

**SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY**

**Appendix 13a: Hazard Index (HI) - off-site soil samples (Shanks' monitoring data)  
Comparison of measured concentrations (PEC) with Predicted no effect concentrations (PNEC) - metals**

													Sampling point 18 PEC(mean) /PNEC				
	Mean 18	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	21.48	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	0.2	0.4	0.2	0.1	0.1
Lead*	55	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.1	0.0	0.5	1.0	5.0
Zinc*	111.2	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	1.1	1.1	2.2	0.0	1.9

													Sampling point 20A PEC(mean) /PNEC				
	Mean 20A	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	73.025	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	0.7	1.5	0.7	0.2	0.4
Lead*	134	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.1	0.1	1.1	2.4	<b>12.2</b>
Zinc*	217.5	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	2.2	2.2	4.4	0.0	3.6

													Sampling point 20B PEC(mean) /PNEC				
	Mean 20B	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	159.75	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	1.6	3.2	1.6	0.4	0.8
Lead*	440	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.5	0.3	3.7	7.8	<b>40.0</b>
Zinc*	496	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	5.0	5.0	9.9	0.0	8.3

													Sampling point 21 PEC(mean) /PNEC				
	Mean 21	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	39.68	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	0.4	0.8	0.4	0.1	0.2
Lead*	70	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.1	0.0	0.6	1.2	6.3
Zinc*	161.8	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	1.6	1.6	3.2	0.0	2.7

													Sampling point 22 PEC(mean) /PNEC				
	Mean 22	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	39.38	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	0.4	0.8	0.4	0.1	0.2
Lead*	69	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.1	0.0	0.6	1.2	6.2
Zinc*	162.2	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	1.6	1.6	3.2	0.0	2.7

													Sampling point 33 PEC(mean) /PNEC				
	Mean 33	L <sub>o</sub> D/T/Inits	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Copper*	58.4	mg/kg	100	ORNL	50	ORNL	100	ORNL	390	ODEQ	190	ODEQ	0.6	1.2	0.6	0.1	0.3
Lead*	126.3	mg/kg	900	ORNL	1700	OSWER	120	OSWER	56	OSWER	11	OSWER	0.1	0.1	1.1	2.3	<b>11.5</b>
Zinc*	247.0	mg/kg	100	ORNL	100	ORNL	50	ORNL	20000	ODEQ	60	ODEQ	2.5	2.5	4.9	0.0	4.1

Notes:

na



PEC/PNEC > 1 in italic

PEC/PNEC > 10 in bold

Where 0.0 is stated, this reflects a HI <0.04

**SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY**

**Appendix 13b: Hazard Index (HI) - off-site soil samples (Shanks' monitoring data)  
Comparison of measured concentrations (PEC) with Predicted no effect concentrations (PNEC) - organics**

		PNEC										Sampling Point 18 HI = PEC(mean) /PNEC					
	Mean 18	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	50.4	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			1.3E-03	1.3E-02	
		PNEC										Sampling Point 20A HI = PEC(mean) /PNEC					
	Mean 20A	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	206.7	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			5.2E-03	5.2E-02	
		PNEC										Sampling Point 20B HI = PEC(max) /PNEC					
	Mean 20B	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	238.8	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			6.0E-03	6.0E-02	
		PNEC										Sampling Point 21 HI = PEC(mean) /PNEC					
	Mean 21	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	253.5	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			6.3E-03	6.3E-02	
		PNEC										Sampling Point 22 HI = PEC(mean) /PNEC					
	Mean 22	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	498.3	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			1.2E-02	1.2E-01	
		PNEC										Sampling Point 22 HI = PEC(mean) /PNEC					
	Mean 22	Lod/Units	PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Total PCBs	498.3	<1µg/kg	na	-	na	-	40000	ORNL	4000	ODEQ	na	-			1.2E-02	1.2E-01	

Notes

Where 0.0 is stated, this reflects a HI <0.04

**SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY**

**Appendix 13b: Hazard Index (HI) - off-site soil samples (Shanks' monitoring data)  
Comparison of measured concentrations (PEC) with Predicted no effect concentrations (PNEC) - dioxins and furans**

	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 18 HI = PEC(mean) /PNEC				
		PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 18 0.006	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.1	0.1

	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 20A HI = PEC(mean) /PNEC				
		PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 20A 0.086	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.7	1.6


	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 20B HI = PEC(mean) /PNEC				
		PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 20B 0.067	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.6	1.2

	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 21 HI = PEC(mean) /PNEC				
		PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 21 0.016	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.1	0.3

	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 22 HI = PEC(mean) /PNEC				
		PNEC microbes	Source	PNEC Invertebrates	Source	PNEC Plants	Source	PNEC Mammalian	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 22 0.031	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.3	0.6

	PEC (µg/kg TEQ)	PNEC (µg/kg TEQ)										Sampling Point 33				
		PNEC microbes	Source	PNEC Invertebrate	Source	PNEC Plants	Source	PNEC Mammalia	Source	PNEC Avian	Source	Microbes	Invertebrates	Plants	Mammalian	Avian
Dioxins and furans	mean 33 0.068	na	-	na	-	na	-	0.1	ODEQ	0.06	ODEQ				0.6	1.2

Notes:

na  
  
 PEC/PNEC > 1 in italic  
 PEC/PNEC > 10 in bold  
 Where 0.0 is stated, this reflects a HI <0.04