

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.: 20	

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

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5.1.2 ELISA (cross reactivity data from ELISA inserts, Immunalysis Corporation)

Analyte	Established cut-off	Percentage of cross reactivity with related drugs*	Concentration equivalent to cut-off (ng)*
Acetaminophen	1000 ng/mL		
Amphetamine	20 ng/mL		
l-amphetamine		2.9	692
Hydroxyamphetamine		44	45
l-methamphetamine		2	1000
d,l-MDA		250	8
d-methamphetamine		6.5	333
d,l-HMA		25	80
Phentermine		89	22
Fenfluramine		<1	2000
d-ephedrine		<1	2000
l-ephedrine		<1	2000
d-phenylpropanolamine		<1	2000
l-phenylpropanolamine		<1	2000
d,l-MDMA		<1	2000
d,l-MDEA		<1	2000
d-pseudoephedrine		<1	2000
l-pseudoephedrine		<1	2000
d,l-MBDB		<1	2000
Tyramine		<1	2000
Methylphenidate		<1	2000
Carisoprodol	500 ng/mL		
Carisoprodol		100	500
Meprobamate		118	425
Cocaine Metabolite	20 ng/mL		
Benzoyllecgonine		100	50
Cocaine		6.66	750
Cocaethylene		<1	5000
Norcocaine		<1	5000
Norcocaethylene		<1	5000

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Ecgonine		<0.5	10000
Ecgonine Methyl Ester		<0.5	10000
Fentanyl	1 ng/mL		
Fentanyl		100	2
Hydroxyfentanyl		83	2
Despropionylfentanyl		10	20
Norfentanyl		<1	200
Hydroxy norfentanyl		<1	200
Methadone	20 ng/mL		
Methadone		100	50
Methadol		50	100
EDDP		<5	1000
LAAM		15	333
Nor-LAAM		<1	5000
Methamphetamine	20 ng/mL		
d,l-methamphetamine		65	30
l-methamphetamine		8	250
d,l-MDMA		135	14
d-amphetamine		2	1000
l-amphetamine		3.4	600
p-hydroxyamphetamine		<1	2000
d,l-MDA		<1	2000
d,l-MDEA		10	200
d,l-MBDB		5	400
d,l-HMA		<1	2000
Fenfluramine		5	400
d-ephedrine		1.2	1720
l-ephedrine		<1	2000
d,l-ephedrine		<1	2000
beta-phenethylamine		<1	2000
Phentermine		<1	2000
d-phenylpropanolamine		<1	2000
d,l-phenylpropolamine		<1	2000
d-pseudoephedrine		<1	2000
l-pseudoephedrine		<1	2000
Tyramine		<1	2000
Opiates	20 ng/mL		

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Morphine		100	20
Codeine		200	10
Dihydrocodeine		85	23
Morphine 3-glucuronide		62.5	32
Morphine 6-glucuronide		<4	800
Hydrocodone		93	21
Hydromorphone		81	24
6-acetylmorphine		83	24
6-acetylcodeine		41.7	33
Oxycodone		21	96
Oxymorphone		20	100
Normorphine		3	640
Norcodeine		8.3	240
Noroxycodone		<0.25	8000
Noroxymorphone		<0.25	8000
Nalorphine		10	200
Meperidine		<0.5	4000
Normeperidine		<0.5	4000
Fentanyl		<0.5	4000
Norfentanyl		<0.5	4000
Buprenorphine		<0.25	8000
Norbuprenorphine		<0.25	8000
Phencyclidine	10 ng/mL		
Phencyclidine		100	10
1-[1-(2-thienyl)cyclohexyl]-piperidine		50	20
1-[1-(2-thienyl)cyclohexyl]-morpholine		10	100
1-(1-phenylcyclohexyl)-pyrrolidine		10	100
1-(1-phenylcyclohexyl)-morpholine		8	120
Cannabinoids	10 ng/mL		
11-nor-9-carboxy- Δ 8-THC		110	11
Δ 9-THC		21	48
Δ 8-THC		45	22
11-hydroxy- Δ 9-THC		<5	1000

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8-11-Dihydroxy- Δ9-THC		<5	1000
Cannabinol		<5	1000
Cannabidiol		<5	1000

	Established cut-off	Concentration (pg/well)	Oxazepam (pg/well)	Percentage of Cross Reactivity
Benzodiazepine	10 ng/mL			
Oxazepam		250	250	100
Alprazolam		50	90	180
		100	240	240
OH-Alprazolam		100	70	70
		250	300	120
Bromazepam		500	350	70
		1000	700	70
Chlordiazepoxide		500	150	30
		1000	180	18
Clonazepam		50	35	70
		100	70	70
7-amino-Clonazepam		500	200	40
		1000	250	25
Diazepam		100	70	70
		250	300	120
Nordiazepam		100	50	50
		250	200	80
Estazolam		100	70	70
		250	300	120
Flurazepam		100	100	100
		250	375	150
2-OH-Ethyl-Flurazepam		500	>1200	>240
N-desmethylflunitrazepam		500	450	90
		1000	1000	100
Halazepam		500	500	100
		1000	950	95
Lorazepam		50	45	90
		100	85	85
Lorazepam – Gluc.		1000	ND	ND

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Lormetazepam		500	600	120
Medazepam		500	200	40
		1000	400	40
Midazolam		100	60	60
		250	110	44
Nitrazepam		500	350	70
		1000	700	70
Prazepam		500	225	45
		1000	500	50
Temazepam		500	1000	200
Triazolam		50	37.5	75
		100	80	80
OH-triazolam		50	40	80
		100	80	80
Oxazepam Gluc.		1000	ND	ND
Clorazepate		100	50	50
		250	150	60
Flunitrazepam		100	30	30
		250	150	60

	Established Cutoff	Concentration (ng/mL)	Cross-reactivity (%)
Oxycodone	5 ng/mL		
Morphine		500	0.4
		1000	0.3
Codeine		1000	0.5
Dihydrocodeine		500	1
Hydromorphone		500	3
		1000	3
Hydrocodone		100	10
Hydromorphone		500	5
Oxymorphone		25	88
		50	90

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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

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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
Norsertaline	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	

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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, Immualysis Corporation

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9.0 Revision History

Revision	Description of Change	Reviewed By	Date
6	Added TOF Screen IFS and edited TOF Screen, Standard Acidic, & Standard Basic analytes	A. Kelly	1013
7	Updated final approver and added raised changes (corrected TOF administrative cutoffs and concentration in controls)	A. Beard	1213
8	Added the frequency of evaluation to the scope	A. Beard	0614
9	Addressed raised changes, removed biochip assay, update TOF analytes, updated alcohol reporting units	L.Nickell/ A. Beard	1114/ 0315
10	Included reasons why screening list may be updated	T. Gray	06/16
11	Included reference to Immunalysis kit insert for ELISA cross reactivity; removed barbiturate screen from ELISA; removed carisoprodol, meprobamate, fentanyl and hydrocodone from TOF screen	T. Gray	1116
12	Removed synthetic cannabinoids from TOF screen	T. Gray	0117
13	Change ELISA cutoffs following revalidation; add oxycodone ELISA kit	T. Gray	0518
14	Update cutoff for benzodiazepine	L.Nickell	0918
15	Update cutoff for benzoyllecgonine	L.Nickell	1218
16	Remove salicylate; remove 2C-E	T. Gray	0219
17	Update cutoff to 0.010 g/100 mL to be consistent with TOX.GC.3624 and TOX.GC.3617 revision 23	T. Gray	0919
18	Removed 2C-I	T. Gray	0420
19	Updated TOF screen to reflect newly validated LODs	T. Gray	1220
20	Updated GHB to reflect newly validated procedure	T. Gray	0321

10.0 Attachment or Appendices

10.1 Not applicable