MINNESOTA POLLUTION CONTROL AGENCY AQUATIC LIFE CRITERIA

Page 1 SUMMARY

2	a Criterion: ug/l (unless				
B. Minnesota Woter Class 1,2A 1,2Bd 6, 2B, 2C, 2D 6,	Use	CC	MC	FAV	Basis ¹
1,2A U	DW, Salmonid	0.61	15,346	30,692	PCA Hs
1,2Bd %	DW, NonSalmonid	0.61	15,346	30,692	PCA Hs
2B, 2C, 2D O ,	NonSalmonid Other	1.62	15,346	30,692	PCA Hs
Chronic: Formulas: CC: VIC: FAV: Notes:	Contappca	Uality Standard		EPA	
C. EPA Crite	erion: ug/l	CCC: none	Basis: Basis:		
Date.]	FAV: none	Basis:		
]	FAV: none	Basis:		
D. Other Crit	teria ug/l	FAV: none	The Basis: The Basis:	Source	
D. Other Crit D. Other Crit E. Notes: The PF Calhoun is a class collected at Pool 3	Use DW, Salmonid DW, NonSalmonid NonSalmonid Other Consumer quality?: no ria values determined for Consuper A erion: ug/l teria ug/l	FAV: none	a is based on BAF	Source	n Lake Calhoun. Lake on BAF information

- Hs = Human health systemic effects
- Hc = Human health carcinogenic effects

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W = Wildlife effects
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O = Organoleptic (taste and odor)

R = Tissue residue (bioaccumulation)

Other = Criterion based on other end point

MINNESOTA POLLUTION CONTROL AGENCY AQUATIC LIFE CRITERIA

Page 2 DIRECT AQUATIC LIFE TOXICITY - EPA Criterion Available

		OA (Lake Calho	un)	CAS# 33	85-67-1	Date	Aug	16, 200	7	
			000							
<u>3.</u>	EPA Criterion	: ug/1	CCC: MC:	none none			sis: sis:			
°∕~	Date.		FAV:				sis:			
<u>~~</u> ~	·U_		1717.	none		Da	.515.			
1.	EPA Criterion Date: Cunesplated to wat Toxicion ug/l	er quality?: no								
2.	Toxicity	FAV:			N:			ACR:		
	Toxictor ug/l	Chronic value:			N:					
3.	Residue	° 0 ₀								
	FDA action	مر ۱ level: none								
	BCF Final	: none o ,	N total:	N	used:					
	geo mean a									
		adjusted for line	k							
	geo man un		QU.							
C.	MPCA Evalua	tion of EPA Crit	erion							
	1. Four lowes	t GMAVs:	ັບ	9 9						
	2. Commercia	ally or recreationa	ally impo	rtant So ecie	S.					
			v 1	° ().						
	3. Plant data:			° Unir	for a					
	 Plant data: Extrapolation 	on of water quali	ty effects		for more ing					
	 Plant data: Extrapolation Chronic data 	on of water quali ta No. of No. be	ty effects values: low crites	Υ ^τ ημ s: rion:	for more inform	ation				
	 Plant data: Extrapolation Chronic data 	on of water quali ta No. of No. be	ty effects values: low crites	"Unit :: rion:	for more inform	ation at ,				
	 Plant data: Extrapolation Chronic data Notes: 	on of water quali ta No. of No. be	ty effects values: low crites	τion:	for more inform	ation at he				
	 Plant data: Extrapolation Chronic data Notes: ACRS 	on of water quali ta No. of No. be ACR used by E	ty effects values: low criter	rion:	for more inform	N:	*05: <u></u>			
	 Plant data: Extrapolation Chronic data Notes: ACRS 	on of water quali ta No. of No. be ACR used by E Geo. mean, all A	ty effects values: low crites <u>PA:</u>	rion:	for more inform	N: N:	os. inw			
	 Plant data: Extrapolation Chronic data Notes: ACRS 	on of water quali ta No. of No. be ACR used by E Geo. mean, all A ACR used by M	ty effects values: low crites PA: ACRs: IPCA:	rion:	for Inore inform	N: N: 1- ge	eneric A	<u>م</u>		
	FDA action BCF Final geo mean a % lipid: geo man un MPCA Evalua 1. Four lowes 2. Commercia 3. Plant data: 4. Extrapolation 5. Chronic data Notes: 6. ACRS	on of water quali ta No. of No. be ACR used by E Geo. mean, all A ACR used by M	ty effects values: low crites PA: ACRs: IPCA:	* Unit s: rion: none 18	for more inform	N: N: N: 1- ge	eneric A	oo CR.stere		
	 3. Plant data: 4. Extrapolation 5. Chronic data Notes: 6. ACRS Notes: 	on of water quali ta No. of No. be ACR used by E Geo. mean, all A ACR used by M	ty effects values: low crites PA: ACRs: IPCA:	rion:	for more inform	N: N: N: 1- ge	eneric A	oc CR stere,		
	Notes:				for more inform	N: N: N: 1- ge	eneric A	oo CR.stere.,	TIR. IS IN	
D.	Notes: Separate Cool	on of water quali ta No. of No. be ACR used by E Geo. mean, all A ACR used by M	iterion, u	g/l	for more inform	N: N: N: 1- ge	eneric A	oc CR state,	TIT. US MAR	
	Notes: Separate Cool	/Warm Water Cri monids deleted fi	iterion, u	g/l	^f or more inform	N: N: N: 1- ge	eneric A	OC CR State	nn.usiwali	atimate a
	Notes: Separate Cool/ No. of Sal N(nonsal):	/Warm Water Cri monids deleted fi	iterion, u	g/l est 4 GMAV	for more inform	N: N: N: 1- ge	cC:		TIT. US MAR	all Materic
	Notes: Separate Cool No. of Sal N(nonsal): Adjustmer	/Warm Water Cri monids deleted fi : FAV:	iterion, u	g/l est 4 GMAV	for more inform	N: N: N: 1- ge	eneric A	Oc. CR.State,,	TIP.US Mal	atimater q
	Notes: Separate Cool/ No. of Sal N(nonsal):	/Warm Water Cri monids deleted fi : FAV:	iterion, u	g/l est 4 GMAV	for more inform	131100 31 1911	eneric A	Oc. CR.Stake,	nn. IS Wald	arimater

MINNESOTA POLLUTION CONTROL AGENCY AQUATIC LIFE CRITERIA

Page 3 DIRECT AQUATIC LIFE TOXICITY No EPA criterion available

A. Chemical: PFOA (Lake Calhoun) B. EPA National Method 1. Data requirements: Salmonid (2A water only Osteichthyes (fish): Chordata (fish, amphibian Planktonic crustacean: Benthic crustacean: Aquatic insect: Phylum other than Arthro Second insect or phylum			(CAS# 335	-0/-	1	Date	Aug. 16, 200	1/
B . EPA Nat	ional Method								
1. Data requirem	ents: Saln	nonid (2A wa	ter only):						
	Oste	ichthyes (fish				Pimephales	promel	as	
nep.	Cho	data (fish, an	•						
Ĩ, FOL	Plan	ktonic crusta	istacean:			Daphnia magna			
ing	Bent	hic crustacea							
Aquatic insec			t:						
	Phyl	um other thai	n Arthropoda						
	• Seco	ond insect or p	hylum not al	ready rep.:	:				
2. GMAVs I	Lowest 4(2A)	: see Tier II	method	Lov	vest 4	4(2B,2C, 2D): see '	Tier II method	l
ug/l	ر د	Dry							
1	N:	· (aCt)			N:				
		Na							
3. FAV: 2	2A: see Tier	II metho		2B,	2C,	2D: see Tie	r II metł	nod	
4. Adjustments t	o FAVs:	*4	lix		1				
5. Chronic dat	a: see Tabl	e 2a	SPNo.		Sp	ecies:			
mean values	8		(ap)						
ug/l			- Yar						
				,	<u> </u>				
6. ACR Measure	ad: A	nito voluo			volu	0			
0. ACK Measur	eu. Au	ute value			valu	e	ACK		
	Ge	eneric		8	i.		18		
Generic: 18					nror.		10		
					- 0	ar;			
Final: 18						10n			
						the here			
	lue: NOE	C of 23,900 u	g/l for Northe	ern milfoil		<i>D</i> _S			
7. Final Plant Va		CR) see	e Tier II meth	od			m		
 Final Plant Va Chronic Criter 	rion (FAV/A			0 a			10		
 Final Plant Vε Chronic Criter 	rion (FAV/A						My ip		
 Final Plant Va Chronic Criter EPA Adv 	visory Metho	d					"N, DC) }	
 Final Plant Va Chronic Criter C. EPA Adv Data requirem 	visory Metho ents:	d F	ish:		Pime	phales prom	elas	State	
	visory Metho	C	rustacean:		Pime Daph	phales prom nia magna	elas	state.np	
No. SMAVs: 2	2	T	rustacean: hird animal:		Pime Daph	phales prom nia magna	elas	state. .m.	
No. SMAVs: 2 No. GMAVs: 2	2	T P	rustacean: hird animal: lant for herbio	ride:	Pime Daph	phales prom nia magna	elas	state.nn.	
No. SMAVs: 2 No. GMAVs: 2 Factor: 1	2	Т Р Ін	rustacean: hird animal:	cide: cide:	Daph	inia magna	elas	estate .Inn .Us/Mare	
No. SMAVs:2No. GMAVs:2Factor:12. Lowest GMA	2 3 V: 399,000 u	Т Р Ін	rustacean: hird animal: lant for herbio	cide: cide: Spec	baph	Daphnia ma	elas egna	state.nn.us.mate	TIM BER
No. SMAVs: 2 No. GMAVs: 2 Factor: 1 2. Lowest GMA 3. FAV: 30,692	2 3 V: 399,000 u ug/l	Т Р Ін	rustacean: hird animal: lant for herbio	cide: cide: Spec	baph	inia magna	elas egna	state.nn.	TIM SIEF. 9U.S.
No. SMAVs:2No. GMAVs:2Factor:12. Lowest GMA3. FAV:30,6924. Chronic data:	2 3 V: 399,000 u ug/l See B.5.	Т Р Ін	rustacean: hird animal: lant for herbio	cide: cide: Spec	baph	Daphnia ma	elas	state. .nn. .ls.wate	Timeler.90ality
No. SMAVs:2No. GMAVs:2Factor:12. Lowest GMA3. FAV:30,6924. Chronic data:5. ACR:18 See	2 .3 V: 399,000 u ug/l See B.5. B.6.	Т Р Ін	rustacean: hird animal: lant for herbio	cide: cide: Spec	baph	Daphnia ma	elas agna	state.nn.us.	TIMATER QUALITY
No. SMAVs:2No. GMAVs:2Factor:12. Lowest GMA3. FAV:30,6924. Chronic data:	2 3 V: 399,000 u ug/l See B.5. B.6. 1	T P In In In	rustacean: hird animal: lant for herbio issect for pesti	cide: cide: Spec MC:	vies:	Daphnia ma 346 ug/l	elas agna	State.nn.USMate	Timater. quality

D. Notes:

MINNESOTA POLLUTION CONTROL AGENCY AQUATIC LIFE CRITERIA

Page 4 HUMAN HEALTH

A. Chemical: PFOA (Lake Calhoun)		CAS# 335-67-1		Date	Aug. 16, 2007			
B. EPA Human Health Criterion: ug/l Aby/Ref.dose: none mg/kg/day Final BCF: none RSC: none	DW and	fish: none	fish only	. none	DW only: none			
			•		•			
Ale/Ref.dose: none mg/kg/day	Cancer Po	otency Slope n	ione (mg/k	$(a^{-1})^{-1}$				
Fina -B CF: none	ot applicable	ncy Slope: none (mg/kg-d) ⁻¹ applicable Source: MDH Source: MDH Source: BAF %lipid Norm BAF 35 not applicable 35 46 not applicable 46 BCF %lipid Norm. BCF BCF %lipid Norm. BCF BCF %lipid Norm. BCF BAF %lipid Norm. BCF						
RSC: nove		TT						
C. Minnesota Human Health Criterior	1							
1. Ref.dose: 0.00014	lay Source: I	MDH						
RSC: 0.2	Source: 1	MDH						
2. Cancer Potency Slope: none (mg/kg-d)	Source:							
3. Measured BAFs: Species/Tissue	BAF	%lipid		Norm BAF				
1. Bluegill (fillet)		35	not ap	plicable	35			
2. White sucker (fillet)		46	not ap	plicable	46			
3. V								
4. ``\$ % _@								
Geo mean: 40	Hiz							
4. Measured BCFs: Species/Tissue	·V.	BCF		%lipid	Norm. BCF			
1. See Table 5a and Table 5b	- ian							
2.								
3.	1	Un:						
4.		<u>'''</u> ,						
<u> </u>		m						
Geo mean:								
5 Edible portion BAE or BCE	BA P			BCF				
Cold water: 60% lipid		nap.		DCI				
Warm water: 1.5 % lipid			· n					
6. Geo mean unadjusted for lipid:			the states					
			Ϋ́ς	S				
7. log Kow: not applicable		meas.	QSAR	"hun por	Est. BCF:			
adjust. for % lipid: not applicable				HRL/HBV: 0.545 hrate				
8. Parachor: not applicable					e~			
9. Food Chain Multiplier: not applicable				-	(are			
10. Final BAF: 2A: 40		2B,2C, 2D) : 40	1	·n _n			
e	0.61 * ug/l	2B/2C, 2D) : 1.62 #	HRL/HB	V: 0.545			
ug/l		ug/l			"Vate			
D. Organoleptic:		Source:			41			
ug/l								

E. Notes: BAFs mostly derived from 1/2 the detection limit of the fish tissue data.

iouality.standards. * Criterion developed using 2 L/day water intake rate and 70 kg body wt. as specified in Minn. R. ch F. G. 7050.

Criterion developed using 0.01 L/day incidental ingestion rate and 70 kg body wt. as specified in H.

Minn. Rule ch. 7050. I.