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SUPERFUND CHEMICAL DATA MATRIX METHODOLOGY

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1.0 INTRODUCTION

The Superfund Chemical Data Matrix (SCDM) is a database containing factor values and benchmark values used for applying the Hazard Ranking System (HRS; 40 CFR Part 300 Appendix A, 55 *FR* 51583) to evaluate potential National Priorities List (NPL) sites. The HRS assigns factor values for toxicity, gas migration potential, gas and ground water mobility, surface water persistence, and bioaccumulation potential. These assignments are based on the physical, chemical, ecological, toxicological, and radiological properties of hazardous substances present at a site. Hazardous substances, as defined for HRS purposes, includes both hazardous substances referenced in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 101(14), which are substances specifically listed under other federal laws and are known as "CERCLA hazardous substances," and "pollutants or contaminants" as defined in CERCLA itself in section 101(33).

SCDM contains HRS factor values and benchmarks for those hazardous substances frequently found at sites that are evaluated using the HRS. SCDM also contains the physical, chemical, toxicological, and radiological input data used to calculate the factors and benchmarks. The input data presented in SCDM are taken directly from peer reviewed, generally accepted literature sources and databases and/or EPA developed literature sources and databases; or are calculated using procedures set forth by EPA and in the HRS. Further HRS procedures are then applied to the input data to determine a factor value or benchmark. The HRS also assigns extra weight to targets with exposure levels to hazardous substances that are at or above benchmarks. These benchmarks include both risk-based screening concentrations and concentrations specified in regulatory limits for the hazardous substances present at a site for a particular migration pathway.

Chapter 2.0, *Data Selection Methodology*, of this document explains how data are selected and prioritized into a hierarchy for assigning SCDM values. Chapter 3.0, *Calculations in SCDM*, describes how some types of data (i.e., volatilization half-lives, distribution coefficients, and screening concentrations) are internally calculated using data in SCDM and methodologies from published literature or regulatory guidance documents. Chapter 4.0, *Chemical Data, Factor Values, and Benchmarks*, describes how SCDM data, HRS factor values, and benchmark values are presented. The factor values and benchmark values are listed, substance by substance, in Appendix A. Appendix B contains the HRS factor values and benchmark tables (organized by pathway) for both nonradiological hazardous substances and radionuclides. Please note that *National Recommended Water Quality Criteria (NRWQC)* Chronic Criteria Continuous Concentration (CCC) and Acute Criteria Maximum Concentration (CMC) values have endnotes associated with them listed at the end of Appendix B. Appendix C contains a cross-reference index of substance name synonyms.

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Arsenic
CAS Number: 007440-38-2

TOXICITY

Parameter	Value		Unit	Source
Oral RfD:	3.0E-4		mg/kg/day	IRIS
Inhal RfD:			mg/kg/day	
Oral Slope:	1.5E+0		(mg/kg/day)^-1	IRIS
Oral Wt-of-Evid:	A			
Inhal Slope:	1.5E+1		(mg/kg/day)^-1	IRIS
Inhal Wt-of-Evid:	A			
Oral ED10:	7.0E-3		mg/kg/day	EPA_ED10
Oral ED10 Wgt:	A			
Inhal ED10:	7.0E-3		mg/kg/day	EPA_ED10
Inhal ED10 Wgt:	A			
Oral LD50:			mg/kg	
Dermal LD50:			mg/kg	
Gas Inhal LC50:			ppm	
Dust Inhal LC50:			mg/L	
ACUTE				
Fresh CMC:	3.4E+2	A, D, K	µg/L	WATCRIT
Salt CMC:	6.9E+1	A, D, bb	µg/L	WATCRIT
CHRONIC				
Fresh CCC:	1.5E+2	A, D, K	µg/L	WATCRIT
Salt CCC:	3.6E+1	A, D, bb	µg/L	WATCRIT
Fresh Ecol LC50:	1.5E+3		µg/L	ECOTOX
Salt Ecol LC50:	3.9E+2		µg/L	ECOTOX

PERSISTENCE

Parameter	Value	Unit	Source
LAKE - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
RIVER - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
Log Kow:	6.8E-1		PHYSPROP

PHYSICAL CHARACTERISTICS

Parameter	Value		
Metal Contain:	Yes		
Organic:	No		
Gas:	No		
Particulate:	Yes		
Radionuclide:	No		
Rad. Element:	No		
Molecular Weight:	7.5E+1		
Density:	5.8E+0	g/mL @	C

MOBILITY

Parameter	Value	Unit	Source
Vapor Press:		Torr	
Henry's Law:	7.7E-1	atm-m3/mol	PHYSPROP
Water Solub:		mg/L	
Distrib Coef:	2.9E+1	ml/g	SSG_KD
Geo Mean Sol:	1.2E+5	mg/L	CALC

BIOACCUMULATION

Parameter	Value	Unit	Source
FOOD CHAIN			
Fresh BCF:	4.0E+0		VER_BCF
Salt BCF:	3.5E+2		VER_BCF
ENVIRONMENTAL			
Fresh BCF:	8.7E+3		ECOTOX
Salt BCF:	3.5E+2		VER_BCF
Log Kow:	6.8E-1		PHYSPROP
Water Solub:			
Geo Mean Sol:	1.2E+5	mg/L	CALC

OTHER DATA

Melting Point:	8.2E+2	C
Boiling Point:	6.0E+2	C
Formula:	As	

CLASS INFORMATION

Class	Parent Substance

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Arsenic
CAS Number: 007440-38-2

ASSIGNED FACTOR VALUES

AIR PATHWAY

Parameter	Value
Toxicity:	10000
Gas Mobility:	
Gas Migration:	

GROUND WATER PATHWAY

Parameter		Value
Toxicity:		10000
Water Solub:		
Distrib:		2.9E+1
Geo Mean Sol:		1.2E+5
Mobility:		
Liquid	Karst:	1.0E+0
	Non Karst:	1.0E-2
Non Liq.	Karst:	1.0E+0
	Non Karst:	1.0E-2

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	10000

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000

HUMAN FOOD CHAIN

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	5.0
Salt:	500.0

ENVIRONMENTAL

Parameter	Value
Fresh Tox:	10
Salt Tox:	100
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	5000.0
Salt:	500.0

BENCHMARKS

AIR PATHWAY

Parameter	Value	Unit
NAAQS/NESHAPS:		µg/m3
Cancer Risk:	5.7E-7	mg/m3
Non Cancer Risk:		mg/m3

GROUND WATER PATHWAY

Parameter	Value	Unit
MCL/MCLG:	1.0E-2	mg/L
Cancer Risk:	5.7E-5	mg/L
Non Cancer Risk:	1.1E-2	mg/L

SOIL EXPOSURE PATHWAY

Parameter	Value	Unit
Cancer Risk:	4.3E-1	mg/kg
Non Cancer Risk:	2.3E+1	mg/kg

RADIONUCLIDE

Parameter	Value	Unit
MCL:		pCi/L
UMTRCA:		pCi/kg
CANCER RISK		
Air:		pCi/m3
DW:		pCi/L
FC:		pCi/kg
Soil Ing:		pCi/kg
Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value	Unit
MCL/MCLG:	1.0E-2	mg/L
Cancer Risk:	5.7E-5	mg/L
Non Cancer Risk:	1.1E-2	mg/L

HUMAN FOOD CHAIN

Parameter	Value	Unit
FDAAL:		ppm
Cancer Risk:	2.1E-3	mg/kg
Non Cancer Risk:	4.1E-1	mg/kg

ENVIRONMENTAL

Parameter	Value	Unit
ACUTE		
Fresh CMC:	3.4E+2 [A, D, K]	µg/L
Salt CMC:	6.9E+1 [A, D, bb]	µg/L
CHRONIC		
Fresh CCC:	1.5E+2 [A, D, K]	µg/L
Salt CCC:	3.6E+1 [A, D, bb]	µg/L

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Cadmium
CAS Number: 007440-43-9

TOXICITY

Parameter	Value		Unit	Source
Oral RfD:	5.0E-4		mg/kg/day	IRIS
Inhal RfD:	2.6E-4		mg/kg/day	STSC
Oral Slope:			(mg/kg/day)^-1	
Oral Wt-of-Evid:				
Inhal Slope:	6.3E+0		(mg/kg/day)^-1	IRIS
Inhal Wt-of-Evid:	B1			
Oral ED10:	1.7E-2		mg/kg/day	EPA_ED10
Oral ED10 Wgt:	B1			
Inhal ED10:	1.7E-2		mg/kg/day	EPA_ED10
Inhal ED10 Wgt:	B1			
Oral LD50:	2.3E+3		mg/kg	RTECS
Dermal LD50:			mg/kg	
Gas Inhal LC50:			ppm	
Dust Inhal LC50:	2.1E+1		mg/L	RTECS
ACUTE				
Fresh CMC:	2.0E+0	D, E, K, bb	µg/L	WATCRIT
Salt CMC:	4.0E+1	D, bb	µg/L	WATCRIT
CHRONIC				
Fresh CCC:	2.5E-1	D, E, K, bb	µg/L	WATCRIT
Salt CCC:	8.8E+0	D, bb	µg/L	WATCRIT
Fresh Ecol LC50:	4.0E-1		µg/L	ECOTOX
Salt Ecol LC50:	2.0E-1		µg/L	ECOTOX

PERSISTENCE

Parameter	Value	Unit	Source
LAKE - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
RIVER - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
Log Kow:	-7.0E-2		PHYSPROP

PHYSICAL CHARACTERISTICS

Parameter	Value		
Metal Contain:	Yes		
Organic:	No		
Gas:	No		
Particulate:	Yes		
Radionuclide:	No		
Rad. Element:	No		
Molecular Weight:	1.1E+2		
Density:	8.7E+0	g/mL @	C

MOBILITY

Parameter	Value	Unit	Source
Vapor Press:		Torr	
Henry's Law:	3.1E-2	atm-m3/mol	PHYSPROP
Water Solub:		mg/L	
Distrib Coef:	7.5E+1	ml/g	SSG_KD
Geo Mean Sol:	1.7E+3	mg/L	CALC

BIOACCUMULATION

Parameter	Value	Unit	Source
FOOD CHAIN			
Fresh BCF:	1.0E+3		ECOTOX
Salt BCF:	5.0E+4		ECOTOX
ENVIRONMENTAL			
Fresh BCF:	2.0E+5		ECOTOX
Salt BCF:	5.0E+4		ECOTOX
Log Kow:	-7.0E-2		PHYSPROP
Water Solub:			
Geo Mean Sol:	1.7E+3	mg/L	CALC

OTHER DATA

Melting Point:	3.2E+2	C
Boiling Point:	7.7E+2	C
Formula:	Cd	

CLASS INFORMATION

Class	Parent Substance

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Cadmium
CAS Number: 007440-43-9

ASSIGNED FACTOR VALUES

AIR PATHWAY

Parameter	Value
Toxicity:	10000
Gas Mobility:	
Gas Migration:	

GROUND WATER PATHWAY

Parameter		Value
Toxicity:		10000
Water Solub:		
Distrib:		7.5E+1
Geo Mean Sol:		1.7E+3
Mobility:		
Liquid	Karst:	1.0E+0
	Non Karst:	1.0E-2
Non Liq.	Karst:	1.0E+0
	Non Karst:	1.0E-2

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	10000

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000

HUMAN FOOD CHAIN

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	5000.0
Salt:	50000.0

ENVIRONMENTAL

Parameter	Value
Fresh Tox:	10000
Salt Tox:	1000
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	50000.0
Salt:	50000.0

BENCHMARKS

AIR PATHWAY

Parameter	Value	Unit
NAAQS/NESHAPS:		µg/m3
Cancer Risk:	1.4E-6	mg/m3
Non Cancer Risk:	9.4E-4	mg/m3

GROUND WATER PATHWAY

Parameter	Value	Unit
MCL/MCLG:	5.0E-3	mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	1.8E-2	mg/L

SOIL EXPOSURE PATHWAY

Parameter	Value	Unit
Cancer Risk:		mg/kg
Non Cancer Risk:	3.9E+1	mg/kg

RADIONUCLIDE

Parameter	Value	Unit
MCL:		pCi/L
UMTRCA:		pCi/kg
CANCER RISK		
Air:		pCi/m3
DW:		pCi/L
FC:		pCi/kg
Soil Ing:		pCi/kg
Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value	Unit
MCL/MCLG:	5.0E-3	mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	1.8E-2	mg/L

HUMAN FOOD CHAIN

Parameter	Value	Unit
FDAAL:		ppm
Cancer Risk:		mg/kg
Non Cancer Risk:	6.8E-1	mg/kg

ENVIRONMENTAL

Parameter	Value	Unit
ACUTE		
Fresh CMC:	2.0E+0 [D, E, K, bb]	µg/L
Salt CMC:	4.0E+1 [D, bb]	µg/L
CHRONIC		
Fresh CCC:	2.5E-1 [D, E, K, bb]	µg/L
Salt CCC:	8.8E+0 [D, bb]	µg/L

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Copper
CAS Number: 007440-50-8

TOXICITY

Parameter	Value		Unit	Source
Oral RfD:			mg/kg/day	
Inhal RfD:			mg/kg/day	
Oral Slope:			(mg/kg/day)^-1	
Oral Wt-of-Evid:				
Inhal Slope:			(mg/kg/day)^-1	
Inhal Wt-of-Evid:				
Oral ED10:			mg/kg/day	
Oral ED10 Wgt:				
Inhal ED10:			mg/kg/day	
Inhal ED10 Wgt:				
Oral LD50:			mg/kg	
Dermal LD50:			mg/kg	
Gas Inhal LC50:			ppm	
Dust Inhal LC50:			mg/L	
ACUTE				
Fresh CMC:	1.3E+1	D, E, K, cc	µg/L	WATCRIT
Salt CMC:	4.8E+0	D, cc, ff	µg/L	WATCRIT
CHRONIC				
Fresh CCC:	9.0E+0	D, E, K, cc	µg/L	WATCRIT
Salt CCC:	3.1E+0	D, cc, ff	µg/L	WATCRIT
Fresh Ecol LC50:	1.6E-1		µg/L	ECOTOX
Salt Ecol LC50:	1.5E+0		µg/L	ECOTOX

PERSISTENCE

Parameter	Value	Unit	Source
LAKE - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
RIVER - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
Log Kow:	-5.7E-1		PHYSPROP

PHYSICAL CHARACTERISTICS

Parameter	Value		
Metal Contain:	Yes		
Organic:	No		
Gas:	No		
Particulate:	Yes		
Radionuclide:	No		
Rad. Element:	No		
Molecular Weight:	6.4E+1		
Density:	9.0E+0	g/mL @	C

MOBILITY

Parameter	Value	Unit	Source
Vapor Press:		Torr	
Henry's Law:	2.5E-2	atm-m3/mol	PHYSPROP
Water Solub:		mg/L	
Distrib Coef:	4.3E+2	ml/g	SSG_KD
Geo Mean Sol:	5.7E+2	mg/L	CALC

BIOACCUMULATION

Parameter	Value	Unit	Source
FOOD CHAIN			
Fresh BCF:	1.1E+2		ECOTOX
Salt BCF:	5.1E+5		ECOTOX
ENVIRONMENTAL			
Fresh BCF:	6.1E+3		ECOTOX
Salt BCF:	5.1E+5		ECOTOX
Log Kow:	-5.7E-1		PHYSPROP
Water Solub:			
Geo Mean Sol:	5.7E+2	mg/L	CALC

OTHER DATA

Melting Point:	1.1E+3	C
Boiling Point:	2.6E+3	C
Formula:	Cu	

CLASS INFORMATION

Class	Parent Substance

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Copper
CAS Number: 007440-50-8

ASSIGNED FACTOR VALUES

AIR PATHWAY

Parameter	Value
Toxicity:	0
Gas Mobility:	
Gas Migration:	

GROUND WATER PATHWAY

Parameter		Value
Toxicity:		0
Water Solub:		
Distrib:		4.3E+2
Geo Mean Sol:		5.7E+2
Mobility:		
Liquid	Karst:	1.0E+0
	Non Karst:	1.0E-2
Non Liq.	Karst:	1.0E+0
	Non Karst:	1.0E-2

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	0

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value
Toxicity:	0
Persistence	
River:	1.0000
Lake:	1.0000

HUMAN FOOD CHAIN

Parameter	Value
Toxicity:	0
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	500.0
Salt:	50000.0

ENVIRONMENTAL

Parameter	Value
Fresh Tox:	1000
Salt Tox:	1000
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	5000.0
Salt:	50000.0

BENCHMARKS

AIR PATHWAY

Parameter	Value	Unit
NAAQS/NESHAPS:		µg/m3
Cancer Risk:		mg/m3
Non Cancer Risk:		mg/m3

GROUND WATER PATHWAY

Parameter	Value	Unit
MCL/MCLG:	1.3E+0	mg/L
Cancer Risk:		mg/L
Non Cancer Risk:		mg/L

SOIL EXPOSURE PATHWAY

Parameter	Value	Unit
Cancer Risk:		mg/kg
Non Cancer Risk:		mg/kg

RADIONUCLIDE

Parameter	Value	Unit
MCL:		pCi/L
UMTRCA:		pCi/kg
CANCER RISK		
Air:		pCi/m3
DW:		pCi/L
FC:		pCi/kg
Soil Ing:		pCi/kg
Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value	Unit
MCL/MCLG:	1.3E+0	mg/L
Cancer Risk:		mg/L
Non Cancer Risk:		mg/L

HUMAN FOOD CHAIN

Parameter	Value	Unit
FDAAL:		ppm
Cancer Risk:		mg/kg
Non Cancer Risk:		mg/kg

ENVIRONMENTAL

Parameter	Value	Unit
ACUTE		
Fresh CMC:	1.3E+1 [D, E, K, cc]	µg/L
Salt CMC:	4.8E+0 [D, cc, ff]	µg/L
CHRONIC		
Fresh CCC:	9.0E+0 [D, E, K, cc]	µg/L
Salt CCC:	3.1E+0 [D, cc, ff]	µg/L

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Manganese
CAS Number: 007439-96-5

TOXICITY

Parameter	Value	Unit	Source
Oral RfD:	1.4E-1	mg/kg/day	IRIS
Inhal RfD:	1.4E-5	mg/kg/day	IRIS
Oral Slope:		(mg/kg/day)^-1	
Oral Wt-of-Evid:			
Inhal Slope:		(mg/kg/day)^-1	
Inhal Wt-of-Evid:			
Oral ED10:		mg/kg/day	
Oral ED10 Wgt:			
Inhal ED10:		mg/kg/day	
Inhal ED10 Wgt:			
Oral LD50:		mg/kg	
Dermal LD50:		mg/kg	
Gas Inhal LC50:		ppm	
Dust Inhal LC50:	1.9E+0	mg/L	RTECS
ACUTE			
Fresh CMC:		µg/L	
Salt CMC:		µg/L	
CHRONIC			
Fresh CCC:		µg/L	
Salt CCC:		µg/L	
Fresh Ecol LC50:		µg/L	
Salt Ecol LC50:		µg/L	

PERSISTENCE

Parameter	Value	Unit	Source
LAKE - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
RIVER - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
Log Kow:	2.3E-1		PHYSPROP

PHYSICAL CHARACTERISTICS

Parameter	Value		
Metal Contain:	Yes		
Organic:	No		
Gas:	No		
Particulate:	Yes		
Radionuclide:	No		
Rad. Element:	No		
Molecular Weight:	5.5E+1		
Density:	7.3E+0	g/mL @	C

MOBILITY

Parameter	Value	Unit	Source
Vapor Press:		Torr	
Henry's Law:		atm-m3/mol	
Water Solub:		mg/L	
Distrib Coef:	6.5E+1	ml/g	BAES_KD
Geo Mean Sol:	1.1E+3	mg/L	CALC

BIOACCUMULATION

Parameter	Value	Unit	Source
FOOD CHAIN			
Fresh BCF:			
Salt BCF:	2.5E+4		ECOTOX
ENVIRONMENTAL			
Fresh BCF:			
Salt BCF:	2.5E+4		ECOTOX
Log Kow:	2.3E-1		PHYSPROP
Water Solub:			
Geo Mean Sol:	1.1E+3	mg/L	CALC

OTHER DATA

Melting Point:	1.2E+3	C
Boiling Point:	2.1E+3	C
Formula:	Mn	

CLASS INFORMATION

Class	Parent Substance

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Manganese
CAS Number: 007439-96-5

ASSIGNED FACTOR VALUES

AIR PATHWAY

Parameter	Value
Toxicity:	10000
Gas Mobility:	
Gas Migration:	

GROUND WATER PATHWAY

Parameter		Value
Toxicity:		10000
Water Solub:		
Distrib:		6.5E+1
Geo Mean Sol:		1.1E+3
Mobility:		
Liquid	Karst:	1.0E+0
	Non Karst:	1.0E-2
Non Liq.	Karst:	1.0E+0
	Non Karst:	1.0E-2

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	10000

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000

HUMAN FOOD CHAIN

Parameter	Value
Toxicity:	10000
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	50000.0
Salt:	50000.0

ENVIRONMENTAL

Parameter	Value
Fresh Tox:	0
Salt Tox:	0
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	50000.0
Salt:	50000.0

BENCHMARKS

AIR PATHWAY

Parameter	Value	Unit
NAAQS/NESHAPS:		µg/m3
Cancer Risk:		mg/m3
Non Cancer Risk:	5.2E-5	mg/m3

GROUND WATER PATHWAY

Parameter	Value	Unit
MCL/MCLG:		mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	5.1E+0	mg/L

SOIL EXPOSURE PATHWAY

Parameter	Value	Unit
Cancer Risk:		mg/kg
Non Cancer Risk:	1.1E+4	mg/kg

RADIONUCLIDE

Parameter	Value	Unit
MCL:		pCi/L
UMTRCA:		pCi/kg
CANCER RISK		
Air:		pCi/m3
DW:		pCi/L
FC:		pCi/kg
Soil Ing:		pCi/kg
Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value	Unit
MCL/MCLG:		mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	5.1E+0	mg/L

HUMAN FOOD CHAIN

Parameter	Value	Unit
FDAAL:		ppm
Cancer Risk:		mg/kg
Non Cancer Risk:	1.9E+2	mg/kg

ENVIRONMENTAL

Parameter	Value	Unit
ACUTE		
Fresh CMC:		µg/L
Salt CMC:		µg/L
CHRONIC		
Fresh CCC:		µg/L
Salt CCC:		µg/L

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Zinc
CAS Number: 007440-66-6

TOXICITY

Parameter	Value		Unit	Source
Oral RfD:	3.0E-1		mg/kg/day	IRIS
Inhal RfD:			mg/kg/day	
Oral Slope:			(mg/kg/day)^-1	
Oral Wt-of-Evid:				
Inhal Slope:			(mg/kg/day)^-1	
Inhal Wt-of-Evid:				
Oral ED10:			mg/kg/day	
Oral ED10 Wgt:				
Inhal ED10:			mg/kg/day	
Inhal ED10 Wgt:				
Oral LD50:			mg/kg	
Dermal LD50:			mg/kg	
Gas Inhal LC50:			ppm	
Dust Inhal LC50:			mg/L	
ACUTE				
Fresh CMC:	1.2E+2	D, E, K	µg/L	WATCRIT
Salt CMC:	9.0E+1	D, bb	µg/L	WATCRIT
CHRONIC				
Fresh CCC:	1.2E+2	D, E, K	µg/L	WATCRIT
Salt CCC:	8.1E+1	D, bb	µg/L	WATCRIT
Fresh Ecol LC50:	1.0E+1		µg/L	ECOTOX
Salt Ecol LC50:	3.3E+1		µg/L	ECOTOX

PERSISTENCE

Parameter	Value	Unit	Source
LAKE - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
RIVER - Halflives			
Hydrolysis:		days	
Volatility:		days	
Photolysis:		days	
Biodeg:		days	
Radio:		days	
Log Kow:			

PHYSICAL CHARACTERISTICS

Parameter	Value	
Metal Contain:	Yes	
Organic:	No	
Gas:	No	
Particulate:	Yes	
Radionuclide:	No	
Rad. Element:	No	
Molecular Weight:	6.5E+1	
Density:	7.1E+0	g/mL @ 25.00 C

MOBILITY

Parameter	Value	Unit	Source
Vapor Press:		Torr	
Henry's Law:	2.5E-2	atm-m3/mol	PHYSPROP
Water Solub:		mg/L	
Distrib Coef:	6.2E+1	ml/g	SSG_KD
Geo Mean Sol:	1.4E+3	mg/L	CALC

BIOACCUMULATION

Parameter	Value	Unit	Source
FOOD CHAIN			
Fresh BCF:	2.8E+0		ECOTOX
Salt BCF:	1.2E+5		ECOTOX
ENVIRONMENTAL			
Fresh BCF:	1.5E+4		ECOTOX
Salt BCF:	1.7E+5		ECOTOX
Log Kow:			
Water Solub:			
Geo Mean Sol:	1.4E+3	mg/L	CALC

OTHER DATA

Melting Point:	4.2E+2	C
Boiling Point:	9.1E+2	C
Formula:	Zn	

CLASS INFORMATION

Class	Parent Substance

SUPERFUND CHEMICAL DATA MATRIX

Date: 1/28/2004
Chemical: Zinc
CAS Number: 007440-66-6

ASSIGNED FACTOR VALUES

AIR PATHWAY

Parameter	Value
Toxicity:	10
Gas Mobility:	
Gas Migration:	

GROUND WATER PATHWAY

Parameter		Value
Toxicity:		10
Water Solub:		
Distrib:		6.2E+1
Geo Mean Sol:		1.4E+3
Mobility:		
Liquid	Karst:	1.0E+0
	Non Karst:	1.0E-2
Non Liq.	Karst:	1.0E+0
	Non Karst:	1.0E-2

SOIL EXPOSURE PATHWAY

Parameter	Value
Toxicity:	10

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value
Toxicity:	10
Persistence	
River:	1.0000
Lake:	1.0000

HUMAN FOOD CHAIN

Parameter	Value
Toxicity:	10
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	5.0
Salt:	50000.0

ENVIRONMENTAL

Parameter	Value
Fresh Tox:	10
Salt Tox:	100
Persistence	
River:	1.0000
Lake:	1.0000
Bioaccumulation	
Fresh:	50000.0
Salt:	50000.0

BENCHMARKS

AIR PATHWAY

Parameter	Value	Unit
NAAQS/NESHAPS:		µg/m3
Cancer Risk:		mg/m3
Non Cancer Risk:		mg/m3

GROUND WATER PATHWAY

Parameter	Value	Unit
MCL/MCLG:		mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	1.1E+1	mg/L

SOIL EXPOSURE PATHWAY

Parameter	Value	Unit
Cancer Risk:		mg/kg
Non Cancer Risk:	2.3E+4	mg/kg

RADIONUCLIDE

Parameter	Value	Unit
MCL:		pCi/L
UMTRCA:		pCi/kg
CANCER RISK		
Air:		pCi/m3
DW:		pCi/L
FC:		pCi/kg
Soil Ing:		pCi/kg
Soil Gam:		pCi/kg

SURFACE WATER PATHWAY

DRINKING WATER

Parameter	Value	Unit
MCL/MCLG:		mg/L
Cancer Risk:		mg/L
Non Cancer Risk:	1.1E+1	mg/L

HUMAN FOOD CHAIN

Parameter	Value	Unit
FDAAL:		ppm
Cancer Risk:		mg/kg
Non Cancer Risk:	4.1E+2	mg/kg

ENVIRONMENTAL

Parameter	Value	Unit
ACUTE		
Fresh CMC:	1.2E+2 [D, E, K]	µg/L
Salt CMC:	9.0E+1 [D, bb]	µg/L
CHRONIC		
Fresh CCC:	1.2E+2 [D, E, K]	µg/L
Salt CCC:	8.1E+1 [D, bb]	µg/L