Harris County Institute of Forensic Sciences		
Section: Toxicology	Approved by: Director, Forensic Toxicology	
Document Type: QA/QC	Procedure No.: TOX07.1027	
Title: Toxicology Routine Screening Analytes		Rev.: 21

1.0 Purpose

1.1 This document lists the major analytes anticipated to produce positive responses in the routine screens applied in the Forensic Toxicology Laboratory.

2.0 Scope

2.1 This procedure is applicable to the Forensic Toxicology Laboratory

2.2 The routine screening analytes are evaluated annually. For example:

2.2.1 Analytes may be added if emerging substances are detected by other techniques or in other laboratories.

2.2.2 Substances may be removed if they are rarely detected in casework and/or determined to be of minor significance.

3.0 Definitions and Abbreviations

3.1 No method-specific or non-standard terms are used in this procedure.

4.0 Materials

4.1 Not Applicable

5.0 Procedure

5.1 Tables

5.1.1 Volatiles

Analyte	**Established Cut-off**
Ethanol	0.010 g/100 mL
Acetone	0.010 g/100 mL
Methanol	0.010 g/100 mL
Isopropanol	0.010 g/100 mL

5.1.2 ELISA (cross-reactivity with structurally similar compounds in **blood** from ELISA inserts, Immunalysis Corporation)

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 10 ng/mL THCA	Cross-Reactivity (%)
(-)-11-nor-9-Carboxy-Δ9-THC	10	N/A	10	100
11-hydroxy-Δ9-THC			200	5
(-) Δ8-THC			300	3.33
(-) Δ9-THC			400	2.5
Cannabinol			1,000	1
Cannabidiol			300,000	0.003
(+) 11-carboxylic acid gluc			1,000	1

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 10 ng/mL Morphine	Cross-Reactivity (%)
Morphine	20	20	10	100.00%
6-Acetyl Codeine			15	66.70%
6-Acetyl Morphine			40	25.00%
Codeine			5	200.00%
Desomorphine			18	55.60%
Dihydrocodeine			20	50.00%
Ethylmorphine			5	200.00%
Heroin			100	10.00%
Hydrocodone			10	100.00%
Hydromorphone			20	50.00%
Levorphanol			65	15.40%
Morphine-3β-Glucuronide			12.5	80.00%
Morphine-6β-Glucuronide			75,000	0.01%
Nalorphine			2,200	0.50%
Naloxone			100,000	0.01%
Norcodeine			1,400	0.70%

Normorphine			15,000	0.10%
Noroxycodone			80,000	0.01%
Noroxymorphone			100,000	<0.01%
Oxycodone			1,500	0.70%
Oxymorphone			3,000	0.30%

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 5 ng/mL PCP	Cross-Reactivity (%)
Phencyclidine (PCP)	10	20	5	100
1-[1-(2-thienyl)cyclohexyl]-piperidine			10	50
1-[1-(2-thienyl)cyclohexyl]-morpholine			50	10
1-(1-phenylcyclohexyl)pyrollidine			50	10
1-(1-phenylcyclohexyl)morpholine			60	8

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 20 ng/mL S(+)-Amphetamine	Cross-Reactivity (%)
(+) Amphetamine	20	40	20	100
(-)Amphetamine			1500	1.3
(±)Amphetamine			50	40
Diphenhydramine			100,000	0.02
(+)Ephedrine			100,000	0.02
(-)Ephedrine			100,000	0.02
Fenfluramine			100,000	0.02
4-Fluoroamphetamine			100	20
MBDB			20,000	0.1
MDA			15	133.3
MDEA			3,500	0.6
MDMA			5,000	0.4
(+)Methamphetamine			20,000	0.1
(-)Methamphetamine			100,000	0.02

Norpseudoephedrine			20,000	0.1
Phentermine			150	13.3
Phenylephrine			100,000	0.02
Phenylpropanolamine			70,000	0.03
PMA			10	200
(+)Pseudoephedrine			100,000	0.02
(-)Pseudoephedrine			100,000	0.02
Tyramine			6,000	0.3

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 50 ng/mL Benzoylecgonine	Cross-Reactivity (%)
Benzoylecgonine	20	20	50	100
Cocaethylene			50	100
Cocaine			60	83
Ecgonine			100,000	0.1
Ecgonine Ethyl Ester			55,000	0.1
Ecgonine Methyl Ester			25,000	0.2
m-Hydroxybenzoylecgonine			100	50
Norcocaine			55,000	0.1

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 10 ng/mL Oxycodone	Cross-Reactivity (%)
Oxycodone	5	5	10	100
6-Acetylmorphine			8,000	0.13
Buprenorphine			100,000	<0.01
Codeine			8,000	0.13
Dihydrocodeine			7,000	0.14
Heroin			10,000	0.1
Hydrocodone			400	2.5
Hydromorphone			500	2.0

Levorphanol			5,000	0.2
Meperidine			100,000	<0.01
Morphine			10,000	0.1
Morphine-3-Glucuronide			10,000	0.1
Nalbuphine			100,000	<0.01
Nalorphine			100,000	<0.01
Naloxone			10,000	0.1
Naloxone-3-Glucuronide			100,000	<0.01
Naltrexone			100,000	<0.01
Norcodeine			100,000	<0.01
Normorphine			100,000	<0.01
Noroxycodone			200	5.0
Noroxymorphone			500	2.0
Oxymorphone			10	100
Oxymorphone-3β-Glucuronide			400	2.5
Tramadol			100,000	N.D.

Analyte	**Established Cut-off, ng/mL (Blood, Urine)**	**Established Cut-off, ng/mL (Liver)**	**Approx. ng/mL equivalent to 20 ng/mL S (+)-Methamphetamine**	**Cross-Reactivity (%)**
(+) Methamphetamine	20	20	20	100
(-)Amphetamine			100,000	0.02
(+)Amphetamine			25,000	0.1
Diphenhydramine			100,000	0.02
(-)Ephedrine			1,000	2
(+)Ephedrine			100,000	0.02
Fenfluramine			5,000	0.4
MBDB			2,000	1
MDA			10,000	0.2
MDMA			20	100

MDEA			40	50
(-) Methamphetamine			3,000	0.7
Norpseudoephedrine			100,000	0.02
Phentermine			100,000	0.02
Phenylephrine			100,000	0.02
Phenylpropanolamine			100,000	0.02
PMA			5,000	0.4
(+)Pseudoephedrine			50,000	0.04
(-)Pseudoephedrine			100,000	0.02
Tyramine			100,000	0.02

Analyte	**Established Cut-off, ng/mL (Blood, Urine)**	**Established Cut-off, ng/mL (Liver)**	**Approx. ng/mL equivalent to 50 ng/mL Oxazepam**	**Cross-Reactivity (%)**
Oxazepam	10	20	50	100.0
Alprazolam			18	277.8
7-Aminoclonazepam			180	27.8
Bromazepam			55	90.9
Chlordiazepoxide			275	18.2
Clobazam			45	111.1
Clonazepam			65	76.9
Clorazepate			30	166.7
Desalkylflurazepam			30	166.7
N-Desmethylflunitrazepam			40	125.0
Diazepam			25	200.0
Estazolam			25	200.0
Etizolam			40	125.0
Flubromazepam			25	200.0
Flubromazolam			20	250.0
Flurazepam			30	166.7
Flunitrazepam			40	125.0
Flumazenil			100,000	N.D.

α-Hydroxy-Alprazolam			25	200.0
2-Hydroxyethylflurazepam			30	16670.0
Hydroxy-Triazolam			40	125.0
Lorazepam Glucuronide			50,000	0.1
Lorazepam			80	62.5
Lormetazepam			50	100.0
Oxazepam Glucuronide			10,000	0.5
Medazepam			85	58.8
Midazolam			45	111.1
Nimetazepam			30	166.7
Nitrazepam			50	100.0
Nordiazepam			30	166.7
Prazepam			35	142.9
Temazepam			35	142.9
Triazolam			35	142.9

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 50 ng/mL Methadone	Cross-Reactivity (%)
(±) Methadone	20	20	50	100
Methadol			600	8.3
EDDP			50,000	0.1
EMDP			100,000	<0.1
LAAM			4,000	1.3

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	Approx. ng/mL equivalent to 1 ng Fentanyl	Cross-Reactivity (%)
Fentanyl	1	2	1.0	100.0
Acetyl fentanyl			1.8	55.6
Acetyl Norfentanyl			1,000,000	<0.0001
Acrylfentanyl			2.0	50.0

Alfentanil			1,000,000	<0.0001
Beta-Hydroxy fentanyl			100	1.0
Butyryl fentanyl			1.0	100
Carfentanil			1000	0.1
Cis-d,l-3-methylfentanyl			50	2.0
Despropionylfentanyl (4-ANPP)			50	2.0
FIBF			3.0	33.3
Furanyl fentanyl			2.0	50.0
Isobutyryl fentanyl			2.0	50.0
meta-Fluorobutyryl fentanyl			2.0	50.0
meta-Fluorofentanyl			2.0	50.0
Methoxyacetyl fentanyl			1.5	66.7
4-methoxy-butyryl fentanyl			1.8	55.6
meta-Chlorophenylpiperazine (mCPP)			1,000,000	0.0001
Norfentanyl			1,000,000	0.0001
Ortho-Fluorobutyryl fentanyl			2.0	50.0
Ortho-Fluorofentanyl			2.0	50.0
para-Chloroisobutyryl fentanyl			4.0	25.0
para-Fluorobutyryl fentanyl			1.75	57.1
Remifentanil			1,000,000	<0.0001
Sufentanil			1000	0.1
Trans-d,l-3-methylfentanyl			5.0	20.0
U-47700			25,000	0.004
Valeryl Fentanyl			1.5	50.0
W-18			1,000,000	<0.0001

Analyte	**Established Cut-off, ng/mL (Blood, Urine)**	**Established Cut-off, ng/mL (Liver)**	**Approx. ng/mL equivalent to 1000 ng Carisoprodol**	**Cross-Reactivity (%)**
Carisoprodol	500	500	1000	100
Meprobamate			850	118

Analyte	Established Cut-off, ng/mL (Blood, Urine)	Established Cut-off, ng/mL (Liver)	No Cross-Reactivity Data
Acetaminophen	1000	N/A	

5.1.3 GC/MS Screens

Analyte	Concentration in Control	Administrative Cut-off
Standard Acidic Drug Screen		
Butalbital	10 mg/L	2 mg/L
Carbamazepine	2 mg/L	1 mg/L
Carisoprodol	10 mg/L	2 mg/L
Ibuprofen	25 mg/L	2 mg/L
Levetiracetam	10 mg/L	2 mg/L
Meprobamate	25 mg/L	2 mg/L
Naproxen	25 mg/L	2 mg/L
Pentobarbital	10 mg/L	2 mg/L
Phenobarbital	10 mg/L	2 mg/L
Phenytoin	10 mg/L	2 mg/L
Secobarbital	10 mg/L	2 mg/L
Topiramate	10 mg/L	2 mg/L
Valproic Acid	10 mg/L	2 mg/L
Standard Basic Drug Screen		
Alprazolam	0.25 mg/L	N/A
Amitriptyline	0.25 mg/L	0.03 mg/L
Carisoprodol	10 mg/L	2 mg/L
Chlorpheniramine	0.10 mg/L	0.03 mg/L
Citalopram	0.25 mg/L	0.03 mg/L
Cocaine	0.25 mg/L	0.03 mg/L
Codeine	0.25 mg/L	0.03 mg/L
Cyclobenzaprine	0.25 mg/L	0.03 mg/L
Dextromethorphan (Methorphan)	0.10 mg/L	0.03 mg/L
Diltiazem	0.25 mg/L	0.03 mg/L
Diazepam	0.25 mg/L	0.03 mg/L

Diphenhydramine	0.25 mg/L	0.03 mg/L
Doxylamine	0.25 mg/L	0.03 mg/L
Fentanyl	0.02 mg/L	N/A
Hydrocodone	0.10 mg/L	0.03 mg/L
Levamisole (Tetramisole)	0.25 mg/L	0.03 mg/L
Lidocaine	0.25 mg/L	0.03 mg/L
Meprobamate	25 mg/L	2 mg/L
Methadone	0.25 mg/L	0.03 mg/L
Methamphetamine	0.25 mg/L	0.03 mg/L
Mirtazapine	0.25 mg/L	0.03 mg/L
Nordiazepam	0.25 mg/L	0.03 mg/L
Norsertraline	0.25 mg/L	0.03 mg/L
Nortriptyline	0.25 mg/L	0.03 mg/L
Oxycodone	0.10 mg/L	N/A
Phencyclidine	0.25 mg/L	0.03 mg/L
Promethazine	0.25 mg/L	0.03 mg/L
Propoxyphene	0.25 mg/L	0.03 mg/L
Sertraline	0.25 mg/L	0.03 mg/L
Tramadol	0.25 mg/L	0.03 mg/L
Trazodone	0.25 mg/L	0.03 mg/L
Venlafaxine	0.25 mg/L	0.03 mg/L
Verapamil	0.25 mg/L	0.03 mg/L
Zolpidem	0.25 mg/L	0.03 mg/L
Other Drug Screens		
GHB	5 mg/L	5 mg/L

5.1.4 TOF Screen:

Compound	**Concentration**	
25I-NBOMe	10 ng/mL	
7-Aminoflunitrazepam	5 ng/mL	
Brompheniramine	10 ng/mL	
Buprenorphine	1 ng/mL	Blood only; not approved for urine
Butylone	10 ng/mL	
Carbamazepine	1000 ng/mL	

Chlordiazepoxide	10 ng/mL	
Chlorpheniramine	10 ng/mL	
Dextromethorphan	10 ng/mL	
Diphenhydramine	10 ng/mL	
Ethylone	10 ng/mL	
Ketamine	10 ng/mL	
Lorazepam	5 ng/mL	
MDPV	10 ng/mL	
Mephedrone	10 ng/mL	
Methedrone	50 ng/mL	
Methylone	10 ng/mL	
Methylphenidate	50 ng/mL	
Midazolam	10 ng/mL	
MPPP	10 ng/mL	
Naphyrone	10 ng/mL	
Oxcarbazepine	1000 ng/mL	
Oxycodone	10 ng/mL	
Oxymorphone	10 ng/mL	
Promethazine	10 ng/mL	
Quetiapine	10 ng/mL	
Ritalinic Acid	100 ng/mL	
TFMPP	50 ng/mL	
TMA-2	50 ng/mL	
Topiramate	50 ng/mL	
Tramadol	10 ng/mL	
Zaleplon	10 ng/mL	
Zolpidem	10 ng/mL	Blood only; not approved for urine
Zopiclone	10 ng/mL	

6.0 Data Analysis and Documentation

6.1 Not Applicable

7.0 Acceptance Criteria

7.1 Not Applicable

8.0 References

8.1 ELISA inserts, Immunalysis Corporation

9.0 Attachment or Appendices

9.1 Not applicable