

ADOPTED BIOLOGICAL EXPOSURE DETERMINANTS

Chemical [CAS No.]				
<i>Determinant</i>		<i>Sampling Time</i>	<i>BEI®</i>	<i>Notation</i>
ACETONE [67-64-1]				
Acetone in urine		End of shift	50 mg/L	Ns
ACETYLCHOLINESTERASE INHIBITING PESTICIDES				
Cholinesterase activity in red blood cells		Discretionary	70% of individual's baseline	Ns
ANILINE [62-53-3]				
Aniline★ in urine		End of shift	—	Nq
Aniline released from hemoglobin in blood		End of shift	—	Nq
p-Aminophenol★ in urine		End of shift	50 mg/L	B, Ns, Sq
ARSENIC, ELEMENTAL [7440-38-2] AND SOLUBLE INORGANIC COMPOUNDS (excludes gallium arsenide and arsine)				
Inorganic arsenic plus methylated metabolites in urine		End of workweek	35 µg As/L	B
BENZENE [71-43-2]				
S-Phenylmercapturic acid in urine		End of shift	25 µg/g creatinine	B
t,t-Muconic acid in urine		End of shift	500 µg/g creatinine	B
1,3-BUTADIENE [106-99-0]				
1,2 Dihydroxy-4-(N-acetylcysteinyl)-butane in urine		End of shift	2.5 mg/L	B, Sq
Mixture of N-1 and N-2-(hydroxybutenyl)valine hemoglobin (Hb) adducts in blood		Not critical	2.5 pmol/g Hb	Sq

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2-BUTOXYETHANOL [111-76-2]	Butoxyacetic acid (BAA) in urine★	End of shift	200 mg/g creatinine	—
CADMIUM [7440-43-9] AND INORGANIC COMPOUNDS	Cadmium in urine	Not critical	5 µg/g creatinine	B
	Cadmium in blood	Not critical	5 µg/L	B
* CARBON DISULFIDE [75-15-0]	2-Thioxothiazolidine-4-carboxylic acid (TTCA) in urine	End of shift	0.5 mg/g creatinine	B, Ns
CARBON MONOXIDE [630-08-0]	Carboxyhemoglobin in blood	End of shift	3.5% of hemoglobin	B, Ns
	Carbon monoxide in end-exhaled air	End of shift	20 ppm	B, Ns
CHLOROBENZENE [108-90-7]	4-Chlorocatechol in urine★	End of shift at end of workweek	100 mg/g creatinine	Ns
	p-Chlorophenol in urine★	End of shift at end of workweek	20 mg/g creatinine	Ns
CHROMIUM (VI), Water-Soluble Fume	Total chromium in urine	End of shift at end of workweek	25 µg/L	—
	Total chromium in urine	Increase during shift	10 µg/L	—

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COBALT [7440-48-4]				
Cobalt in urine	End of shift at end of workweek	15 µg/L	B	
Cobalt in blood	End of shift at end of workweek	1 µg/L	B, Sq	
CYCLOHEXANOL [108-93-0]				
1,2-Cyclohexanediol★ in urine	End of shift at end of workweek	—	Nq, Ns	
Cyclohexanol★ in urine	End of shift	—	Nq, Ns	
CYCLOHEXANONE [108-94-1]				
1,2-Cyclohexanediol★ in urine	End of shift at end of workweek	80 mg/L	Ns, Sq	
Cyclohexanol★ in urine	End of shift	8 mg/L	Ns, Sq	
DICHLOROMETHANE [75-09-2]				
Dichloromethane in urine	End of shift	0.3 mg/L	Sq	
N,N-DIMETHYLACETAMIDE [127-19-5]				
N-Methylacetamide in urine	End of shift at end of workweek	30 mg/g creatinine	—	
N,N-DIMETHYLFORMAMIDE (DMF) [68-12-2]				
N-Methylformamide in urine	End of shift	15 mg/L	—	
N-Acetyl-S-(N-methylcarbamoyl) cysteine in urine	Prior to last shift of workweek	40 mg/L	Sq	
2-ETHOXYETHANOL (EGEE) [110-80-5] and 2-ETHOXYETHYL ACETATE (EGEEA) [111-15-9]				
2-Ethoxyacetic acid in urine	End of shift at end of workweek	100 mg/g creatinine	—	

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ETHYL BENZENE [100-41-4]				
Sum of mandelic acid and phenylglyoxylic acid in urine		End of shift at end of workweek	0.7 g/g creatinine	Ns, Sq
Ethyl benzene in end-exhaled air		Not critical	—	Sq
FLUORIDES				
Fluorides in urine		Prior to shift	3 mg/g creatinine	B, Ns
		End of shift	10 mg/g creatinine	B, Ns
FURFURAL [98-01-1]				
Furoic acid in urine★		End of shift	200 mg/L	Ns
n-HEXANE [110-54-3]				
2,5-Hexanedion★ in urine		End of shift at end of workweek	0.4 mg/L	—
LEAD [7439-92-1] [See Note below]				
Lead in blood		Not critical	30 µg/100 ml	—
Note: Women of child bearing potential, whose blood Pb exceeds 10 µg/dl, are at risk of delivering a child with a blood Pb over the current Centers for Disease Control guideline of 10 µg/dl. If the blood Pb of such children remains elevated, they may be at increased risk of cognitive deficits. The blood Pb of these children should be closely monitored and appropriate steps should be taken to minimize the child's exposure to environmental lead. (CDC: Preventing Lead Poisoning in Young Children, October 1991; See BEI® and TLV® <i>Documentation</i> for Lead).				
MERCURY				
Total inorganic mercury in urine		Prior to shift	35 µg/g creatinine	B
Total inorganic mercury in blood		End of shift at end of workweek	15 µg/L	B

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METHANOL [67-56-1] Methanol in urine		End of shift	15 mg/L	B, Ns
METHEMOGLOBIN INDUCERS Methemoglobin in blood		During or end of shift	1.5% of hemoglobin	B, Ns, Sq
‡ 2-METHOXYETHANOL (EGME) [109-86-4] and 2-METHOXYETHYL ACETATE (EGMEA) [110-49-6] 2-Methoxyacetic acid in urine		End of shift at end of workweek	(—)	(Nq)
METHYL n-BUTYL KETONE [591-78-6] 2,5-Hexanedione ^{2x} in urine		End of shift at end of workweek	0.4 mg/L	—
METHYL CHLOROFORM [71-55-6] Methyl chloroform in end-exhaled air Trichloroacetic acid in urine Total trichloroethanol in urine Total trichloroethanol in blood		Prior to last shift of workweek End of workweek End of shift at end of workweek End of shift at end of workweek	40 ppm 10 mg/L 30 mg/L 1 mg/L	— Ns, Sq Ns, Sq Ns
4,4'-METHYLENE BIS(2-CHLOROANILINE) [MBOCA] [101-14-4] Total MBOCA in urine		End of shift	—	Nq
METHYL ETHYL KETONE (MEK) [78-93-3] MEK in urine		End of shift	2 mg/L	—

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‡ METHYL ISOBUTYL KETONE (MIBK) [108-10-1]				
MIBK in urine		End of shift	(2 mg/L)	—
N-METHYL-2-PYRROLIDONE [872-50-4]				
5-Hydroxy-N-methyl-2-pyrrolidone in urine		End of shift	100 mg/L	—
NITROBENZENE [98-95-3]				
Total p-nitrophenol in urine		End of shift at end of workweek	5 mg/g creatinine	Ns
Methemoglobin in blood		End of shift	1.5% of hemoglobin	B, Ns, Sq
PARATHION [56-38-2]				
Total p-nitrophenol in urine		End of shift	0.5 mg/g creatinine	Ns
Cholinesterase activity in red cells		Discretionary	70% of individual's baseline	B, Ns, Sq
PENTACHLOROPHENOL (PCP) [87-86-5]				
Total PCP in urine		Prior to last shift of workweek	2 mg/g creatinine	B
Free PCP in plasma		End of shift	5 mg/L	B
PHENOL [108-95-2]				
Phenol in urine★		End of shift	250 mg/g creatinine	B, Ns
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)				
1-Hydroxypyrene★(1-HP) in urine		End of shift at end of workweek	—	Nq

BEI®

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2-PROPANOL [67-63-0]				
Acetone in urine		End of shift at end of workweek	40 mg/L	B, Ns
STYRENE [100-42-5]				
Mandelic acid plus phenylglyoxylic acid in urine		End of shift	400 mg/g creatinine	Ns
Styrene in venous blood		End of shift	0.2 mg/L	Sq
* TETRACHLOROETHYLENE [127-18-4]				
Tetrachloroethylene in end-exhaled air		Prior to shift	3 ppm	—
Tetrachloroethylene in blood		Prior to shift	0.5 mg/L	—
TETRAHYDROFURAN [109-99-9]				
Tetrahydrofuran in urine		End of shift	2 mg/L	—
‡ TOLUENE [108-88-3]				
o-Cresol in urine		End of shift	(0.5 mg/L)	B
(Hippuric acid in urine)		(End of shift)	(1.6 g/g creatinine)	(B, Ns)
Toluene in blood		Prior to last shift of workweek	(0.05 mg/L)	—
TRICHLOROETHYLENE [79-01-6]				
Trichloroacetic acid in urine		End of shift at end of workweek	15 mg/L	Ns
Trichloroethanol [☆] in blood		End of shift at end of workweek	0.5 mg/L	Ns
Trichloroethylene in blood		End of shift at end of workweek	—	Sq
Trichloroethylene in end-exhaled air		End of shift at end of workweek	—	Sq

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‡ (VANADIUM PENTOXIDE [1314-62-1]) (Vanadium in urine)	(End of shift at end of workweek)	(50 µg/g creatinine)	(Sq)	
XYLENES [95-47-6; 108-38-3; 106-42-3; 1330-20-7] (Technical or Commercial Grade) Methylhippuric acids in urine	End of shift	1.5 g/g creatinine	—	

★ With hydrolysis.

☆ Without hydrolysis; n-hexane, methyl n-butyl ketone and trichloroethylene.

BEI[®]

2009 NOTICE OF INTENDED CHANGES

These substances, with their corresponding indices, comprise those for which (1) a BEI® is proposed for the first time, (2) a change in the Adopted index is proposed, (3) retention as an NIC is proposed, or (4) withdrawal of the *Documentation* and adopted BEI® is proposed. In each case, the proposals should be considered trial indices during the period they are on the NIC. These proposals were ratified by the ACGIH® Board of Directors and will remain on the NIC for approximately one year following this ratification. If the Committee neither finds nor receives any substantive data that change its scientific opinion regarding an NIC BEI®, the Committee may then approve its recommendation to the ACGIH® Board of Directors for adoption. If the Committee finds or receives substantive data that change its scientific opinion regarding an NIC BEI®, the Committee may change its recommendation to the ACGIH® Board of Directors for the matter to be either retained on or withdrawn from the NIC.

Documentation is available for each of these substances and their proposed values.

This notice provides an opportunity for comment on these proposals. Comments or suggestions should be accompanied by substantiating evidence in the form of peer-reviewed literature and forwarded in electronic format to The Science Group, ACGIH®, at science@acgih.org. Please refer to the ACGIH® TLV®/BEI® Development Process on the ACGIH® website (<http://www.acgih.org/TLV/DevProcess.htm>) for a detailed discussion covering this procedure, methods for input to ACGIH®, and deadline date for receiving comments.

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† 2-METHOXYETHANOL (EGME) [109-86-4] and 2-METHOXYETHYL ACETATE (EGMEA) [110-49-6] 2-Methoxyacetic acid in urine	End of shift at end of workweek	1.0 mg/g creatinine	—

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† METHYL ISOBUTYL KETONE (MIBK) [108-10-1]				
MIBK in urine	End of shift	1 mg/L	—	
† TOLUENE [108-88-3]				
Toluene in blood	Prior to last shift of workweek	0.02 mg/L	—	
Toluene in urine	End of shift	0.03 mg/L	—	
o-Cresol in urine★	End of shift	0.3 mg/g creatinine	B	
† URANIUM [7440-61-1]				
Uranium in urine	End of shift	200 µg/L	—	
† VANADIUM PENTOXIDE [1314-62-1]	WITHDRAW ADOPTED <i>DOCUMENTATION</i> AND BEI® DUE TO NEW DATA			

† = 2009 Revision or Addition to the Notice of Intended Changes.

★ With hydrolysis.

BEIS