

# DE MINIMIS Tables Update 2011



**West Virginia Brownfields Conference  
Morgantown, West Virginia  
September 14-15, 2011**

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On behalf of Larry Sirinek

# De Minimis Tables Update



## Current Standards -2008

- 396 Residential/Industrial Values
- 396 Groundwater Values
- 383 Leach-based Values

## Revised Standards -2011

- 383 Residential/Industrial Values
- 383 Groundwater Values
- 372 Leach-based Values

# De Minimis Tables Update



- 13 Soil and Groundwater Values Eliminated
- 11 Leach-based Values Eliminated
  - Toxicity studies were not robust, results were highly variable, etc.

# De Minimis Tables Update



## Deleted Constituent

- 4-Aminopyridine
- Antimony trioxide
- sec-Butylbenzene
- tert-Butylbenzene
- Carbazole
- 1,3-Dichlorobenzene

## Deleted Constituent

- Dicofol
- Dimethylamine
- Dimethyl phthalate
- Methylcyclohexane
- 4-Nitrophenol
- Tetrahydrofuran
- Uranium

# De Minimis Tables Update



## **178 (46%) Residential Soil Standards Revised**

- 97 (25%) RBC Increased
- 81 (20%) RBC Decreased

## **170 (43%) Industrial Soil Standards Revised**

- 103 (26%) RBC Increased
- 67 (17%) RBC Decreased

# De Minimis Tables Update



## 95 (25%) GW Standards Revised

- 49 (13%) Standards Increased
- 46 (12%) Standards Decreased

## 327 (88%) Leach-based Standards Revised

- 150 (40%) Standards Increased
- 177 (48%) Standards Decreased

# Basis of Revisions



- Changes In Toxicity Criteria
- EPAs Superfund Program Revised Analysis of Inhalation Pathway(2009)
- Revised Physiochemical Data

# Basis of Revisions



- Changes In Toxicity Criteria
  - ✦ Revised IRIS Values (Tier I, primary source)
  - ✦ Increased public access to lower tier values
    - EPA's PPRTV (Tier II)
    - CalEPA, ATSDR, Heast (most current, peer reviewed)
  - ✦ Revised Non-Cancer Criteria

# Basis of Revisions



- Changes In Toxicity Criteria
  - ✦ Revised Non-Cancer Criteria
    - RfDo - 53
    - RfCi – 88
  - ✦ Revised Cancer Criteria
    - CSFo - 42
    - IUR – 67

# Basis of Revisions



- Revised Analysis of Inhalation Pathway (EPAs Superfund Program-2009)
  - ✦ EPA Updated its approach for determining risk from inhaled chemicals
    - RAGS (Part F, Sup. Guidance for Inhalation Risk Assessment) 2009
    - Consistent with the *Inhalation Dosimetry Methodology* (USEPA, 1994)

# Basis of Revisions



- Revised Analysis of Inhalation Pathway
  - ✦ Original method based on RAGS Part A (Dec. 1991)
    - Exposure was typically derived in terms of a chronic daily air intake (CDI) and calculated on a mg/kg-day body weight basis.

$$\text{CDI (mg/kg-day)} = \text{CA} \times (\text{IR}/\text{BW}) \times (\text{ET} \times \text{EF} \times \text{ED})/\text{AT}$$

CA (mg/M<sup>3</sup>), IR (M<sup>3</sup>/hr.), BW (Kg), ET(hrs./day), EF (days/yr.), ED (yrs.), AT (avg. time) (period over which exposure is averaged - days)

# Basis of Revisions



- Revised Analysis of Inhalation Pathway
  - ✦ Original Method (after calculating CDI)
    - Cancer Risk=CDI x CSFi;
    - Non-Cancer Risk HQ=CDI/RfDi

# Basis of Revisions



- Revised Analysis of Inhalation Pathway
  - ✦ Revised method based on RAGS Part F (Jan. 2009)
    - Concentration-based approach where exposure is determined on a daily e.g.,  $\mu\text{g}/\text{M}^3$  basis.  
General Carcinogenic equation:
      - **$EC = (CA \times ET \times EF \times ED)/AT$**

EC ( $\mu\text{g}/\text{M}^3$ ), CA ( $\mu\text{g}/\text{M}^3$ ), ET (hrs./day), EF (days/yr.), ED (yrs.) and AT (lifetime in yrs., x 365 days/yr. x 24 hrs./day)

# Basis of Revisions

## ORIGINAL METHOD (Residential Exposure)

○  $CDI \text{ (mg/kg-day)} =$   
 $CA \times (IR/BW) \times (ET \times EF \times ED)/AT$

## REVISED METHOD (Residential Exposure)

■  $EC \text{ (}\mu\text{g/M}^3\text{)} =$   
 $(CA \times ET \times EF \times ED)/AT$

# Basis of Revisions



## ORIGINAL METHOD (Residential Exposure)

- Cancer Risk=
  - ✦  $CDI \text{ (ug/kg-day)} \times CSFi$ ;
- Non-Cancer Risk HQ=
  - ✦  $CDI/RfDi$

## REVISED METHOD (Residential Exposure)

- Cancer Risk =  
 $EC \text{ (}\mu\text{g/M}^3\text{)} \times IUR$
- Non-Cancer Risk HQ =
  - $EC/RfCi \times 1000 \mu\text{g/mg}$

HQ (unitless) = Hazard Quotient  
 $EC \text{ (}\mu\text{g/M}^3\text{)}$

# Basis of Revisions



- Revised Physiochemical Data
  - ✦ Increased access to high-quality databases for most constituents
  - ✦ Better agreement between multiple sources
  - ✦ Fewer estimated (modeled) values
  - ✦ Reflected in high frequency (88%) of revisions to leach-based standards

# Basis of Revisions



## Current SSL

Contaminant	Resident (mg/kg)	Industrial (mg/kg)
Acetaldehyde	1.1E+01	1.6E+02
Benzene	1.5E+01	1.5E+01
MTBE	1.5E+02	1.1E+04

## Revised SSL

Contaminant	Resident (mg/kg)	Industrial (mg/kg)
Acetaldehyde	1.1E+01	3.8E+02
Benzene	1.1E+00	5.8E+01
MTBE	4.4E+01	2.4E+03

# Basis of Revisions



## Current Standard

## Revised Standard

Contaminant	GW (ug/L)	MGW (mg/kg)
Acetaldehyde	1.7E+00	8.3E-03
Benzene	5.0E+00	3.4E-02
MTBE	1.7E+01	7.1E-02

Contaminant	GW (ug/L)	MGW (mg/kg)
Acetaldehyde	2.2E+00	8.9E-03
Benzene	5.0E+00	5.1E-02
MTBE	1.2E+01	5.6E-02

# TOXICITY/PHYSIOCHEMICAL DATA



CONTAMINANT	CAS	CAS No.	M u t a g e	CSFo	RfDo	IURF	RFC
				(per mg/kg-d)	(mg/kg-d)	(per µg/m³)	(mg/m³)
Acetaldehyde	75-07-0	75070				2.20E-06 i	9.0E-03
Acetochlor	34256-82-1	34256821			2.0E-02 i		7.0E-02
Acetone	67-64-1	67641			9.0E-01 i		3.1E+01
Acetonitrile	75-05-8	75058					6.0E-02
Acetophenone	98-86-2	98862			1.0E-01 i		
Acrolein	107-02-8	107028			5.0E-04 i		2.0E-05
Acrylamide	79-06-1	79061	M	5.0E-01 i	2.0E-03 i	1.0E-04 i	6.0E-03
Acrylonitrile	107-13-1	107131		5.4E-01 i	4.0E-02 m	6.8E-05 i	2.0E-03
Alachlor	15972-60-8	15972608		5.6E-02 cal	1.0E-02 i		3.5E-02
Alar	1596-84-5	1596845		1.8E-02 cal	1.5E-01 i	5.1E-06 cal	
Aldicarb	116-06-3	116063			1.0E-03 i		3.5E-03
Aldicarb sulfone	1646-88-4	1646884			1.0E-03 i		3.5E-03
Aldrin	309-00-2	309002		1.7E+01 i	3.0E-05 i	4.9E-03 i	1.1E-04
Aluminum	7429-90-5	7429905			1.0E+00 p		5.0E-03
Aniline	62-53-3	62533		5.7E-03 i	7.0E-03 p	1.6E-06 r	1.0E-03
Antimony and compounds	7440-36-0	7440360			4.0E-04 i		
Arsenic	7440-38-2	7440382		1.5E+00 i	3.0E-04 i	4.3E-03 i	1.5E-05

# TOXICITY/PHYSIOCHEMICAL DATA



											WV Ground
	Derma l	GI									Water Std.
VOC (Y/N)	abs. soils ABS	fract abs	HLC (atm-m3/mol)	H' (dimensionless)	Di (cm2/s)	Dw (cm2/s)	Koc (cm3/g)	Kd (cm3/g)	S (mg/L-water)		(ug/L)
Y		1	6.67E-05 a	2.73E-03 a	1.28E-01 a	1.35E-05 a	1.00E+00 a				1.00E+06 a
N	0.1	1	2.23E-08 a	9.12E-07 a			2.98E+02 a				2.23E+02 a
Y		1	3.50E-05 a	1.43E-03 a	1.06E-01 a	1.15E-05 a	2.36E+00 a				1.00E+06 a
Y		1	3.45E-05 a	1.41E-03 a	1.34E-01 a	1.41E-05 a	4.67E+00 a				1.00E+06 a
Y		1	1.04E-05 a	4.25E-04 a	6.52E-02 a	8.72E-06 a	5.19E+01 a				6.13E+03 a
Y		1	1.22E-04 a	4.99E-03 a	1.12E-01 a	1.22E-05 a	1.00E+00 a				2.12E+05 a
N	0.1	1	1.70E-09 a	6.95E-08 a			5.69E+00 a				3.90E+05 a
Y		1	1.38E-04 a	5.64E-03 a	1.14E-01 a	1.23E-05 a	8.51E+00 a				7.45E+04 a
N	0.1	1	8.32E-09 a	3.40E-07 a			3.12E+02 a				2.40E+02 a 2.0E+00
N	0.1	1	4.23E-10 a	1.73E-08 a			1.00E+01 a				1.00E+05 a
N	0.1	1	1.44E-09 a	5.89E-08 a	3.18E-02 d	7.24E-06 d	2.46E+01 a				6.03E+03 a
N	0.1	1	3.37E-09 a	1.38E-07 a			1.00E+01 a				1.00E+04 a
N	0.1	1	4.40E-05 a	1.80E-03 a	1.32E-02 b	4.86E-06 b	8.20E+04 a				1.70E-02 a
NA		1						a	1.50E+03 a		
N	0.1	1	2.02E-06 a	8.26E-05 a	8.30E-02 a	1.01E-05 a	7.02E+01 a				3.60E+04 a
NA		0.15							4.50E+01 a		
NA	0.03	1							2.90E+01 a		1.0E+01

# DATA SHEET HEADINGS/DATA SOURCES



## Data sheet column headings:

CAS No. – Chemical Abstracts number formatted without hyphens.

CSFo – Cancer slope factor, oral.

RfDo – Reference dose, oral.

CSFi – Cancer slope factor, inhalation.

RfDi – Reference dose, inhalation.

VOC – Volatile organic compound classification. 1 = VOC, 0 = non-VOC

Skin absorption soils (ABS) – The fraction of contaminant in contact with skin that passes into the bloodstream.

H – Henry's law constant.

H' – Dimensionless form of Henry's law constant. Equal to  $H \times 41$ .

Di – Diffusivity in air.

Dw – Diffusivity in water.

Koc – Soil organic carbon to water partition coefficient.

Kd – Soil to water partition coefficient.

S – Solubility in water.

West Virginia Groundwater Standards - listed at West Virginia Code of State Rules, Title 46 Legislative Rule Environmental Quality Board, Series 12 Requirements Governing Groundwater Standards (46CSR12), Appdx. A.

## Data sheet column notes identifying data sources:

a – US Dept of Energy Oak Ridge Laboratory Risk Assessment Information System

b – EPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, September 2002.

c – EPA Region 3 SSL background data.

cal – California EPA Office of Environmental Health Hazard Assessment

d – EPA Water9 Wastewater Treatment

Model

e – EPA/NCEA Provisional Value

h – Health Effects Assessment Summary Tables FY 1997 Update [HEAST]. EPA/540/R-97-036.

i – Integrated Risk Information System.

m – Value derived from ATSDR Minimal Risk Level

(MRL)

n – National Library of Medicine Hazardous Substances Database

o – Value cited by EPA Region 3 attributed to other sources

p – EPA Peer-Reviewed Provisional Value (PPRV) as cited by EPA Region 3

r – Toxicity value assigned on the basis of route-to-route extrapolation.

s – Value based on surrogate compound per VRRP Guidance

t – Value derived from Total Petroleum Hydrocarbon Criteria Working Group Series - Volume 3

x – Toxicity value that has been withdrawn from either IRIS or HEAST pending further review.

# EXPOSURE ASSUMPTIONS



		Carcinogens	Mutagenic Carcinogens	Non Carcinogens	Carcinogens	Non Carcinogens	Carcinogens	Mutagenic Carcinogens	Non Carcinogens
Modeling Assumptions	UNITS	Residential Soil	Residential Soil	Residential Soil	Industrial Soil	Industrial Soil	Groundwater	Groundwater	Groundwater
Exposure Duration	yr	30	30		25	25	30	30	
Exposure Duration (Child)	yr	6		6			6		
Mutagenic Exposure Duration (0-2)	yr		2					2	
Mutagenic Exposure Duration (2-6)	yr		4					4	
Mutagenic Exposure Duration (6-16)	yr		10					10	
Mutagenic Exposure Duration (16-30)	yr		14					14	
Exposure Duration (Adult)	yr	24					24	24	30
Averaging Time	days	25550	25550	2190	25550	9125	25550	25550	10950
Exposure Frequency	days/year	350	350	350	250	250	350	350	350
Body Weight (Child)	kg	15	15	15			15	15	
Body Weight (Adult)	kg	70	70		70	70	70	70	70
Soil Ingestion Rate (Child)	mg/day	200	200	200					
Soil Ingestion Rate (Adult)	mg/day	100	100		50	50			
Composite Soil Ingestion Intake Factor	mg-yr/kg-day	114.3	489.5						
Inhalation Exposure Duration	hr/day	24	24	24	8	8	24	24	24
Surface area of dermal exposure (Child)	cm <sup>2</sup>	2800	2800	2800					
Surface area of dermal exposure (Adult)	cm <sup>2</sup>	5700	5700		3300	3300			
Soil to Skin Adherence Factor (Child)	mg/cm <sup>2</sup>	0.20	0.20	0.20					
Soil to Skin Adherence Factor (Adult)	mg/cm <sup>2</sup>	0.07	0.07		0.20	0.20			
Composite Dermal Intake Factor	mg-yr/kg-day	360.8	1445.5						
Water Ingestion Rate (Child)	L/day						1	1	
Water Ingestion Rate (Adult)	L/day						2	2	2
Composite Water Intake Factor	L-yr/kg-day						1.1	3.4	
Default water volatilization factor	L/m <sup>3</sup>						0.5	0.5	0.5
Conversion Factor	mg/kg	1.00E+06	1.00E+06	1.00E+06	1.00E+06	1.00E+06			
Conversion Factor	kg/mg	1.00E-06	1.00E-06	1.00E-06	1.00E-06	1.00E-06			
Conversion Factor	µg/mg	1.00E+03	1.00E+03	1.00E+03	1.00E+03	1.00E+03	1.00E+03	1.00E+03	1.00E+03
Target Excess Lifetime Cancer Risk	unitless	1.00E-06	1.00E-06		1.00E-05		1.00E-06	1.00E-06	
Target Hazard Quotient	unitless			1.00E+00		1.00E+00			1

# EXPOSURE ASSUMPTIONS



Modeling Assumptions	UNITS	Value	Reference
Groundwater Dilution and Attenuation Factor	unitless	20	Soil Screening Guidance 1996
Fraction of vegetative cover	unitless	0.5	Soil Screening Guidance 1996
Total soil porosity	unitless	0.43	Soil Screening Guidance 1996
Air-filled soil porosity (shallow)	unitless	0.28	Soil Screening Guidance 1996
Air-filled soil porosity (deep)	unitless	0.13	Soil Screening Guidance 1996
Water-filled soil porosity (shallow)	unitless	0.15	Soil Screening Guidance 1996
Water-filled soil porosity (deep)	unitless	0.3	Soil Screening Guidance 1996
Soil bulk density	kg/L	1.5	Soil Screening Guidance 1996
Soil particle density	kg/L	2.65	Soil Screening Guidance 1996
Fraction organic carbon in soil (shallow)	unitless	0.006	Soil Screening Guidance 1996
Fraction organic carbon in soil (deep)	unitless	0.002	Soil Screening Guidance 1996
Exposure interval for volatilization	s	9.50E+08	Soil Screening Guidance 1996
Mean annual wind speed (Um)	m/s	4.69	Soil Screening Guidance 1996
Threshold wind speed value at 10m (Ut)	m/s	11.32	Soil Screening Guidance 1996
Inverse of mean conc at source center (Q/C) - P	g/m <sup>2</sup> -s per kg/m <sup>3</sup>	90.8	Soil Screening Guidance 1996
Inverse of mean conc at source center (Q/C) - V	g/m <sup>2</sup> -s per kg/m <sup>3</sup>	68.81	Soil Screening Guidance 1996
Function dependent on Um/Ut	unitless	0.194	Soil Screening Guidance 1996
Particulate Emission Factor	unitless	1.32E+09	

# INTERMEDIATE CALCULATIONS



CONTAMINANT	FULL CAS Entry	D <sub>A</sub> (cm <sup>2</sup> /s)	VF <sub>S</sub> (m <sup>3</sup> /kg)	C <sub>SAT</sub> (mg/kg)	Residential Mutagen			Residential Cancer			RevRS <sub>C</sub> * (mg/kg)
					R <sub>INGESTION</sub> (mg/kg)	R <sub>DERMAL</sub> (mg/kg)	R <sub>INHALATION</sub> (mg/kg)	R <sub>INGESTION</sub> (mg/kg)	R <sub>DERMAL</sub> (mg/kg)	R <sub>INHALATION</sub> (mg/kg)	
Acetaldehyde	75-07-0	1.7E-04	9.6E+03	2.0E+05						1.1E+01	1.1E+01
Acetochlor	34256-82-1										
Acetone	67-64-1	6.9E-05	1.5E+04	2.0E+05							
Acetonitrile	75-05-8	7.7E-05	1.4E+04	2.1E+05							
Acetophenone	98-86-2	3.6E-06	6.6E+04								
Acrolein	107-02-8	2.7E-04	7.6E+03	4.3E+04							
Acrylamide	79-06-1				3.0E-01	1.0E+00	1.3E+04	1.3E+00	4.0E+00	3.2E+04	2.3E-01
Acrylonitrile	107-13-1	2.2E-04	8.5E+03	1.6E+04				1.2E+00		3.0E-01	2.4E-01
Alachlor	15972-60-8							1.1E+01	3.6E+01		8.7E+00
Alar	1596-84-5							3.5E+01	1.1E+02	6.3E+05	2.7E+01
Aldicarb	116-06-3										
Aldicarb sulfone	1646-88-4										
Aldrin	309-00-2							3.8E-02	1.2E-01	6.5E+02	2.9E-02
Aluminum	7429-90-5										
Aniline	62-53-3							1.1E+02	3.5E+02	2.0E+06	8.5E+01
Antimony and compounds	7440-36-0										
Arsenic	7440-38-2							4.3E-01	4.5E+00	7.4E+02	3.9E-01

# INTERMEDIATE CALCULATIONS



Residential Non-Cancer				Industrial Cancer				Industrial Non-Cancer				
R <sub>INGESTION</sub>	R <sub>DERMAL</sub>	R <sub>INHALATION</sub>	RevRS <sub>NC</sub> *	I <sub>INGESTION</sub>	I <sub>DERMAL</sub>	I <sub>INHALATION</sub>	RevIS <sub>C</sub> *	I <sub>INGESTION</sub>	I <sub>DERMAL</sub>	I <sub>INHALATION</sub>	RevIS <sub>NC</sub> *	
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)				(mg/kg)	
		9.0E+01	9.0E+01			5.3E+02	5.3E+02				3.8E+02	3.8E+02
1.6E+03	5.6E+03	9.6E+07	1.2E+03					4.1E+04	3.1E+04	4.0E+08	1.8E+04	
7.0E+04		4.9E+05	6.1E+04					1.8E+06		2.0E+06	9.7E+05	
		8.9E+02	8.9E+02							3.7E+03	3.7E+03	
7.8E+03			7.8E+03					2.0E+05			2.0E+05	
3.9E+01		1.6E-01	1.6E-01					1.0E+03		6.7E-01	6.7E-01	
1.6E+02	5.6E+02	8.2E+06	1.2E+02	1.1E+02	8.7E+01	1.6E+06	4.9E+01	4.1E+03	3.1E+03	3.5E+07	1.8E+03	
3.1E+03		1.8E+01	1.8E+01	1.1E+02		1.5E+01	1.3E+01	8.2E+04		7.4E+01	7.4E+01	
7.8E+02	2.8E+03	4.8E+07	6.1E+02	1.0E+03	7.7E+02		4.4E+02	2.0E+04	1.5E+04	2.0E+08	8.8E+03	
1.2E+04	4.2E+04		9.2E+03	3.2E+03	2.4E+03	3.2E+07	1.4E+03	3.1E+05	2.3E+05		1.3E+05	
7.8E+01	2.8E+02	4.8E+06	6.1E+01					2.0E+03	1.5E+03	2.0E+07	8.8E+02	
7.8E+01	2.8E+02	4.8E+06	6.1E+01					2.0E+03	1.5E+03	2.0E+07	8.8E+02	
2.3E+00	8.4E+00	1.4E+05	1.8E+00	3.4E+00	2.6E+00	3.3E+04	1.5E+00	6.1E+01	4.6E+01	6.1E+05	2.6E+01	
7.8E+04		6.9E+06	7.7E+04					2.0E+06		2.9E+07	1.9E+06	
5.5E+02	2.0E+03	1.4E+06	4.3E+02	1.0E+04	7.6E+03	1.0E+08	4.3E+03	1.4E+04	1.1E+04	5.8E+06	6.2E+03	
3.1E+01			3.1E+01					8.2E+02			8.2E+02	
2.3E+01	2.8E+02	2.1E+04	2.2E+01	3.8E+01	9.6E+01	3.8E+04	2.7E+01	6.1E+02	1.5E+03	8.6E+04	4.4E+02	

# INTERMEDIATE CALCULATIONS



Groundwater Mutagen		Groundwater Cancer			Groundwater Non-Cancer		
GW <sub>INGESTION</sub>	GW <sub>INHALATION</sub>	GW <sub>INGESTION</sub>	GW <sub>INHALATION</sub>	RevGW <sub>C</sub>	GW <sub>INGESTION</sub>	GW <sub>INHALATION</sub>	RevGW <sub>NC</sub>
(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
			2.2E+00	2.2E+00		1.9E+01	1.9E+01
					7.3E+02		7.3E+02
					3.3E+04	6.5E+04	2.2E+04
						1.2E+02	1.2E+02
					3.7E+03		3.7E+03
					1.8E+01	4.2E-02	4.2E-02
4.3E-02		1.3E-01		4.3E-02	7.3E+01		7.3E+01
		1.2E-01	7.1E-02	4.5E-02	1.5E+03	4.2E+00	4.2E+00
		1.2E+00		1.2E+00	3.7E+02		3.7E+02
		3.7E+00		3.7E+00	5.5E+03		5.5E+03
					3.7E+01		3.7E+01
					3.7E+01		3.7E+01
		4.0E-03		4.0E-03	1.1E+00		1.1E+00
					3.7E+04		3.7E+04
		1.2E+01		1.2E+01	2.6E+02		2.6E+02
					1.5E+01		1.5E+01
		4.5E-02		4.5E-02	1.1E+01		1.1E+01



CONTAMINANT	CAS No.	Revised		Revised		Revised		Revised
		Residential Soil (mg/kg)		Industrial Soil (mg/kg)		Ground Water (ug/L)		Migration to Groundwater (mg/kg)
Acetaldehyde	75-07-0	1.1E+01	c	3.8E+02	nc	2.2E+00	c	8.9E-03
Acetochlor	34256-82-1	1.2E+03	nc	1.8E+04	nc	7.3E+02	nc	1.2E+01
Acetone	67-64-1	6.1E+04	nc	2.0E+05	Csat	2.2E+04	nc	8.9E+01
Acetonitrile	75-05-8	8.9E+02	nc	3.7E+03	nc	1.2E+02	nc	5.2E-01
Acetophenone	98-86-2	7.8E+03	nc	2.0E+05	nc	3.7E+03	nc	2.2E+01
Acrolein	107-02-8	1.6E-01	nc	6.7E-01	nc	4.2E-02	nc	1.7E-04
Acrylamide	79-06-1	2.3E-01	c	4.9E+01	c	4.3E-02	c	1.8E-04
Acrylonitrile	107-13-1	2.4E-01	c	1.3E+01	c	4.5E-02	c	2.0E-04
Alachlor	15972-60-8	8.7E+00	c	4.4E+02	c	2.0E+00	gws	3.3E-02
Alar	1596-84-5	2.7E+01	c	1.4E+03	c	3.7E+00	c	1.6E-02
Aldicarb	116-06-3	6.1E+01	nc	8.8E+02	nc	3.7E+01	nc	1.8E-01
Aldicarb sulfone	1646-88-4	6.1E+01	nc	8.8E+02	nc	3.7E+01	nc	1.6E-01
Aldrin	309-00-2	2.9E-02	c	1.5E+00	c	4.0E-03	c	1.3E-02
Aluminum	7429-90-5	7.7E+04	nc	1.0E+06	max	3.7E+04	nc	1.1E+06
Aniline	62-53-3	8.5E+01	c	4.3E+03	c	1.2E+01	c	8.0E-02
Antimony and compounds	7440-36-0	3.1E+01	nc	8.2E+02	nc	1.5E+01	nc	1.3E+01
Arsenic	7440-38-2	3.9E-01	c	2.7E+01	c	1.0E+01	gws	5.8E+00

# Current Status of Revisions



- Public comments received/reviewed-approved.
- Effective date 2012.
- Place revised toxicity and physiochemical data and calculations on the WVDEP Website.

# Reference/Links



- *Inhalation Dosimetry Methodology:*  
[Http://cfpub.epa.gov/ncea.cfm.recordisplay.cfm?deid=71993](http://cfpub.epa.gov/ncea.cfm.recordisplay.cfm?deid=71993)
- Risk Assessment Guidance for Superfund Volume I: Human  
[http://www.epa.gov/reg3hwmd/risk/human/rb-concentration\\_table/usersguide.htm](http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/usersguide.htm)
- Regional Screening Levels for Chemical Contaminants at Superfund Sites (screening level/preliminary remediation goal table)  
[http://www.epa.gov/reg3hwmd.risk.human.rbconcentration\\_table/index.htm](http://www.epa.gov/reg3hwmd.risk.human.rbconcentration_table/index.htm)