

Positive Prevalence Rates in Drug Tests for Drugs of Abuse in Oral-Fluid and Urine

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Common Matrices in Drugs of Abuse Testing

- Urine
 - Detects recent use (previous 24-72 hrs)
- Oral-Fluid
 - Detects recent use (previous 24-36 hrs)
- Hair
 - Detects a pattern of repetitive use (up to 90 days, based on testing proximal 1.5" head hair)

Objective

- Compare trends and positive prevalence rates for oral-fluid and urine specimens

Specimen Demographics

- Source
 - Routine random, oral-fluid (N ~ 4.9 MM) and urine (non-regulated) specimens (N ~ 32.6 MM) submitted for drugs of abuse testing
 - Workplace
 - Rehab/CJ excluded
 - POCT Confirms excluded
 - Excludes high positivity
 - Specimens tested Jan 2005 – Jun 2010
 - Laboratory positive data (prior to MRO review)
- Testing Reason (Urine / Oral-Fluid)
 - Pre-Employment – 74% / 81%
 - Random – 13% / 9%
 - Post-Accident – 6% / 6%

Methods – Urine Screening

Drug	Cutoff (ng/mL)	Technology
Amphetamines	1000 / 300	Siemens EMIT
Cocaine	300	Microgenics DRI
Marijuana	100/ 50 / 20	Microgenics DRI / Siemens EMIT
Opiates	2000 / 300	Microgenics DRI / Siemens EMIT
PCP	25	Microgenics DRI

Methods – Urine Confirmation

Drug	Extraction	Derivative	Instrumental Analysis	Analyte(s)	Cutoff (ng/mL)
Amphetamines	LLE	PFP	GC/MS	Amphetamine / Methamphetamine	500 / 300
Cocaine	SPE	TMS	GC/MS	Benzoyllecgonine	150
Marijuana	SPE	TMS	GC/MS	THC-COOH	15
Opiates	SPE	TMS	GC/MS	Codeine / Morphine	2000 / 300
PCP	SPE	None	GC/MS	PCP	25

Methods – Oral-Fluid Screening

Drug	Cutoff (ng/mL)	Technology
Amphetamine	100	OraSure Intercept
Methamphetamines	40	OraSure Intercept
Cocaine	5	OraSure Intercept
Marijuana	1	OraSure Intercept
Opiates	10	OraSure Intercept
PCP	1	OraSure Intercept

Methods – Oral-Fluid Confirmation

Drug	Extraction	Derivative	Instrumental Analysis	Analyte(s)	Cutoff (ng/mL)
Amphetamines	LLE	HFB or PFP	GC/MS	Amphetamine / Methamphetamine / MDMA / MDA	40
Cocaine	SPE	HFIP or TMS	GC/MS	Benzoylcegonine	2
Marijuana	LLE or SPE	TMS	GC/MS or GC/MS/MS	THC	0.5
Opiates	SPE	TMS (Oxime)	GC/MS	Codeine / Morphine / Hydrocodone / Hydromorphone 6-AM	10 1*
PCP	SPE or LLE	None	GC/MS or GC/MS/MS	PCP	0.5

Overall Positive Rates

- Overall prevalence (2005-Jun 2010)

Urine¹	Oral-Fluid	% Difference
4.3%	4.1%	-4.7%

- ¹Includes testing for “non-SAMHSA” drugs

- Prevalence by year

Year	Urine	Oral Fluid
2005	4.5	4.0
2006	4.4	4.0
2007	4.4	4.1
2008	4.2	4.2
2009	4.2	4.2
Jan-Jun 2010	4.2	4.4

Amphetamine Positive Rates

- Amphetamine prevalence (2005-Jun 2010)

Urine¹	Oral-Fluid	% Difference
0.45%	0.17%	-62.2%

- ¹As a percentage of all tests for “Amphetamines”

- Prevalence by year

Year	Urine	Oral Fluid
2005	0.44	0.18
2006	0.38	0.16
2007	0.40	0.16
2008	0.45	0.17
2009	0.55	0.17
Jan-Jun 2010	0.62	0.23

Methamphetamine Positive Rates

- Methamphetamine Prevalence (2005-Jun 2010)

Urine¹	Oral-Fluid²	% Difference
0.16%	0.23%	43.8%

- ¹As a percentage of all tests for “Amphetamines”
- ²Includes MDMA and analogues

- Prevalence by year

Year	Urine	Oral Fluid
2005	0.28	0.39
2006	0.18	0.27
2007	0.14	0.22
2008	0.11	0.15
2009	0.10	0.13
Jan-Jun 2010	0.10	0.13

Cocaine Metabolite Positive Rates

- Cocaine Metabolite Prevalence (2005-Jun 2010)

Urine	Oral-Fluid	% Difference
0.55%	0.80%	45.5%

- Prevalence by year

Year	Urine	Oral Fluid
2005	0.70	1.00
2006	0.72	1.10
2007	0.58	0.82
2008	0.41	0.58
2009	0.29	0.50
Jan-Jun 2010	0.22	0.47

Marijuana / Metabolite Positive Rates

- Marijuana / Metabolite Prevalence (2005-Jun 2010)

Urine	Oral-Fluid	% Difference
2.3%	2.5%	8.7%

- Prevalence by year

Year	Urine	Oral Fluid
2005	2.5	2.4
2006	2.4	2.3
2007	2.3	2.4
2008	2.1	2.7
2009	2.0	2.7
Jan-Jun 2010	2.1	2.9

Opiates Positive Rates

- Opiates Prevalence (2005-Jun 2010)

Urine ¹	Oral-Fluid ²	% Difference
0.36%	0.62%	72.2%

- ¹Approximately 8% of tests include hydrocodone and hydromorphone
- ²Approximately 50% of tests include hydrocodone and hydromorphone

- Prevalence by year

Year	Urine	Oral Fluid
2005	0.32	0.34
2006	0.32	0.45
2007	0.35	0.67
2008	0.38	0.76
2009	0.45	0.86
Jan-Jun 2010	0.39	0.91

Oral Fluid Opiates Detail

(as a percentage of all tests for “Opiates”¹)

Drug	2007	2008	2009	Jan-Jun 2010
Overall	0.67%	0.76%	0.86%	0.91%
Codeine	0.09%	0.09%	0.10%	0.08%
Morphine	0.05%	0.06%	0.07%	0.05%
Hydrocodone	0.54%	0.61%	0.69%	0.77%
6-MAM	0.03%	0.04%	0.05%	0.04%
Codeine and morphine	0.01%	0.01%	0.01%	0.01%
Morphine and 6-MAM	0.02%	0.02%	0.03%	0.02%

- ¹Approximately 50% of tests include hydrocodone and hydromorphone

Phencyclidine Positive Rates

- Phencyclidine Metabolite Prevalence (2005-Jun 2010)

Urine	Oral-Fluid	% Difference
0.02%	0.02%	0.0%

Year	Urine	Oral Fluid
2005	0.02	0.01
2006	0.02	0.02
2007	0.02	0.02
2008	0.02	0.02
2009	0.02	0.01
Jan-Jun 2010	0.01	0.01

Summary

- Oral-fluid and urine provide insights into an individual's recent drug use
- Oral-fluid and urine exhibit similar trends
- Positive prevalence rates for most analytes are similar in oral-fluid and urine
- Oral-fluid data shows a significantly higher level of positives for cocaine metabolite
 - Gap expected to narrow with recent cutoff changes
 - In first 3 months (Q4-2010) of DOT testing, cocaine metabolite positives up 36% vs. Q4-2009
- Significantly more 6-AM positives in oral-fluid than urine
- Widening gap for marijuana (OF>Ur) positives

Questions?