SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY

Appendix 11a. Comparison of predicted concentrations at the point of entry into the Afon Lwyd with water screening guidance values (WSGV)
From soil contamination

	Peak Concentration (and Time) 90%ile in µg/l or concentration at 1000 years	Units	WSGV	Water screening guidance values (WSGV)	Necessary dilution
Bromide	175 mg/l (8)	mg/l	na		
Chromium Dissolved (ICP-MS)	20 (1,000)	ug/l	20	EQS (76/464/EEC) freshwater suitable for all salmonid (hardness > 100-150)*	
Nickel Dissolved (ICP-MS)	1,920 (900)	ug/l	150	EQS (76/464/EEC) freshwater suitable for all fishlife (hardness > 100-150)*	
Zinc Dissolved (ICP-MS)	238 (1,000)	ug/l	75	EQS (76/464/EEC) freshwater suitable for all salmonid (hardness > 100-150) (value for Total Zn)	3
2,4,6 Trichlorophenol	1.9 (750)	ug/l	4.9	US EPA Region 5 (2003) Ecological Screening Levels	
2,4,6 Trichlorophenol (1)	0.049 (750)	ug/l	4.9	US EPA Region 5 (2003) Ecological Screening Levels	
Naphthalene	2.2 (1,000)	ug/l	10	EQS (76/464/EEC) all freshwater EQS (ug/l)	
1,4,Dichlorobenzene	0.43 (1,000)	ug/l	9.4	US EPA Region 5 (2003) Ecological Screening Levels	
1,4,Dichlorobenzene (1)	9.9e-4 (500)	ug/l	9.4	US EPA Region 5 (2003) Ecological Screening Levels	
Vinyl Chloride	3.9 (100)	ug/l	87.8	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Vinyl Chloride (1)	0.059 (100)	ug/l	87.8	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Trichloroethene (TCE)	14 (300)	ug/l	351	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Trichloroethene (TCE) (1)	2.3 (150)	ug/l	351	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Bromoform	17 (50)	ug/l	230	US EPA Region 5 (2003) Ecological Screening Levels	
Bromoform (1)	1.7 (55)	ug/l	230	US EPA Region 5 (2003) Ecological Screening Levels	
1,1,2,2- Tetrachloroethene	2.4 (200)	ug/l	418	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
1,2,4, Trichlorobenzene	2.9 (1,000)	ug/l	418	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
1,2,4, Trichlorobenzene (1)	6.6e-3 (1,000)	ug/l	30	US EPA Region 5 (2003) Ecological Screening Levels	
Dioxins and furans TEQ (Nato) *	1.20E-09	ng/l	$<10^{-5}$	NOAA (ambient water criteria - 378 TCDD)	

Notes

(1) values when modelisation made with biodegradation

predicted concentration at the point entry into the river higher than water screening value

na : not available

* Peak Concentration (and Time) 95%ile in µg/l or concentration at 1000 years

SHANKS WASTE MANAGEMENT LTD, PONTYPOOL HTI FACILITY

Appendix 11b. Comparison of predicted concentrations at the point of entry into the Afon Lwyd From groundwater contamination

	Peak Concentration (and Time) 90%ile in µg/l or concentration at 1000 years	Units	WSGV	Water screening guidance values (WSGV)	Necessary dilution
source 1					
Arsenic Dissolved (ICP-MS)	1.8e-7 (1,000)	<1 ug/l	50	EQS (76/464/EEC) freshwater	
Bromide	33 (mg/l) (1,000)	mg/l	na		
Chromium Dissolved (ICP-MS)	7.2e-2 (1,000)	ug/l	20	EQS (76/464/EEC) freshwater suitable for all salmonid (hardness > 100-150)*	
Selenium Dissolved (ICP-MS)	9.8 (1,000)	<1 ug/l	5	US EPA Region 5 (2003) Ecological Screening Levels (value for Total Se)	2
Zinc Dissolved (ICP-MS)	1.1e-4 (1,000)	ug/l	75	EQS (76/464/EEC) freshwater suitable for all salmonid (hardness > 100-150) (value for Total Zn)	
source 2					
Vinyl Chloride	70 (1,000)	ug/l	87.8	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Vinyl Chloride (1)	0.06 (1,000)	ug/l	87.8	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Trichloroethene (TCE)	160 (1,000)	ug/l	351	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Trichloroethene (TCE) (1)	0.85 (1,000)	ug/l	351	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Tetrachloroethene (PCE)	97 (1,000)	ug/l	125	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
Tetrachloroethene (PCE) (1)	0.65 (1,000)	ug/l	125	Tier II SAV Surface Water Screening Benchmark, Chronic Value (Suter and Tsao 1996)	
source 3					
Benzene	38 (1,000)	ug/l	30	EQS (76/464/EEC) freshwaters (value for benzene-annal average)	1
Benzene (1)	0.03 (1,000)	ug/l	30	EQS (76/464/EEC) freshwaters (value for benzene-annal average)	
Toluene	890 (1,000)	ug/l	50	EQS (76/464/EEC) freshwaters (value for toluene-annal average)	18
Toluene (1)	0.03 (1,000)	ug/l	50	EQS (76/464/EEC) freshwaters (value for toluene-annal average)	
Xylenes	50 (1,000)	ug/l	30	EQS (76/464/EEC) freshwaters (value for Xylenes-annal average)	2
Xylenes (1)	0.05 (1,000)	ug/l	30	EQS (76/464/EEC) freshwaters (value for Xylenes-annal average)	
MTBE	140 (1,000)	ug/l	11.07	EPA, Region 6	13
MTBE (1)	6 (1,000)	ug/l	11.07	EPA, Region 6	
Naphthalene	0.1 (1,000)	ug/l	10	EQS (76/464/EEC) all freshwater EQS (ug/l)	
Pentachlorophenol	9.7e-4 (1,000)	ug/l	15	EPA 2004, National Recommended Water Quality Criteria	
source 4					
source 5					
source 6					
Total Aliphatics (C5-C35)	4 (1,000)	ug/l	na		
Total Aliphatics (C5-C35) (1)	0.5 (1000)	ug/l	na		
Total Aromatics (C6-C35	10 (1,000)	ug/l	na		
Total Aromatics (C6-C35) (1)	4 (1,000)	ug/l	na		

Notes

(1) values when modelisation made with biodegradation

predicted concentration at the point entry into the river higher than water screening value

na : not available