

Reference Order



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Jim Davis, Chief
Surface Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, NM. 87505

February 11, 2002

Re: Final PCB and Dioxin/Furan Results in Water and Tissue for Samples Collected in 1999 and 2000

Dear Mr. Davis:

The Department of Energy Oversight Bureau of the New Mexico Environment Department has compiled PCB data from seventeen tissue samples collected from Cochiti and Abiquiu Reservoirs, McAllister Lake, and the South Fork of Upper Sandia Canyon (Table 1). Two tissue samples were collected from Cochiti Reservoir in 1999 and all other tissue samples were collected in 2000. We have also compiled PCB data from nine surface water samples (Table 2). The water data include five storm water grab samples, one ambient grab sample, and two time-weighted samples (including one equipment-rinsate blank) collected during stream course sediment removal associated with SWMU 3-056(c) remediation. We have also compiled dioxin/furan data for the seventeen tissue samples (Table 3) and three ambient surface water samples (Table 4). This data replaces all preliminary dioxin/furan and PCB data previously released by our Bureau in 2000 and 2001.

PCB Data

PCBs in Tissue Data:

All PCB Toxic Equivalence Quotients (TEQs) and total dioxin-like PCB in tissue values are based upon Method 1668 HRGC/HRMS data while some (8 of 10 Cochiti tissue) Total PCB measurements are from Method 8081/8082M GC/LRMS data. All PCB tissue data were screened against five times the blank concentration and blank corrected. PCB as Aroclor equivalents is reported for the two 1999 tissue samples (COCH-01 & COCH-02). Total PCB (sum of all congeners) ranged from 1.13 to 166.54 ng/g (ppb), Total dioxin-like PCBs (sum of all dioxin-like congeners) ranged from 73 to 7,974 pg/g (ppt) and TEQ (PCBs) ranged from 0.068 to 3.90 pg/g (ppt).



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PCBs in Water Data:

Five of the nine surface water samples are based upon Method 1668 HRGC/HRMS data and three used Method 8081/8082M GC/LRMS data. All PCB in water represent whole-water samples and are considered as total measurements. All PCB water data were screened against five times the blank concentration and blank corrected. The two samples collected during remediation of SWMU 3-056(c) were additionally corrected for PCBs detected in an ISCO equipment rinsate blank. Total PCBs in water ranged from non-detect to 821.7 ng/L (ppt).

Dioxin/Furan Data

Dioxin/Furan Tissue Data:

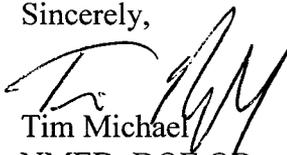
All dioxin/furan data were obtained using EPA method 1613 and have been blank-corrected. Total dioxin/furan (sum of all congeners) in tissue ranged from non-detect to 77.7 pg/g (ppt) and dioxin TEQ in tissue ranged from non-detect to 0.21 pg/g (ppt).

Dioxin/Furan in Water Data:

Total dioxin/furan (sum of all congeners) in water ranged from non-detect to 112.3 pg/L (ppq) and dioxin TEQ ranged from non-detect to 9.7 E-05 pg/L (ppq).

These data are provided as final to SWQB and other State of New Mexico and Federal agencies, the Pueblos, our website and interested members of the public. Complete data packages including all manipulations (in Excel spreadsheet form) are available upon request. Please contact Ralph Ford-Schmid at 428-2559 if you have any questions about this data.

Sincerely,



Tim Michael
NMED, DOE OB

TM:rfs

cc: with enclosures

John Parker, Chief, NMED, DOE OB
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Table 1 Summary PCBs in Tissue											
		Total PCB	Total Dioxin-like Congeners	TEQ (PCBs)	Percent Lipid	Sample Size	AROCLOR Measurements				
		ng/g (ppb)	pg/g (ppt)	pg/g (ppt)	%	g	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	
		(wet weight basis)	(wet weight basis)	(wet weight basis)			pg/g	pg/g	pg/g	pg/g	
Abiquiu Reservoir Fish											
ABQ-01	Smallmouth Bass Fillets (5 fish)	2.19	126.99	0.139	3.7	10.1					
ABQ-02	Walleye Pike Fillets (2 fish)	1.13	73.15	0.068	2	10.0					
ABQ-03	Dressed Catfish (2 fish composite)	27.52	4244.77	1.909	9.6	10.1					
ABQ-04	1.2 kg Carpsucker	9.83	580.09	0.556	19	10.0					
ABQ-05	750 gm Carpsucker	12.71	729.81	0.674	11	10.5					
Cochiti Reservoir Fish											
COCH-01	Whole Carp (with internal organs)	88.50	7974.41	2.037	7.6	10.1	1570	ND	48900	65200	
COCH-02	Whole Channel Catfish (with internal organs)	34.19	5749.98	1.822	12	10.2	1020	ND	21000	19200	
COCH-03	9-10 lb Northern Pike (skin-on fillet)	24.26	2561.11	1.046	2.18	10.2					
COCH-04	4-6 lb Walleye Pike (skin-on fillet)	6.23	486.99	0.205	2.14	10.2					
COCH-05	31 cm Channel Catfish (whole-gutted fish)	39.59	5467.03	2.071	11.53	10.0					
COCH-06	30 cm Carp (whole-gutted fish)	8.53	676.10	0.318	6.2	10.1					
COCH-06(Dup)		8.93	710.80	0.098	6.06	10.0					
COCH-07	4 to 6 lb Walleye Pike (skin-on fillet)	6.24	538.75	0.245	2.84	10.4					
COCH-08	Two 16cm White Bass (heads and guts removed) - Composited	4.99	423.51	0.209	4.14	10.1					
COCH-09	29 cm Channel Catfish (whole-gutted fish)	16.48	2871.19	1.013	7.29	10.0					
COCH-10	31 cm Carp (Whole-gutted fish)	10.95	929.28	0.492	10.8	10.1					
McAllister Lake (Control Site)											
MCC-01	21 inch Rainbow Trout (McCallister Lake) Steaks from front 1/3 of fish	6.55	501.33	0.069	6.4	10.2					
Aquatic Insects at Sandia Canyon (LANL)											
SFSA-01	Odonata (Sandia Canyon, LANL) Whole Body (dragonflies and damselflies)	166.54	6125.71	3.902	1.5	10.0					
ND = None Detected											
Total PCB = Sum of all congeners											
Total Dioxin-like Congeners = Sum of the 12 Dioxin-like congeners											
TEQ (PCBs) = SUM (TEF X Concentration of the 12 Dioxin-like congeners detected)											
TEFs from "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife Environmental Health Perspectives" Volume 106, Number 12, December 1998 (Van den Berg, et al., 1998)											

Table 2 PCB in Water 2000 Summary		NMED DOE Oversight Bureau										
Stormwater; Ambient water; NPDES & Environmental Restoration water												
All samples Blank-corrected												
Lab ID	Sample ID	Sample Location	Date	Time	Sample Type	Analytical Method	Total PCB			Total Dioxin-like Congeners	PCB TEQ for Dioxin-like Congeners	
							ng/L (ppt)			ng/L (ppt)	ng/L (ppt)	
		NM WQCC Standard					14					
L2845-21	PU 2.0	Pueblo Canyon near Bayo Treatment Plant	9/8/2000	18:00	Whole Water Storm Water Grab Sample	1668 HRGC/HRMS	821.70			27.67	3.04E-02	
L2845-22	LA12.0	LA RESERVOIR Depth Composit Sample	8/31/2000	10:00	Whole Water Ambient Water Depth Composit	1668 HRGC/HRMS	4.42			0.02	2.30E-06	
L2845-23	PUN-0.01	Pueblo Canyon North Tributary	9/8/2000	16:30	Whole Water Storm Water Grab Sample	1668 HRGC/HRMS	520.80			11.97	2.05E-02	
L2937-4R	LA 10.5	Los Alamos Below Omega Bridge	10/28/2000	13:45	Whole Water Storm Water	8081/8082M GC/LRMS	ND			ND	ND	
L2937-5R	LA 5.0 (LA@SR4)	Los Alamos Canyon below Sediment Trap	10/28/2000	10:45	Whole Water Storm Water Grab Sample	8081/8082M GC/LRMS	125.44			13.06	2.60E-03	
L2937-6R	SA 5.6	Sandia Canyon near TA-53 Entrance	10/28/2000	10:00	Whole Water Storm Water Grab Sample	8081/8082M GC/LRMS	224.63			14.41	6.42E-02	
Samples Collected during Environmental Clean-up Operations in Sandia Canyon Streamcourse												
All samples Blank-corrected												
All samples have been corrected for PCBs found in Automatic Sampling Equipment Rinsate-blank												
Lab ID	Sample ID	Sample Location	Date	Time	Sample Type	Analytical Method	Total PCB	Sample Conc. minus Equipment Rinsate Blank Conc.		Total Dioxin-like Congeners	PCB TEQ for Dioxin-like Congeners	
							ng/L (ppt)	Total PCB ng/L (ppt)		ng/L (ppt)	ng/L (ppt)	
L3060-8	056(C)-01	Upstream from sediment removal	12/8/2000	10:10 - 16:10 (1/2 hour intervals)	Ambient Water (cooling tower effluent) Automatic Sampler 1/2 hour intervals Composit	1668 HRGC/HRMS	6.70	6.45		0.51	7.61E-05	
L3060-9	056(C)-02	Downstream from sediment removal	12/8/2000	10:15 - 16:15 (1/2 hour intervals)	Ambient Water (cooling tower effluent) Automatic Sampler 1/2 hour intervals Composit	1668 HRGC/HRMS	71.22	70.97		2.32	3.98E-04	
L3060-10	056(C)-03	Equipment Rinsate Blank	12/6/2000		De-ionized water run through sampler	1668 HRGC/HRMS	0.25			0.03	2.37E-06	
ND = None Detected												
Total PCB = Sum of all congeners												
Total Dioxin-like Congeners = Sum of the 12 Dioxin-like congeners												
TEQ (PCBs) = SUM (TEF X Concentration of the 12 Dioxin-like congeners detected)												
TEFs from "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife Environmental Health Perspectives" Volume 106, Number 12, December 1998 (Van den Berg, et al., 1998)												

Table 3 Dioxin/Furan Summary in Tissue						
		Dioxin/Furan Detections*	Total Dioxin/Furan	TEQ Dioxin/Furan	Percent Lipids	Sample Size
	Cochiti Reservoir Fish Tissue	pg/g (ppt)	pg/g (ppt)	pg/g (ppt)	%	g
COCH-01	Whole Carp (with internal organs)	1,2,3,6,7,8-HxCDD(0.51ppt); 1,2,3,4,6,7,8-HpCDD(0.78ppt); 1,2,3,4,7,8-HxCDF(0.13ppt); 2,3,7,8-TCDF(1.1ppt)	2.52	0.1818	8.8	12
COCH-02	Whole Channel Catfish (with internal organs)	1,2,3,6,7,8-HxCDD(0.64ppt); 1,2,3,4,6,7,8-HpCDD(0.87ppt)	1.51	0.0727	11	11
COCH-03	9-10 lb Northern Pike (skin-on fillet)	ND	0	0	2.3	11
COCH-04	4-6 lb Walleye Pike (skin-on fillet)	ND	0	0	2.1	12
COCH-05	31 cm Channel Catfish (whole-gutted fish)	2,3,7,8-TCDF(0.72ppt)	0.72	0.072	10	11
COCH-06	30 cm Carp (whole-gutted fish)	2,3,7,8-TCDF(0.46ppt)	0.46	0.046	5.4	10
COCH-07	4 to 6 lb Walleye Pike (skin-on fillet)	2,3,7,8-TCDF(0.49ppt)	0.49	0.049	2.5	12
COCH-08	Two 16cm White Bass (heads and guts removed) - Composited	ND	0	0	3.8	13
COCH-09	29 cm Channel Catfish (whole-gutted fish)	ND	0	0	7.2	11
COCH-10	31 cm Carp (Whole-gutted fish)	2,3,7,8-TCDF(0.67ppt)	0.67	0.067	9	10
Abiquiu Reservoir fish tissue						
ABQ-01	Smallmouth Bass, Composite of 5 fish, skin-on fillets,(4) 10 inch fish;(1) 12 inch fish	ND	0	0	3.6	10
ABQ-02	Walleye Pike,Composite of 2 fish, skin-on fillets(2 - 12 inch fish)	ND	0	0	1.7	10
ABQ-03	Channel Catfish, Composite of 2, (whole-gutted), 2 - 13 inch fish	1,2,3,4,6,7,8-HpCDD (0.52 ppt)	0.52	0.0052	11	10
ABQ-04	Carp sucker (whole-gutted), 18 inches(1.2 kg)	ND	0	0	22	10
ABQ-05	Carp sucker (whole-gutted), 14 inches(750 gm)	ND	0	0	12	11
McAllister Lake Fish Tissue						
MCC-01	Rainbow Trout Chunk (steak, bones & skin) from body beginning behind head, 21.5 inch fish	ND	0	0	6.7	10
Upper Sandia Canyon (LANL) Aquatic Insects						
SFSA-01	Odonata nymphs (damselflies & dragonflies) Collected from the South Fork of Upper Sandia Canyon below 3-056(c) PCB site (from North & South Fork junction upstream to sanitary line crossing)	1,2,3,4,6,7,8-HpCDD (17ppt); OCDD (57ppt); 1,2,3,4,6,7,8-HpCDF (3.7ppt)	77.7	0.2127	1.7	11
Total Dioxin/Furan = Sum of all congeners						
Dioxin/Furan Detections* = All method blanks were non-detect						
TEQ Dioxin/Furan = is the sum of the products of all Dioxin/Furan detections multiplied by each one's respective Toxic Equivalency Factor (TEF)						
TEF = From Van den Berg et. al., 1998, "Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife". Environmental Health Perspectives, Volume 106, Number 12, December 1998						

Table 4 Surface Water Summary Dioxin/Furans

Sample ID	Lab ID	Date	Location	Total Dioxin/Furan pg/L (ppq)	TEQ Dioxin/Furan pg/L (ppq)
PA 10.6	8763-003	6/29/2000	Ambient Surface Water from Pajarito Canyon West of LANL	0	0
PA 6.7	8763-001	6/29/2000	Ambient Surface Water from Pajarito Canyon @ confluence of Twomile Canyon	95.39	9.7E-05
TM 0.01	8763-002	6/29/2000	Ponded Surface Water from Twomile Canyon @ confluence of Pajarito Canyon	112.27	1.1E-05

TEQ Dioxin/Furan is the sum of the products of all Dioxin/Furan detections multiplied by each one's respective Toxic Equivalency Factor (TEF)

TEF = From Van den Berg et. al., 1998, Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and Wildlife. Environmental Health Perspectives, Volume 106, Number 12, December 1998

Total Dioxin/Furan = Sum of all detections