be assessed to the known or likely industrial generator of dioxin, and payment will not be a condition of the waste discharge license of the POTW.

1997 DIOXIN DISCHARGE LAW
CRITERIA FOR CERTIFICATION OF BLEACH PLANT OPERATION

The following certification requirements, included in all kraft pulp mill wastewater discharge licenses, are permit conditions and are designed to maintain compliance with the requirements of the dioxin discharge law.

"In lieu of once per month monitoring of the bleach plant waste stream for 2,3,7,8 TCDD (dioxin) and 2,3,7,8 TCDF (furan) (40 CFR Part 430), by December 31 of each calendar year *(PCS Code 95799)*, the permittee shall sample (1/year) and report the results for said parameters and provide the Department with a certification stating:

a. Elemental chlorine gas or hypochlorite was not used in the bleaching of pulp.

b. The chlorine dioxide (ClO_2) generating plant has been operated in a manner which minimizes or eliminates byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.

c. Documented and verifiable purchasing procedures are in place for the procurement of defoamers or other additives without elevated levels of known dioxin precursors."

d. Fundamental design changes that affect the ClO2 plant and/or bleach plant operation have been reported to the Department prior to their implementation and said reports explained the reason(s) for the change and any possible adverse consequences.

FISH CONSUMPTION ADVISORIES

There is a statewide fish consumption advisory due to mercury for all fresh waters. There are additional advisories for a number of rivers due to 1) dioxins and dioxin-like (coplanar) PCBs, 2) total PCBs, and 3) DDTs (Appendix 1).

There are 75 dioxins and 135 related furans, 17 of which are considered toxic, but with different toxicity potencies. The total toxicity of a sample (dioxin toxic equivalents=DTE or toxic equivalents=TEQ) can be calculated as the sum of the product of the concentration and toxicity equivalency factor (TEF, relative to the most toxic dioxin, TCDD) for each of the 17 dioxins and furans.

The Maine Center for Disease Control publishes fish consumption advisories to inform the public about potential risk from consuming fish contaminated with dioxin and dioxin-like compounds. These advisories are based on a comparison of a Fish Tissue Action Level (FTAL) to dioxin toxic equivalent (DTE) concentrations using the 95^{th} percentile upper confidence limit on the mean DTE in fish tissue. Should a tissue concentration exceed an FTAL, a fish consumption rate (e.g., # meals per month), which is unlikely to result in toxic effects, is determined. Two FTALs have been derived for evaluating potential toxic effects from exposure to +dioxins and dioxin-like compounds. Both FTALs were developed using standard USEPA risk assessment methods (EPA 1997). For potential carcinogenic effects associated with long-term exposure, MCDC has developed a FTALc of 1.5 ppt, while for reproductive and developmental effects MCDC has developed a FTAL of 0.4 ppt. The FTAL for reproductive and developmental effects is relevant to women of childbearing age, pregnant women, and lactating women. The FTALs are compared to the concentration of DTE in edible portions of the fish, skinless filet data. Where whole fish data are reported, the DTE concentration is divided by a factor of 3.5 (determined from previous studies with white suckers, to estimate skinless filet concentration). In this report all comparisons with DTE in fish are made with FTAL, since that is the lower of the two and protective against both effects.

WORKPLAN DESIGN

The primary emphasis of the 2008 workplan was to collect fish samples from the appropriate stations and species from each river such that accurate, complete, and current data are available to assess impact to human consumers. The workplan design included sampling at locations recommended by MCDC. The 2008 workplan was initially drafted by DEP according to the objectives listed above and sent to participating facilities for comment on May 12, 2008. After discussion of the draft workplan at a meeting of the SWAT Technical Advisory Group on June 13, 2008, a final workplan was determined by the Commissioner (Table 1). Fish were also collected at other stations as part of the SWAT program at the request of MCDC for assessment of the Fish Consumption Advisories. The 2008 workplan was different than that of recent previous years in that it specified that 10 fish be collected from each station to be combined and analyzed as 2 composites rather than collecting 5 fish to be analyzed individually. All samples were analyzed for all seventeen 2,3,7,8-substituted dioxins and furans as skinless filets.

Table 1 DMP/SWAT 2008 Workplan

RIVER	STATION	FISH predators samples	FISH omnivores samples	DMP PCDD/F samples	DMP facility	SWAT PCDD/F samples	SWAT CPCB samples
ANDROSCOGGIN	GILEAD	2C5 RBT				2	2
	RUMFORD						
	RILEY						
	LIVERMORE FALLS						
	TURNER GIP	2C5 SMB	2C5 WHS	4	RPC, VERSO		4
	LISBON						
	ANDROSCOGGIN L	2C5 WHP		2	RPC, VERSO		2
KENNEBEC	FAIRFIELD	2C5 BNT/RBT		2	SAPPI SOMERSET		2
	WINSLOW						
	AUGUSTA	2C5 SMB		2	KSTD		2
	GARDINER	2C5 SMB				2	2
	RICHMOND	2C5 SMB				2	2
PENOBSCOT	WOODVILLE	2C5 SMB	2C5 WHS	2	KATAHDIN PAPER	2	4
	S LINCOLN	2C5 SMB	2C5 WHS	2	LINCOLN PAPER	2	4
	VEAZIE	2C5 SMB	2C5 WHS	0	RED SHIELD	0	0
PRESUMPSCOT	WINDHAM	2C5 SMB	2C5 WHS			4	4
	WESTBROOK	2C5 SMB	2C5 WHS			4	4
SALMON FALLS	S BERWICK	2C5 SMB	2C5 WHS	4	BERWICK		4
SEBASTICOOK	BURNHAM	2C5 SMB	2C5 WHS			4	4
EAST BRANCH	NEWPORT	2C5 SMB	2C5 WHS			4	4
WEST BRANCH	PALMYRA						
TOTAL				**18**		**26**	**44**

2C5 = 2 composites of 5 fish each

We were able to collect all samples except that we collected only 4 brown trout and 5 rainbow trout of the right size from the Kennebec River at Fairfield, 5 white suckers from the Sebasticook River at Burnham and none from Newport.

The preferred sampling time is late in the summer when fish are likely to be most contaminated after being exposed to higher concentrations of dioxin during low river flows and after significant growth has occurred. At some locations there has been a problem collecting enough fish later in the summer. At those locations sampling began in mid-May to try to insure that a suitable sample was collected. These stations were also visited after the beginning of July if there was time. If fish were captured during the later period, those samples were submitted for analyses. Otherwise, the fish collected during the early period were used. Sampling at other stations began in July. Actual dates of collection are shown in Table 1, Appendix 5.

SAMPLING PROCEDURES

Fish were collected by DEP. Upon capture, fish were immediately killed, weighed and measured, rinsed in river water, wrapped in aluminum foil with the shiny side out, labeled, and placed in a cooler on ice for transport to the DEP lab. Chain-of-custody forms were used to record all field information and document all transfers. In the lab, all fish samples were frozen and later transported whole to the Pace Analytical Services lab in Minneapolis, Minnesota for analysis. All other procedures followed EPA's Sampling Guidance Manual for the National Dioxin Study (July 1984). A laboratory log was kept for an inventory of samples in the lab at any time and final disposition.

Most of the facilities in the program already sample sludge or effluent as part of their Maine Sludge Spreading Permit or Waste Discharge License or Federal NPDES permit. Data from those programs provide adequate information about sources of dioxin. Therefore, no additional sludge samples were collected as part of this program in 2008. Effluent data are also used when available to indicate sources and any trends.

CALCULATIONS

In this report, dioxins are reported in different ways for each goal of the program. Given the uncertainty of true values when results are below the detection level, for the purpose of determining the range of possible concentrations, DTE are shown as a range with non-detects calculated at zero (DTEo) and at the detection limit (DTEd) as a mean for all samples of a given species at each station (Appendix 6). For human health assessment, DTEh, calculated using non-detects at 1/2 the detection limit consistent with the policy of MCDC were compared with the FTAL. The upper 95th percentile confidence limit (UCL) was used for these comparisons, consistent with the policy of the BOH.

A related issue is that of estimated maximum possible concentrations (EMPC). Some compounds, particularly hydroxydiphenyl ethers (DPEs), are coextracted with furans. Laboratory analysis has been modified to minimize these interferences, but some DPEs may remain. In the 2007 Dioxin Monitoring Program report, the Maine Center for Disease Control and Prevention calculated EMPCs as a detected value according to their policy for setting the fish consumption advisories. To be consistent for comparison with MCDC’s FTAL, EMPCs were treated the same way in this report.

RESULTS AND DISCUSSION.

Results for each sampling station are discussed with respect to the three objectives of the program, 1) human health assessment, 2) trends, and 3) 1997 Dioxin law, no discharge provision, continued compliance. See Appendix 2 for raw dioxin data for 2008, Table 1, Appendix 5 for fish sample data, and Appendix 6 for all historical dioxin data.

Dioxin concentrations in fish generally continued to decline from previous years, but there is some year-to-year variation among species and stations within the trends. Concentrations remained elevated above natural background levels in fish at some stations, particularly on the Androscoggin and Sebasticook rivers, but approached background levels at some stations on other rivers. Dioxin toxic equivalents (DTEh), most likely from historical discharges from the mills, exceeded or, combined with (dioxin-like) coplanar PCBs (CTEh) contributed significantly to exceedances of the FTAL at several stations (Figures 1 & 2).

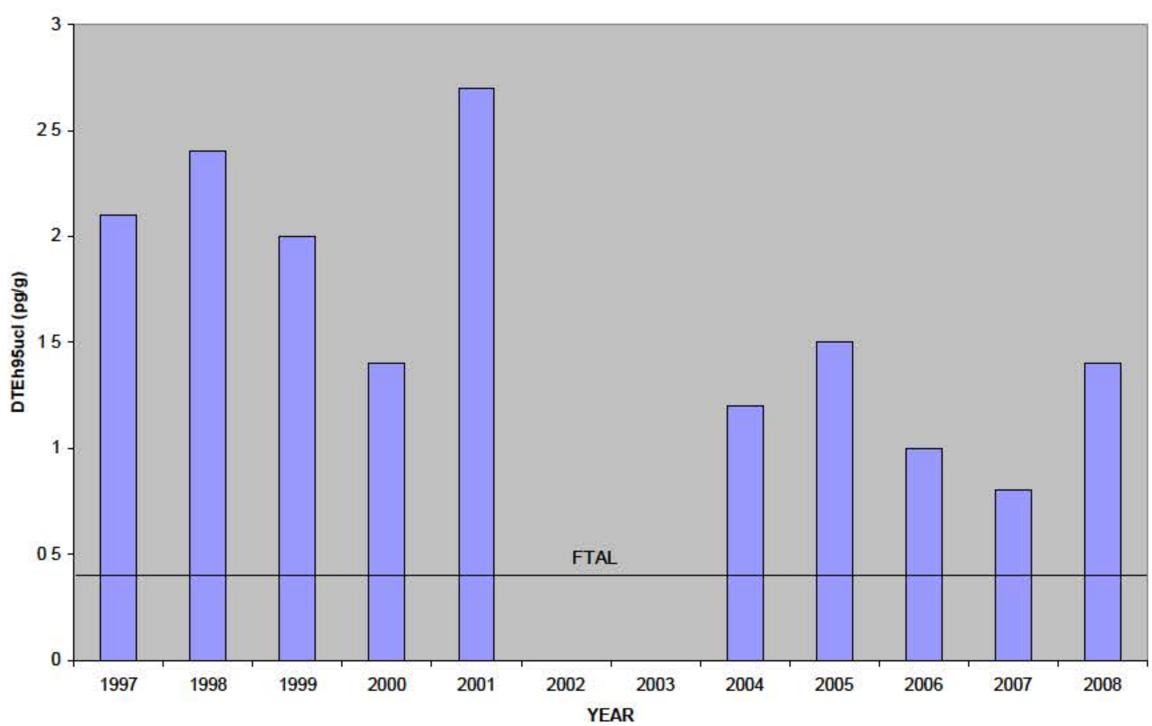
Androscoggin River

<u>Gilead -</u> (AGL) As part of the SWAT monitoring program, a total of ten rainbow trout were collected near Peabody Island in Gilead and combined into two composites of five fish each (Table 1, Appendix 5). This station is downstream of Fraser Paper Co's paper mill in Berlin, New Hampshire, the pulp mill having closed in 2006, but upstream of all Maine mills.

DTEh concentrations greatly exceeded the FTAL (Figure 1, Appendix 2). They were the highest of all fish species on the Androscoggin River and among the highest of all sample stations in the state. The addition of dioxin-like (coplanar) PCBs to DTEh results in even higher levels of total toxic equivalents (TTEh).

Every year measured, DTEh in fish have been significantly higher at this station than in fish from reference stations in Maine (Appendix 6). There was no significant trend for the period 1997-2008 for rainbow trout or any other species captured at this station in the past, although concentrations of DTEh are lower in the past 5 years than previously (Figure 5). The mill in Berlin, New Hampshire has reported the switch to elemental chlorine free (ECF) bleaching (chlorine dioxide) in 1994. The mill closed in 2001 but the paper and pulp mills were purchased by Fraser and reopened in 2002 and 2003 respectively and then the pulp mill closed again in September 2006. The paper mill uses pulp purchased from a variety of sources including post consumer waste.

Figure 5. Dioxin (DTEh, 95th UCL) concentrations in rainbow trout in the Androscoggin River at Gilead (AGL)



Auburn-GIP- (AGI) A total of ten smallmouth bass and ten white suckers were collected in Gulf Island Pond near the deep hole at Seagull Island, approximately 30 miles downstream of Verso Paper and about 50 miles below Rumford Paper Co., and combined into two composites of five fish each for each species (Table 1, Appendix 5).

Concentrations of DTEh in bass were at the FTAL, but DTEh in suckers exceeded the FTAL (Figure 1, Appendix 2). The addition of dioxin-like (coplanar) PCBs to DTEh resulted in an exceedance of the FTAL for bass and further increased the exceedance for suckers.

There is a declining trend in TCDD and DTE in bass during the period 1997-2008 (Figure 6). From limited data there is no significant trend for white suckers for the period 1995-2008, although concentrations since 2001 are lower than those of 1995. Elevated DTEh concentrations suckers are likely the legacy of the long history of discharges accumulating in this deep impoundment. As this station is a popular fishing spot, it warrants some continued monitoring for assessment of the Fish Consumption Advisories.

Fish sampling in 2003 and 2004 documented that the mill was no longer discharging measurable amounts of dioxins. In a letter dated December 12, 2008 the mill demonstrated continued compliance with the 'no discharge' provision of the 1997 Dioxin law by certifying that it has met the performance criteria established by DEP for the bleaching process and defoamer usage (Appendix 7). The bleach plant effluent, analyzed for dioxins in September 2008, documented that concentrations of both TCDD and TCDF have been reported below a 10 ppq detection limit in bleach plant effluent since 2002 and below much lower limits since 2004 (Appendix 4). There are no new sludge data since 1996.

Figure 6. Dioxin (DTEh, 95th UCL) concentrations in smallmouth bass from the Androscoggin River at Gulf Island Pond (AGI)

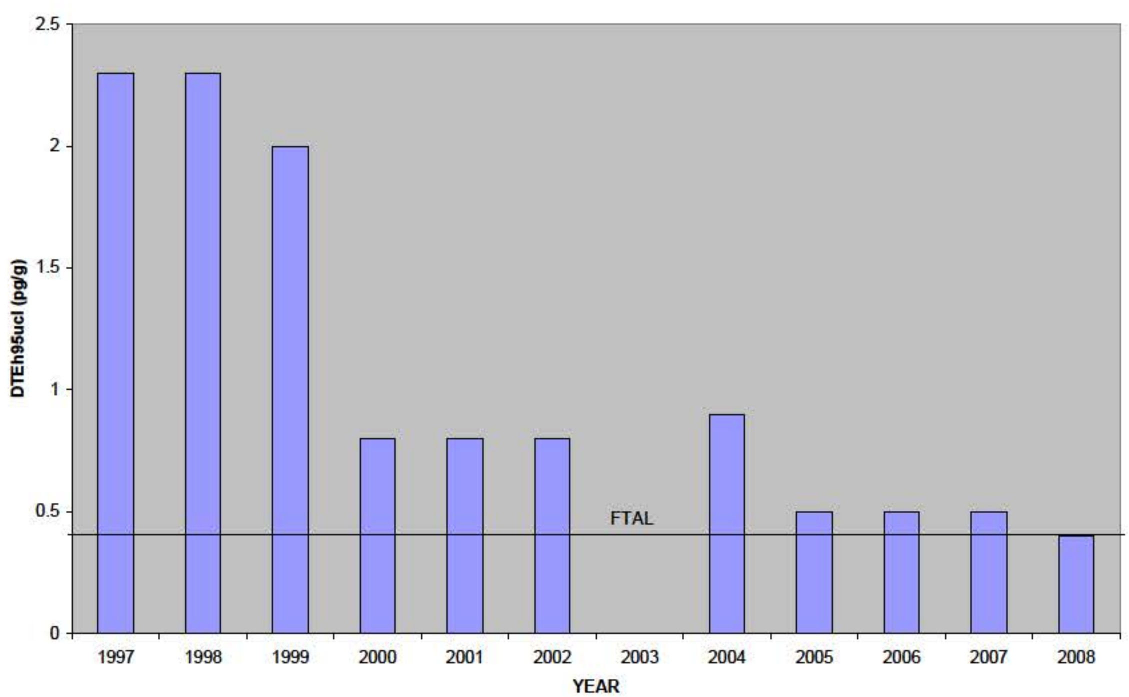
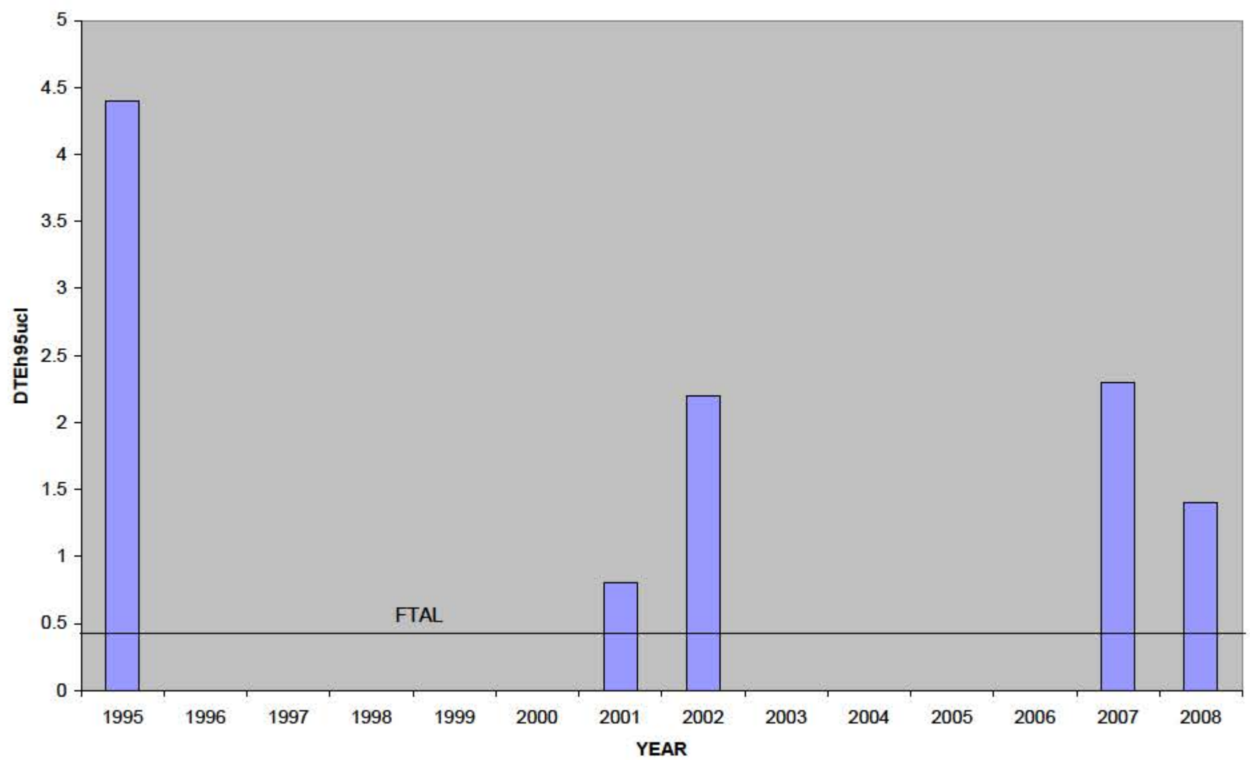


Figure 7. Dioxin (DTEh, 95th UCL) concentrations in white suckers from the Androscoggin River in Gulf Island Pond (AGI)



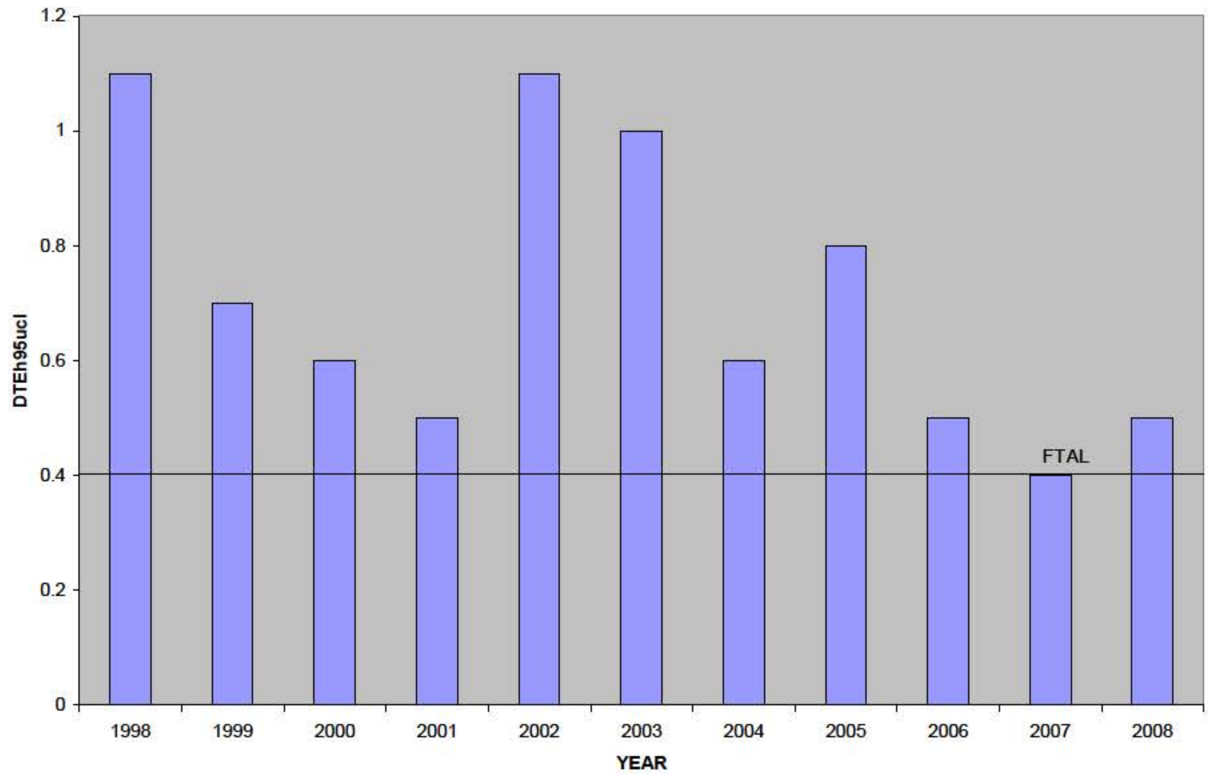
Androscoggin Lake

Wayne- Androscoggin Lake in Wayne (ALW) and Leeds is a 4000-acre, 38-foot-deep meso-trophic lake with a unique reverse delta at the outlet formed by centuries of periodic backflow from the Androscoggin River via the Dead River into the lake. There is a dam on the Dead River that reduces, but does not prevent, the backflow into the lake, which usually occurs once or twice every year. Significant amounts of dioxin were found in fish from the lake beginning in 1996, but have been somewhat lower since.

In 2008, ten white perch were collected from the lake and analyzed as two composites of five fish each (Table 1, Appendix 5). TCDD concentrations were similar to those of historical reference stations unimpacted by point source discharges (Appendix 6) but DTEh concentrations exceeded the FTAL (Figure 1, Appendix 2). The addition of dioxin-like (coplanar) PCBs to DTEh resulted in an increase in total toxic equivalents (TTEh) that further exceeded the FTAL.

There is no trend for the period 1996-2008 although concentrations are lower in the last three years than most previous years (Figure 8). Concentrations in white perch have historically been as high as or higher than those in bass. Continued monitoring is needed for this popular fishing lake.

Figure 8. Dioxin (DTEh, 95th UCL) concentrations in white perch from Androscoggin Lake (ALW)



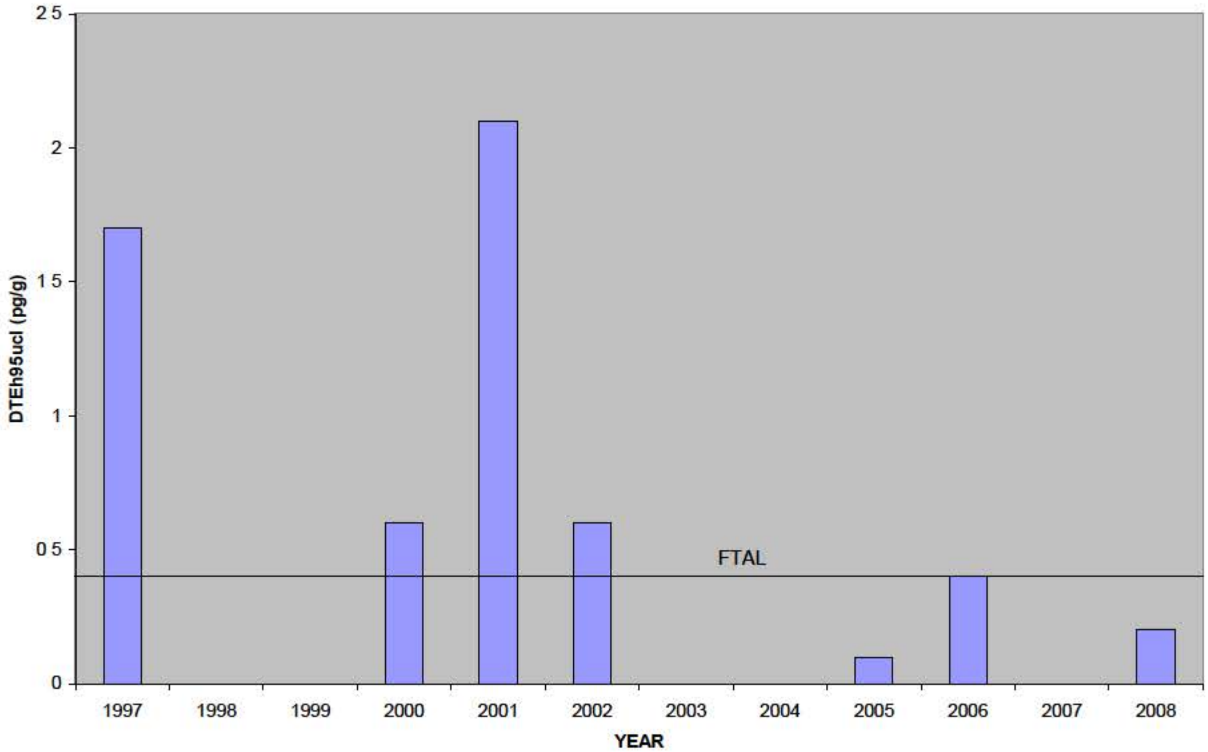
Kennebec River

Fairfield- (KFF) A total of four brown trout and five rainbow trout were collected from the river between the Shawmut Dam and the I-95 bridge, approximately 7-8 miles below SAPPI Somerset's bleached kraft pulp and paper mill in Skowhegan and analyzed as a single composite for each species (Table 1, Appendix 5).

TCDD and DTEh concentrations in both species were similar to those in historical reference stations unimpacted by point sources (Appendix 6) and below the FTAL (Figure 1, Appendix 2). The addition of dioxin-like (coplanar) PCBs to DTEh results in an increase in total toxic equivalents (TTEh) to a level that is still below the FTAL. There is no declining trend with brown trout, but DTEh from 2005 and later appear lower than those from previous years (Figure 9).

Fish sampling in 2003 and 2004 documented that the mill was no longer discharging measurable amounts of dioxins. The mill has demonstrated continued compliance with the 'no discharge' provision of the 1997 Dioxin law. In a letter dated December 17, 2008 the mill certified that it has met the performance criteria established by DEP for the bleaching process and defoamer usage (Appendix 7). Sampling bleach plant effluent was conducted in November 2008 documented that concentrations of both TCDD and TCDF were below detection at a low sample specific detection level (Appendix 4).

Figure 9. Dioxin (DTEh, 95 UCL) concentrations in brown trout from the Kennebec River at Fairfield (KFF)

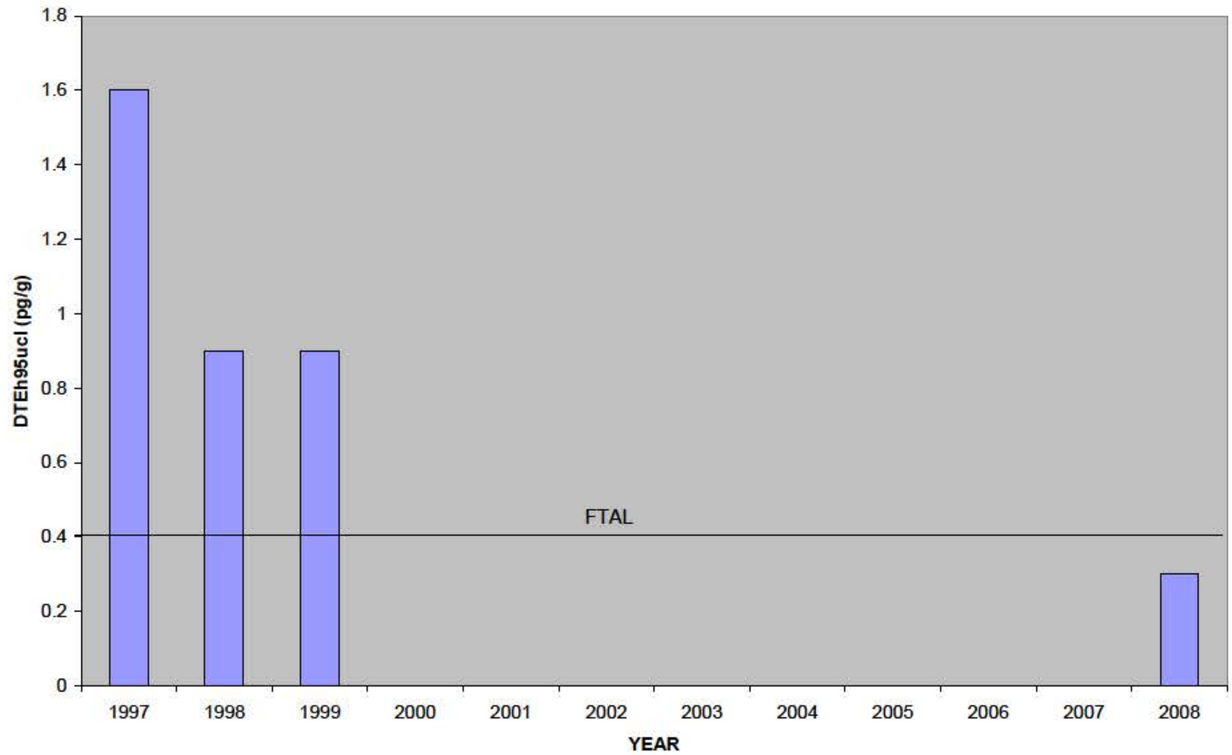


<u>Augusta</u>- (KAG) A total of ten smallmouth bass (Table 1, Appendix 5) were collected in Augusta approximately 20 miles below the discharge from the Kennebec Sanitary Treatment District, which processes effluent from the Huhtamaki paper mill and combined into two composites of five fish each.

Concentrations of TCDD were similar to those at historical reference stations unimpacted by point sources (Appendix 6). DTEh were slightly elevated above those at historical reference stations but below the FTAL (Figure 1, Appendix 2). The addition of dioxin-like (coplanar) PCBs to DTEh results in an increase in total toxic equivalents (TTEh) to a level that greatly exceeded the FTAL. These data corroborate very high levels of PCBs measured previously which resulted in a no consumption fish advisory for the Kennebec from Augusta to tidewater.

There are not enough data for trends analysis, but concentrations in 2008 were significantly lower than when last sampled in 1997-1999 at KAG (Figure 10).

Figure 10. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the Kennebec River in Augusta (KAG)



Gardiner- (KGD) As part of the SWAT monitoring program ten smallmouth bass (Table 1, Appendix 5) were collected from the river at Gardiner, approximately 6 miles below the discharge of the former (Statler, Tree-Free, American Paper) recycled paper mill in Augusta and combined into two composites of five fish each. Concentrations of TCDD were similar to those at historical reference stations unimpacted by point sources (Appendix 6). As as Augusta, DTEh were slightly elevated above those at historical reference stations but below the FTAL (Figure 1, Appendix 2). Concentrations were similar to those from 2006, the only other year with data (Appendix 6). The addition of dioxin-like (coplanar) PCBs to DTEh results in an increase in total toxic equivalents (TTEh) to a level that greatly exceeded the FTAL. Elevated concentrations of total PCBs in fish from the Kennebec River below Augusta has been previously well documented. Consequently, MCDC has issued a Fish Consumption Advisory recommending no consumption of freshwater fish from this river reach (Appendix 1).

Richmond (KRD) As part of the SWAT monitoring program ten smallmouth bass (Table 1, Appendix 5) were collected from the river at Richmond, approximately 10 miles below Gardiner. Concentrations of TCDD were similar to those at historical reference stations unimpacted by point sources (Appendix 6). Similar to upstream stations at Augusta and Gardiner, DTEh were slightly elevated above those at historical reference stations but below the FTAL (Figure 1, Appendix 2). The addition of dioxin-like (coplanar) PCBs to DTEh results in an increase in total toxic equivalents (TTEh) to a level that exceeded the FTAL. Elevated concentrations of total PCBs in fish from the Kennebec River below Augusta has been previously well documented. Consequently, MCDC has issued a Fish Consumption Advisory recommending no consumption of freshwater fish from this river reach (Appendix 1). Concentrations were much lower than those from this station in 1993 in American eel, often roughly equivalent to those in bass at other stations, (Appendix 6).

Penobscot River

Woodville (Mattaceunk Impoundment)- (PBW) Fish collected at Woodville, downstream of Katahdin Paper's pulp and paper mills in Millinocket and East Millinockett in 1997-2001 had similarly low concentrations of dioxin as the historical reference station at Grindstone on the East Branch, uninfluenced by any mill. Therefore, PBW had served as a reference station for the Penobscot River and the upstream station for Lincoln Paper and Tissue above/below (A/B) test. Finding DTEh in suckers in 2002, 2003, and 2005 elevated above historical levels at this station, it was resampled in 2007 and 2008.

In 2008, as part of the SWAT monitoring program, ten smallmouth bass were collected from this station and combined into two composites of five fish each (Table 1, Appendix 5). As part of the Dioxin Monitoring Program, ten white suckers were also collected from this station and analyzed as two composites of five fish each.

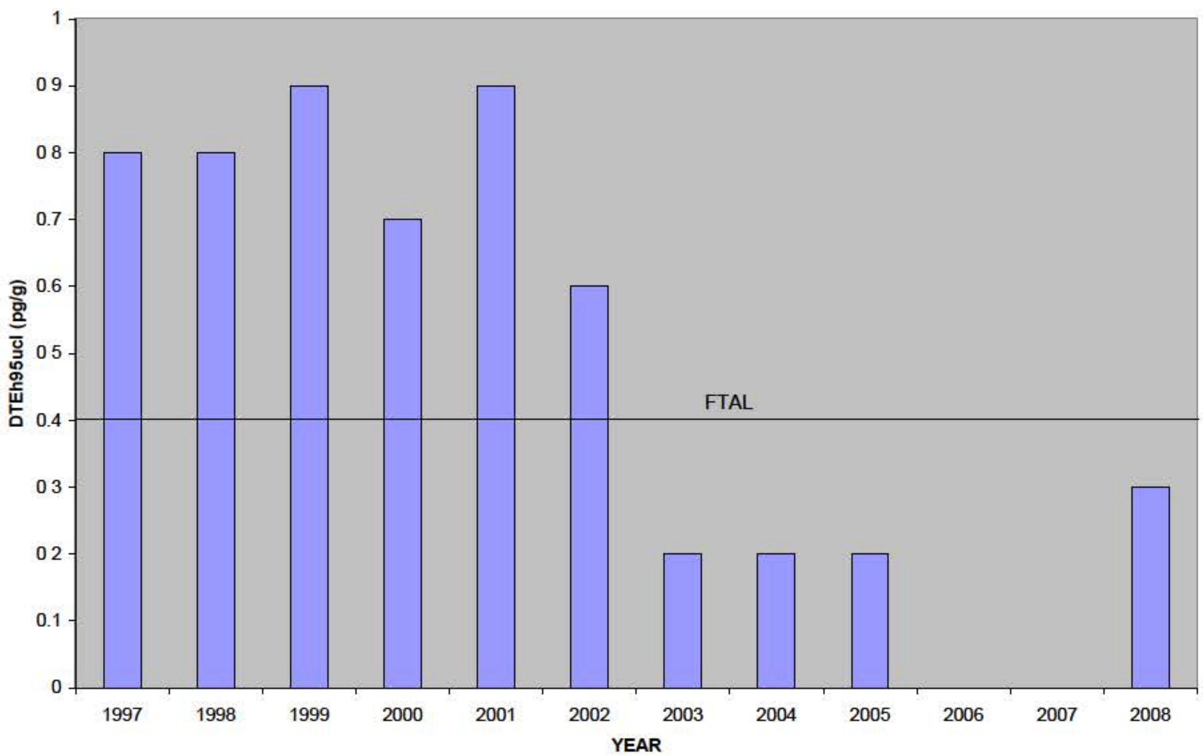
Concentrations of TCDD (Appendix 2) and DTEh (Figure 1) in bass were below the FTAL and TCDD was similar to those from Grindstone and to those at Woodville prior to 2002 (Appendix 6) while DTEh exceeded the FTAL. Concentrations of TCDD in suckers were below the FTAL and similar to those from Grindstone and Woodville prior to 2002, but concentrations of DTEh exceeded the FTAL (Figure 2). The addition of dioxin-like (coplanar) PCBs to DTEh results in small increases in total toxic equivalents (TTEh) for both bass and suckers. Elevated DTEh concentrations in both species in 2008 compared to previous years suggest a potential intermittent source upstream at Millinockett or East Millinockett.

South Lincoln- (PBL) As part of the SWAT monitoring program, ten smallmouth were collected from the river near the boat ramp in South Lincoln, approximately 4 miles downstream of Lincoln Paper and Tissue Company's bleached kraft mill in Lincoln and combined into two composites of five fish each (Table 1, Appendix 5). As part of the Dioxin Monitoring Program, ten white suckers were also collected from this station and analyzed as two composites of five fish each.

Concentrations of TCDD (Appendix 2) and DTEh in both species were slightly elevated but below the FTAL (Figures 1 and 2). The addition of dioxin-like (coplanar) PCBs to DTEh resulted in a small increase in total toxic equivalents (TTEh) to a level that was at the FTAL in bass, but resulted in a substantial increase in DTEh that exceeded the FTAL in suckers.

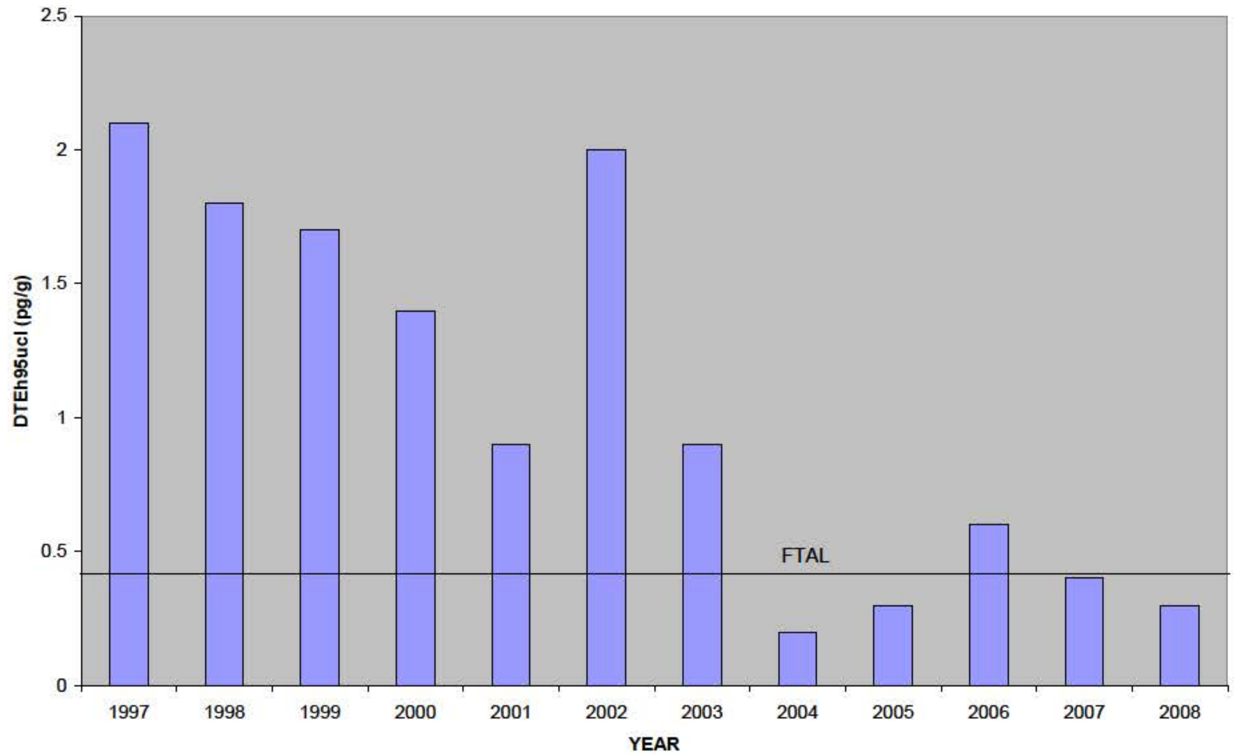
There is no declining trend in DTEh for the period 1997-2008 for bass, although levels are lower since 2002 (Figure 11). There is however, a declining trend for white suckers for the same period (Figure 12).

Figure 11. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the Penobscot River at South Lincoln (PBL)



The mill passed the A/B test in 2003 and 2005, and must demonstrate continuing compliance annually. Reduced discharge of dioxin from the mill has been documented by decreased concentrations of TCDD and TCDF in sludge (Appendix 3) and in effluent (Appendix 4) since a change in the mill's bleaching process from chlorine based bleaching to primarily oxygen based bleaching in 1999. These results are consistent with the declining trend seen in fish, and the finding of no measurable discharge by 2005. The mill has demonstrated continued compliance with the 'no discharge' provision of the 1997 Dioxin law. In a letter dated December 12, 2008 the mill certified that it has met the performance criteria established by DEP for the bleaching process and defoamer usage (Appendix 7). Sampling bleach plant effluent was conducted in June 2008 documented that concentrations of both TCDD and TCDF were below detection at a low sample specific detection level (Appendix 4).

Figure 12. Dioxin (DTEh, 95 UCL) concentrations in white suckers from the Penobscot River at South Lincoln (PBL)



Presumpscot River

Windham -(PWD) As part of the SWAT monitoring program, ten smallmouth and ten white suckers were collected from the Dundee Impoundment in the river in Windham, upstream of the SD Warren paper mill in Westbrook and combined into two composites of five fish each (Table 1, Appendix 5). Concentrations of TCDD (Appendix 6) and DTEh (Figures 1 and 2) were similar to those from other historical reference stations unimpacted by point source discharges. This "reference" station had no point source discharges above it, but in many years had higher concentrations than all other reference stations with no point sources. The addition of dioxin-like (coplanar) PCBs to DTEh resulted in small increases in total toxic equivalents (TTEh) to levels still below the FTAL for both species. There is no trend for the period 1997-2008, but levels were lower than previous levels in both species (Figure 14).

Figure 13. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the Presumpscot River at Windham (PWD)

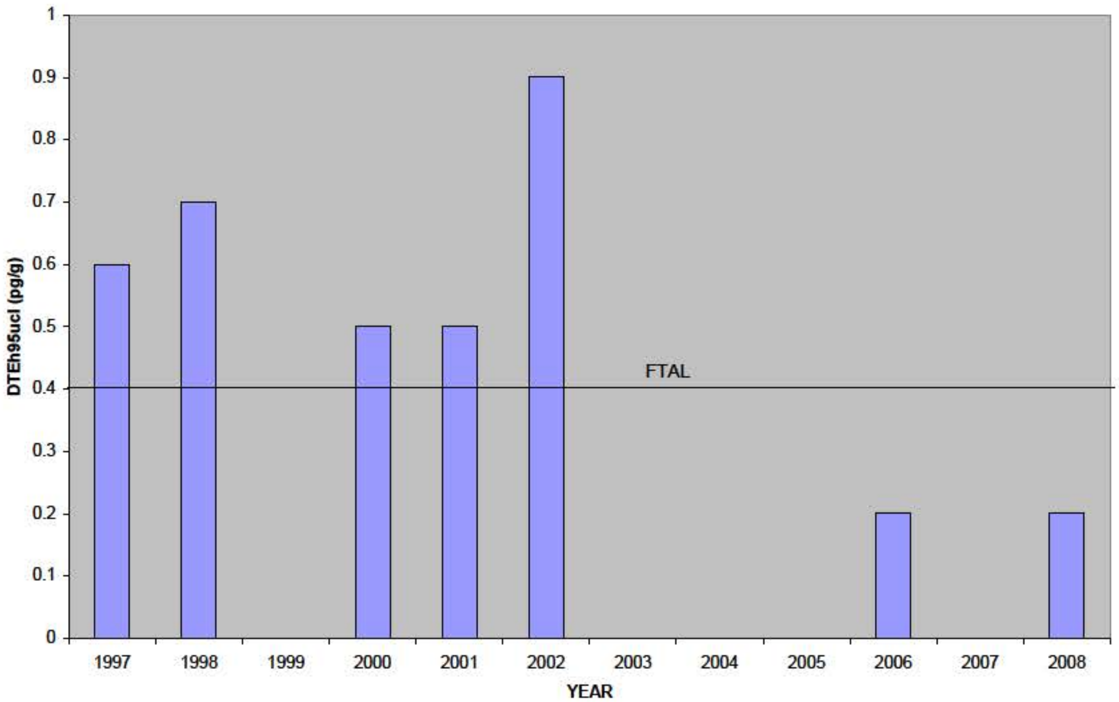
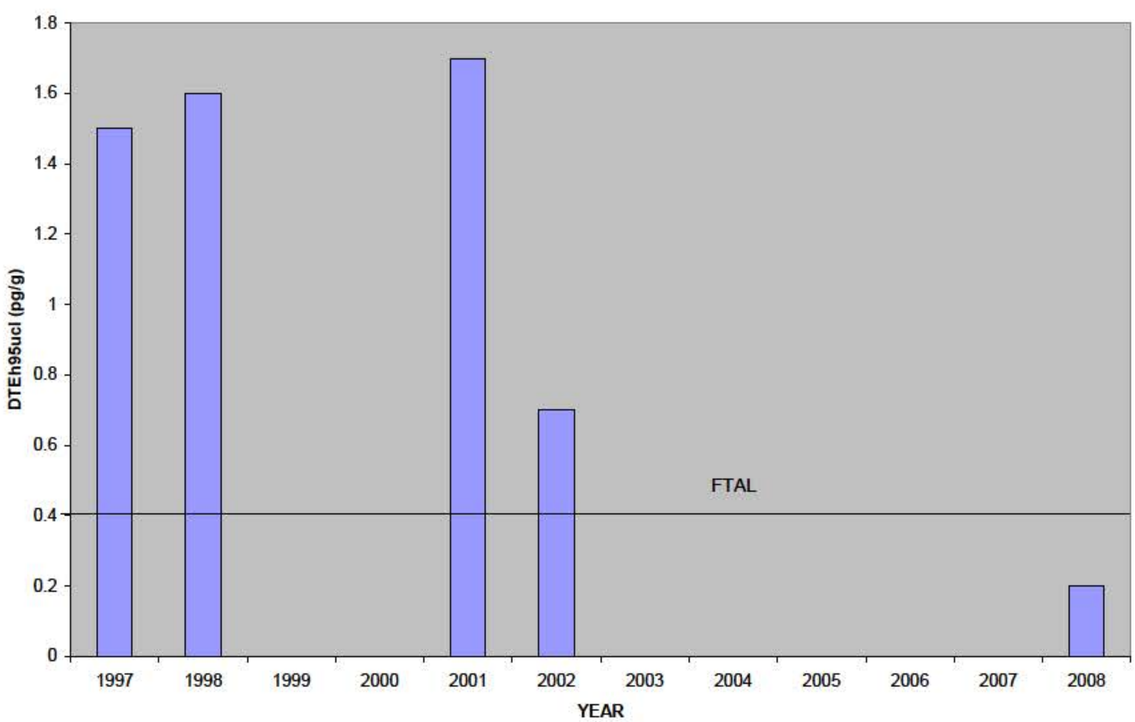


Figure 14. Dioxin (DTEh, 95 UCL) concentrations in white suckers from the Presumpscot River at Windham (PWD)



Westbrook- (PWB) As part of the SWAT monitoring program, ten smallmouth and ten white suckers were collected from the river below the SD Warren paper mill in Westbrook and combined into two composites of five fish each (Table 1, Appendix 5). Concentrations of TCDD (Appendix 6) and DTEh (Figures 1 and 2) were below the FTAL and similar to those from historical reference stations unimpacted by point source discharges for bass while DTEh was at the FTAL in suckers. The combination of dioxin-like (coplanar) PCBs with DTEh resulted in increases in total toxic equivalents (TTEh) to levels that exceeded the FTAL for both species. There is no trend in DTEh for the period 1997-2008 for either species, but levels were lower than previous levels in bass (Figure 15) and in suckers (Figure 16). These levels are higher than those at Windham, upstream of Westbrook.

Figure 15. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the Presumpscot River at Westbrook (PWB)

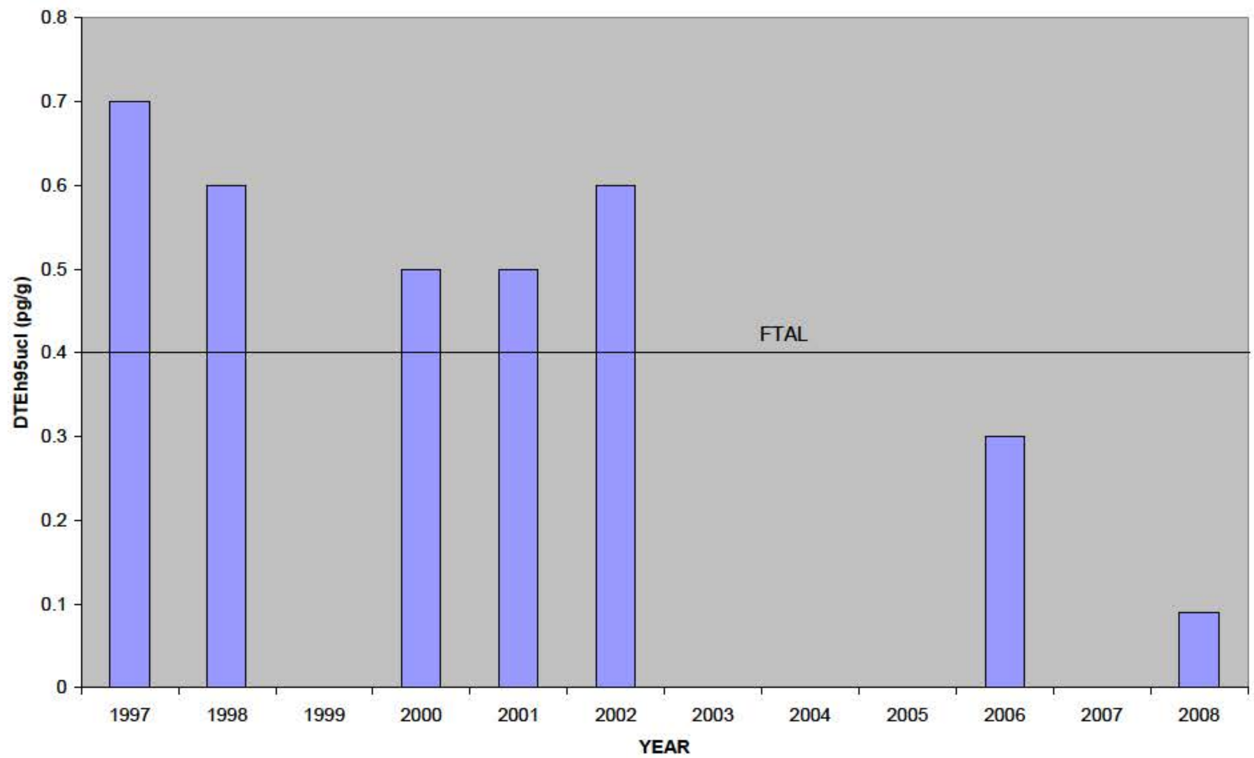
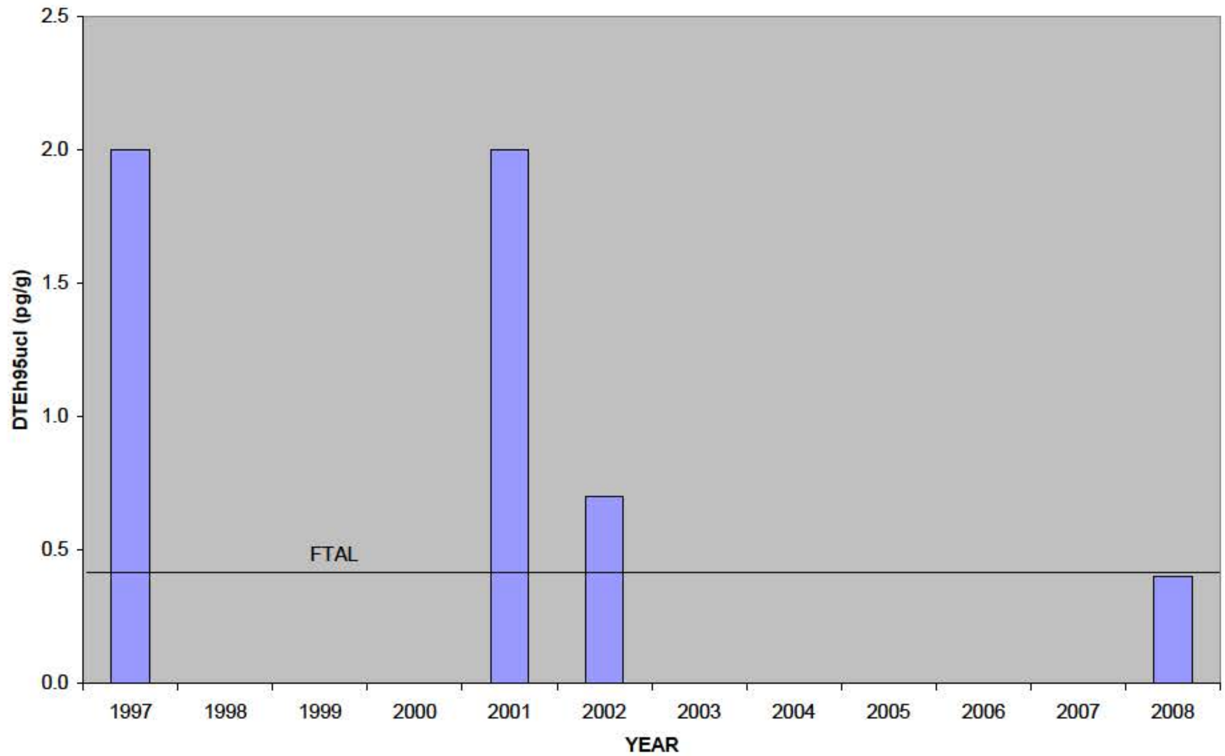


Figure 16. Dioxin (DTEh, 95 UCL) concentrations in white suckers from the Presumpscot River at Westbrook (PWB)



Salmon Falls River

There is currently a fish consumption advisory on the Salmon Falls River below Berwick due to a combination of dioxins and PCBs. Through 2002, fish samples have been collected from the Salmon Falls River about 2 miles below the discharge from the Berwick Sewer District's municipal wastewater treatment plant in Berwick, whose discharge ranged from 65-70% effluent from Prime Tanning Company in the past to ~40% currently. Sampling was scheduled for 2003 and 2004 but fish were not captured. DEP's long standing policy has been that where there is a single discharger of dioxin in a river, fish sampling is the best way to determine the status of any discharge. Where there is more than one source, sampling of sludge may be used to determine discharge status. Prime Tanning Company notified DEP that there was an additional source historically in Somersworth NH. Consequently, after discussion with the New Hampshire Department of Environmental Services, testing of both Berwick and Somersworth, NH wastewater treatment plant sludge was substituted for fish testing on a quarterly basis for two years. The results of the sampling show that concentrations from both are relatively low but similar to those from the Town of Hartland (with the discharge from Irving Tanning) below which are significantly elevated concentrations in fish (Appendix 3).

Consequently, at the request of MCDC, fish were collected below the Berwick discharge for analyses in 2007 and 2008.

South Berwick- A total of ten largemouth bass and ten white suckers (Table 1, Appendix 5) were collected from the Rollinsford Impoundment about 2 miles below the discharge from the Berwick Sewer District's municipal wastewater treatment plant in Berwick, whose discharge is dominated by effluent from Prime Tanning Company, and combined into two composites of five fish each. Concentrations of TCDD were slightly elevated in bass and DTEh were at the FTAL (Figure 1). Concentrations of TCDD were more elevated in suckers but still below the FTAL, while DTEh were elevated to levels exceeding the FTAL (Figure 2). TCDD and DTEh were similar in bass for both 2007 and 2008; there were no data for suckers in 2007 (Appendix 6). The addition of dioxin-like (coplanar) PCBs to DTEh resulted in a substantial increase in total toxic equivalents (TTEh) to levels that exceeded the FTAL for bass and further increased the exceedance for suckers. There was no trend in either TCDD or DTEh although DTEh are lower in bass in the last three years than previously (Figure 17) and lower in suckers in 2008 than in 1997, the last year previously sampled (Figure 18).

Figure 18. Dioxin (DTEh, 95 UCL) concentrations in bass from the Salmon Falls River in South Berwick (SFS)

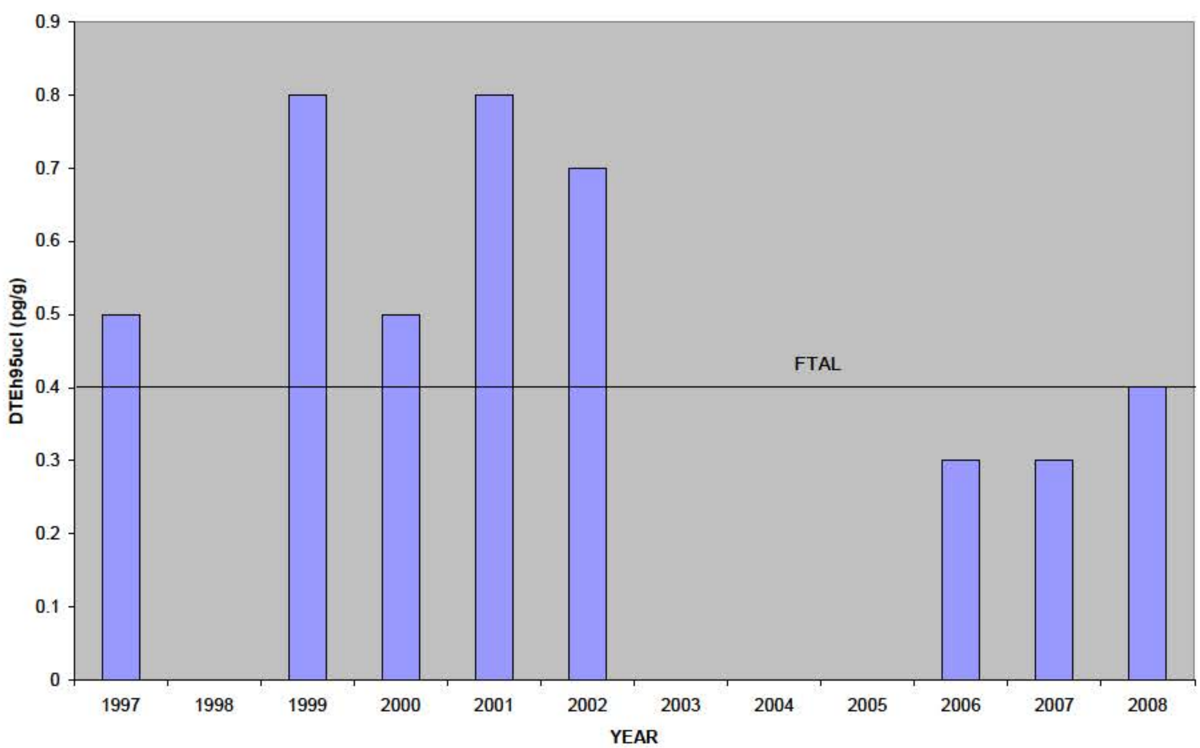
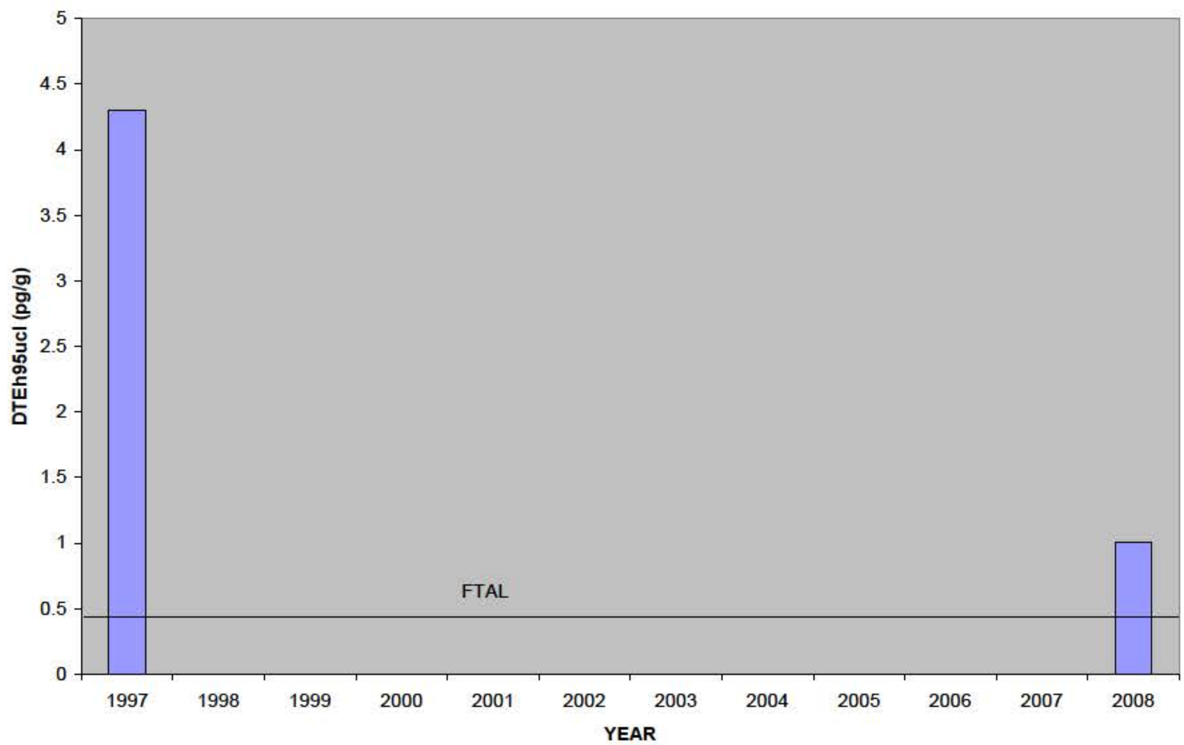


Figure 19. Dioxin (DTEh, 95 UCL) concentrations in white suckers from the Salmon Falls River in South Berwick (SFS)



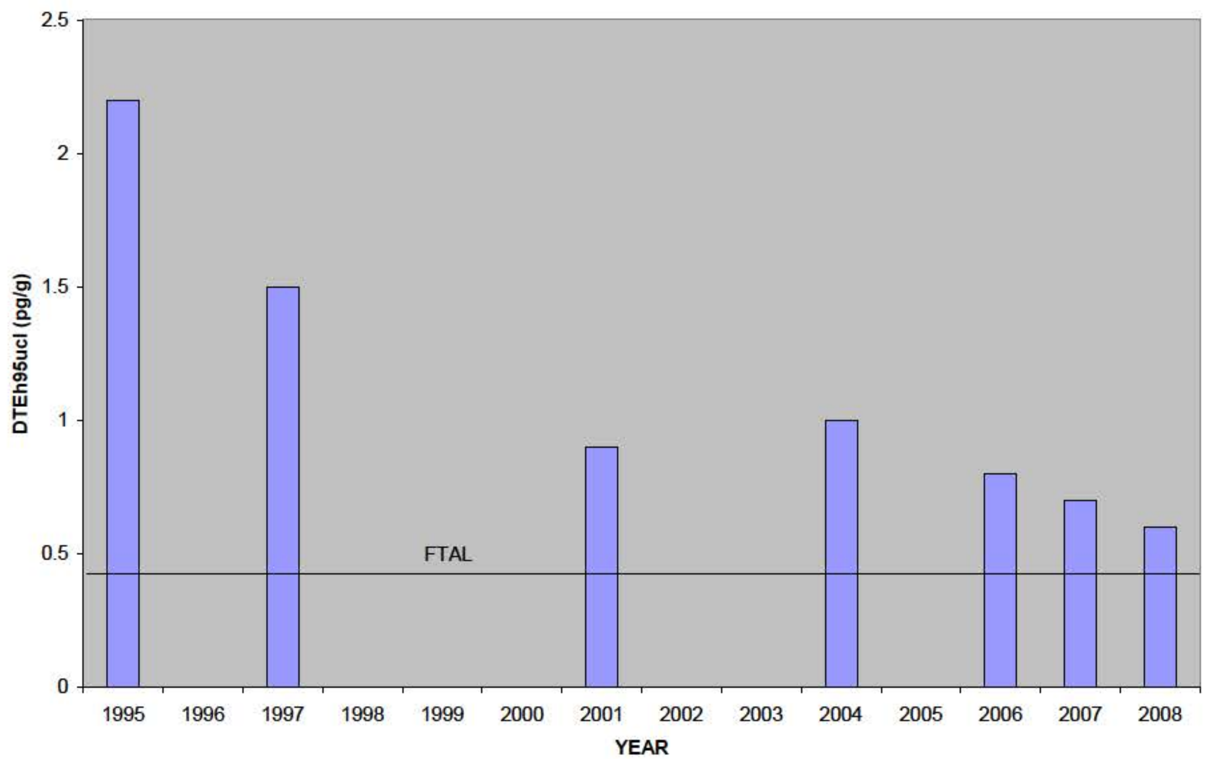
Sebasticook River

Historical discharges of dioxin have been documented on both the East and West Branches of the Sebasticook River. In 2008, at the request of MCDC as part of DEP's SWAT monitoring program, fish were sampled from the East Branch and main stem.

East Branch at Newport- (SEN) A total of ten largemouth bass (Table 1, Appendix 5) were collected from the river just above the County Road Bridge, a popular fishing spot at the inlet to Sebasticook Lake, and combined into two composites of five fish each. This station is approximately 2 miles below the former Corinna Sewer District discharge, 80% of which was from the Eastland Woolen Mill. This facility treated the waste from the Eastland Woolen Mill in Corinna until 1996, when the mill ceased operation. Since then groundwater and river sediments have been found to be contaminated with a number of pollutants from the mill including dioxin. The site was placed on the National Priorities List of Superfund sites in 1999, and extensive remediation included removal of contaminated soil and the buildings in the 'downtown area' and relocation of a portion of the riverbed. In addition, the Corinna discharge was removed from the river, going to land treatment in 2005.

Concentrations of TCDD in 2008 were similar to those of historical reference stations unimpacted by point source discharges and lower than previous levels (Appendix 6). DTEh, however, were elevated above the FTAL (Appendix 2, Figure 1). The addition of dioxin-like (coplanar) PCBs to DTEh resulted in a substantial increase in total toxic equivalents (TTEh) above the FTAL. DTEh show a declining trend since 1995, likely documenting the effects of remediation, although levels still exceed the FTAL (Figure 19).

Figure 17. Dioxin (DTEh, 95 UCL) concentrations in bass from the East Branch of the Sebasticook River at County Road, Newport (SEN)



Burnham- (SEB) A total of ten smallmouth bass and five white suckers (Table 1, Appendix 5) were collected from the main stem of the Sebasticook River below the confluence of the East Branch and West Branch (Table 1, Appendix 5) and combined into composites of five fish each at the request of the MCDC as part of Maine's Surface Water Ambient Toxics (SWAT) monitoring program. This reach is downstream of Hartland and Corinna, both former dischargers and perhaps legacy sources of dioxin.

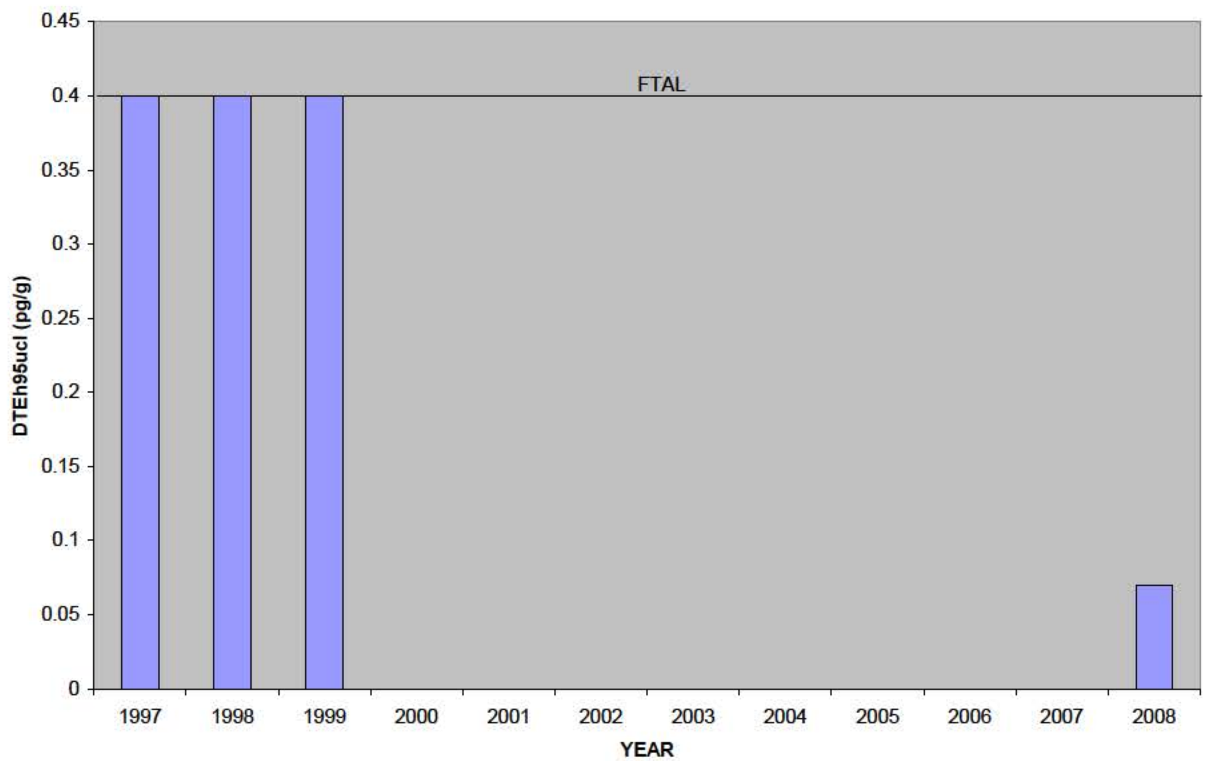
Concentrations of TCDD were slightly elevated above those at historical reference stations unimpacted by point source discharges for both species (Appendix 6). Concentrations of DTEh were also elevated above the FTAL for both species (Figures 1 and 2, Appendix 2). There results are not surprising given the existence of sources upstream on each branch of the river. The addition of dioxin-like (coplanar) PCBs to DTEh results in total toxic equivalents (TTEh) that further exceed the FTAL for both species.

There are not enough data for trends analysis, but concentrations have remained elevated for all years monitored (2004-2006, 2008).

St. Croix River

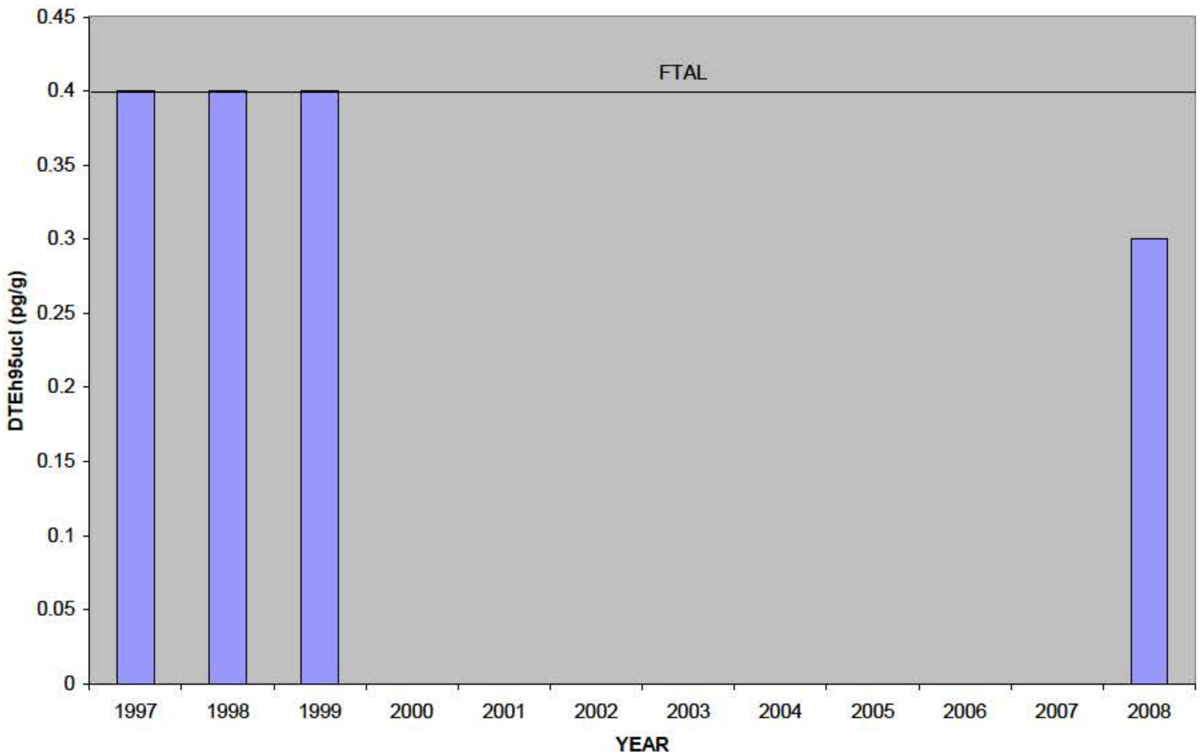
Woodland (SCW) A total of ten smallmouth bass (Table 1, Appendix 5) were collected from the St. Croix River above the Domtar pulp and paper mill (Table 1, Appendix 5) and combined into composites of five fish each at the request of the MCDC as part of Maine's Surface Water Ambient Toxics (SWAT) monitoring program. Concentrations of TCDD (Appendix 6) and DTEh (Figures 1 and 2) were below the FTAL similar to those from historical reference stations unimpacted by point source discharges. The addition of dioxin-like (coplanar) PCBs to DTEh resulted in no measurable increase in total toxic equivalents (TTEh), unlike previous years. There are not enough data for trends analysis, but the 2008 level was lower than previous levels (Figure 20).

Figure 20. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the St. Croix River at Woodland (SCW)



Baring (SCB) A total of ten smallmouth bass (Table 1, Appendix 5) were collected from the St. Croix River below the Domtar pulp and paper mill (Table 1, Appendix 5) and combined into composites of five fish each at the request of the MCDC as part of Maine's Surface Water Ambient Toxics (SWAT) monitoring program. Concentrations of TCDD were similar to concentrations at Woodland (Appendix 6) while DTEh (Figures 1 and 2) were slightly elevated but below the FTAL. The addition of dioxin-like (coplanar) PCBs to DTEh resulted in an increase in total toxic equivalents (TTEh) that exceeded the FTAL. There are not enough data for trends analysis, but the 2008 levels were lower than previous levels (Figure 21).

Figure 21. Dioxin (DTEh, 95 UCL) concentrations in smallmouth bass from the St. Croix River at Baring (SCB)



APPENDIX 1.

FISH CONSUMPTION ADVISORIES

MAINE FISH CONSUMPTION ADVISORIES

MAINE CENTER FOR DISEASE CONTROL AND PREVENTION

WARNING About Eating Freshwater Fish

Warning: Mercury in Maine freshwater fish may harm the babies of pregnant and nursing mothers, and young children.

SAFE EATING GUIDELINES

Pregnant and nursing women, women who may get pregnant, and children under age 8 SHOULD NOT EAT any freshwater fish from Maine's inland waters. Except, for brook trout and landlocked salmon, 1 meal per month is safe.

All other adults and children older than 8 CAN EAT 2 freshwater fish meals per month. For brook trout and landlocked salmon, the limit is 1 meal per week.

It's hard to believe that fish that looks, smells, and tastes fine may not be safe to eat. But the truth is that fish in Maine lakes, ponds, and rivers have mercury in them. Other states have this problem too. Mercury in the air settles into the waters. It then builds up in fish. For this reason, older fish have higher levels of mercury than younger fish. Fish (like pickerel and bass) that eat other fish have the highest mercury levels.

Small amounts of mercury can harm a brain starting to form or grow. That is why unborn and nursing babies, and young children are most at risk. Too much mercury can affect behavior and learning. Mercury can harm older children and adults, but it takes larger amounts. It may cause numbness in hands and feet or changes in vision. The Safe Eating Guidelines identify limits to protect everyone.

See http://www.maine.gov/dhhs/eohp/fish/index.htm

Warning: Some Maine waters are polluted, requiring additional limits to eating fish.

Fish caught in some Maine waters have high levels of PCBs, Dioxins or DDT in them. These chemicals can cause cancer and other health effects. The Bureau of Health recommends additional fish consumption limits on the waters listed below. Remember to check the mercury guidelines. If the water you are fishing is listed below, check the mercury guideline above and follow the most limiting guidelines.

SAFE EATING GUIDELINES

Androscoggin River Gilead to Merrymeeting Bay:-------------------6-12 fish meals a year.
Dennys River Meddybemps Lake to Dead Stream:-------------------1-2 fish meals a month.
Green Pond, Chapman Pit, & Greenlaw Brook
(Limestone):--Do not eat any fish from these waters.
Little Madawaska River & tributaries
(Madwaska Dam to Grimes Mill Road):--------------Do not eat any fish from these waters.
Kennebec River Augusta to the Chops:--------------Do not eat any fish from these waters.
Shawmut Dam in Fairfield to Augusta:-------5 trout meals a year, 1-2 bass meals a month.
Madison to Fairfield: --1-2 fish meals a month.
Meduxnekeag River: -- 2 fish meals a month.
North Branch Presque Isle River--2 fish meals a month.
Penobscot River below Lincoln:---1-2 fish meals a month
Prestile Stream:---1 fish meal a month.
Red Brook in Scarborough: -- 6 fish meals a year.
Salmon Falls River below Berwick: -------------------------------------6-12 fish meals a year.
Sebasticook River (East Branch, West Branch & Main Stem)
(Corinna/Hartland to Winslow):---2 fish meals a month.

APPENDIX 2.

DIOXIN AND FURAN CONCENTRATIONS IN 2004 FISH AND SHELLFISH SAMPLES

DEP Sample ID	AGL-RBT-C1 (1,3,5,8,10)		AGL-RBT-C2		**AGL-RBT**
Lab Sample ID	L11928-19		L11928-20		**AVE**
Sample Date	6/9/2008		6/9/2008		
Dilution Factor	1		1		
atus = unaccepted	pg/g				
2,3,7,8-TCDF	5.41	B	4.08	B	**4.75**
1,2,3,7,8-PECDF	0.798		0.438	EMPC	**0.62**
2,3,4,7,8-PECDF	1.07	EMPC	0.776		**0.92**
1,2,3,4,7,8-HXCDF	0.168	EMPC	0.12	EMPC	**0.14**
1,2,3,6,7,8-HXCDF	0.072		0.061	EMPC	**0.07**
2,3,4,6,7,8-HXCDF	0.104	B/EMPC	0.088	B/EMPC	**0.10**
1,2,3,7,8,9-HXCDF	0.0467	U	0.0453	U	**0.05**
1,2,3,4,6,7,8-HPCDF	0.057	EMPC	0.0453	U	**0.05**
1,2,3,4,7,8,9-HPCDF	0.054		0.0453	U	**0.05**
OCDF	0.144	B	0.0453	U	**0.09**
2,3,7,8-TCDD	0.176	EMPC	0.121	EMPC	**0.15**
1,2,3,7,8-PECDD	0.087	EMPC	0.058	EMPC	**0.07**
1,2,3,4,7,8-HXCDD	0.063		0.0453	U	**0.05**
1,2,3,6,7,8-HXCDD	0.088	EMPC	0.068	EMPC	**0.08**
1,2,3,7,8,9-HXCDD	0.085	EMPC	0.059	EMPC	**0.07**
1,2,3,4,6,7,8-HPCDD	0.08	B/EMPC	0.102	B/EMPC	**0.09**
OCDD	0.202		0.108	B/EMPC	**0.16**
DTEo	**0.579**		**0.641**		**0.61**
DTEd	**0.711**		**0.766**		**0.74**
DTEh	**0.645**		**0.703**		**0.67**
DTEh sd					**0.041**
DTEh confidence					**0.057**
DTEh 95 UCL					**0.73**
% FTAL					**183**
LENGTH					
WEIGHT					
LIPIDS	2.09		1.83		
SOLIDS					
MOISTURE	77.4		77.9		

AGI-SMB-C1 (2,3,4,6,9)		AGI-SMB-C2		**AGI-SMB. AVE**	AGI-WHS-C1 (1,2,4,5,9)		AGI-WHS-C1
L11928-7		L11928-8			L11928-5 (A)		WG27041-103 (DUP L
8/1/2008		8/1/2008			8/1/2008		8/1/2008
1		1			1		1
0.345	B	0.365	B	**0.36**	4.6	B	4.92
0.134		0.129		**0.13**	0.53		0.626
0.273	EMPC	0.268		**0.27**	0.903		0.984
0.056	EMPC	0.0499	U	**0.05**	0.345		0.431
0.0475	U	0.0499	U	**0.05**	0.068	EMPC	0.095
0.102		0.076		**0.09**	0.124		0.118
0.0475	U	0.053	EMPC	**0.05**	0.0465	U	0.0497
0.077	B/EMPC	0.0499	U	**0.06**	0.171	B	0.136
0.06		0.0499	U	**0.05**	0.0465	U	0.0497
0.109	B/EMPC	0.0499	U	**0.08**	0.144	B	0.129
0.141	EMPC	0.136	EMPC	**0.14**	0.196	EMPC	0.246
0.076	EMPC	0.057	EMPC	**0.07**	0.086		0.157
0.0475	U	0.0499	U	**0.05**	0.069	EMPC	0.053
0.069	EMPC	0.0499	U	**0.06**	0.171	EMPC	0.249
0.0475	U	0.0499	U	**0.05**	0.047	EMPC	0.0523
0.097	B/EMPC	0.0499	U	**0.07**	0.266	B/EMPC	0.371
0.17	B/EMPC	0.134	B	**0.15**	0.326	B/EMPC	0.559
0.0493		**0.128**		**0.09**	**0.881**		**0.965**
0.196		**0.26**		**0.23**	**0.953**		**1.05**
0.123		**0.194**		**0.16**	**0.917**		**1.01**
				0.050			
				0.070			
				0.23			
				57			
0.33		0.41			2.05		2.01
79.3		79.2			79.3		79.2

L (1,2,4,5,9) (I .11928-5)	AGI-WHS-C1 ave	AGI-WHS-C2 L11928-6 8/1/2008 1		**AGI-WHS** **AVE**	ALW-WHP-C1 (3,4,6,8,9) L11928-21 7/23/2008 1	
B	4.76	5.72	B	**5.24**	0.71	B
	0.578	0.523		**0.55**	0.157	
	0.9435	1.13		**1.04**	0.477	
EMPC	0.388	0.319		**0.35**	0.098	EMPC
EMPC	0.0815	0.108		**0.09**	0.048	EMPC
EMPC	0.121	0.065		**0.09**	0.124	B
U	0.0481	0.0452	U	**0.05**	0.0468	U
B	0.1535	0.121	B/EMPC	**0.14**	0.095	
U	0.0481	0.0452	U	**0.05**	0.0468	U
B	0.1365	0.111	B/EMPC	**0.12**	0.095	B
EMPC	0.221	0.211	EMPC	**0.22**	0.057	
*	0.1215	0.113	EMPC	**0.12**	0.087	EMPC
EMPC	0.061	0.096	EMPC	**0.08**	0.0468	U
EMPC	0.21	0.23	EMPC	**0.22**	0.096	EMPC
U	0.04965	0.054	EMPC	**0.05**	0.047	EMPC
B/EMPC	0.3185	0.159	B/EMPC	**0.24**	0.092	B/EMPC
B	0.4425	0.428	B	**0.44**	0.181	B
	0.923	**0.976**		**0.95**	**0.289**	
	1.0015	**1.09**		**1.046**	**0.365**	
	0.964	**1.03**		**1.00**	**0.327**	
				0.047		
				0.065		
				1.06		
				265		
		2.31			0.74	
		79			77.5	

ALW-WHP-C		ALW-WHP	KFF-BNT-C1 (1,2,3,4)		KFF-RBT-C1 (1,2,3,4,5)		KAG-SMB-C:
L11928-22		AVE	L11926-7 I2		L11926-8 I2		L11926-13 R
7/23/2008			6/3/2008		6/6/2008		7/9/2008
1			1		1		1
0.943	B	0.83	0.156	EMPC	0.188	EMPC	0.332
0.194		0.18	0.0484	U	0.0483	U	0.0495
0.527	EMPC	0.50	0.057	EMPC	0.066	EMPC	0.08
0.094	EMPC	0.10	0.0484	U	0.0483	U	0.0495
0.061	EMPC	0.05	0.0484	U	0.0483	U	0.0495
0.112	B/EMPC	0.12	0.0484	U	0.065	EMPC	0.0495
0.0482	U	0.05	0.0484	U	0.0483	U	0.0495
0.095	EMPC	0.10	0.0484	U	0.0483	U	0.084
0.0482	U	0.05	0.0484	U	0.0483	U	0.0495
0.091	B/EMPC	0.09	0.0484	U	0.0483	U	0.191
0.095	EMPC	0.08	0.096	B/EMPC	0.1	B/EMPC	0.089
0.049	EMPC	0.07	0.062	EMPC	0.055	EMPC	0.055
0.0482	U	0.05	0.0484	U	0.0483	U	0.0495
0.064		0.08	0.0484	U	0.062	EMPC	0.077
0.059	EMPC	0.05	0.0484	U	0.0483	U	0.0495
0.146	B	0.12	0.086	B/EMPC	0.075	B	0.38
0.209	B	0.20	0.134	B	0.13	B/EMPC	1.86
0.108		**0.20**	**0.0000402**		**0.00075**		**0.0453**
0.249		**0.31**	**0.151**		**0.149**		**0.191**
0.178		**0.253**	**0.075**		**0.075**		**0.118**
		0.105					
		0.146					
		0.40	**0.08**		**0.08**		
		100	**19**		**19**		
1.09			**1.58**		**1.68**		1.48
77.2			**78.7**		**78.2**		80.9

1 (3,6,7,8,10)	KAG-SMB-C		**KAG-SMB**	KGD-SMB-C1 (1,4,5,7,10)		KGD-SMB-C	
	L11926-14 I		**AVE**	L11926-5		L11926-6	
	7/9/2008			7/10/2008		7/10/2008	
	1			1		1	
	0.097		**0.21**	0.064		0.116	EMPC
U	0.065		**0.06**	0.0499	U	0.0484	U
EMPC	0.094	EMPC	**0.09**	0.075		0.0484	U
U	0.0485	U	**0.05**	0.0499	U	0.0484	U
U	0.0485	U	**0.05**	0.0499	U	0.0484	U
U	0.111	EMPC	**0.08**	0.056		0.061	EMPC
U	0.0485	U	**0.05**	0.0499	U	0.0484	U
EMPC	0.124	U	**0.10**	0.0499	U	0.0484	U
U	0.162	EMPC	**0.11**	0.0499	U	0.0484	U
B	0.0653	U	**0.13**	0.0499	U	0.0484	U
EMPC	0.103	B/EMPC	**0.10**	0.078	B/EMPC	0.107	B/EMPC
EMPC	0.065		**0.06**	0.0499	U	0.076	
U	0.067	EMPC	**0.06**	0.0499	U	0.0484	U
	0.094	EMPC	**0.09**	0.0499	U	0.0484	U
U	0.052	EMPC	**0.05**	0.0499	U	0.0484	U
B	0.143	B/EMPC	**0.26**	0.058	B/EMPC	0.061	B/EMPC
B	0.314	B	**1.09**	0.143	B/EMPC	0.095	B
	0.0767		**0.06**	**0.0345**		**0.076**	
	0.177		**0.18**	**0.167**		**0.177**	
	0.127		**0.12**	**0.101**		**0.127**	
			0.006				
			0.009				
			0.13				
			33				
	0.82			0.68		0.79	
	78.5			80		79.1	

KGD-SMB AVE	KRD-SMB-C1 (1,2,3,4,8)		KRD-SMB-C		KRD-SMB AVE	PBW-SMB-C1 (1,2,5,7,10)	
	L11926-16 I		L11926-17			L11928-15	
	7/11/2008		7/11/2008			8/26/2008	
	1		1			1	
0.09	0.083	B	0.09		**0.09**	0.084	B
0.05	0.074		0.0483	U	**0.06**	0.0426	U
0.06	0.117	EMPC	0.137	EMPC	**0.13**	0.055	
0.05	0.086	EMPC	0.0483	U	**0.07**	0.0426	U
0.05	0.051	EMPC	0.0483	U	**0.05**	0.0426	U
0.06	0.136	EMPC	0.05	EMPC	**0.09**	0.046	B/EMPC
0.05	0.109	EMPC	0.0483	U	**0.08**	0.0426	U
0.05	0.109	B/EMPC	0.0483	U	**0.08**	0.044	EMPC
0.05	0.057	EMPC	0.0483	U	**0.05**	0.0426	U
0.05	0.254	B/EMPC	0.065	EMPC	**0.16**	0.073	B
0.09	0.099		0.114	B	**0.11**	0.0426	U
0.06	0.102		0.115		**0.11**	0.067	EMPC
0.05	0.123	EMPC	0.0483	U	**0.09**	0.05	EMPC
0.05	0.158	EMPC	0.119		**0.14**	0.061	EMPC
0.05	0.106	EMPC	0.0483	U	**0.08**	0.0426	U
0.06	0.137	B/EMPC	0.113	B/EMPC	**0.13**	0.077	B/EMPC
0.12	0.288	B/EMPC	0.279	B	**0.28**	0.109	B/EMPC
0.06	**0.212**		**0.25**		**0.23**	**0.0249**	
0.17	**0.258**		**0.296**		**0.28**	**0.143**	
0.11	**0.235**		**0.273**		**0.25**	**0.0837**	
0.018					**0.027**		
0.025					**0.037**		
0.14					**0.29**		
35					**73**		
	0.24		0.49			0.63	
	79.2		80.1			80	

PBW-SMB-C		**PBW-SMB AVE**	PBW-WHS-C1 (3,5,6,8,9)		PBW-WHS-C		**PBW-WHS AVE**
L11928-16			L11928-1		L11928-2		
8/26/2008			8/26/2008		8/26/2008		
1			1		1		
0.12	B/EMPC	**0.10**	0.654	B	0.743	B	**0.70**
0.111		**0.08**	0.076	EMPC	0.0492	U	**0.06**
0.114		**0.08**	0.144		0.071		**0.11**
0.166	EMPC	**0.10**	0.0485	U	0.058	EMPC	**0.05**
0.116	EMPC	**0.08**	0.068		0.0492	U	**0.06**
0.259	B	**0.15**	0.115	EMPC	0.094		**0.10**
0.257	EMPC	**0.15**	0.0485	U	0.0492	U	**0.05**
0.276		**0.16**	0.294	B/EMPC	0.161	B/EMPC	**0.23**
0.258		**0.15**	0.0485	U	0.0492	U	**0.05**
0.975	B	**0.52**	0.232	B/EMPC	0.205	B	**0.22**
0.121	EMPC	**0.08**	0.127	EMPC	0.123	EMPC	**0.13**
0.154	EMPC	**0.11**	0.159		0.193	EMPC	**0.18**
0.198	EMPC	**0.12**	0.073	EMPC	0.119	EMPC	**0.10**
0.232		**0.15**	0.389		0.321	EMPC	**0.36**
0.335		**0.19**	0.0485	U	0.063	EMPC	**0.06**
0.446	B/EMPC	**0.26**	0.511	B	0.412	B/EMPC	**0.46**
1.17	B/EMPC	**0.64**	0.638	B	0.458	B/EMPC	**0.55**
0.126		**0.08**	**0.319**		**0.105**		**0.21**
0.241		**0.19**	**0.394**		**0.236**		**0.32**
0.184		**0.13**	**0.356**		**0.171**		**0.26**
		0.071					**0.131**
		0.098					**0.181**
		0.23					**0.44**
		58					**111**
0.36			1.52		1.79		
80.5			81.4		81.8		

PBL-SMB-C1 (5,6,7,8,9)		PBL-SMB-C2		**PBL-SMB AVE**	PBL-WHS-C1 (2,4,5,6,7)		PBL-WHS-C
L11928-17		L11928-18			L11928-13		L11928-14
8/26/2008		8/26/2008			8/26/2008		8/26/2008
1		1			1		1
0.056	EMPC	0.158	B	**0.11**	0.107	B	0.427
0.115		0.047		**0.08**	0.0459	U	0.0432
0.0484	U	0.117		**0.08**	0.099	EMPC	0.068
0.0452	U	0.051	EMPC	**0.05**	0.0459	U	0.0432
0.047	EMPC	0.0439	U	**0.05**	0.0459	U	0.0432
0.149	B	0.195	B	**0.17**	0.047	B/EMPC	0.0432
0.109		0.058	EMPC	**0.08**	0.049	EMPC	0.0432
0.077		0.137		**0.11**	0.0459	U	0.0432
0.132	EMPC	0.057		**0.09**	0.0459	U	0.0432
0.251	B/EMPC	0.235	B/EMPC	**0.24**	0.123	B	0.076
0.081		0.062	EMPC	**0.07**	0.091	EMPC	0.082
0.0494	U	0.067		**0.06**	0.075	EMPC	0.0432
0.0471	U	0.073	EMPC	**0.06**	0.0459	U	0.0432
0.127	EMPC	0.06	EMPC	**0.09**	0.112		0.092
0.063	EMPC	0.102	EMPC	**0.08**	0.0459	U	0.0432
0.262	B/EMPC	0.103	B/EMPC	**0.18**	0.073	B	0.101
0.412	B/EMPC	0.328	B	**0.37**	0.188	B/EMPC	0.133
0.111		**0.141**		**0.13**	**0.0227**		**0.0427**
0.204		**0.212**		**0.21**	**0.158**		**0.175**
0.158		**0.176**		**0.17**	**0.0904**		**0.109**
				0.013			
				0.018			
				0.18 46			
0.5		0.64			0.41		1.33
80.7		79.4			80		80.3

	PBL-WHS-C AVE	PWD-SMB-C1 (2,3,8,10,1 -11926-1 I (A) 9/30/2008 1		PWD-SMB-C1 (2,3,8,10,1 WG27025-103 I (DUP L11926-1) 9/30/2008 1		PWD-SMB-C1 AVE
B	**0.27**	0.161		0.133	EMPC	0.147
U	**0.04**	0.0498	U	0.0495	U	0.04965
EMPC	**0.08**	0.118	EMPC	0.063	EMPC	0.0905
U	**0.04**	0.0498	U	0.0495	U	0.04965
U	**0.04**	0.0498	U	0.0495	U	0.04965
U	**0.05**	0.064	EMPC	0.055	EMPC	0.0595
U	**0.05**	0.0498	U	0.0495	U	0.04965
U	**0.04**	0.0498	U	0.0495	U	0.04965
U	**0.04**	0.0498	U	0.0495	U	0.04965
B/EMPC	**0.10**	0.0498	U	0.0598	U	0.0548
EMPC	**0.09**	0.069	B/EMPC	0.055	B/EMPC	0.062
U	**0.06**	0.087	EMPC	0.0495	U	0.06825
U	**0.04**	0.0498	U	0.0495	U	0.04965
EMPC	**0.10**	0.069	EMPC	0.056	EMPC	0.0625
U	**0.04**	0.0498	U	0.0495	U	0.04965
B/EMPC	**0.09**	0.073	B/EMPC	0.059	B/EMPC	0.066
B	**0.16**	0.188	B/EMPC	0.099	B/EMPC	0.1435
	0.03	**0.0161**		**0**		0.00805
	0.17	**0.169**		**0.153**		0.161
	0.10	**0.0923**		**0.0765**		0.0844
	0.013					
	0.018					
	0.12					
	29					
		1.78		1.49		
		79.1		77.2		

PWD-SMB-C		**PWD-SMB AVE**	PWD-WHS-C1 (2,4,6,8,9)		PWD-WHS-(		**PWD-WHS AVE**
L11926-2 I			L11926-11 I		L11926-12		
9/30/2008			9/30/2008		9/30/2008		
1			1		1		
0.149	EMPC	**0.15**	0.178		0.046		**0.11**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.065	EMPC	**0.08**	0.092	EMPC	0.061	EMPC	**0.08**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.054	EMPC	**0.06**	0.057		0.053	EMPC	**0.06**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.0492	U	**0.05**	0.05	U	0.0564	U	**0.05**
0.0492	U	**0.05**	0.077	EMPC	0.121	B	**0.10**
0.083	B/EMPC	**0.07**	0.061	B/EMPC	0.061	EMPC	**0.06**
0.0492	U	**0.06**	0.056	EMPC	0.0455	U	**0.05**
0.0492	U	**0.05**	0.05	U	0.051		**0.05**
0.0492	U	**0.06**	0.06		0.0455	U	**0.05**
0.0492	U	**0.05**	0.05	U	0.0455	U	**0.05**
0.058	B/EMPC	**0.06**	0.138	B/EMPC	0.087	B/EMPC	**0.11**
0.118	B	**0.13**	0.228	B	0.407	B/EMPC	**0.32**
0.0000354		**0.00**	**0.0296**		**0.00974**		**0.02**
0.152		**0.16**	**0.173**		**0.145**		**0.16**
0.0758		**0.08**	**0.101**		**0.0773**		**0.09**
		0.006					**0.017**
		0.008					**0.023**
		0.09					**0.11**
		22					**28**
1.51			1.18		0.49		
76.9			82.4		78.1		

PWB-SMB-C1 (1,3,6,9,10)		PWB-SMB-C		**PWB-SMB**	PWB-WHS-C1 (1,2,4,7,8)		PWB-WHS-C
L11926-3		L11926-4		**AVE**	L11926-9 I		L11926-10 I
9/3/2008		9/3/2008			9/4/2008		9/5/2008
1		1			1		1
0.233		0.104	EMPC	**0.17**	0.402		0.465
0.0597	U	0.0493	U	**0.05**	0.072	EMPC	0.049
0.0597	U	0.0493	U	**0.05**	0.117	EMPC	0.068
0.0495	U	0.0493	U	**0.05**	0.071	EMPC	0.047
0.0495	U	0.0493	U	**0.05**	0.056	EMPC	0.047
0.06		0.0493	U	**0.05**	0.096		0.082
0.0495	U	0.0493	U	**0.05**	0.051	EMPC	0.047
0.0495	U	0.0493	U	**0.05**	0.093	EMPC	0.087
0.0495	U	0.0493	U	**0.05**	0.069		0.047
0.0495	U	0.05	EMPC	**0.05**	0.076	EMPC	0.064
0.0495	U	0.0493	U	**0.05**	0.112	B/EMPC	0.114
0.0495	U	0.0493	U	**0.05**	0.128	EMPC	0.125
0.0495	U	0.0493	U	**0.05**	0.098	EMPC	0.068
0.067	EMPC	0.0493	U	**0.06**	0.175	EMPC	0.162
0.0495	U	0.0493	U	**0.05**	0.081	EMPC	0.065
0.086	B/EMPC	0.052	B/EMPC	**0.07**	0.302	B	0.307
0.188	B	0.115	B	**0.15**	0.541	B	0.409
0.0294		**0.0000345**		**0.01**	**0.0537**		0.0636
0.179		**0.152**		**0.17**	**0.195**		0.202
0.104		**0.0762**		**0.09**	**0.124**		0.133
				0.020			
				0.027			
				0.12 29			
1.68		1.11			1.98		1.78
78.1		79.8			80		80.4

	PWB-WHS	SFS-LMB-C1 (1,10,11,12,		SFS-LMB-C2		**SFS-LMB**	SFS-WHS-C
	AVE	L11928-3 I		L11928-4		**AVE**	L11928-9 (A)
		7/21/2008		7/22/2008			7/21/2008
		1		1			1
B	**0.43**	0.07		0.12	B/EMPC	**0.10**	0.636
EMPC	**0.06**	0.069	EMPC	0.0433	U	**0.06**	0.0482
EMPC	**0.09**	0.0499	U	0.071	EMPC	**0.06**	0.186
U	**0.06**	0.065		0.0433	U	**0.05**	0.07
U	**0.05**	0.0499	U	0.078		**0.06**	0.064
EMPC	**0.09**	0.106	EMPC	0.129	B/EMPC	**0.12**	0.179
U	**0.05**	0.07	EMPC	0.08	EMPC	**0.08**	0.062
B	**0.09**	0.079	B	0.108	EMPC	**0.09**	0.229
U	**0.06**	0.051	EMPC	0.1	EMPC	**0.08**	0.119
B	**0.07**	0.153	B/EMPC	0.199	B/EMPC	**0.18**	0.264
EMPC	**0.11**	0.141	EMPC	0.184		**0.16**	0.33
EMPC	**0.13**	0.11	EMPC	0.088	EMPC	**0.10**	0.299
EMPC	**0.08**	0.077	EMPC	0.095	EMPC	**0.09**	0.329
	0.17	0.096	EMPC	0.151	EMPC	**0.12**	0.717
EMPC	**0.07**	0.095	EMPC	0.073	EMPC	**0.08**	0.166
B/EMPC	**0.30**	0.069	B/EMPC	0.131	B/EMPC	**0.10**	0.792
B/EMPC	**0.48**	0.173	B/EMPC	0.319	B	**0.25**	1.17
	0.06	**0.0143**		**0.192**		**0.10**	**0.443**
	0.20	**0.162**		**0.281**		**0.22**	**0.53**
	0.13	**0.0879**		**0.237**		**0.16**	**0.486**
	0.006					**0.105**	
	0.009					**0.146**	
	0.14					**0.31**	
	34					**77**	
		0.18		0.31			1.25
		79.7		74.9			75.5

1 (2,7,9,10,11	SFS-WHS-C1 (2,7,9,10,11		SFS-WHS-C1	SFS-WHS-C		**SFS-WHS**
	WG27073-103 (DUP L11928-9)		ave	L11928-10		**AVE**
	7/21/2008			7/21/2008		
	1			1		
B	0.586	B	0.611	0.338	B/EMPC	**0.47**
U	0.071	EMPC	0.0596	0.0815	U	**0.07**
EMPC	0.218	EMPC	0.202	0.114	EMPC	**0.16**
	0.073	EMPC	0.0715	0.0487	U	**0.06**
EMPC	0.075		0.0695	0.0487	U	**0.06**
B/EMPC	0.21	B	0.1945	0.102	EMPC	**0.15**
EMPC	0.0447	U	0.05335	0.0487	U	**0.05**
EMPC	0.235	EMPC	0.232	0.149	B/EMPC	**0.19**
	0.0447	U	0.08185	0.0487	U	**0.07**
B/EMPC	0.234	B	0.249	0.129	B/EMPC	**0.19**
	0.33	EMPC	0.33	0.34		**0.34**
EMPC	0.217	EMPC	0.258	0.151		**0.20**
	0.163	*	0.246	0.103	EMPC	**0.17**
EMPC	0.558		0.6375	0.375		**0.51**
EMPC	0.116	EMPC	0.141	0.067	EMPC	**0.10**
B	0.775	B	0.7835	0.581	B/EMPC	**0.68**
B	1	B	1.085	0.901	B/EMPC	**0.99**
	0.167		0.305	**0.529**		**0.42**
	0.286		0.408	**0.591**		**0.50**
	0.227		0.3565	**0.56**		**0.46**
						0.144
						0.199
						0.66
						164
	1.31			0.83		
	79			80.7		

SEN-LMB-C1 (3,4,7,8,9)		SEN-LMB-C2		**SEN-LMB AVE**	SBN-SMB-C1 (1,2,6,7,8)		SBN-SMB-C2
L11926-18		L11926-19			L11926-20 R		L11926-21
7/16/2008		7/16/2008			7/16/2008		7/16/2008
1		1			1		1
0.187	EMPC	0.157	EMPC	**0.17**	0.224	B	0.35
0.0475	U	0.0487	U	**0.05**	0.085	EMPC	0.052
0.075	EMPC	0.0487	U	**0.06**	0.187	EMPC	0.161
0.0475	U	0.0487	U	**0.05**	0.112		0.0482
0.0475	U	0.0487	U	**0.05**	0.08	EMPC	0.0482
0.0475	U	0.074	EMPC	**0.06**	0.159	B/EMPC	0.133
0.0475	U	0.0487	U	**0.05**	0.113	EMPC	0.0482
0.116	EMPC	0.0487	U	**0.08**	0.149	EMPC	0.13
0.0475	U	0.0487	U	**0.05**	0.222		0.0482
0.073	EMPC	0.069	EMPC	**0.07**	0.588	B/EMPC	0.185
0.145	B	0.139	B/EMPC	**0.14**	0.244		0.261
0.339		0.204	EMPC	**0.27**	0.353		0.294
0.052	EMPC	0.0487	U	**0.05**	0.196	EMPC	0.166
0.233		0.146		**0.19**	0.376	EMPC	0.447
0.0475	U	0.0487	U	**0.05**	0.119		0.0482
0.183	B/EMPC	0.097	B/EMPC	**0.14**	0.294	B/EMPC	0.254
0.411	B	0.183	B	**0.30**	0.755	B/EMPC	0.505
0.507		**0.0147**		**0.26**	**0.645**		**0.0872**
0.555		**0.16**		**0.36**	**0.684**		**0.219**
0.531		**0.0875**		**0.31**	**0.664**		**0.153**
				0.314			
				0.435			
				0.74			
				186			
0.44		0.47			0.45		0.84
80.2		81.7			78.9		77.5

	SBN-SMB	SBN-WHS-C1 (1,2,3,4,5)		SCW-SMB-C1 (2,6,7,9,10		SCW-SMB-C	
	AVE	L11926-15 I2		L11928-23		L11928-24	
		9/17/2008		8/4/2008		8/4/2008	
		1		1		1	
B	0.29	0.598		0.0453	U	0.0447	U
EMPC	0.07	0.0483	U	0.0453	U	0.0447	U
	0.17	0.11		0.083	EMPC	0.0447	U
U	0.08	0.0483	U	0.0453	U	0.0447	U
U	0.06	0.0483	U	0.0453	U	0.0447	U
EMPC	0.15	0.095	EMPC	0.081	B/EMPC	0.072	B/EMPC
U	0.08	0.0483	U	0.0453	U	0.0447	U
B	0.14	0.12	EMPC	0.0453	U	0.047	EMPC
U	0.14	0.0483	U	0.0453	U	0.0447	U
B	0.39	0.051	EMPC	0.047	B	0.0447	U
EMPC	0.25	0.202	B/EMPC	0.0453	U	0.0447	U
EMPC	0.32	0.193		0.0453	U	0.0447	U
EMPC	0.18	0.117		0.0453	U	0.0447	U
EMPC	0.41	0.382	EMPC	0.0453	U	0.0447	U
U	0.08	0.0492	U	0.0453	U	0.0447	U
B	0.27	0.577	B/EMPC	0.084	B/EMPC	0.071	B/EMPC
B/EMPC	0.63	0.564	B/EMPC	0.137	B/EMPC	0.13	B/EMPC
	0.37	0.298		0.0000141		0	
	0.45	0.378		0.143		0.141	
	0.41	0.338		0.0716		0.0706	
	0.361						
	0.501						
	0.91						
	227						
		0.98		0.22		0.21	
		82.1		78.8		79.3	

SCW-SMB AVE	SCB-SMB-C1 (1,4,5,6,8) L11928-11 I 8/4/2008 1		SCB-SMB-C: L11928-12 I 8/4/2008 1		SCB-SMB AVE
0.05	0.049	EMPC	0.182	B	**0.12**
0.05	0.0479	U	0.045	EMPC	**0.05**
0.06	0.065		0.103	EMPC	**0.08**
0.05	0.0479	U	0.0413	U	**0.04**
0.05	0.066		0.0413	U	**0.05**
0.08	0.099	EMPC	0.064	B/EMPC	**0.08**
0.05	0.081	EMPC	0.077	EMPC	**0.08**
0.05	0.087	B/EMPC	0.072		**0.08**
0.05	0.083		0.069	EMPC	**0.08**
0.05	0.121	B/EMPC	0.155	B/EMPC	**0.14**
0.05	0.088	EMPC	0.096	EMPC	**0.09**
0.05	0.0479	U	0.061	EMPC	**0.05**
0.05	0.0492	U	0.0413	U	**0.05**
0.05	0.0518	U	0.085	EMPC	**0.07**
0.05	0.0504	U	0.0413	U	**0.05**
0.08	0.1	B/EMPC	0.121	B/EMPC	**0.11**
0.13	0.262	B	0.257	B	**0.26**
0.00	**0.027**		**0.019**		**0.02**
0.14	**0.16**		**0.145**		**0.153**
0.07	**0.0933**		**0.082**		**0.09**
0.001					**0.008**
0.001					**0.011**
0.07					**0.10**
18					**25**
	0.54		0.7		
	79.1		82.6		

APPENDIX 2A.

SPECIES AND STATION CODES

SPECIES CODES

BNT	brown trout
EEL	eel
LMB	largemouth bass
RBT	rainbow trout
SMB	smallmouth bass
WHP	white perch
WHS	white sucker

STATION CODES

AGL	Androscoggin R at Gilead above NewPage
ARP	Androscoggin R at Rumford Point above NewPage
ARF	Androscoggin R below Rumford below NewPage
ARY	Androscoggin R at Riley above Verso Paper
ALV	Androscoggin R at Livermore Falls below International Paper
AGI	Androscoggin R at Gulf Island Pond, Auburn below International Paper
ALS	Androscoggin R at Lisbon Falls below International Paper
ALW	Androscoggin Lake at Wayne below International Paper
KRM	Kennebec R at Madison above SAPPI Somerset, Skowhegan
KNW	Kennebec R at Norridgewock above SAPPI Somerset, Skowhegan
KHY	Kennebec R at Hinckley, above SAPPI Somerset Skowhegan
KFF	Kennebec R at Shawmut, Fairfield below SAPPI Somerset, Skowhegan
KRS	Kennebec R at Sidney below SAPPI-Somerset & KSTD in Waterville
KAG	Kennebec R at Augusta below former Statler Tissue
KGD	Kennebec R at Gardiner
KRD	Kennebec R at Richmond
PBW	Penobscot R at Woodville above Lincoln Paper & Tissue
PBM	Penobscot R at Winn above Lincoln Pulp and Paper in Lincoln
PBL	Penobscot R at S Lincoln below Lincoln Pulp and Paper in Lincoln
PBC	Penobscot R at Costigan, Milford above Georgia Pacific in Old Town
PBV	Penobscot R at Veazie below Georgia Pacific in Old Town
PBO	Penobscot R at Orrington below Georgia Pacific in Old Town
PWD	Presumpscot R at Windham above SAPPI Westbrook
PWB	Presumpscot R at Westbrook below SAPPI Westbrook
SFS	Salmon Falls R at S. Berwick below Berwick POTW and Prime Tanning
SEN	E Br Sebasticook at Newport below Corinna and former Eastland Woolen mill
SWP	W Br Sebasticook at Palmyra below Hartland POTW and Irving Tanning
SBN	Sebasticook R at Burnham

APPENDIX 3.

TCDD & TCDF IN SLUDGE FROM MAINE WASTEWATER TREATMENT PLANTS

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
AMERICAN TISSUE	880930	62.6	36.9	414.0		78.3
AUGUSTA	881223	61.4	37.6	326.0		70.2
	890403	61.6	34.6	242.0		58.8
	890628	65.5	17.7	414.0		59.1
	971125		0.5	4.3		
AMERICAN PULP AND F	88		104.0	2930.0		397
BERLIN NH						
AUBURN VPS	951005		1.3	17.9		4.6
AUBURN FIBER	970806		<0.9	9.9	1.1	3.6
	041307		<1	3.2		
	040506		0.5	5.2		
	071207		<.2	5.8		
	083007		0.2	2.9		
AUGUSTA SANITARY	900409		<1.2	1.3		1.5
DISTRICT	900608		<3.9	2.5		5
	900608		E2.1	10.2		5.4
	900914		<20.0	E20.0		<22
	900809		<20			16.7
	910108		<5	5.0		7.1
	910220		<1.9	0.8		<11.1
	910301		<1.9	4.8		5.7
	920416		1.9	1.9		7
	920427		<1.0	1.9		3.3
	930223		<1.3	<1.3		4
	940215		<1.0	<1.0		3
			<0.02	0.0		0.04
			<0.23	1.8		1.1
	950227		1.9	<1		5.6
	960228		<1	<1	0.8	5.8
	970408		0.9	<0.9	0.9	5.8
	980514		<1	<1		
ANSON-MADISON SANIT	910408		<1.3	2.2		<1.5
DISTRICT	911001		1.7	4.6		2.2
BANGOR	950104		<19.9	<26.4		109.6
						55.5
BERWICK SEWER DISTR	861111		<2.5	<4.0		<2.9
	890301	76.4	14.0	19.9		16.1
	890927	75.3	<12.1	<12.1		<13.4
	891208	87.5	1152.0	872.0		1240
	050819	67.5	<0.40	1.7		5.1
	051221	72.6	<0.68	1.0		6.2
	060329		<0.43	1.4	4.4	4.8
	060629		<0.60	<0.9	4.2	6.9
	061230	preliminary	0.21	4.3		
SOMERSWORTH, NH	050810	82.0	<0.52	2.1		6.4
	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	950815		<.22	1.6		0.9
	970218		<0.8	<1.7	0.3	4.3
BREWER	920520		<2.1	36.0		
	920901		<6.0	110.0		<43.1
	921116		3.8	19.0		<10.7
	930202		<3.7	11.0		<18.0
	930511		1.2	9.8		7.4
	930810		4.1	24.0		9
	931118		3.8	26.0		
	940201		3.2	24.0		9.5
	940517		<0.9	14.0		
	940823		4.5	26.0		9.9
	941108		5.2	36.0		10.8
	950613		<1	18.0		5.2
BREWER	960611		2.1	17.0	6.1	8.2
	970212		3.4	22.0	5.8	9.9
	980622		<1	<1		
	990730		<1	1.3		
	000718		1.1	1.0	3.0	
	010725		<1	<1		
	010807		<1	1.8		
	020723	75.7	<1	2.0		
	030717		<1.0	2.3		
	040426		<1.0	2.0		
BOOTHBAY HARBOR SD	011228		<1	2.6		
BOWATER						
BUCKSPORT WWTF	010919		<0.5	4.1		
MILLINOCKET	850618		<0.4			
	880602		<1.9	7.3		
	940414		<7.4	<8.9		8.2
	940506		<.9	6.7		3.4
	950316		<.6	4.0		1.7
	960711		<1, <1	<1	0.1	5.4
	960914		<0.4, <0.3	4.4	1.6	2.3
	960917		<1	<1		
CORINNA SEWER DISTR	850506					10.3
	871117		<11.9	<28.8		31.7
	880301		<3.0	8.5		<3.2
	890222		<13.0			<64.1
	890510		<5.0			
	900131		2.3	127.0		40.3
	900606		<4.0	85.4		29.8
	900606		<4.9	82.2		31.2
	900919		<10.0	50.0		35.2
	901009		<1.5	<.8		
	901024		<8.0			
	910313		<5.0			34.7
	910514					13.9
	920304		<3.9	<8.4		26.1
	930405		<4.8	19.9		16.6
	930811		<9.9	68.6		51
	940308		<13.1	46.0		41.6
	940810		<5.6	7.8		35.7
	950321		<2.1	13.3		7.7
	960206		<1.8	12.7		
DOMTAR	890113	75.8	<6.2	<3.55		
BAILEYVILLE	890424	74.7	<0.63	<4.74		
	890718	66.0	<1.76	12.9		
	891217		0.9	3.2		2.4
	910630		<1	2.0		

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	910630		<1	1.0		
	910630		<1	<1		
	910630		1.0	4.0		
	910630		<1	<1		
	910630		<1	2.0		
	911231		<1	2.0		
	911231		2.0	5.0		
	911231		<1	3.0		
	911231		<1	2.0		
	930108		<1	<1		
	940530		<5.0	<5.0		
	941222		<5.0	11.9		
	950331		<5.0	14.3		
	950630		<5.0	<5.0		
	950930		<5.0	24.5		
	951231		<1.0	3.4		
	011115		0.4	2.6		
	020315		<0.2	J0.53		
	030211		J0.3	2.3		
FRASER PAPER LTD	880903	68.3	13.9	233.0		37.2
MADAWASKA	890106	79.1	E23.4	204.0		E44
	890406	71.3	E3.83	12.9		5.2
	890930	80.1	5.0	E26.6		7.5
	940426		<.1	0.8		0.3
GARDINER WATER DIST	900918		<0.87	4.6		1.4
	910401		1.4	4.4		3.8
	911002		<0.54	5.1		4.1
	920504		<3.5	9.4		3.8
	921116		<.93	<6.4		3.4
	930407		<0.13	0.9		<0.8
	931115		<1.6	<18		5.9
	931115					1.8
	931115		<0.9			0.9
	940329		<0.2	<1.1		0.4
	941018		<1.2	<4.3		2
	950221		<2.8	5.2		3.6
	951003		<1.7			3.4
	960326		4.1	27.0	10.2	10.2
	961015		0.8	11.0	3.3	3.3
	970331		<1.1	<5.8	0.1	4.8
FORT FAIRFIELD UTIL	010514		<.67	3.2		
GEORGIA PACIFIC	880801		12.0	34.0		15.4
OLD TOWN	881225	78.6	301.0	963.0		398
	890423	78.7	380.0	1197.0		499
	890718	68.8	50.6	478.0		98.4
	950103		8.8	65.0		15.3
GRAND ISLE WWTP	010710		<1	<1		
HARTLAND WASTEWATER	881007	65.0	<2.86	<1.71		<2.9
TREATMENT PLANT	881221	65.5	<7.25	E6.09		<7.8
	890312	64.3	<0.28	5.6		<0.8
	890627	63.3	<1.36	6.5		<1.9
	000127		<0.4	E1.4		
	000426		<0.5	<0.4		
	000922		<2.1 <3.1	<1.9 <2.2		
	001205		<0.8	<0.9		
HAWK RIDGE COMPOST	1989-90	mean n=6	6.6	15.9		8.2
UNITY	1991	(1.6-13)		mean n=4		6.6
(compost)	900420		2.9	15.0		5.9
	900507		3.4	6.0		6.2
	900628		3.4	31.0		9.8

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	900712		5.0	40.0		11.7
	900817		3.4	31.0		12.8
	900820		3.0	30.0		9.2
	900820		5.0	40.0		12.6
	901010		<5	30.0		10.9
	910115		0.6	6.4		1.9
	910207		4.0	59.5		15.5
	910806		1.6	15.0		8.4
	920123		2.6	18.0		17.8
	920318		<1			16.1
	920715		<2.0	34.0		24.3
	920818		<1.0	18.0		17.3
	921007		2.2	23.0		12.4
	930111		<2.2	12.0		8.1
	930406		1.7	16.0		7.5
	930629		1.7	22.0		9.5
	931213		3.4	28.0		11.3
	940101		2.6	27.0		11.3
	940422		<1.0	12.0		5.1
	940422		<1	9.1		7.7
	940725		1.6	13.0		6
	941024		<2.4, 4.9	13.0, 33.0		8.4
HAWK RIDGE COMPOST	950724		<1	12.0		5.6
UNITY	951012		1.1	12.0		5.2
(compost)	960131		<1	8.8	1.1	5.4
	960501		<1	6.6	0.9	6.1
	960709		<1	7.6	1.3	6.3
	961007		1.4	10.0	3.2	6.8
	970110		<1	1.5	0.8	5.9
	970305		<1	3.6	1.4	6.5
	970725		<1	3.8	1.6	8.3
	971014		<1	3.8	1.2	6.4
INTERNATIONAL PAPER	850621		51.3W			
JAY	870115		190.0	760.0		266
	880218		24.0	130.0		39
	880219		23.0	121.0		34.1
	880223		14.0	75.0		21.5
	880225		57.0	250.0		82
	880226		15.0	79.0		22.9
	880227		13.0	79.0		20.9
	881231		16.6W	143W		30.9W
	890124		15W	77W		22.7W
	890126		28.0	112.0		39.2
	890323		7.7W	42.6W		12.0W
	890417		24.0	150.0		39.0
	950712		7.2	39.0		
	960125		2.6	16.0		
	960126		2.8	16.0		
	960227		<1.0	14.0		
	960228		2.3	14.0		
	961015		<1	4.0	0.5	5.6
	961016		<1	5.4	1	6.2
	961126		4.6	22.0	8.3	12.5
	961127		2.7	12.0	5.7	9.6
KENNEBEC SANITARY	870713					38.5
TREATMENT DISTRICT	871105					10.2
WATERVILLE	880118					7.2

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	880322					5.4
	880518					18.1
	880921					3.6
	890711					42.2
	891011					106.9
	900410		E7.9	121.0		41.6
	900824		3.3	54.0		22.7
	901101		3.6	12.0		<20.1
	901221		3.5	6.7		<21.3
	901221		3.5	19.0		18.3
	910408		<2.3	<3.3		<15.0
	910606		<2.9	<5.0		<19.4
	910808		2.3	53.0		15.6
	910911		3.1	4.1		<12.2
	920226		2.6	20.0		10.3
	920708		<1.0	11.0		
	930914		1.1	6.3		31.1
	941021		<1.0	8.2		13.4
	951113		<1	1.3		3.3
	960924		<1	<1	0.9	6
	971010		<1	12.0	2.6	7.8
	990120		<1	<1		
	990915		<1	<1		
	000927		0.4, <4.8, <0.75, <3.1, 2.9,3.9			
	010108		<.10	<.10		
	011017		<0.007	1.4	11	
	021017		<0.007	1.4		
	031021		0.3	1.5		
KENNEBUNK SD	011105		EMPC	1.8		
KIMBERLY-CLARK WINSLOW	871008		36.0			49.8
	871201		13.5			23.7
	880331		25.0	219.0		52.8
	880630		19.0	177.0		38.6
	880930		22.0	189.0		43.8
	881231		17.0	181.0		37.1
	890331		18.0	177.0		38.5
	890628		14.0	89.0		25
	890927		11.0	67.0		18.8
	891231		13.0	115.0		27.3
	900201		12.0	86.0		16.4
	900628		12.0	94.0		24.5
	900928		9.4	76.0		19.7
	901231		7.2	63.0		15.5
	910214		12.0	86.0		
	910411		8.3	100.0		20.5
	910630		4.6	62.0		13.4
	910930		6.5	69.0		15
	911101		6.5	63.2		
	911203		6.3	68.1		14.7
	920225		6.5	72.1		42.4
	920623		5.2	55.0		12.4
	921006		5.1	60.0		13.2
	921228		7.2	59.0		18.1
	930317		4.7	47.0		12.6
	930629		4.2	37.0		11.4
	930917		3.9	42.0		9.8
	931231		5.2	44.0		11.1
	940101		3.5	31.0		7.1
	940401		3.7	27.0		7
	940909		4.9	33.0		11.7
	941231			30.0		10.7
	950331		4.4	42.0		11.4
	950608		<1	24.0		10.3
	950930		2.2	25.0		

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	951231		3.0	34.0		15.4
	960122	RWT	3.0	34.0	6.9	11
	960410		3.1	29.0	6.1	12.2
	960702		4.4	36.0	8.9	12.4
	960702D		1.6	17.0	3.8	7.2
	961030		2.4	18.0	5.6	9.4
	961030D		<1	17.0	1.8	7
	970318	RWT	2.4	16.0	4.1	7.2
	970616	RWT	1.4	16.0	3.1	6.6
	971104	RWT	1.3	23.0	4.1	7.9
KITTERY WWTP	990319		<0.4	5.2		
LEWISTON-AUBURN TREATMENT PLANT	871231		<1.0	an for year (n=4)		
	881031		0.0			
	900809		E10	9.0		19.1
	910306		<7.3	<7.3		25
	920610		<0.8	4.5		8
	930625		<1	4.4		
	930922		<2.7	<2.5		6.6
	950405		<2.2	0.8		5.7
	960625		<1	<1	1	6.2
	961202		<1	21.0	2.2	7.3
	990730		1.0	6.9		
	000201	limed	<0.6	8.5		
	020801	limed	<1	<0.1		
	020801	ished comp	<1	<0.1		
	030709	limed	<5	<5		
	030717	ished comp	<5	<5		
	040830	limed	<0.5	<1.2		
	040830	solids/comp	1.1	2.0		
	062508	solid	<1	1.1		
	060710		<0.4	<0.4		
	070612	solid	<2	1.4		
LINCOLN PULP & PAPE LINCOLN	881119		48W	223W		70.3W
	890123	80.9	44.0	203.0		
	890123		44.0	173.0		
	890407	85.1	49.0	298.0		
	890407		41.0	219.0		
	890831	83.5	182.0	640.0		
	890831		156.0	625.0		
	890831		41.0	220.0		
	890831		59.0	294.0		
	921231		20.4	91.6		
	931014		9.1	187.5		
	940331	PRI SL	14.9	154.0		
	940331	SEC SL	97.1	734.0		
	960302		<0.4	<0.3	0	0.8
	960419		4.2	21.7	7.1	7.5
	960431		4.2	25.1		
	970831		3.7	20.0		
	971130		<1.5	3.7		
	980930		<0.7	1.2		
	990531		0.3	1.5		
	990930		0.4	1.0		
	000130		1.3	1.5		
	012307	solid	<.2	<.16		

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
MADAWASKA WWTP	011119		<1	2.0		
NEWPAGE CORP	850621		32.0			
RUMFORD	880602		105.0	674.0		171
	890108	77.1	114.0	569.0		171
	890407	73.1	46.5	184.0		65.1
	890628	76.8	E9.91	134.0		E23.3
NORRIDGEWOCK WWTP	011116		<0.1	<0.8		
NORTH JAY WWTP	011127		0.8	<1.6		
OAKLAND TREATMENT F	910304		<2.5	10.0		<3.5
	910329		<5	10.0		14.8
	920415		<1.0	<1.0		5.8
	920415		<1	<1		18.1
	930408		<1.0	<1.0		<6.6
	930501		<1.0	11.0		64.4
	940426		<1.0	<1.0		29.4
OGUNQUIT SD	010912		<1.4	1.4		
OLD TOWN	880525		<3.0	<3.0		2.9
	900212		<2.2	16.7		5.3
	910918		<2.9	6.6		24
	910918		<2.2			<2.2
ORONO TREATMENT PLA	900316		2.1			
	900412		8.5			
	901001		3.5	9.2		8.3
	901021		3.9			
	910324		<2.1	9.5		11.7
	910918		<2.9	6.6		20
	920323		<0.6	7.6		12
	920328		9.4			
	920915		<0.5	5.4		2.2
	921015		1.1			
	930427		1.3			1.8
	930427		<0.5	3.4		2.2
	940502		<0.6	2.5		1.8
PERC	910417		<2.0	9.9		5.7
PORTLAND WATER DIST	861205					3.8
PORTLAND	870402					4.1
	871124					1.0
	880913					0.1
	891206		E1.2	11.3		5.8
	891206		1.6	14.5		7.9
	901002		<3	10.0		6.7
	901002		<3	20.0		8.6
	910826		<64	<32		33.6
	910828		<66	<140		40.1
	920715		<1.1	6.4		6.1

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	920715		0.9	7.6		7.51
	930719		<1	2.3		9.8
	930719		<1.1	<3.2		22.7
	940718		<1.0	0.8		1.3
	950727		0.5	1.0		2.5
	960807		<0.7	<0.1	1.6	3.4
	980811		<0.4	3.4		
	980514		<1	<1		
	990602		<1	5.6		
	000913		<0.1	8.0		
	010806		<1	3.2		
	020830		<0.2	0.6		
	030830		<0.3	<0.2		
	040913		0.4	1.0		
	040830		<0.41	<2		
PORTLAND WATER DIST	861205					0.5
WESTBROOK WWTF	870402					4.9
	871119					0.2
	891205		E1.6	14.5		4.9
	901001		<3.0	9.0		<5.5
	910826		<64	<32		<67.3
	920714		<1.1	7.6		3.7
	930719		<1.0	3.2		6.6
	980811		<0.2	4.1		
	001011		<0.6	3.5		
	001121			3.6		
	001228		1.2	3.4		
	010329		0.6	4.6		
	010525		<0.7	<0.5		
	010803		1.4	2.1		
	020830		<0.3	0.9		
	030830		<0.3	<0.7		
	040830		<.1	2.4		
	040913		<1	1.0		
PRESQUE ISLE SEWER	010625		<1.1	<1.1		
REGIONAL WASTE SYST	890111	ash	5.5	28.0		8.3
PORTLAND	890112	ash	6.0	24.0		8.4
	890113	ash	10.0	50.0		15
	890114	ash	10.0	20.0		12
	890121	ash	6.0	90.0		15
	900211	ash	E20	210.0		E41
ROBINSON MANUFACTUR	870113		10.1	17.5		18.5
OXFORD	880419		<0.4	<0.2		<0.4
	881004		<7.3	<9.6		<8.2
	890119		<0.39	<1.2		2
	890119D		<2.1	<1.1		3
	910226		<3.0	<3.0		5
	910305		<3	<0.3		<8.0
	910308		<3	<3		<0.01
	910323		<5	<5		<0.01
	910323		<3	<3		<0.01
	920610		<1.2	<1.0		2.2
	960216		<1	0.1	1	3.2
	960315		<1	4.2	1	5.2
	970220		<1	<1	1.2	6.4
	980218		<1	<1	0.4	5.7
SABATTUS SANITARY D	010412		<2	<2		
SAPPI -SOMERSET	861217		<2	47.0		5
	870519		13.0	21.0		15.2
	870930					1.2

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	871215		60.0			60.1
	880325		27.0	88.0		40
	880630	EPA	67.0	33.0		100
	881014		40.0	98.0		52.1
	881220		54.0	177.0		76.5
	890303		54.0	92.0		65.7
	890629		23.0	53.0		30.91
	890926		<.8	16.0		1.6
	891205		18.0	52.0		26.4
	900314		<18	23.0		4.9
	900620		35.0	73.0		52.1
	900916		45.0	86.0		68.6
	901215		39.5	115.0		57.8
	910324		23.1	51.0		31.8
	910626		39.4	146.0		66.5
	910910		69.9	260.0		105.9
	920624		33.0	856.0		
	920923		20.0	39.0		
	921218		15.0	45.0		
	930107		11.0	31.0		
	930616		23.0	73.0		
	930916		56.0	170.0		
	931229		42.0	110.0		
	940108		31.0	95.0		
	940627		33.0	89.0		
	940926		12.0	36.0		
	941212		11.0	20.0		
	950313		3.6	15.0		
	950510		3.3	11.0		
	950914		9.6	25.0		
	951120	comb	1.2	4.2		
	960327		2.0	9.6		
	960624		5.1	18.0		
	960910		5.2	11.0		
	961014		5.2	15.0		
	970319		5.5	26.0		
	970624		8.5,4.9	36.0		
	970917		<.71	2.0		
	971216		<.28	0.7		
	980316		<.79	<6.2		
	980527		1.0	2.5		
	980928	dredging	6.6	18.0		
	981208		<.4	0.7		
	990330		<.26	<4.2		
	990607		<.4	0.8		
	990921		<.48	<5.4		
	991215		<.4	1.2		
	000131		<.65	1.8		
	000607		<.729	2.9		
	000926	dredging	1.86	6.8		
	001213		<.207	1.4		
	010314		0.3	0.2		
	010524		0.7	0.3		
	010910		<0.561	0.2		
	011217		0.2	0.1		
	020318		0.3	0.1		
	020509		<0.319	0.1		
	020917		3.1	1.5		
	021217		0.5	0.2		
	030310		<0.181	0.1		
	030609		0.5	0.2		
	030909		<0.121	0.0		
	031217		0.2	0.1		
SAPPI - WESTBROOK	850620		17.2			
	870929		31.0			31.1
	871231		21.0	135.0		34.7
	880331		5.6	21.0		7.7

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
	880401		8.7	3.9		14.9
	880630		13.0	55.0		18.5
	881207		19.0	127.0		34.2
			19.0	69.0		27.5
	890106		<1.8	31.0		<4.9
	890600		<1.2	13.0		22.6
	890600		5.3	35.0		10.5
	890600		<.2	0.2		0.2
	890600		<.4	8.8		14.2
	890600		69.9	60.0		105.1
	891031		5.0	30.0		12.9
	891130		3.0	30.0		15.5
	891231		7.0	50.0		15.2
	900131		6.0	20.0		14.0
	900228		2.7	24.6		7.7
	900331		5.1	33.6		17.1
	900430		5.9	34.6		14.9
	900531		5.3	25.8		10.5
	900630		19.0	26.0		29.5
	900730		5.2	20.6		11.6
	900831		2.9	12.1		9.8
	900930		2.5	10.0		7
	901231		7.7	35.7		24.8
	910917		70.0	275.0		105.1
	910331		3.4	21.5		9.1
	910630		2.9	19.6		8.4
	910930		3.8	14.2		5.2
	911231		2.4	25.1		8.2
	920331		1.2	19.4		3.8
	920505		1.6	10.8		5.4
	920821			24.5		2.8
	940131		0.9	11.6		2.9
	940324			12.3		2.0
	940728		2.1	17.3		5.1
	941213		5.3	29.2		46.9
	950329		1.2	20.0		
	950602		1.0	10.1		
	950911			18.3		
	951120		1.1	23.3		
	960327		2.0	9.6		
	990113		4.0	61.0		
	990407		2.9	36.0		
	990728		1.0	14.0		
	990830		<0.9	4.0		
	990928		<1.0	2.8		
CITY OF SOUTH PORTLAND						
S PORTLAND STP	880000		<8.65	<48		30.8
	900314		<5.3	<3.5		9.4
	900314		<2.7	<5.4		10
	910508			<10		9
	910531		<5			<11.2
	920401		<1.0	<0.8		<5.9
	920428		<0.8	1.4		4
	920714		0.9	6.4		7.5
	930324		<2.8	<2.8		16
	940315		<1.0	3.9		7.9
	941005		8.7	48.0		30.4
	950405		<1	3.3		13.6
	960610		<1	5.3	4.4	9.2
	970616		<1	15.0	6.7	11.5
	000912		<1	2.6		
	010205		<3	<2		
	010918		<1	1.8		
	040913		<0.96	1.0		
	040819		E0.41	2.0		

APPENDIX 3. TCDD AND TCDF IN SLUDGE FROM WASTEWATER TREATMENT PLANTS (pg/g)

LOCATION	DATE	%MOIST	TCDD	TCDF	DTEo	DTEd
WELLS SANITARY DIST	011109		<0.4	0.9		
YORK SD	010806		<1	<1		
VAN BUREN WWTP	000918		0.6	4.0		

D=duplicate analysis

APPENDIX 4.

TCDD & TCDF IN WASTEWATER FROM MAINE PULP AND PAPER MILLS

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE	TCDD (pg/l)	TCDF (pg/l)
ANSON MADISON	920408	<3	<3
	921001	<3	20
BREWER	920624	<5.9	
	930429	<3.9	
	941129	7.4	
	950503	<3.6	
	960416	<10	
	000501	<10	
GEORGIA PACIFIC	880630	39	
OLD TOWN	890131	27	120
	890222	210	340
	890223	92	290
	890224	77	340
	890320		34
	890324		24
	890325	36	73
	890405	30	110
	890410	17	52
	890411	32	89
	890824	32	94
	890831	13	150
	890911	<4.1	14
	890915	<3.3	<8.1
	890921	<5.7	13
	890927	<5.3	9.7
	891011	<3	11
	891019	<5.2	14
	891102	<6	18
	891106	6.7	22
	891114	<9.5	<7.1
	891127	<6.4	20
	891206	<8.4	13
	891213	<8.3	20
	891221	<4.7	23
	900105	<6.8	<8.3
	900111	<9	<8.5
	900118	<5.9	6.1
	900125	<6.7	10
	900207	<4.6	17
	900214	<6.6	23
	900222	<7.3	15
	900301	<6	11
	900308	<3	12
	900315	<4	16
	900329	<7.4	14
	900407	<7.2	24
	900502	<7	19
	900729	<9.9	49
	910330	17	70
	910430	19	65

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	910530		9.5		41
	910630		6.8		43
	910830		11		66
	911030				7.9
	911130		<7.7		<16
	920330		<5.7		50
	920730		16		69
	920830		<4.9		23
	921030		<3.0		
	921230		4.8		
	930130		<5.0		14
	930330		<4.9		12
	930530		<4.2		11
	930630		<2.8		15
	930830		<1.6		9.2
	930930		<3.5		7.6
	931130		<3.1		32
	931230		<3.2		19
	940230		<4.8		7.7
	940330		<4.6		12
	940530		<1.5		<4.5
	940630		<3.5		9.2
	940830		<2.0		<4.8
	940930		<4.6		<6.8
	941130		<9.5		<10
	941230		<1.1		5.8
	942730		<1.1		5.8
	950130		<2.4		8.2
	950119		<2.4		8.2
	951230		<1.1		5.8
	950430		<1.4		5.6
	950430		8		36
	950421		<1.4		5.6
	950622		<2		6.8
	950928		<3.8		8.1
	951129		<5.4		13
	951228		<1.4		6.2
	980115	BPA	<2.8		<5.8
		BPB	<11		53
	980130		<3		9.4
		BPA	<2.9		18
		BPB	<2.8		8.9
	980219	BPA	<1.7		12
		BPB	<3.9		39
	980230		<2.6		8.7
	980328	BPA	<5.8		11
		BPB	<5.2		13
	980330		<2		9.1
	980730		<3		<4
	980830	BP	<3.5	BP	<4.2
	980930		<3.2		<4.8
		BP	5.9	BP	28

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	981030		<3.2		<4.8
		BP	<3.5	BP	<4.2
	981130		<5.5		<5.4
		BP	<3.4	BP	<4.6
	981230		<1.6		8.7
		BP	<3.1	BP	6.5
	990130		<3.4		<2.6
		BP	<3	BP	<3.9
	990230		<10		<10
		BP	<10	BP	<10
	990330	BP	<2.3	BP	<1.8
	990530		<1.9<4.7		<2.9<3.3
		BP	<3.2	BP	<4.8
	990630		<1.3		<1.8
		BP	<2.3	BP	7.3
	990730		<.93		<1.4
		BP	<2.6	BP	<1.8
	990930		<.68		<2.1
		BP	<1.3	BP	<5
	991030		<2.5		<2.1
		BP	<3	BP	<3.6
	000130		<8.4		<4.9
		BP	<9.0	BP	<5.4
	000330		<3.4		<3.1
		BP	<2.9	BP	<2.3
	000430		<7.4		<7.6
		BP	<5.0	BP	<5.5
	000630		<2.2		<1.5
		BP	<4.0	BP	<3.0
	000830		<1.2		<1.1
		BP	<3.0	BP	<3.2
	001030		<2.3		<2.6
		BP	<3.4	BP	<3.4
	001130		<2.7		<1.4
		BP	<2.7	BP	<3.2
	010130		<3.3		<2.1
		BP	<3.9	BP	<3.1
	010330		<4.7		<3.2
		BP	<2.4	BP	<4.5
	010530		<2.9		<2.5
		BP	<6.7	BP	<5.4
	010630		<1.7		<1.5
		BP	<3.2	BP	<3.2
	010730		<2.0		<1.5
		BP	<2.7	BP	<2.2
	010930		<3.2		<2.5
		BP	<2.3	BP	<1.7
	011130		<4.7		<3.9
		BP	<3.4	BP	<2.6
	020115		<2.7		<1.9
	020115	BP	<2.5	BP	<1.8
	020225		<4.2		<3.0
	020227	BP	<3.9	BP	<4.2

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	020416		<1.4		<1.5
	020416	BP	<2.4	BP	<2.3
	020625		<4.1		<4.4
	020730		ND		ND
	020723	BP	<4.1	BP	<2.5
	020830		ND		ND
	021010	BP	<3.2	BP	<3.1
	020930		<4.7		<3.1
	021030		<3.2		<3.1
	021130		<10		<10
	021106	BP	<10	BP	<10
	021230		<0.69		<1.6
	021203	BP	<0.69	BP	<1.6
	030130		<0.49		<0.93
	030230		<1.4		<1.6
	030330		<1.8		<1.5
	030430		<1.4		<2.4
	030530		<6.8		<8.9
	030630		<5.0		<3.6
	030730		<2.2		<1.4
	030830		<3.4		<3.2
	030930		<7.0		<5.1
	031030		NS		NS
	031130		<10		<10
	031230		<2.9		<1.7
	040130	BP	<10	BP	<10
	040230	BP	<10	BP	<10
	040330	BP	<10	BP	<10
	040430	BP	<10	BP	<10
	040530	BP	<10	BP	<10
	040630	BP	<1.6	BP	<1.2
	040730	BP	<3.1	BP	<2.1
	040830	BP	<10	BP	<10
	040930	BP	<10	BP	<10
	041030	BP	<10	BP	<10
	041130	BP	<10	BP	<10
	050131	BP		BP	<10
	050228	BP	<10	BP	<10
	050331	BP	<10	BP	<10
	050430	BP	<10	BP	<10
	050531	BP	<10	BP	<10
	050630	BP	<3.5	BP	<3.1
	050731	BP	<4.7	BP	<2.2
	050831	BP	<8.4	BP	<7.5
	050930	BP	<0.42	BP	<0.39
	051031	BP	<0.42	BP	<0.39
	051130	BP	0.86	BP	0.96
	051231	BP	0.31	BP	<0.5
	060129	BP	<0.68	BP	<0.72
	060226	BP	<0.69	BP	<0.81
	060326	BP	<0.7	BP	<0.52

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
DOMTAR	880101		6.8		25
Baileyville	900316		<5		4
	900423		<3		<6
	900531		<8		<5
	900619		<3		<1
	900716		<1		<3
	900807		<2		<5
	910630		<10		<10
	910630		<10		<10
	910630		<11		<11
	910630		<11		<11
	910630		<11		<11
	910630		<11		<11
	910630		<10		<10
	910630		<11		<11
	910630		<11		<11
	911231		<10		<10
	911231		<10		<10
	911231		<11		<11
	911231		<11		<11
	911231		<10		<10
	911231		<11		<11
	911231		<10		<10
	911231		<11		<11
	911231		<11		<11
	930408		<10		<10
	930506		<10		<10
	930713		<10		<10
	940530		<10		<10
	941222		<10		<10
	950331		<10		<10
	950630		<10		<10
	950930		<10		<10
	951231		<10		<10
	980330				60
	980421		<10		60
	980825		<10		40
		BP	<10	BP	10
	981230		<10		<10
		BP	<10	BP	<10
	990430		<10		<10
		BP	<10	BP	<10
	990930		<4		<3
			<2		<6
		BP	C<2 A<4	BP	C<2 A<7
		BP	C<5 A<3	BP	C<4 A<3
	991030		<5		<3
		BP	C<7 A<5	BP	C<8 A<3
	991130		<1		<6
		BP	C<1 A<2	BP	C<5 A<3A
	000130		<4.2		<3.4
		BP	C<2.0 A<2.0	BP	C<4.0 A<3.0

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
			<5.0		<4.0
		BP	C<3.0 A<3.0	BP	C<3.0 A<2.0
	000930	BP	C<7.1 A<3.4	BP	C<5.6 A<2.4
		BP	C<2.3 A<2.5	BP	C<1.6 A<1.7
	001200	BP	C<5.9 A<3.8	BP	C<5.3 A<2.1
		BP	C<5.1 A<4.0	BP	C<4.0 A<3.0
	020319	BP	C<4.7 A<5.1	BP	C<4.0 A<4.2
	020610		<2.4		<3.1
	020615	BP	C<2.6	BP	C<2.1
	020918	BP	C<1.9 A<1.3	BP	C<4.7 A<1.3
	030211		<4.7		J7.3
	030312	BP	C<4.0 A<2.6	BP	C<4.3 2.6
	031023	BP	C<5.8 A<3.5	BP	C<4.3 A<2.5
	040630	BP	<10	BP	
	060430	BP	<10	BP	<10
	070430	BP	C9.7, A<9.7		C<9.7, A0.87
	080630	BP	C1.2, A1.2		C<9.7, A0.92
INTERNATIONAL PAPER	880101		88		420
VERSO	880715		30		150
Jay	890307		30, E6		100, E20
	890310		16		74
	890616		<8		980
	890621		17		140
	890713		<16		50
	890720	DEP	30		150
	890818		20		110
	900413		<10		90
	910924		<10		60
	910926		<10		60
	911129		50		210
	911219		<20		<80
	920125		20		110
	920126		20		110
	920127		30		100
	920128		30		100
	920129		13.7		49.9
	920312		19.3		65.6
	920320		14.8		73.9
	920423		<13.9		59.1
	920610		<5.7		29.5
	920617		<6.3		30.8
	920723		<8.4		33.6
	920819		6.6		29.7
	920923		<2.6		<2.0
	921111		<6.1		22.4
	921202		<2.6		<14.4
	930125		5.4		19.6
	930222		<5.3		25.5
	930420		<2.0		16.7
	930527		4.3		10.3
	930716		<5.2		28.9

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	930826		<5.3, <6.5		21.5, 19.2
	930910		<8.6		9.4
	931022				19.5
	931119		<3.6		19.5
	931224		10.9		31.1
	940125		<4.1		21.6
	940226		7.3		38
	940422		7.7		41.1
	940520		4.1		25.6
	940722		<3.4		16.7
	940829		<7.9		31.8
	941027		<3.4		25.3
	941125		<6.8		24.4
	950126		<5.0		20.9
	950222		<3.6		21.4
	950420		<2.5		25.6
	950527		<1.8		24.1
	950724		<3.2		16.1
	950826		<4.9		7.5
	950929		<6.0		15.4
	951020		<8.5		12.9
	951122		<3.8		10.5
	960228		<10		6.5
	960430		<10		12.8
	960530		<10		15.7
	961030		<10		7.7
	961130		<10		<10
	970130		<10		<10
	970228		<10		11.5
	970330		<10		<10
	970330	BPA	<6.2	BPA	<6.3
		BPB	<5.1	BPB	<3.7
	970430		<10		14.4
	970522	BPA	4.9	BPA	5.6
		BPB	10.9	BPB	9.6
	970406	BPA	<4.9	BPA	10.9
		BPB	<5.6	BPB	9.6
	970630		<10		6.8
	970730		<10		<10
	970728	BPA	<5.2	BPA	11.5
		BPB	<5.4	BPB	6.3
	970830		<10		<10
	971030		<10		
	971013	BPA	<4.3	BPA	<5
		BPB	<7.2	BPB	<8.3
	971130		<10		
	980117		<2.1		7.1
	980126	BPA	<3.5		<3.2
		BPB	<1.2		<1.7
	980221		<3.7		<3.7
	980406	BPA	<0.6		<2.3
		BPB	<1.4		<1.3
	980516		<3		8

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)	TCDF (pg/l)
	980613		<1.4	<2.2
	980706	BPA	<2.8	19
		BPB	<1.2	4.8
	980711		<2.3	4.9
	980814		<2.2	<1.1
	981012	BPA	<2.0	45
		BPB	<2.9	<1.6
	981016		<2	5.1
	981116	BPA	<6.8	9.9
	981119		<7	<8.6
	981130	BPB	<3.3	<5.2
	990117		<2.8	3.6
	990112	BPA	<.99	54
		BPB	<.97	4
	990312		<3	7.4
	990304	BPA	<2.1	9.7
		BPB	<2.7	<5.9
	990412		<5.9	18
	990408	BPA	<2.6	7.4
		BPB	<5.5	<5
	990618		<5.1	<4.2
	990622	BPA	<8.6	<9
		BPB	<3.3	<4.1
	990723		<2.2	<1.6
	990720	BPA	<2.9	130
		BPB	<2.5	<2.3
	990917		<6.2	<6.5
	990913	BPA	<3.8	<1.6
		BPB	<3.4	<1.4
	991008		<5.6	6.6
	991005	BPA	<2	<1.6
		BPB	<3	<1.3
	991112		<2.7	<6.5
	991110	BPA	<2.7	<4
		BPB	<2.1	<2.1
	000104	BPA	<2.5	<1.8
		BPB	<3.0	<2.8
	000306	BPA	<1.6	<5.0
		BPB	<1.1	<2.6
	000419	BPA	<2.9	<1.6
		BPB	<2.7	<1.8
	000612	BPA	<3.7	<2.6
		BPB	<1.51	<0.59
	000705	BPA	<2.43	<4.57
		BPB	<2.07	<1.8
	000829	BPA	<2.28	<3.57
		BPB	<1.69	<2.20
	001019	BPA	<0.573	<1.91
		BPB	<0.698	<1.61
	001207	BPA	<1.80	<1.89
		BPB	<0.825	<1.19
	020130		ND	ND
	020230		ND	ND

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE	TCDD (pg/l)	TCDF (pg/l)
	020430	ND	ND
	020530	ND	ND
	020730	ND	ND
	020830	ND	ND
	021030	ND	ND
	021130	ND	ND
	030130	ND	ND
	030230	ND	ND
	030330	ND	ND
	030430	ND	ND
	030630	ND	ND
	031030	ND	ND
	031130	ND	ND
	040130	<2.5	<1.5
		<1.3	4.2
	040224	<3.8	<3.9
		<3.8	<2.9
	040520	<1.7	<1.2
		<2.0	<1.2
	040622	<1.9	7.9
		<3.7	<2.5
	040722	>1.3	<0.79
		<6.7	<5.6
	040824	<3.3	<2.6
		<2.1	<2.1
	041021	<0.68	<0.75
		<0.71	<0.80
	041111	<0.70	2.8
		<0.57	2
	050112	<0.35	<0.54
		<0.77	<1.0
	050217	<2.8	<2.9
		<4.0	<3.7
	050608	<0.62	<7.3
		<0.56	<8.2
	050622	<6.2	<4.1
		<0.33	<4.8
	050825	<1.7	<1.1
		<1.2	<1.4
	050912	<0.62	<0.72
		<0.61	<9.6
	051107	<0.34	<0.54
		<0.61	<0.99
	051212	<0.52	<2.6
		<0.57	<0.32
	060207	<0.26	<0.54
		<0.20	<0.48
	060306	<1.1	<0.89
		<0.54	<0.67
	102307	<1.07	<1.09
		<1.30	<1.07
	090308	<0.1	<3.23
		<0.1	<3.19

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
HARTLAND	960530		<0.06		
KIMBERLY-CLARK	930308		<10		<12
	930623		<4.6		<3.9
LINCOLN PAPER & TISSUE	881130		32		130
	920817		11.2		69.8
	920908		<11		27.3
	921117		7.7		39.1
	921216		<1.9		9.5
	931230		<5.5		<17.3
	940417		1.9		7.5
	950824		1.3		8.5
	960409		1.3		8.5
	970116	BP	25.4	BP	103
	970212	BP	11	BP	43.1
	970522	BP	11.4	BP	27.6
	970813	BP	6.4	BP	14.4
	971001	BP	1.6	BP	1.9
	971231	BP	<2.4	BP	<3.83
	980330	BP	<3.4	BP	<3.7
	980430	BP	<10	BP	13.2
	980630	BP	<8.9	BP	<4
	980830	BP	<7.1	BP	<7.6
	980930	BP	<2.3<4.1	BP	<2.3<3.2
	981130	BP	<2.6<4.9	BP	<2.7<3.6
	981230	BP	<1.5	BP	<1.3
	990230	BP	<1.1	BP	<2.1
	990330	BP	<2.5	BP	<3.8
	990430	BP	<2.8	BP	<3.2
	990630	BP	<4.4	BP	<4.5
	990830	BP	<4.3	BP	<2.8
	990930	BP	<1.3	BP	<.44
	991030	BP	<2.3	BP	<2.2
	991130	BP	<3	BP	<2.9
	000130	BP	<1.4	BP	<1.4
	000330	BP	<3.0	BP	<1.2
	000430	BP	<1.6	BP	<1.3
	000630	BP	<7.14	BP	<3.63
	000730	BP	<2.07	BP	<1.25
	000830	BP	<2.14	BP	<3.17
	001030	BP	<3.39	BP	<2.17
	001130	BP	<2.08	BP	<4.43
	010228	BP	<2.11	BP	<2.39
	010330	BP	<0.56	BP	<0.618
	010530	BP	<3.28	BP	<7.31
	010630	BP	<2.05	BP	<1.97
	010830	BP	<1.25	BP	<3.56
	010930	BP	<4.01	BP	<3.37
	011130	BP	<2.18	BP	<6.19

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	011230	BP	<4.97	BP	<4.79
	020230	BP	<1.68	BP	<1.22
	020330	BP	<2.27	BP	<1.31
	'020530	BP	<1.34	BP	<1.08
	020630	BP	<.841	BP	<1.03
	021030	BP	<.381	BP	<.548
	021130	BP	<.612	BP	<.340
	030230	BP	<1.16	BP	<.630
	030330	BP	<.995	BP	<.590
	030530	BP	<1.63	BP	<1.17
	030630	BP	<2.15	BP	<.447
	030730	BP	<2.82	BP	<2.76
	030830	BP	<3.76	BP	<3.02
	040830	BP	<0.785	BP	<2.12
	040930	BP	<0.824	BP	<0.769
	041130	BP	<1.92	BP	<1.57
	041230	BP	<1.81	BP	<1.37
	050228	BP	<1.44	BP	<1.39
	050330	BP	**5.52**	BP	<0.934
	050530	BP	<0.975	BP	<0.904
	050630	BP	<0.910	BP	<1.25
	050830	BP	<1.25	BP	<1.66
	050930	BP	<1.38	BP	<1.53
	051130	BP	<1.03	BP	<1.29
	051230	BP	<0.982	BP	<0.632
	060228	BP	<0.718	BP	<0.587
	060330	BP	<0.655	BP	<0.570
	060530	BP	<0.734	BP	<0.857
	060630	BP	<1.94	BP	<2.10
	060830	BP	<0.865	BP	<1.01
	060930	BP	<0.631	BP	<0.910
	061130	BP	<2.24	BP	<1.78
	061230	BP	<1.32	BP	<1.32
	070228	BP	<0.89	BP	<1.18
	080630	BP	<0.94	BP	<1.18
NEWPAGE CORP	880518		120		570
	890301		25		80
	890807		<6		20
	890810		<13		20
	890814		<5		13
	890817		<5		18
	890821		<8		21
	890824		<5		10
	890829		<5		18
	890831		<11		20
	890905		<11		20
	890907		<9		18
	891023		<3		7
	891026		<5		6
	891222		<5		20

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE	TCDD (pg/l)	TCDF (pg/l)
	900216	<2	6
	900216	<1	7
	900515	<10	<8
	900515	<1	5
	900627	<3	8
	900627	<3	9
	920217	<4.6	14
	920221	<4.6	13
	920311	<4.6	9.9
	920316	3.2	8.7
		3.5	12
		4.6	17
	920326	4.5	8.5
	920412	6.3	24
	920613	<4.6	6.8
	920708	<4.6	<5.8
	920831	<4.6	3.5
	920904	<3.8	
	921104	<3.7	
	921201	<2.4	
	930105	<2.4	
	930201	<2.4	<10
	930401	<2.8	<10
	930501	<2.4	<10
	930701	<3.9	12
	930801	<2.8	<3.4
	931001	<3.2	<10
	931101	<3.9	<3.6
	940130	<2.8	<5.2
	940219	<1.9	<1.3
	940417	<3.3	<2.4
	940509	<3.6	<1.2
	940728	<3.7	<1.7
	940829	<2.7	<2.0
	941024	<2.1	<1.1
	941205	<2.7	<1.8
	950131	<10	<10
	950229	<10	<10
	950430	<10	<10
	950531	<10	<10
	950731	<10	<10
	950831	<10	<10
	951031	<10	<10
	951130	<10	<10
	960130	<10	<10
	960330	<10	<10
	960430	<10	<10
	960530	<10	<10
	960730	<10	<10
	960830	<10	<10
	961030	<10	<10
	961130	<10	<10

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	970317		<10		<10
	980130		<10		<10
	980230		<10		<10
	980430		<10		<10
	980530		<10		<10
	980609	BP	<10		<10
	980730		<10		<10
	980830	BP	<10		<10
	981030	BP	<10		<10
	981130	BP	<10		<10
	990130		<10		<10
		BP	<10	BP	<10
	990230		<10		<10
		BP	<10	BP	<10
	990430		<10		<10
		BP	<10	BP	<10
	990530		<10		<10
		BP	<10	BP	<10
	990730		<10		<10
		BP	<10	BP	<10
	990830		<10		<10
		BP	<10	BP	<10
	991030		<10		<10
		BP	<10	BP	<10
	991130		<10		<10
		BP	<10	BP	<10
	000113	BP	<10	BP	<10
	000224	BP	<10	BP	<10
	000410	BP	<10	BP	<10
	000505	BP	<10	BP	<10
	000718	BP	<10	BP	<10
	001003	BP	<10	BP	<10
	001106	BP	<10	BP	<10
	010112	BP	<10	BP	<10
	010201	BP	<10	BP	<10
	010408	BP	<10	BP	<10
	010502	BP	<10	BP	<10
	010711	BP	<10	BP	<10
	010808	BP	<10	BP	<10
	011009	BP	<10	BP	<10
	011102	BP	<10	BP	<10
	020105	BP	<10	BP	<10
	020202	BP	<10	BP	<10
	020408	BP	<10	BP	<10
	020503	BP	<10	BP	<10
	020712	BP	<10	BP	<10
	020817	BP	<10	BP	<10
	021001	BP	<10	BP	<10
	021106	BP	<10	BP	<10
	030102	BP	<10	BP	<10
	030201	BP	<10	BP	<10
	030406	BP	<10	BP	<10
	030512	BP	<10	BP	<10

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	030706	BP	<10	BP	<10
	030811	BP	<10	BP	<10
	031020	BP	<10	BP	<10
	031110	BP	<10	BP	<10
	040130		<10		<10
	040230				<10
	040330		<10		<10
	040430				<10
	040530				<10
	040630		<10		<10
	040730				<10
	040830				<10
	040930		<10		<10
	041030				<10
	041130				<10
	050110		<10		<10
	050207		<10		<10
	050404		<10		<10
	050530		<10		<10
	050704		<10		<10
	050815		<10		<10
	060101		0.69		<0.523
	070131		1.35		1.49
	080131		<1.0		<1.86
SAPPI - SOMERSET	880630		16,19		63,100
	900710		<7.1		8.4
	900716		<6.1		5.9
	dup		<5.5		<7.3
	900724		<3.6		<3.9
	930105		<3.4		9.2
	930224		<4.7		15
	930311		<4.0		10
	930409		6.8		18
	930616		6.3		14
	930917		7		17
	931203		7.6		19
	940107		<3.8		9.2
	940624		<10		13
	940923		<11		8.7
	941209		<4.6		6.6
	950310		9		11.6
	950505		<10.3		6.6
	950616		<3.9		<9.4
	950807		5.8		14.5
	950911		2.8		15.3
	951124		<4.2		38.7
	951208		<7.4		29
	960112		<1.6		<2.3

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	960209		<3.2		<4.8
	960405		<2.7		<2.7
	960610		<3.6		6.5
	960712		<3.0		4.2
	960809		5.8		15
	961108		<4.9		11
	961206		<4.1		9.7
	970103		<4.3		6.2
	970207		<2.0		7.5
	970411		<2.2		5.7
	970509		8.2		12
	970708	BP	<3.0		
	970711		<3.2		<2.9
	970805	BP	<2.9		
	970807	BP	<3.5		
	970815		<3		<3.3
	970820	BP	<3.7		
	980825	BP	<2.3		
	970916	BP	<2.6		
	971017		<9.1		<6.3
	971114		<3.8		<0.51
	980109		<3.5		<1.9
	980112	BP	<3.2		
	980206		<4.3		<2
	980410		<1.6		<1.6
	980608		<5.7		<1.7
	980810		<1.6		<2.5
	980911		<1.9		<2
	981009		<1.9		<1.9
	981106		<2.2		<1
	990210		<1.5		<1.2
	990310		<2.6		<2
	990410		<4.6		<3.3
	990510		<3.4		<4.5
	990710		<3.5		<3.9
	990910		<7.3		<6
	991010		<4.1		<6.1
	991110		<2.2		<1.1
	000204		<3.4		<4.7
	000310		<3.1		<3.1
	000407		<3.3		<3.3
	000505		<5.7		<4.5
	000728		<2.24		<1.22
	000908		<4.34		<4.67
	001110		<0.556		<1.13
	001208		<3.61		<3.09
	020130	BP	<0.993	BP	<0.696
	020230	BP	<3.29	BP	<2.16
	020330	BP	<2.64	BP	<1.09
	020430	BP	<0.328	BP	<0.475
	020530	BP	<0.471	BP	<0.473
	020630	BP	<0.926	BP	<0.982
	020730	BP	<0.903	BP	<0.708

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	020830	BP	<0.955	BP	<1.19
	020930	BP	<2.41	BP	<2.25
	021030	BP	<0.661	BP	1.73
	021130	BP	<1.77	BP	<1.66
	021230	BP	ND	BP	<1.68
	030130	BP	<0.933	BP	<0.435
	030230	BP	<1.91	BP	<2.36
	030330	BP	<1.18	BP	<1.20
	030430	BP	<1.82	BP	<1.21
	030530	BP	<0.878	BP	<0.874
	030630	BP	<0.841	BP	<0.847
	030730	BP	<1.18	BP	<0.985
	030830	BP	<2.04	BP	<1.42
	030930	BP	<0.672	BP	<0.573
	031030	BP	<1.28	BP	<1.20
	031130	BP	<1.41	BP	<1.49
	031230	BP	<3.04	BP	<3.38
	040130	BP	<1.96	BP	<2.13
	040230	BP	<1.95	BP	<1.94
	040330	BP	<0.440	BP	<0.642
	040430	BP	<0.691	BP	<0.628
	040530	BP	<0.532	BP	<0.498
	040630	BP	<1.08	BP	<1.58
	040730	BP	<1.34	BP	<1.06
	040830	BP	<0.904	BP	<0.576
	040930	BP	<1.47	BP	<1.31
	041130	BP	<2.01	BP	<2.09
	050131	BP		BP	<0.551
	050228	BP	<2.06	BP	<1.76
	050331	BP	<0.541	BP	<0.527
	050430	BP	<0.938	BP	<0.543
	050531	BP	<0.790	BP	<0.890
	050630	BP	<1.06	BP	<0.873
	060226	BP	<2.5	BP	
	060924	BP	<0.350	BP	<0.933
	071031	BP	<0.70	BP	<1.68
	081130	BP	<1.45	BP	0.87
SAPPI - WESTBROOK	880101		6.3		
	1989		1		
	901118		<3		8
	910425		<5		<5
	910716		<8		<5
	911203		<8		<5
	920218		<2.8		7
	920507		<1.2		4.6
	920715		<5.8		<4.9
	921114		<1.8		3.9
	930303		<7.8		16
	930617		<1.5		<6.4
	930915		<2.4		5.7

APPENDIX 4. 2378-TCDD AND 2378-TCDF IN EFFLUENT FROM WASTEWATER TREATMENT PLANTS

SOURCE	DATE		TCDD (pg/l)		TCDF (pg/l)
	931208		<3.4		<7.3
	940130		<6.5		<9.8
	940324				<5.9
	940727		3.6		7.8
	941212		<6.0		<15.8
	950730		<5.4		9.8
	950615		<2.8		<9.9
	950815		<4.3		<21.9
	970519	BP	<7.9	BP	<10
	970808	BP	5.05	BP	<8.2
	971002	BP	<	BP	13.46
	980324		<1.6		5.9
	980914	BP	13.4	BP	130
	980915		<1.0		11
	980921		<1.9		<1.9
		BP	<10	BP	110
	981118		<10		<10
		BP	<10	BP	130
	981208	BP	<10	BP	140
	981209		<11		<11
	990113		<10		<10
	990131				<11
		BP	10	BP	140
	990209		<10		<10
	990318		<10		<10
	990331				<10
		BP	<11	BP	150
	990407		<10		<10
	990526		<11		15
	990617		<10		<10
	990630				15
		BP	<11	BP	130
	990728		<9.5		<9.5
	990731	BP	<10	BP	54
	990830		<10		<10
	990830		<10		<10

APPENDIX 5.

LENGTHS AND WEIGHTS FOR 2008 FISH SAMPLES

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
ANDROSCOGGIN RIVER			
GILEAD			
AGL-RBT-1	6/9/2008	320	240
AGL-RBT-2	6/9/2008	240	145
AGL-RBT-3	6/16/2008	330	370
AGL-RBT-4	6/17/2008	320	330
AGL-RBT-5	6/17/2008	255	160
AGL-RBT-6	6/20/2008	266	235
AGL-RBT-7	6/22/2008	225	120
AGL-RBT-8	7/10/2008	236	145
AGL-RBT-9	**7/14/2008**	**217**	**105**
AGL-RBT-10	7/14/2008	222	107
AGL-RBT-11	7/14/2008	330	320
GULF ISLAND POND			
AGI-SMB-1	8/1/2008	322	353
AGI-SMB-2	8/1/2008	339	477
AGI-SMB-3	8/1/2008	329	412
AGI-SMB-4	8/1/2008	307	329
AGI-SMB-5	8/1/2008	330	497
AGI-SMB-6	8/1/2008	362	656
AGI-SMB-7	8/1/2008	340	418
AGI-SMB-8	8/6/2008	364	639
AGI-SMB-9	8/6/2008	310	362
AGI-SMB-10	8/6/2008	309	382
AGI-WHS-1	8/1/2008	415	860
AGI-WHS-2	8/1/2008	444	1107
AGI-WHS-3	8/1/2008	422	893
AGI-WHS-4	8/1/2008	451	1067
AGI-WHS-5	8/1/2008	435	974
AGI-WHS-6	8/1/2008	465	1110
AGI-WHS-7	8/1/2008	443	1002
AGI-WHS-8	8/1/2008	440	949
AGI-WHS-9	8/1/2008	440	933
AGI-WHS-10	8/1/2008	450	985

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
ANDROSCOGGIN L.			
ALW-WHP-1	7/23/2008	285	295
ALW-WHP-2	7/23/2008	280	245
ALW-WHP-3	7/23/2008	278	251
ALW-WHP-4	7/23/2008	281	288
ALW-WHP-5	7/23/2008	283	263
ALW-WHP-6	7/23/2008	283	301
ALW-WHP-7	7/23/2008	292	342
ALW-WHP-8	7/23/2008	292	314
ALW-WHP-9	7/23/2008	285	283
ALW-WHP-10	7/23/2008	294	300
KENNEBEC RIVER			
FAIRFIELD			
KFF-BNT-1	6/3/2008	425	740
KFF-BNT-2	6/3/2008	415	900
KFF-BNT-3	6/4/2008	400	590
KFF-BNT-4	6/8/2008	395	650
KFF-BNT-5			
KFF-RBT-1	6/6/2008	405	600
KFF-RBT-2	6/6/2008	385	550
KFF-RBT-3	6/8/2008	425	650
KFF-RBT-4	6/8/2008	430	870
KFF-RBT-5	6/8/2008	425	780
AUGUSTA			
KAG-SMB-1	7/9/2008	370	640
KAG-SMB-2	7/9/2008	395	740
KAG-SMB-3	7/9/2008	380	530
KAG-SMB-4	7/9/2008	355	510
KAG-SMB-5	7/9/2008	309	290
KAG-SMB-6	7/9/2008	325	390
KAG-SMB-7	7/9/2008	310	320
KAG-SMB-8	7/9/2008	306	305
KAG-SMB-9	7/9/2008	315	330
KAG-SMB-10	7/9/2008	355	660

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
GARDINER			
KGD-SMB-1	7/10/2008	325	425
KGD-SMB-2	7/10/2008	360	580
KGD-SMB-3	7/10/2008	310	375
KGD-SMB-4	7/10/2008	310	275
KGD-SMB-5	7/10/2008	330	400
KGD-SMB-6	7/10/2008	310	330
KGD-SMB-7	7/10/2008	300	275
KGD-SMB-8	7/10/2008	325	400
KGD-SMB-9	7/10/2008	315	340
KGD-SMB-10	7/10/2008	310	350
RICHMOND			
KRD-SMB-1	7/11/2008	320	320
KRD-SMB-2	7/11/2008	310	345
KRD-SMB-3	7/11/2008	380	650
KRD-SMB-4	7/11/2008	300	340
KRD-SMB-5	7/11/2008	325	450
KRD-SMB-6	7/11/2008	310	330
KRD-SMB-7	7/11/2008	308	300
KRD-SMB-8	7/11/2008	345	505
KRD-SMB-9	7/11/2008	400	775
KRD-SMB-10	7/11/2008	355	520
PENOBSCOT RIVER			
WOODVILLE (MATTASEUNK IMPOUNDMENT)			
PBW-SMB-01	8/26/2008	347	622
PBW-SMB-02	8/26/2008	442	1214
PBW-SMB-03	8/26/2008	414	917
PBW-SMB-04	8/26/2008	410	940
PBW-SMB-05	8/26/2008	400	903
PBW-SMB-06	8/26/2008	465	1436
PBW-SMB-07	8/26/2008	394	796
PBW-SMB-08	8/26/2008	382	752
PBW-SMB-09	8/26/2008	394	827
PBW-SMB-10	8/26/2008	412	1012
PBW-WHS-01	8/26/2008	450	1011
PBW-WHS-02	8/26/2008	434	1038
PBW-WHS-03	8/26/2008	435	969
PBW-WHS-04	8/26/2008	431	1046
PBW-WHS-05	8/26/2008	408	904
PBW-WHS-06	8/26/2008	440	977
PBW-WHS-07	8/26/2008	435	986
PBW-WHS-08	8/26/2008	432	978
PBW-WHS-09	8/26/2008	452	1146
PBW-WHS-10	8/26/2008	463	1170

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
S LINCOLN			
PBL-SMB-1	8/26/2008	464	1435
PBL-SMB-2	8/26/2008	406	976
PBL-SMB-3	8/26/2008	438	1042
PBL-SMB-4	8/26/2008	390	848
PBL-SMB-5	8/26/2008	430	1049
PBL-SMB-6	8/26/2008	395	872
PBL-SMB-7	8/26/2008	386	848
PBL-SMB-8	8/26/2008	455	1239
PBL-SMB-9	8/26/2008	410	883
PBL-SMB-10	8/26/2008	428	1199
PBL-WHS-1	8/26/2008	410	858
PBL-WHS-2	8/26/2008	455	1087
PBL-WHS-3	8/26/2008	470	1216
PBL-WHS-4	8/26/2008	405	809
PBL-WHS-5	8/26/2008	448	1065
PBL-WHS-6	8/26/2008	382	974
PBL-WHS-7	8/26/2008	418	774
PBL-WHS-8	8/26/2008	432	1009
PBL-WHS-9	8/26/2008	394	791
PBL-WHS-10	8/26/2008	448	1066
PRESUMPSCOT RIVER			
WINDHAM			
PWD-SMB1	9/30/2008	332	538
PWD-SMB2	9/30/2008	308	339
PWD-SMB3	9/30/2008	320	469
PWD-SMB4	9/30/2008	300	335
PWD-SMB5	9/30/2008	316	384
PWD-SMB7	9/30/2008	370	700
PWD-SMB8	10/1/2008	286	342
PWD-SMB9	10/1/2008	313	431
PWD-SMB10	10/1/2008	340	543
PWD-SMB11	10/2/2008	315	409
PWDWHS1	9/30/2008	396	714
PWDWHS2	9/30/2008	365	557
PWDWHS3	9/30/2008	366	605
PWDWHS4	9/30/2008	370	615
PWDWHS5	9/30/2008	425	952
PWDWHS6	9/30/2008	367	605
PWDWHS7	9/30/2008	404	827
PWDWHS8	9/30/2008	403	734
PWDWHS9	9/30/2008	406	792
PWDWHS10	9/30/2008	369	656

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
WESTBROOK			
PWBSMB1	9/3/2008	280	491
PWBSMB2	9/3/2008	300	316
PWBSMB3	9/3/2008	290	331
PWBSMB4	9/3/2008	293	352
PWBSMB5	9/4/2008	280	264
PWBSMB6	9/4/2008	306	375
PWBSMB7	9/4/2008	285	282
PWBSMB8	9/4/2008	320	471
PWBSMB9	9/4/2008	298	348
PWBSMB10	9/4/2008	284	318
PWBWHS1	9/4/2008	350	539
PWBWHS2	9/4/2008	315	452
PWBWHS3	9/5/2008	420	870
PWBWHS4	9/5/2008	405	928
PWBWHS5	9/5/2008	350	547
PWBWHS6	9/5/2008	362	589
PWBWHS7	9/5/2008	360	611
PWBWHS8	9/5/2008	334	478
PWBWHS9	9/5/2008	340	489
PWBWHS10	9/5/2008	332	465
SALMON FALLS RIVER			
S BERWICK			
SFS-LMB-01	7/21/2008	439	930
SFS-LMB-06	7/22/2008	430	782
SFS-LMB-10	7/22/2008	409	670
SFS-LMB-11	8/10/2008	424	1093
SFS-LMB-12	8/10/2008	365	843
SFS-LMB-13	8/10/2008	305	399
SFS-LMB-15	8/13/2008	415	1005
SFS-LMB-16	8/13/2008	455	1261
SFS-LMB-17	8/14/2008	352	759
SFS-LMB-18	8/14/2008	375	677
SFS-WHS-1	7/21/2008	439	930
SFS-WHS-2	7/21/2008	430	877
SFS-WHS-3	7/21/2008	342	414
SFS-WHS-4	7/21/2008	336	422
SFS-WHS-5	7/22/2008	422	786
SFS-WHS-6	7/22/2008	430	782
SFS-WHS-7	7/22/2008	430	881
SFS-WHS-8	7/22/2008	425	742
SFS-WHS-9	7/22/2008	424	767
SFS-WHS-10	7/22/2008	409	670

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
SEBASTICOOK RIVER			
NEWPORT			
SEN-LMB-1	7/16/2008	472	1723
SEN-LMB-2	7/16/2008	365	711
SEN-LMB-3	7/16/2008	320	457
SEN-LMB-4	7/16/2008	420	1171
SEN-LMB-5	7/16/2008	430	1252
SEN-LMB-6	7/16/2008	386	886
SEN-LMB-7	7/16/2008	382	867
SEN-LMB-8	7/16/2008	430	1086
SEN-LMB-9	7/16/2008	395	945
SEN-LMB-10	7/16/2008	395	836
BURNHAM			
SBN-SMB-1	7/16/2008	370	612
SBN-SMB-2	7/16/2008	410	1038
SBN-SMB-3	7/16/2008	409	877
SBN-SMB-4	7/16/2008	445	1250
SBN-SMB-5	7/16/2008	395	743
SBN-SMB-6	7/16/2008	398	842
SBN-SMB-7	7/16/2008	344	521
SBN-SMB-8	7/16/2008	304	364
SBN-SMB-9	7/16/2008	360	629
SBN-SMB-10	7/16/2008	322	495
SBNWHS1	9/17/2008	450	1046
SBNWHS2	9/17/2008	470	1073
SBNWHS3	9/18/2008	440	985
SBNWHS4	9/18/2008	470	1076
SBNWHS5	9/18/2008	480	1163
ST CROIX RIVER			
WOODLAND			
SCW-SMB-1	8/4/2008	320	451
SCW-SMB-2	8/4/2008	309	355
SCW-SMB-3	8/4/2008	353	582
SCW-SMB-4	8/4/2008	417	945
SCW-SMB-5	8/4/2008	338	516
SCW-SMB-6	8/4/2008	334	503
SCW-SMB-7	8/4/2008	311	406
SCW-SMB-8	8/4/2008	309	399
SCW-SMB-9	8/4/2008	343	473
SCW-SMB-10	8/4/2008	355	557

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
BARING			
SCB-SMB-1	8/4/2008	305	393
SCB-SMB-2	8/4/2008	350	547
SCB-SMB-3	8/4/2008	314	434
SCB-SMB-4	8/4/2008	340	498
SCB-SMB-5	8/4/2008	321	432
SCB-SMB-6	8/4/2008	331	462
SCB-SMB-7	8/4/2008	322	450
SCB-SMB-8	8/4/2008	318	397
SCB-SMB-9	8/4/2008	337	578
SCB-SMB-10	8/4/2008	320	409
SACO BAY			
OOB-BLF-1	8/19/2008	32"	
OOB-BLF-2	8/19/2008	28	
OOB-BLF-3	8/19/2008	27	
OOB-BLF-6	8/19/2008	29	
OOB-BLF-7	8/19/2008	30	
MEDUXNEKEAG R AT LOWERY BRIDGE HOULTON			
MXW-BKT-1	6/10/2008	290	300
MXW-BKT-2	6/24/2008	280	250
MXW-BKT-3	6/24/2008	260	200
HAMMOND BK IN HAMLIN			
HBH-BKT-1	7/15/2008	149	
HBH-BKT-2	7/15/2008	165	52
HBH-BKT-3	7/15/2008	152	37
HBH-BKT-4	7/15/2008	157	47
HBH-BKT-5	7/15/2008	167	38
HBH-BKT-6	7/15/2008	165	45
HBH-BKT-7	7/15/2008	172	52
HBH-BKT-8	7/15/2008	173	50
HBH-BKT-9	7/15/2008	227	110
HBH-BKT-10	7/15/2008	?	?
VIOLETTE ST IN VAN BUREN			
VSVB-BKT-1	7/16/2008	178	42
VSVB-BKT-2	7/16/2008	159	37
VSVB-BKT-3	7/16/2008	208	93
VSVB-BKT-4	7/16/2008	176	50
VSVB-BKT-5	7/16/2008	230	123
VSVB-BKT-6	7/16/2008	140	25
VSVB-BKT-7	7/16/2008	192	66
VSVB-BKT-8	7/16/2008	165	37
VSVB-BKT-9	7/16/2008	175	47

DMP & SWAT SAMPLES 2008			
field ID	DATE SAMPLED	L mm	W g
LIMESTONE ST IN LIMESOTONE			
LSL-BKT-1	7/11/2008	190	65
LSL-BKT-2	7/11/2008	187	70
LSL-BKT-3	7/11/2008	172	50
LSL-BKT-4	7/11/2008	180	60
LSL-BKT-5	7/11/2008	223	120
LSL-BKT-6	7/15/2008	170	60
LSL-BKT-7	7/15/2008	165	55
LSL-BKT-8	7/15/2008	203	105
LSL-BKT-9	7/15/2008	170	60
LSL-BKT-10	7/15/2008	230	160
BEAVER BK IN T13R5			
BBPL-BKT-1	7/17/2008	152	25
BBPL-BKT-2	7/17/2008	142	25
BBPL-BKT-3	7/17/2008	155	36
BBPL-BKT-4	7/17/2008	156	28
BBPL-BKT-5	7/17/2008	131	18
BBPL-BKT-6	7/17/2008	139	23
BBPL-BKT-7	7/17/2008	146	27
BBPL-BKT-8	7/17/2008	144	24
BBPL-BKT-9	7/17/2008	197	70
BBPL-BKT-10	7/17/2008	215	81
LIBBY BK IN FT FAIRFIELD			
LBFF-BKT-1	7/15/2008	146	
LBFF-BKT-2	7/15/2008	127	
LBFF-BKT-3	7/15/2008	133	
LBFF-BKT-4	7/15/2008	127	
LBFF-BKT-5	7/15/2008	140	
CLARK BK IN PRESQUE ISLE			
CBPI-BKT-1	9/15/2008		
CBPI-BKT-2	9/15/2008		
CBPI-BKT-3	9/15/2008	171	43
CBPI-BKT-4	9/15/2008	114	15
CBPI-BKT-5	9/15/2008	251	154
CBPI-BKT-6	9/15/2008	180	52
CBPI-BKT-7	9/15/2008	192	64
CBPI-BKT-8	9/15/2008	123	18
CBPI-BKT-9	9/15/2008	121	14
CBPI-BKT-10	9/15/2008	124	10

APPENDIX 6.

SUMMARY OF DIOXINS AND FURANS IN FISH AND SHELLFISH SAMPLES, 1984-2008

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			NDS/NBS	MAINE									
			1984-86	1988- 1990		19 91		19 92		19 93		19 94	
WATER/STATION	SPECIES	TISSUE	TCDD	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
ANDROSCOGGIN LAKE													
Wayne	bn trout	f											
	bass	f											
	w perch												
	sucker	w/f											
POCASSET LAKE													
Wayne	bass												
	SMB comp												
	WHP comp												
ANDROSCOGGIN R													
Gilead	rb trout												
	bn trout												
	juv bass												
	bass												
	sucker	w	1.8f/6.5w										
Rumford	bass	f				1.4	2.3-2.8	0.6	1.0-1.2	2.9	4.5-5.4	3.8	5.7-6.2
	juv bass												
	sucker	w						3.0	7.4-8.0	5.8	13.6-14.6	4.0	11.4-11.9
Riley	bass												
	sucker	w	<2.1f/13w										
Jay	bass	f		17.6	24.0-29.1			1.2	1.9-2.3	1.4	1.8-2.2	1.6	2.2-2.8
	sucker	w						5.4	12.9-13.9	4.5	10.9-11.8	4.7	11.5-12.3
Livermore Falls	bass	f				2.4	3.1-3.3	1.1	1.4-1.5	1.4	1.6-1.8	1.4	1.6-2.3
	sucker	w						3.8	7.4-8.0	3.6	6.8-7.3	2.2	4.8-5.3
	sucker comp												
Livermore ALF	bass												
	sucker												
N Turner	sucker	w	6.2f/30w										
Auburn-GIP	bass	f	3.7f/24w					1.7	2.6-2.8	1.2	1.8-1.9	1.3	2.0-2.7
	lm bass	f						1.1	1.6-1.8				
	sucker	w	8.3f/29w					5.6	14.3-15.4	3.7	9.0-9.8	1.6	4.4-5.4
	bullhead	w	7.8f/29.6w							2.1	3.0-3.3	1.3	2.3-2.8
Lisbon Falls	bn trout	f		5.3	6.5-6.9								
	bass	f		4.5	5.5-5.8			0.7	1.0	1.2	1.7-1.8	0.6	0.8-1.7
	sucker	w	5.1f/12w					3.4	8.1-8.7	2.7	6.1-6.6	2.4	5.8-6.2
Brunswick	sucker	w	19.0										
	carp	f	11.0										
BEARCE LAKE													
Baring	pickerel	f	<0.1										
BRAVE BOAT HARBOR													

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			NDS/NBS	MAINE									
			1984-86	1988- 1990		19 91		19 92		19 93		19 94	
WATER/STATION	SPECIES	TISSUE	TCDD	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Kittery	lobster	m										<0.1	<0.1-1.2
	lobster	t										1.3	9.7-11.5
BROOKLYN	lobster	m											
	lobster	t											
COREA	lobster	t											
JONES CREEK													
Scarborough	clam	m						<0.1	<0.1-0.3				
KENNEBEC R													
Madison	bn trout	f											
	bass	f						<0.1	<0.1-0.1				
	sucker	w						0.1	0.3				
Norridgewock	bass												
	bn trout												
	sucker												
Fairfield	bass	f				1.4	1.6-1.7	0.6	0.6-0.7	1.5	1.7-2.0	0.9	1.1-1.8
	trout	f		6.2	6.9-8.0			1.4	1.6-1.8	1.4	1.6-1.9	2.2	2.5-3.8
	sucker	w	6.4	10.3	16.8-18.1			2.0	3.1-3.3	1.6	2.2-2.6	2.2	2.9-3.8
Sidney	bass	f	20.3w			1.0	1.4-2.4	0.4	0.6-1.0	0.6	0.8-1.4	0.3	0.4-1.3
	bn trout												
	sucker	w	1.2f/11.4w					2.7	4.4-4.8	1.5	2.5-2.7	2.3	3.0-4.0
Augusta	bn trout	f		2.2	2.9-4.9			1.9	2.5-4.3				
	bass	f						0.4	0.6-1.0	0.6	0.9-1.5	1.0	1.3-3.7
	sucker	w		5.0	7.3-8.4			1.5	2.6-2.8	1.9	3.3-3.6	2.3	4.0-5.8
Hallowell	smelt	c						0.2	0.5-0.8				
Gardiner	bass												
Richmond	eel	f								0.6	0.8-1.4		
	bass												
Phippsburg	clam	m						0.3	0.6-0.9				
	lobster	m								0.2	0.3-1.2	<0.1	<0.1-1.6
	lobster	t								7.9	27.5-27.6	6.5	23.4-26.6
MESSALONSKEE LAKE													
Belgrade	bass					<<0.1	<0.1-0.3						
NARRAGUAGUS R													
Cherryfield	fallfish	w	<1.0										
NORTH POND													
Chesterfield	sucker	w	0.4										
	pickerel	f	<0.1										

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

WATER/STATION	SPECIES	TISSUE	NDS/NBS 1984-86 TCDD	MAINE 1988- 1990 TCDD	MAINE 1988- 1990 DTE	1991 TCDD	1991 DTE	1992 TCDD	1992 DTE	1993 TCDD	1993 DTE	1994 TCDD	1994 DTE
PENOBSCOT R													
E Br Grindstone	bass	f		<0.1	<0.1-0.2								
	sucker	w		<0.4	<0.1-0.6								
E Millinocket	bass	f		<0.2	0.4-0.8								
	sucker	w		0.7	3.6-4.2								
Woodville	bass												
	sucker												
Winn	bass												
	sucker												
N Lincoln	bass	f		<0.4	0.2-0.8								
	sucker	w		<0.5-20.8	2.0-41.6								
S Lincoln	bass	f	5.0	1.7	2.3-2.7	0.9	1.2-1.3	0.7	1.0-1.2	1.2	1.6-1.8	0.4	0.4-1.7
	sucker	w		37.0	66.4-67.2			3.3	6.8	1.7	3.5-3.6	2.2	5.8-6.1
Passadumkeag	bass	f		1.8	2.9								
	sucker	w		2.8	7.6-7.7								
Milford	bass	f		0.9	1.4-1.7			0.3	0.4-0.5				
	sucker	w		9.7	19.9-20.1			2.2	4.6				
Veazie	bass	f	4.6w	1.9	2.4-2.6	1.2	1.5-1.7	0.4	0.6	0.6	0.8-1.0	0.2	0.2-1.3
	sucker	w	2.6f/7.6w	5.9	9.8-9.9	2.5	4.9-5.0	2.2	4.8-4.9	1.1	2.7-3.0	0.6	1.6-2.8
Bangor	eel	f								1.0	1.1-1.2		
Bucksport	clam	m						0.1	0.8-0.9				
Stockton Spring	lobster	m								0.1	0.3-1.1	<0.1	0.1-1.0
	lobster	t								4.0	28.0	2.3	18.1-27.9
OWLS HEAD	mussel	m	<0.8										
PISCATAQUIS R													
Sangerville	bass	f				<0.2	<0.1-0.3						
	bn trout	f				<0.4	<0.1-0.4						
	sucker	w				0.26	0.6-0.7						
Howland	bass	f		<0.2	<0.1-0.6								
PRESUMPSCOT R													
Windham	bass	f								<0.1	<0.1-0.3	<0.1	<0.1-1.1
	sucker	w								0.3	0.7-0.8	0.2	1.4-2.4
Westbrook	bass	f		1.8	2.4-4.5	0.2	0.2-0.4	0.1	0.2-0.4	<0.2	0.1-0.5	0.2	0.3-1.2
	pickerel	f		<2.6	<0.1-5.9								
	w perch	f		1.2	2.5-3.1	0.4	0.9-1.0						
	sucker	w	5.2	5.1	8.2-9.6	0.6	1.6-1.7	0.3	0.8-0.9	1.1	1.8-2.3	0.9	2.1-3.7
Falmouth	clam	m						<0.1	0.2-0.4				
Portland	lobster	m								<0.1	0.1-0.8	<0.1	0.2-1.0
	lobster	t								3.4	18.5-18.7	2.5	17.2-21.3
ST CROIX R													

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			NDS/NBS	MAINE									
			1984-86	1988- 1990		19 91		19 92		19 93		19 94	
WATER/STATION	SPECIES	TISSUE	TCDD	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Woodland	bass	f											
	sucker												
Baring	bass			0.3	0.5-1.0	<0.1	<0.1-0.3						
	sucker	w	<0.7	0.6	1.0-1.1								
Robbinston	lobster	t											
ST JOHN R													
Frenchville	sucker	w										0.1	0.2-1.0
Madawaska	y perch	f		<0.5	<0.1-0.8								
	bk trout	f										<0.3	<0.1-2.3
	sucker	w										<0.1	0.2-0.8
SACO R													
Dayton	sucker	w	<0.3										
SACO BAY													
Scarborough	lobster	m								<0.1	0.1-0.8	<0.1	<0.1-0.8
	lobster	t								2.0	11.3-14.6	1.3	9.7-12.0
SALMON FALLS R													
Acton	lm bass												
	sucker												
Lebanon	lm bass												
S Berwick	sm bass	f		0.4	0.5-0.6					0.2	0.2-0.9	0.5	0.7-3.3
	lm bass												
	pickerel	f		0.2	0.3								
	sucker	w		1.5	2.1-2.2			2.4	3.4-3.6	1.9	3.6-3.8	2.1	4.7-6.1
SANDY P													
	bass	f	<1.0										
SEBAGO L													
Naples	bass	w	<0.6										

SEBASTICOOK R

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

WATER/STATION	SPECIES	TISSUE	NDS/NBS 1984-86 TCDD	MAINE 1988- 1990 TCDD	MAINE 1988- 1990 DTE	19 91 TCDD	19 91 DTE	19 92 TCDD	19 92 DTE	19 93 TCDD	19 93 DTE	19 94 TCDD	19 94 DTE
E Br Corinna	lm bass												
	bass												
	sucker												
Newport	bass	f						0.1	0.3-0.4				
	lm bass	f	<0.2					<0.2	0.2-0.4				
	w perch	f		1.0	1.6-2.1								
Sebastcook L	bass	f											
	w perch	f											
Detroit	bass	f											
Burnham	bass												
	sucker												
W Br Harmony	bass												
	sucker												
W Br Palmyra	bass	f		1.2	1.4-1.8			0.4	0.5-0.6	0.9	1.2-1.6	0.4	0.4-1.3
	pickerel	f	<0.1					0.2	0.2				
	sucker	w	1.6	3.3	4.3-4.6			1.1	1.4-1.6	1.0	2.6-2.7	1.2	4.0-4.3
WEBBER POND													
Vassalboro	bass	f				<<0.1	<0.1-0.4						

f=fillet
m=meat
t=tomalley
w=whole

DTE= dioxin toxic equivalents using WHO 98 toxic equivalency factors (TEF).
Range shown at nd=0 and nd=mdl, ie DTEo-DTEd

			1995		1996		1997		1998		1999		2000		2001	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
ANDROSCOGGIN LAKE																
Wayne	bn trout	f			0.7	1.1-2.3										
	bass	f			0.6	1.2-2.2			0.2	0.4-1.0	0.1	0.2-0.8	<0.1	<0.1-1.3	<0.1	0.1-0.8
	w perch								0.5	0.6-1.2	0.2	0.3-0.9	0.2	0.2-0.8	0.1	0.2-0.7
	sucker	w/f			w 0.4	1.4-2.5			w 0.4	0.9-1.1			w <0.1	0.1-1.1	f <0.1	0.1-0.7
POCASSET LAKE																
Wayne	bass															
	SMB comp															
	WHP comp															
ANDROSCOGGIN R																
Gilead	rb trout		1.2	2.4-2.9	0.9	2.0-2.6	0.5	1.6-2.1	0.4	1.5-2.0	0.7	1.7-2.3	0.4	0.9-1.4	0.8	2.1-2.5
	bn trout				0.4	1.0-1.5					0.4	1.0-1.5	0.1	0.4-1.0	0.8	2.5-2.7
	juv bass															
	bass		0.9	3.8-4.1							0.4	1.4-1.5	0.2	0.8-1.2	0.3	1.0-1.4
	sucker	w	1.7	6.1-6.7	0.7	4.4-5.3	0.5	3.4-3.8	0.9	3.1-3.5	0.8	2.9-3.3	0.3	1.8-2.2	0.1	0.7-1.1
Rumford	bass	f	2.2	3.5-4.1			0.5	1.2-1.8	0.4	1.1-1.5	0.6	1.5-1.9	0.2	0.6-1.1	0.2	0.5-1.0
	juv bass															
	sucker	w			0.8	4.1-5.2	0.5	3.6-4.9	0.4	3.0-3.4	0.4	2.8-3.2	0.3	1.9-2.3	0.3	2.0-2.4
Riley	bass						0.3	1.1-2.2	0.2	0.8-1.0	<0.1	0.6-0.9	<0.1	0.2-0.6	0.2	0.8-1.0
	sucker	w					0.5	3.8-4.8	0.3	2.5-2.8	0.3	2.6-2.8			0.3	1.9-2.1
Jay	bass	f			0.5	1.3-1.4										
	sucker	w	2.3	6.9-7.6												
Livermore Falls	bass	f	0.5	0.8-1.3			0.3	1.2-1.4	0.2	1.1-1.2	0.2	0.9-1.2	0.2	0.6-1.0	0.3	0.9-1.4
	sucker	w			0.6	3.4-3.9	0.5	2.8-2.9	0.5	2.8-2.9	0.4	2.4			0.3	1.6-1.7
	sucker comp															
Livermore ALF	bass															
	sucker															
N Turner	sucker	w														
Auburn-GIP	bass	f			0.6	2.1-2.5	0.4	2.0-2.2	0.4	1.6-1.8	0.4	1.6-1.8	0.1	0.4-0.9	0.2	0.4-0.9
	lm bass	f														
	sucker	w	1.4	3.8-5.0											0.2	0.6-0.9
	bullhead	w														
Lisbon Falls	bn trout	f														
	bass	f	0.9	1.4-2.4			0.6	1.3-1.8	0.5	1.1-1.5	0.7	1.7-2.1	0.2	0.5-1.0	0.4	0.9-1.3
	sucker	w			0.7	1.6-2.8										
Brunswick	sucker	w														
	carp	f														
BEARCE LAKE																
Baring	pickerel	f														
BRAVE BOAT HARBOR																

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			1995		1996		1997		1998		1999		2000		2001	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Kittery	lobster	m			1.7	13.8-15.5										
	lobster	t	1.6	6.7-9.9												
BROOKLYN	lobster	m	0.8	4.9-8.2												
	lobster	t														
COREA	lobster	t			0.6	6.6-7.3										
JONES CREEK																
Scarborough	clam	m														
KENNEBEC R																
Madison	bn trout	f	<0.1	0.1-0.7											<0.1	<0.1-0.7
	bass	f			<0.1	0.1-0.8	<0.2	<0.1-1.6								
	sucker	w	0.1	0.3-1.0	<0.1	0.3-1.0	<0.1	0.2-0.8								
Norridgewock	bass								<0.1	<0.1-0.6	<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	0.1-0.8
	bn trout												<0.1	<0.1-0.7		
	sucker								<0.1	0.2-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7
Fairfield	bass	f					0.6	0.6-1.2	0.3	0.4-1.0	0.4	0.4-1.0	0.4	0.5-1.1	0.2	0.4-0.9
	trout	f	1.6	1.7-2.5			1.2	1.3-1.9							1.0	1.2-1.8
	sucker	w			1.6	2.1-2.7	1.2	1.7-2.1	0.9	1.4-1.8	0.3	0.4-1.0	0.4	0.5-1.0	0.3	0.5-1.1
Sidney	bass	f			0.2	0.4-1.0	0.2	0.3-0.9					0.2	0.2-0.8	0.2	0.4-0.9
	bn trout												0.3	0.3-0.8	0.4	0.5-1.1
	sucker	w	1.2	1.7-2.5												
Augusta	bn trout	f	1.0	1.3-3.5			0.6	1.0-1.3								
	bass	f					0.5	0.8-1.6	0.3	0.6-0.9	0.3	0.6-0.9				
	sucker	w			2.2	2.6-3.3										
Hallowell	smelt	c														
Gardiner	bass															
Richmond	eel	f														
	bass															
Phippsburg	clam	m														
	lobster	m														
	lobster	t	4.6	13.5-17.1	3.6	16.7-18.6										
MESSALONSKEE LAKE																
Belgrade	bass															
NARRAGUAGUS R																
Cherryfield	fallfish	w														
NORTH POND																
Chesterfield	sucker	w														
	pickerel	f														

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			19 95		19 96		19 97		19 98		19 99		20 00		20 01	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
PENOBSCOT R																
E Br Grindstone	bass	f	<0.1	0.1-0.7	<0.1	0.1-0.8	<0.1	<0.1-0.7	<0.1	<0.1-0.7						
	sucker	w	<0.1	0.1-0.6	<0.1	0.1-0.8	<0.1	<0.1-0.7	<0.1	<0.1-0.7						
E Millinocket	bass	f					<0.1	<0.1-0.7	<0.1	<0.1-0.7						
	sucker	w					<0.1	<0.1-0.7	<0.1	<0.1-0.7						
Woodville	bass						<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	0.1-0.7	<0.1	0.1-0.7
	sucker						<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	0.1-0.7	<0.1	0.1-0.7	<0.1	0.1-0.7
Winn	bass										<0.1	0.2-0.8	<0.1	0.1-0.7	<0.1	<0.1-0.7
	sucker										<0.1	0.2-0.9	<0.1	0.1-0.8	<0.1	<0.1-0.7
N Lincoln	bass	f														
	sucker	w														
S Lincoln	bass	f	0.5	0.7-1.3	0.3	0.5-1.2	0.2	0.4-1.0	0.2	0.4-0.9	0.4	0.6-1.0	0.2	0.3-0.9	0.4	0.5-1.1
	sucker	w			1.6	2.2-3.2	1.2	1.6-2.2	1.0	1.4-2.0	1.0	1.4-1.6	0.7	1.0-1.5	0.3	0.5-1.1
Passadumkeag	bass	f														
	sucker	w														
Milford	bass	f					0.2	0.4-0.9	0.2	0.2-0.8	0.1	0.4-0.7	0.2	0.3-0.9	0.3	0.5-1.1
	sucker	w					1.0	1.6-2.0	1.0	1.5-2.0	1.0	1.5-1.6	0.8	1.1-1.6	0.4	0.5-1.0
Veazie	bass	f	0.3	0.4-1.9	0.3	0.3-1.5	0.3	0.4-0.9	0.2	0.3-0.9	0.3	0.4-0.9	0.4	0.5-1.1	0.2	0.3-0.8
	sucker	w	0.5	1.4-2.5	0.4	0.9-2.0	1.1	1.3-1.9	1.0	1.2-1.8	1.1	1.3-1.7	0.9	1.2-1.7	1.3	1.7-2.2
Bangor	eel	f			0.3	0.4-1.5							1.6	2.0-2.5	1.1	1.5-2.0
Bucksport	clam	m														
Stockton Spring	lobster	m														
	lobster	t	1.3	7.2-14.6	0.9	12.5-13.2										
OWLS HEAD	mussel	m														
PISCATAQUIS R																
Sangerville	bass	f														
	bn trout	f														
	sucker	w														
Howland	bass	f														
PRESUMPSCOT R																
Windham	bass	f			<0.1	0.5-1.5	<0.1	0.5-0.7	<0.1	0.4-0.8			<0.1	0.1-0.7	<0.1	0.1-0.7
	sucker	w	0.3	2.4-7.7			0.2	1.2-1.4	0.2	1.2-1.4					0.2	1.4-1.5
Westbrook	bass	f			0.2	0.4-0.9	0.1	0.4-0.9	<0.1	0.3-0.8			<0.1	0.2-0.8	<0.1	<0.1-0.7
	pickerel	f														
	w perch	f														
	sucker	w	0.8	1.6-2.6			0.2	1.6-2.0	0.2	1.6-2.0					0.2	1.3-1.7
Falmouth	clam	m														
Portland	lobster	m			2.7	18.9-21.6										
	lobster	t	2.2	9.5-12.8												
ST CROIX R																

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			1995		1996		1997		1998		1999		2000		2001	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Woodland	bass	f					<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7				
	sucker						<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7				
Baring	bass						<0.1	<0.1-0.7	<0.1	<0.1-0.7	<0.1	<0.1-0.7				
	sucker	w					<0.1	<0.1-0.8	<0.1	<0.1-0.8	<0.1	<0.1-0.7				
Robbinston	lobster	t			1.0	10.2-11.2										
ST JOHN R																
Frenchville	sucker	w														
Madawaska	y perch	f														
	bk trout	f														
	sucker	w														
SACO R																
Dayton	sucker	w														
SACO BAY																
Scarborough	lobster	m														
	lobster	t														
SALMON FALLS R																
Acton	lm bass		<0.1	<0.1-0.7	<0.1	0.1-1.0										
	sucker															
Lebanon	lm bass															
S Berwick	sm bass	f	0.4	0.4-4.0			0.2	0.3-0.6			0.1	0.3-0.6	0.1	0.2-0.8	0.2	0.4-0.8
	lm bass										0.2	0.5-0.8				
	pickerel	f					0.6	0.8-1.0								
	sucker	w			2.0	3.2-4.5										
SANDY P																
	bass	f														
SEBAGO L																
Naples	bass	w														

SEBASTICOOK R

			19 95		19 96		19 97		19 98		19 99		20 00		20 01	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
E Br Corinna	lm bass		0.1	0.2-1.1			<0.1	0.1-0.7								
	bass															
	sucker															
Newport	bass	f					0.2	1.2-1.4							0.1	0.6-0.9
	lm bass	f	0.3	1.1-2.0												
	w perch	f			0.3	1.6-2.3										
Sebastcook L	bass	f											0.1	0.5-0.8		
	w perch	f											0.2	0.8-0.9		
Detroit	bass	f													0.1	0.2-0.8
Burnham	bass															
	sucker															
W Br Harmony	bass		<0.1	0.1-0.8			<0.1	<0.1-0.7								
	sucker				0.1	0.1-1.2										
W Br Palmyra	bass	f	0.8	1.7-2.2			0.3	0.6-0.9	0.2	0.5-0.8	0.2	0.6-0.8	0.1	0.4-2.7	0.2	0.5-0.8
	pickerel	f														
	sucker	w			1.2	2.2-3.6										
WEBBER POND																
Vassalboro	bass	f														

f=fillet
m=meat
t=tomalley
w=whole

DTE= dioxin toxic equivalents u
Range shown at nd=0 and nd=mdl,

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			2002		2003		2004		2005		2006		2007		2008	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
ANDROSCOGGIN LAKE																
Wayne	bn trout	f														
	bass	f	<0.1	0.3-1.3	0.2	0.8-1.0	<0.1	0.2-0.4	<0.1	0.1-0.3	<0.1	0.2-0.4				
	w perch		<0.1	0.4-1.4	0.1	0.7-0.9	<0.1	0.4-0.8	0.1	0.8-0.9	0.1	0.4-0.6	<0.1	0.2-0.4	<0.1	0.4
	sucker	w/f														
POCASSET LAKE																
Wayne	bass		<0.1	<0.1-1.2	<0.1	<0.1-0.5										
	SMB comp				<0.1	0.2-0.5										
	WHP comp				<0.1	0.3-0.6										
ANDROSCOGGIN R																
Gilead	rb trout						<0.1	0.8-1.1	<0.1	1.0-1.2	0.1	0.6-0.8	<0.1	0.4-0.5	0.1	0.9
	bn trout															
	juv bass		<0.1	1.9-2.8												
	bass		<0.1	1.4-2.3	0.1	1.1-1.4	0.1	1.6-1.8								
	sucker	w	<0.2	1.4-2.2	<0.1	1.2-1.5	<0.1	1.2-1.5								
Rumford	bass	f	<0.2	0.6-1.5	<0.1	0.6-0.9	<0.1	0.3-0.5	0.1	0.4-0.5	0.1	0.4-0.6	<0.1	0.3		
	juv bass		<0.1	0.8-1.4												
	sucker	w	<0.1	0.4-1.5	0.2	1.8-2.1	<0.1	1.0-1.2								
Riley	bass		<0.1	0.2-1.3	<0.1	0.3-0.7	<0.1	0.2-0.3			<0.1	0.2-0.4	0.1	0.3		
	sucker	w	0.1	0.6-1.6	0.2	1.9-2.1	0.3	2.8-2.9	0.3	2.8-2.9	0.2	1.2-1.4	0.2	1.4		
Jay	bass	f														
	sucker	w														
Livermore Falls	bass	f	<0.1	0.3-1.4	<0.1	0.2-0.6	<0.1	0.2-0.3			<0.1	0.2-0.4	0.1	0.3		
	sucker	w	0.2	0.9-1.9	0.3	1.6-1.9	0.3	1.8-1.9	0.2	1.1-1.3	0.2	1.3-1.5	0.3	1.8-1.9		
	sucker comp				0.2	1.5-1.7										
Livermore ALF	bass				<0.1	0.2-0.6										
	sucker				0.1	0.6-0.9										
N Turner	sucker	w														
Auburn-GIP	bass	f	0.1	0.2-1.3			0.1	0.4-0.6	<0.1	0.2-0.5	0.1	0.3-0.5	0.2	0.3-0.4	0.1	0.3-0.4
	lm bass	f														
	sucker	w	0.3	0.8-1.2									0.4	2.0	0.2	1.3
	bullhead	w														
Lisbon Falls	bn trout	f														
	bass	f					0.1	0.2-0.3					0.1	0.2-0.3		
	sucker	w											0.3	1.0		
Brunswick	sucker	w														
	carp	f														
BEARCE LAKE																
Baring	pickerel	f														

BRAVE BOAT HARBOR

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			2002		2003		2004		2005		2006		2007		2008	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Kittery	lobster	m														
	lobster	t														
BROOKLYN	lobster	m														
	lobster	t														
COREA	lobster	t														
JONES CREEK																
Scarborough	clam	m														
KENNEBEC R																
Madison	bn trout	f														
	bass	f														
	sucker	w														
Norridgewock	bass		<0.1	<0.1-1.3	<0.1	<0.1-0.5	<0.1	<0.1-0.2								
	bn trout		<0.1	<0.1-1.0												
	sucker				<0.1	<0.1-0.5	<0.1	0.2-0.4								
Fairfield	bass	f	<0.1	<0.1-1.2	<0.1	<0.1-0.5	<0.1	<0.1-0.2								
	trout	f	0.1	0.1-1.0					<0.1	<0.1-0.2	0.1	0.2-0.4			0.1	0.2
	sucker	w			0.2	0.3-0.6	0.1	0.2-0.4	<0.1	<0.1-0.3	0.1	0.3-0.5	0.1	0.3		
Sidney	bass	f	0.1	<0.1-1.3												
	bn trout										<0.1	0.2-0.4				
	sucker	w														
Augusta	bn trout	f														
	bass	f													0.1	0.2-0.3
	sucker	w														
Hallowell	smelt	c														
Gardiner	bass										<0.1	<0.1-0.3			<0.1	0.2
Richmond	eel	f														
	bass														0.1	0.3
Phippsburg	clam	m														
	lobster	m														
	lobster	t														
MESSALONSKEE LAKE																
Belgrade	bass															
NARRAGUAGUS R																
Cherryfield	fallfish	w														
NORTH POND																
Chesterfield	sucker	w														
	pickerel	f														

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			2002		2003		2004		2005		2006		2007		2008	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
PENOBSCOT R																
E Br Grindstone	bass	f														
	sucker	w									<0.1	<0.1-0.3	<0.1	<0.1-0.2		
E Millinocket	bass	f														
	sucker	w														
Woodville	bass		<0.1	<0.1-1.0	<0.1	<0.1-0.6	<0.1	<0.1-0.2	<0.1	<0.1-0.3					<0.1	0.3
	sucker		<0.1	1.6-1.9	<0.1	0.5-0.8	<0.1	<0.1-0.3	<0.1	0.3-0.5	<0.1	<0.1-0.3	0.1	0.5-0.6	0.1	0.5
Winn	bass		<0.1	<0.1-1.2	<0.1	<0.1-0.5										
	sucker		0.2	1.1-1.8	<0.1	0.3-0.6										
N Lincoln	bass	f														
	sucker	w														
S Lincoln	bass	f	<0.1	<0.1-1.2	<0.1	<0.1-0.5	<0.1	<0.1-0.2	<0.1	<0.1-0.3					<0.1	0.2
	sucker	w	0.3	1.6-2.0	0.1	0.6-0.8	<0.1	<0.1-0.3	<0.1	0.2-0.4	0.1	0.4-0.5	<0.1	0.2-0.3	<0.1	0.2
Passadumkeag	bass	f														
	sucker	w														
Milford	bass	f	<0.1	<0.1-1.2	<0.1	<0.1-0.5	<0.1	<0.1-0.2								
	sucker	w	0.3	1.0-1.7	<0.1	0.3-0.7	<0.1	0.3-0.4								
Veazie	bass	f	<0.1	<0.1-1.2	<0.1	<0.1-0.5	<0.1	<0.1-0.2	<0.1	0.1-0.2						
	sucker	w	0.4	1.4-2.0	0.1	0.2-0.6	<0.1	0.2-0.3	<0.1	0.3-0.5	0.1	0.5-0.6	<0.1	0.2-0.3		
Bangor	eel	f	0.1	0.2-1.3												
			<0.1	0.1-1.3												
Bucksport	clam	m														
Stockton Spring	lobster	m														
	lobster	t														
OWLS HEAD	mussel	m														
PISCATAQUIS R																
Sangerville	bass	f														
	bn trout	f														
	sucker	w														
Howland	bass	f														
PRESUMPSCOT R																
Windham	bass	f	<0.1	<0.1-1.5							<0.1	<0.1-0.3			<0.1	0.1-0.2
	sucker	w	<0.1	0.1-1.3											<0.1	0.1-0.2
Westbrook	bass	f	<0.1	<0.1-1.2											<0.1	<0.1-0.2
	pickerel	f														
	w perch	f														
	sucker	w	<0.1	0.1-1.3							<0.1	0.1-0.3			0.1	0.4
Falmouth	clam	m														
Portland	lobster	m														
	lobster	t														
ST CROIX R																

APPENDIX 6. DIOXIN AND FURAN CONCENTRATIONS IN MAINE FISH AND SHELLFISH 1984-2008 (pg/g)

			2002		2003		2004		2005		2006		2007		2008	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
Woodland	bass	f													<0.1	<0.1-0.2
	sucker															
Baring	bass														<0.1	0.2
	sucker	w														
Robbinston	lobster	t														
ST JOHN R																
Frenchville	sucker	w														
Madawaska	y perch	f														
	bk trout	f														
	sucker	w														
SACO R																
Dayton	sucker	w														
SACO BAY																
Scarborough	lobster	m														
	lobster	t														
SALMON FALLS R																
Acton	lm bass															
	sucker															
Lebanon	lm bass										<0.1	0.1-0.3				
S Berwick	sm bass	f	0.1	0.1-1.2												
	lm bass										0.1	0.2-0.4	0.1	0.3	0.2	0.3-0.4
	pickerel	f														
	sucker	w													0.3	0.7-0.8
SANDY P																
	bass	f														
SEBAGO L																
Naples	bass	w														
SEBASTICOOK R																

			2002		2003		2004		2005		2006		2007		2008	
WATER/STATION	SPECIES	TISSUE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE	TCDD	DTE
E Br Corinna	lm bass															
	bass															
	sucker															
Newport	bass	f					0.1	0.7-0.8								
	lm bass	f									0.1	0.5-0.6	0.1	0.5	0.1	0.5
	w perch	f														
Sebastcook L	bass	f					<0.1	0.4-0.6								
	w perch	f														
Detroit	bass	f														
Burnham	bass						0.2	0.4-0.5	0.1	0.2-0.4	0.1	0.3-0.4	0.2	0.5	0.3	0.8
	sucker														0.2	0.6
W Br Harmony	bass															
	sucker															
W Br Palmyra	bass	f	0.3	0.4-1.2	0.4	0.9-1.1	0.5	1.2-1.3	0.1	0.2-0.4	0.2	0.3-0.5	0.2	0.4		
	pickerel	f														
	sucker	w														
WEBBER POND																
Vassalboro	bass	f														

f=fillet
m=meat
t=tomalley
w=whole

DTE= dioxin toxic equivalents u
Range shown at nd=0 and nd=mdl,

APPENDIX 7

CERTIFICATIONS OF BLEACH PLANT OPERATION

Verso Paper
Androscoggin Mill
Environmental Services
P.O. Box 20 - Riley Road
Jay, ME 04239

T 207 897-3431
F 207 897-1783

www.versopaper.com

December 12, 2008

Ms. Beth DeHaas
Department of Environmental Protection
Bureau of Land and Water Quality Control
State House Station #17
Augusta, ME 04333

RE: MEPDES Permit ME0001937 License Number W000632-5N-F-R, Special Conditions, Paragraph J. Dioxin/Furan Certification

Dear Ms. DeHaas:

Per requirements of Special Conditions Paragraph J of the September 21, 2005 Maine Department of Environmental Protection (MEDEP) Permit, Verso Androscoggin, LLC in Jay, Maine respectfully submits this letter and four copies for you review and approval to fulfill the certification requirements cited in paragraph J.

Verso Androscoggin, LLC certifies that during the calendar year of 2008:

a. Elemental chlorine gas or hypochlorite was not used in the bleaching of pulp.
b. The chlorine dioxide (ClO_2) generating plant was operated in a manner which minimized or eliminated byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.
c. Purchasing procedures verified the procurement of defoamers or other additives without elevated levels of known dioxin precursors.
d. No fundamental design changes that affected the ClO_2 plant and/or bleach plant operation were made.

Additionally, in 2008, monitoring of the bleach plant waste streams for 2,3,7,8 TCDD (dioxin) and 2,3,7,8 TCDF (furan) was performed on September 3, 2008. Results of this sampling event were submitted in the September Discharge Monitoring Report (DMR).

If you have any questions, please contact Vickie Gammon at 897-1821. Thank you.

Sincerely,

Michael Rowland
Manager, Manufacturing Excellence

Sincerely,

Jeffrey M. Pike
Senior Area Manager, Pulp Group

cc: Shiloh Ring, Town of Jay
Dick Jackson
Phil Sekerak
Bill Taylor
Vickie Gammon
Mike Glowdowski
Neil Aldridge
File: 121219-16

permit mepdes\condition (j)\dioxin_furan _certification_MEDEP_121208.doc

Lincoln PAPER and TISSUE

Lincoln Paper and Tissue, LLC
Post Office Box 490
Lincoln, ME 04457 USA

t 207/794-0600
f 207/794-3964
www.lpandt.com

In accordance with Special Condition P of Maine Waste Discharge License #W000381-5N-E-M, Lincoln Paper and Tissue, LLC certifies that for the calendar year of 2008:

a) Elemental chlorine gas or hypochlorite was not used in the bleaching of pulp.
b) The chlorine dioxide generating plant has been operated in a manner which minimizes or eliminates byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.
c) Documented and verifiable purchasing procedures are in place for the procurement of defoamers or other additives without elevated levels of known dioxin precursors.
d) Fundamental design changes that affect the ClO_2 plant and/or bleach plant operation have been reported to the Department prior to their implementation and said reports explained the reason(s) for the change and any possible adverse consequences if any.

D. McComb

Dennis C. McComb
Environmental/Safety Manager

12/11/08
Date

• ~~Put BOD violation in WCS~~
• put Ch. 530 letter
Special Condition P letter
in WCS

sappi

December 17, 2008

Fine Paper
North America

Environmental

1329 Waterville Road
Skowhegan ME 04976
Tel +1 207 453 9301
Fax +1 207 238 3485

Ms. Denise Behr
Maine Department of Environmental Protection
Bureau of Land & Water Quality
17 State House Station
Augusta, ME 04333-0017

Re: MEPDES Permit #ME0021521

Dear Ms. Behr:

Special Condition P was added to Somerset's MEPDES Permit in an administrative modification issued by Gregg Wood on July 12, 2005. This condition reduces the frequency of bleach plant dioxin monitoring from once per month to once per year provided that Somerset submit an annual certification to the Department regarding certain bleach plant operating conditions and purchasing procedures. Therefore Somerset certifies the following for calendar year 2008:

a) Elemental chlorine gas or hypochlorite was not used in the bleaching of pulp.
b) The chlorine dioxide (ClO_2) generating plant has been operated in a manner which minimizes or eliminates byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.
c) Purchasing procedures are in place for the procurement of defoamers or other additives without elevated levels of know dioxin precursors.
d) Fundamental design changes to the ClO_2 plant and/or bleach plant operation have been reported to the Department and said reports explained the reason(s) for the change and any possible consequences if any.

With regard to bullet (d) above there were no fundamental design changes to the ClO_2 plant and/or bleach plant operation during calendar year 2008.

If you require additional information or have any questions please contact me.

Sincerely,

Thomas E. Griffin
Environmental Manager

cc: Barry Mower – MEDEP
Gregg Wood - MEDEP

File: XV.F.2.

RJN/bt:dw
W2540

NewPage

December 16, 2008

Beth DeHaas
Bureau of Land and Water Quality
State of Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017

Subject: Dioxin/Furan Certification (PCS Code 95799)

Dear Ms. DeHaas:

This letter is intended to satisfy Special Condition L of the MEPDES Permit which requires an annual certification in lieu of monthly sampling and testing of the bleach plant effluent. Special Condition L requires that:

a) Elemental chlorine and/or hypochlorite not be used in the bleaching of pulp.
b) The chlorine dioxide (ClO_2) generating plant to be operated in a manner which minimizes or eliminates byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.
c) Documented and verifiable purchasing procedures to be in place for the procurement of defoamers or other additives without elevated levels of known dioxin precursors.
d) Any fundamental design changes to the ClO_2 stages of the bleach plant must be reported to the Department.

Attached is the required language certified by an appropriate company official. Please contact me at (207) 369-2766 if you have any questions.

Sincerely,

John L. Cronin,
Environmental Engineer

cc: STR, file

NewPage Corporation
35 Hartford Street, Rumford, ME 04276

Annual Dioxin/Furan Certification Required per Special Condition L

This is to certify that in 2008:

- Elemental chlorine or hypochlorite was not used in the bleaching of pulp.
- The chlorine dioxide (ClO_2) generating plant has been operated in a manner which minimizes or eliminates byproduct elemental chlorine generation per the manufacturers/suppliers recommendations.
- Documented and verifiable purchasing procedures are in place for the procurement of defoamers or other additives without elevated levels of known dioxin precursors.
- There were no fundamental design changes to the ClO_2 stages of the bleach plant that required reporting to the Department. Therefore, there were no reports submitted that explained the reason(s) for the change and any possible adverse consequences, if any.

Gerald LeClaire, VP Maine Operations

12-16-08
Date