MINNESOTA POLLUTION CONTROL AGENCY
AQUATIC LIFE CRITERIA

Page 1 SUMMARY

A.	Chemical: PFOA (Lake Calhoun)	CAS# 335-67-1	Date Aug. 16, 2007

B.   Minnesota Criterion: ug/l (unless noted otherwise)

Water Class	Use	CC	MC	FAV	Basis[1]
1,2A	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	NonSalmonid	1.62	15,346	30,692	PCA Hs
	Other				

Toxicity related to water quality?: no
If yes, above criteria values determined for:
Slope: Acute:
        Chronic:
Formulas: MPCA   EPA

	MPCA	EPA
CC:		
MC:		
FAV:		

Notes:

C.	EPA Criterion: ug/l	CCC: none	Basis:
	Date:	MC: none	Basis:
		FAV: none	Basis:

D. Other Criteria ug/l	Source

E. Notes: The PFOA site-specific criterion for Lake Calhoun is based on BAF information from Lake Calhoun. Lake Calhoun is a class 2B water. The PFOA site-specific criterion for the Mississippi River is based on BAF information collected at Pool 3 on the Mississippi River.

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[1] Criteria basis codes for part B:
    EPA = From EPA criterion
    PCA = Criterion developed by Minnesota Pollution Control Agency staff
    T1 = Direct aquatic life toxicity, EPA national criteria procedures used
    T2 = Direct aquatic life toxicity, EPA advisory procedures used
    Hs = Human health systemic effects
    Hc = Human health carcinogenic effects
    R = Tissue residue (bioaccumulation)
    W = Wildlife effects
    O = Organoleptic (taste and odor)
    Other = Criterion based on other end point

Page 2 DIRECT AQUATIC LIFE TOXICITY - EPA Criterion Available

A.	Chemical: PFOA (Lake Calhoun)	CAS# 335-67-1	Date Aug. 16, 2007

B.	EPA Criterion: ug/l	CCC: none	Basis:
	Date:	MC: none	Basis:
		FAV: none	Basis:

1.	Related to water quality?: no		
2.	Toxicity	FAV:	N:	ACR:
	ug/l	Chronic value:	N:	
3.	Residue			
	FDA action level: none			
	BCF Final: none N total: N used:			
	geo mean at 1% lipid:			
	% lipid:			
	geo man unadjusted for lipid			

C. MPCA Evaluation of EPA Criterion
   1. Four lowest GMAVs:

   2. Commercially or recreationally important species:

   3. Plant data:

   4. Extrapolation of water quality effects:

   5. Chronic data   No. of values:
                            No. below criterion:

   Notes:

6. ACRS	ACR used by EPA: none	N:
	Geo. mean, all ACRs:	N:
	ACR used by MPCA: 18	N: 1- generic ACR

   Notes:

D. Separate Cool/Warm Water Criterion, ug/l
      No. of Salmonids deleted from lowest 4 GMAVs:
      N(nonsal):   FAV: MC: CC:
      Adjustments to FAV:

   Notes:

E. Summary of changes made to EPA criterion:

Page 3 DIRECT AQUATIC LIFE TOXICITY
No EPA criterion available

A.	Chemical: PFOA (Lake Calhoun)	CAS# 335-67-1	Date Aug. 16, 2007

B.	EPA National Method			
1. Data requirements:	Salmonid (2A water only):			
	Osteichthyes (fish):		Pimephales promelas	
	Chordata (fish, amphibian):			
	Planktonic crustacean:		Daphnia magna	
	Benthic crustacean:			
	Aquatic insect:			
	Phylum other than Arthropoda or Chordata:			
	Second insect or phylum not already rep.:			
2. GMAVs ug/l	Lowest 4(2A): see Tier II method		Lowest 4(2B,2C, 2D): see Tier II method	
	N:		N:	
3. FAV:	2A: see Tier II method		2B, 2C, 2D: see Tier II method	
4. Adjustments to FAVs:				
5. Chronic data: see Table 2a		No.	Species:	
mean values ug/l				

6. ACR Measured:	Acute value	Chronic value	ACR
	Generic		18
Generic: 18			
Final: 18			

7. Final Plant Value: NOEC of 23,900 ug/l for Northern milfoil

8. Chronic Criterion (FAV/ACR)   see Tier II method

C.	EPA Advisory Method		
1. Data requirements:	Fish:	Pimephales promelas	
	Crustacean:	Daphnia magna	
No. SMAVs: 2	Third animal:		
No. GMAVs: 2	Plant for herbicide:		
Factor: 13	Insect for pesticide:		

2. Lowest GMAV: 399,000 ug/l   Species: Daphnia magna

3. FAV: 30,692 ug/l   MC: 15,346 ug/l

4. Chronic data: See B.5.

5. ACR: 18 See B.6.

6. CC: 1705 ug/l

7. Citation for lowest GMAV: AR226-0512, AR226-0517, AR226-0508, and STS-403

D. Notes:

Page 4 HUMAN HEALTH

A.	Chemical: PFOA (Lake Calhoun)	CAS# 335-67-1	Date	Aug. 16, 2007

B.	EPA Human Health Criterion: ug/l	DW and fish: none	fish only: none	DW only: none
ADI/Ref.dose: none mg/kg/day		Cancer Potency Slope: none (mg/kg-d)$^{-1}$		
Final BCF: none		%lipid: not applicable		
RSC: none				

C.	Minnesota Human Health Criterion			
1. Ref.dose: 0.00014 mg/kg/day		Source: MDH		
RSC: 0.2		Source: MDH		
2. Cancer Potency Slope: none (mg/kg-d)$^{-1}$		Source:		
3. Measured BAFs: Species/Tissue		BAF	%lipid	Norm BAF
1. Bluegill (fillet)		35	not applicable	35
2. White sucker (fillet)		46	not applicable	46
3.				
4.				
Geo mean: 40				
4. Measured BCFs: Species/Tissue		BCF	%lipid	Norm. BCF
1. See Table 5a and Table 5b				
2.				
3.				
4.				
5.				
6.				
Geo mean:				
5. Edible portion BAF or BCF		BAF		BCF
Cold water: 6.0 % lipid				
Warm water: 1.5 % lipid				
6. Geo mean unadjusted for lipid:				
7. log Kow: not applicable adjust. for % lipid: not applicable		meas.	QSAR:	Est. BCF:
8. Parachor: not applicable				
9. Food Chain Multiplier: not applicable				
10. Final BAF: 2A: 40		2B,2C, 2D: 40		
11. Criteria: ug/l	2A: 0.61 * ug/l	2Bd: 0.61 * ug/l	2B/2C, 2D: 1.62 # ug/l	HRL/HBV: 0.5 ug/l

D.	Organoleptic: ug/l	Source:

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

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

G.   7050.

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

I.   Minn. Rule ch. 7050.