



Maine Department of Health and Human Services
Maine Center for Disease Control and Prevention
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ORAL FLUID TESTING

HEALTH & ENVIRONMENTAL TESTING LABORATORY -
FORENSIC CHEMISTRY: TOXICOLOGY

DRUG DETECTION TIMES

Drug Detection Times in Blood, Oral Fluid, & Urine						
Drug	Blood	References	Oral Fluid	References	Urine	References
Δ9-Tetrahydrocannabinol (THC)	Smoked: 3.5-5.5 hours Eaten: up to 16 hours	1	Smoked: 2 to ≥22 hours Eaten: 1 to ≥48 hours	2, 3, 4, 5	N/A	
11-nor-9-carboxy-Δ9-Tetrahydrocannabinol (THCCOOH)	Smoked: 48-152 hours Eaten: 7-51 hours	1, 5	Smoked: N/A Eaten: 3 to 122 hours	5, 4	Smoked: 34-120 hours (dose dependent) Chronic: ≥30 days	6, 2
Cocaine	Intranasal: 4-6 hours	6	Intravenous: 4-8 hours	2	Up to 40 hours	2
Cocaine Metabolite (Benzoylecgonine)	Intranasal: up to 48 hours	7, 6	Intravenous, Intranasal, Smoked: 12-24 hours	8, 6	Intranasal: 48-72 hours	9, 6
Amphetamine	Oral: up to 46 hours	10, 6	Oral: 20-50 hours	6, 11	Up to 5 days	12
Methamphetamine	Smoked: up to 48 hours	13, 6	Oral 36-72 hours	14, 6	Oral: 87+/-51 hours	15, 6

All information is obtained from peer reviewed scientific literature and compiled to provide guidance on average detection times of drugs in average individuals. All material provided is from infrequent drug usage, chronic drug usage may result in the continual presence of a drug in an individual's blood, oral fluid, or urine.

SAMPLE COMPARISON

- Blood and Oral fluid have comparable detection windows.
- Blood or oral fluid are more appropriate samples to indicate recent, relevant drug use in comparison to urine.

ORAL FLUID TESTING MENU

(AT MINIMUM-ADDITIONAL DRUGS MAY BE INCLUDED)

Proposed Oral Fluid Drug Testing Menu: Based on "Recommendations for Toxicological Investigation of Drug-Impaired Driving and Motor Vehicle Fatalities-2021 Update".			
Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)	Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)
CNS Stimulants		CNS Depressants	
Amphetamine	20	Carisoprodol	500
Benzoylcegonine	8	Meprobamate	500
Cocaethylene	8	Zolpidem	10
Cocaine	8	Alprazolam	1
Methamphetamine	20	a-hydroxyalprazolam	1
Hallucinogens		Clonazepam	1
MDA	20	7-Aminoclonazepam	1
MDMA	20	Lorazepam	1
Narcotics		Diazepam	1
6-MAM	1	Nordiazepam	1
Buprenorphine	2	Oxazepam	1
Codeine	5	Temazepam	1
Fentanyl	0.5	Cannabinoids	
Methadone	10	delta-9-THC	1
Morphine	5		
Oxycodone	5		
Oxymorphone	5		
Tramadol	10		
Hydromorphone	5		
Hydrocodone	5		

ORAL FLUID TO BLOOD RATIOS- LIMITATIONS

Table 2. Average oral fluid to blood concentration ratios for selected drugs.

Drug (type)	Average oral fluid to blood concentration ratio
Alcohol (ethanol)	1.07
Barbiturates	0.3
Buprenorphine	1
Codeine (basic)	4
Methamphetamine (basic)	2
MDMA (basic)	7
Cocaine (basic)	3
Diazepam (acidic)	0.01-0.02
Methadone (basic)	1.6
Morphine (basic)	0.8
Δ^9 -Tetrahydrocannabinol (neutral)	1.2

- *Not all compounds transfer readily from blood to oral fluid.*
 - *Benzodiazepines and Morphine*
 - *Example: Blood concentration of Diazepam 10 ng/mL would result in an average oral fluid concentration of 0.1-0.2 ng/mL.*
 - *The recommended lower reporting limit for diazepam in oral fluid is 1 ng/mL.*

ORAL FLUID TESTING-LIMITATIONS

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Benzoylcegonine	8	Meprobamate	500
Cocaethylene	8	Zolpidem	10
Cocaine	8	Alprazolam	1
Methamphetamine	20	a-hydroxyalprazolam	1
Hallucinogens		Clonazepam	1
MDA	20	7-Aminoclonazepam	1
MDMA	20	Lorazepam	1
Narcotics		Diazepam	1
6-MAM	1	Nordiazepam	1
Buprenorphine	2	Oxazepam	1
Codeine	5	Temazepam	1
Fentanyl	0.5	Cannabinoids	
Methadone	10	delta-9-THC	1
Morphine	5		
Oxycodone	5		
Oxymorphone	5		
Tramadol	10		
Hydromorphone	5		
Hydrocodone	5		

HOW WOULD THE LAB ADDRESS LIMITATIONS:

- Provide training to law enforcement officers if certain drugs are indicated or suspected to collect a different sample type.
- Include an automatic comment on the result report for oral fluid samples.

CURRENT TESTING MENUS

(BLOOD & URINE)

Blood Drug Testing Menu: Every blood sample, unless otherwise noted, is tested for the following:

Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)	Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)
CNS Stimulants		CNS Depressants	
Amphetamine	10	7-amino flunitrazepam	4
Benzoyllecgonine	10	7-aminoclonazepam	4
<u>Cocaethylene</u>	10	<u>a-Hydroxyalprazolam</u>	4
Cocaine	10	Alprazolam	4
Methamphetamine	10	Amitriptyline	10
Methylphenidate	10	Carbamazepine	10
Dissociative Anesthetics		Carisoprodol	10
Dextromethorphan	10	Chlordiazepoxide	10
Ketamine	10	Citalopram	10
<u>Norketamine</u>	10	Clonazepam	4
PCP	10	Clonidine	10
Cannabinoids		Cyclobenzaprine	10
Delta-9-THC	1	Desipramine	10
Hydroxy-delta-9-THC	1	Diazepam	4
Carboxy-delta-9-THC	5	Diphenhydramine	10
Narcotics		Doxepin	10
3-Methylfentanyl	0.5	Etizolam	4
6-Acetylcodeine	5	Flunitrazepam	4
6-Acetylmorphine	5	Fluoxetine	10
Buprenorphine	0.5	Imipramine	10
<u>Butyrylfentanyl</u>	0.5	Lamotrigine	10
Codeine	5	Lorazepam	4
EDDP	5	Meprobamate	5
Fentanyl	0.5	Mirtazapine	10
Heroin	5	Nordiazepam	4
Hydrocodone	5	Nortriptyline	10
Hydromorphone	5	Olanzapine	10
Meperidine	5	Oxazepam	4
Methadone	5	Risperidone	10
Morphine	5	Sertraline	10
Norbuprenorphine	0.5	Temazepam	4
<u>Norcodeine</u>	5	Trazodone	5
<u>Norfentanyl</u>	0.5	Triazolam	10
<u>Norhydrocodone</u>	5	Venlafaxine	10
<u>Noroxycodone</u>	5	Zolpidem	4
O-Desmethyiltramadol	5	Zopiclone	10
Oxycodone	5	Hallucinogens	
Oxymorphone	5	LSD	10
Propoxyphene	5	MDMA	10
<u>Sufentanil</u>	0.5		
Tramadol	5		

Urine Drug Testing Menu: Every urine sample, unless otherwise noted, is tested for the following:

Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)	Drug/Metabolite	Confirmation Test Reporting Limit (ng/mL)
CNS Stimulants		CNS Depressants	
Amphetamine	50	Alprazolam	50
Benzoyllecgonine	50	Amitriptyline	100
<u>Cocaethylene</u>	20	Citalopram	100
Cocaine	20	Cyclobenzaprine	10
Methamphetamine	50	Diazepam	50
Methylphenidate	20	Diphenhydramine	50
Hallucinogens		Estazolam	50
MDA	50	Etizolam	100
MDEA	50	<u>Flualprazolam</u>	25
MDMA	50	<u>Hydroxyalprazolam</u>	50
Narcotics		<u>Hydroxymidazolam</u>	50
6-MAM	25	Midazolam	50
Acetyl Fentanyl	10	Nortriptyline	100
Codeine	50	Sertraline	25
Dihydrocodeine	50	Temazepam	50
EDDP	50	Zolpidem	50
Fentanyl	10	Dissociative Anesthetics	
Methadone	50	Dextromethorphan	100
Morphine	50	Ketamine	100
<u>N-Desmethyl Tramadol</u>	100	<u>Norketamine</u>	100
Tramadol	50	PCP	10
		Cannabinoids	
		Carboxy-delta-9-THC	5

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