

DRUG TESTING GUIDELINES
DEVELOPED FOR
DEPARTMENT OF HUMAN SERVICES

TASK FORCE MEMBERS

DEPARTMENT OF HUMAN SERVICES

DEPARTMENT OF PUBLIC HEALTH

SUBSTANCE ABUSE TREATMENT PROVIDERS

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DPH/DHS

DECISION MAKING TOOL FOR DETERMINING DRUG TESTING METHOD

TYPE OF TEST	INDICATIONS FOR USE	PROS	CONS	WINDOW OF DETECTION
URINE	<ul style="list-style-type: none"> • When a child is removed from an active clandestine meth lab, a urine sample within 4 hours is critical for both medical care and for forensic evidence. • When use is suspected in the past few days. Except marijuana which could be in the last several days to weeks. • When same gender collector is available for observed collection or collector trained to DOT standards for unobserved collection. • When cost is an issue, use for regular, random and frequent testing. • To have results that are the most defensible in court. • As a deterrent to use or continued use of an illicit substance. • To identify those who are using illicit substances. • Wide range of possible drug use. 	<ul style="list-style-type: none"> • Highest assurance of reliable results. • Least expensive. • Most flexible in testing different drugs including alcohol and Nicotine. • Most likely of all drug testing methods to withstand legal challenge when observed. • SAMHSA approved. 	<ul style="list-style-type: none"> • Specimen can be adulterated, substituted or diluted. Adulteration and dilution can be detected. • Preventing substitution depends upon careful observation of sample collection. • Limited window of detection. • Tests sometimes viewed as invasive or embarrassing. • Biological hazard for specimen handling and shipping to lab. 	Typically 1 to 5 days.
HAIR	<ul style="list-style-type: none"> • When a non-intrusive method is necessary. • Children – for presence of drugs in the system. • To achieve a longer detection window – 1.5 inches of hair equals a 90-day window. • Hair is not significantly affected by brief periods of abstinence so it can be used to indicate periodic relapse. 	<ul style="list-style-type: none"> • Longer window of detection. • Greater stability (does not deteriorate). • Can measure chronic use. Convenient shipping and storage (no need to refrigerate). 	<ul style="list-style-type: none"> • More expensive. • Test usually limited to 5-drug panel. • Cannot detect alcohol use. • Will not detect very recent drug use. • Most recent use detected may be up to 7 days. 	Depends on the length of hair in sample. Hair grows about half-inch per month, so a 1.5 inch specimen would show a 3 month history.

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	<ul style="list-style-type: none"> • When invasive collection is an issue. • To identify usage that occurred over 7 days in the past. • When there is a suspicion of repeated successful adulteration, dilution, tampering of urine samples. 	<ul style="list-style-type: none"> • Collection procedure not considered invasive or embarrassing. • More difficult to adulterate than urine. 	<ul style="list-style-type: none"> • Some drugs migrate through the hair, so presence may not indicate recent use. • Coarse hair retains more and longer evidence of use, so there is risk of racial bias. • Amount detected may vary across samples of hair from the same person. • Split sample technique should be used to differentiate environmental exposure from personal use. • Not SAMHSA approved. 	
ORAL FLUIDS	<ul style="list-style-type: none"> • When a non-intrusive method is necessary. • When observed collection is necessary but no same gender collector is available. • For recent use (previous hour up to 24 hours marijuana, previous hour up to 48 hours all others). • Post incident/accident situations. • When there is a need to know if someone is “under the influence,” shows presence of parent drug. • When marijuana is not a concern. 	<ul style="list-style-type: none"> • Sample obtained under direct observation. Minimal risk of tampering. • Non-invasive. • Samples can be collected easily in almost any environment. • Can detect alcohol use. • Reflects recent drug use. 	<ul style="list-style-type: none"> • Drugs and drug metabolites do not remain in oral fluid as long as they do in urine. • Less reliable than other testing methods in detecting marijuana use. • Very short detection period is a problem. • To enhance defensibility must use other methods for marijuana. • Not SAMHSA approved. 	Approximately 10 to 24 hours.

TYPE OF TEST	INDICATIONS FOR USE	PROS	CONS	WINDOW OF DETECTION
SWEAT PATCH	<ul style="list-style-type: none"> • As a deterrent to use or continued use of an illicit substance. • To identify those who are using illicit substances. • When a non-intrusive method is necessary. • To achieve a longer detection window – drugs are detected up 2 days prior and for as long as the patch is worn. Typically 7-14 days. • When there is a suspicion of repeated successful adulteration, dilution, tampering of urine samples. • When a visible deterrent to using is desirable. • When close monitoring is desired, gives 24/7 monitoring while worn. • When “shy bladder” is an issue. • When head hair has been shaved off. 	<ul style="list-style-type: none"> • Longer window of detection. • Sample obtained over 7 or more days. • 24 hour a day monitoring. • Minimal risk of tampering, if removed by donor can’t be reapplied. • Non-invasive, no same gender issues. • Difficult to adulterate, attempts and tampering are evident to collector. • Not considered a bodily fluid/hazard, as is urine. • All positive screens are confirmed by GC/MS. • Positives are confirmed for parent drug and drug metabolite. • Can detect occasional use. • Recommended by DHHS for approval for use in federally mandated testing programs. • FDA approved. • Gives client good reason to refuse using opportunities. 	<ul style="list-style-type: none"> • Is a storage device, can’t tell if use was once or multiple times. • Collector needs to be attentive to condition of patch upon removal to detect tampering. • Chain of custody form needs to be completed. • Possibility of contamination via mishandling by collector. Need to follow application and removal protocols. • Not as court tested as urine. • More labs doing urine, hair and oral fluids, less choice in who to work with. • Tests only for 5 substances: cocaine, PCP, opiates, marijuana, and amphetamine/methamphetamine. • Not SAMHSA approved. 	<ul style="list-style-type: none"> • 1-2 days prior to application of patch and while being worn, typically 7+ days.

ADULT UA FREQUENCY PROTOCOL

Suggestions:

- Unannounced random home visits
- If cost is an issue -- and more frequently drops are desired -- drops can be as frequent as every day. Then one or two of those drops are randomly selected for analysis. This saves on lab costs but not on the supervision of drops.
- Failure to appear for ANY reason or adulterated specimen is regarded as a positive test result.
- The ideal is that all UA's must be observed.
- Repeated positive tests results consider substance abuse assessments.
- Random schedule.
- Require a co-pay from client.
- Recommend the client pay for confirmation.
- Dirty results are not an indicator for increased UA's rather an indicator for increased interventions.

A 9-panel screen is recommended. (marijuana, amphetamine, cocaine, barbiturates, benzodiazepines, methadone, opiates, phencyclidine, propoxyphene).

There may be a need to check on Oxycontin use in selected cases.

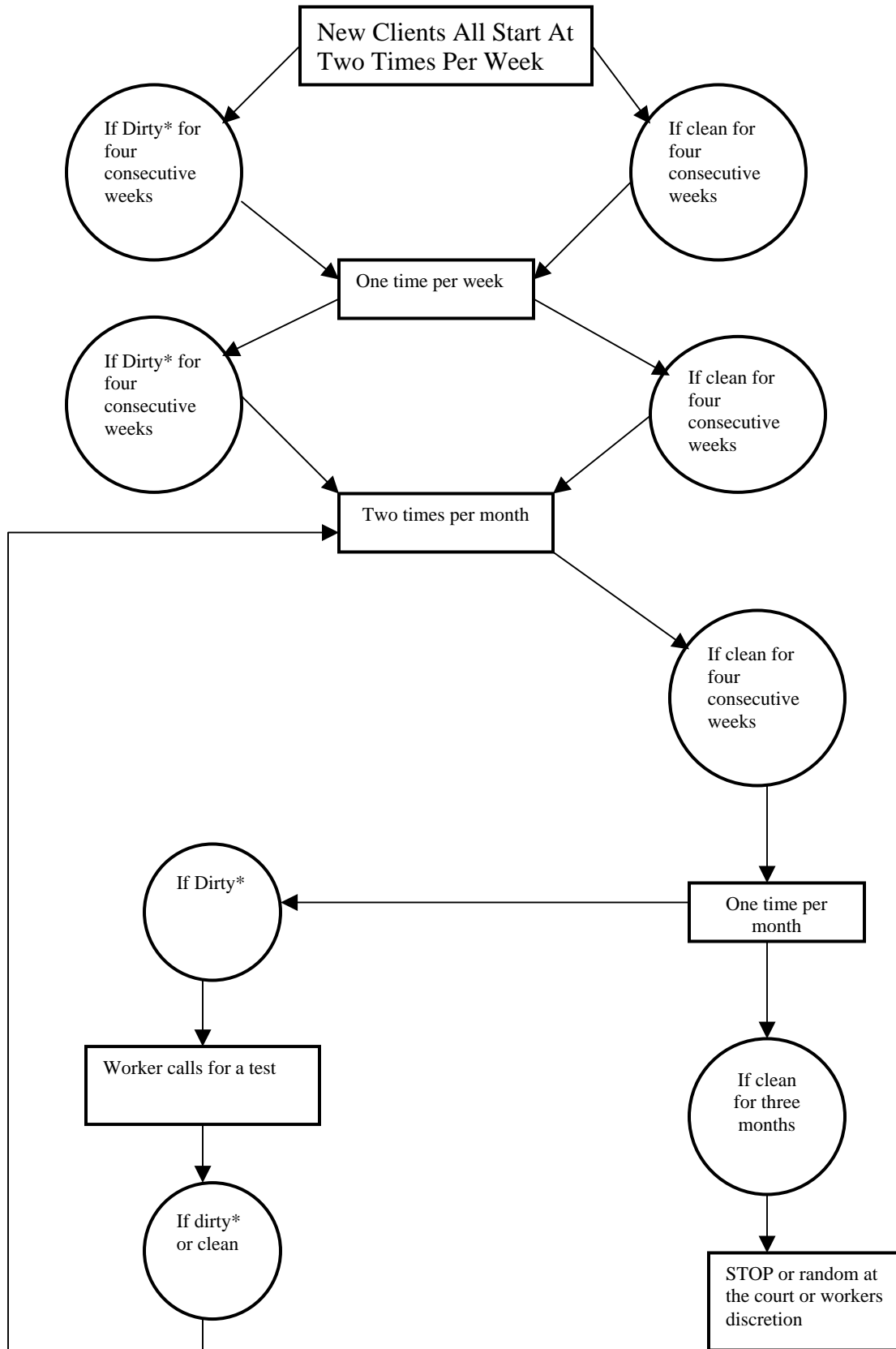
	ASSESSMENT	ONGOING CASES			
	During CPA assessment	30 Days	30 to 60 Days	60 to 90 Days	90 + Days
Drug Tests or Breathalyzer (minimum)	Allegation and event linked in accordance with Central Abuse Registry	Twice a week/ random and/or event linked	Once a week/ random and/or event linked	One to two times a month/ random and/or event linked	Once every other month/random and/or event linked. If client clean for three months, random or STOP

The Central Abuse Registry will pay for “drug testing” (or other “medical relevant test”) when:

- A. The “drug test” is performed before a report of child abuse is made to DHS AND the test was ordered by a health practitioner because they determined that it was “medically indicated.”
- B. The “drug test” is performed during the child abuse assessment on an adult that is named as an alleged perpetrator on an allegations of Denial of Critical Care for Failure to Provide Proper Supervision or and allegation of Presence of Illegal Drugs in a Child.
- C. B is true but the “drug test” is performed after the conclusion of the assessment, AND there is documentation in the written report that the worker requested or attempted to have the “drug test” done prior to completing assessment.
- D. B is true AND the “drug test” is scheduled before but cannot be administered before the completion of the assessment AND the worker documents in the written report that an Addendum will be submitted that addresses the result of the “drug test.”

PRACTICAL DRUG TESTING PROGRESSION FOR ADULTS

This flow chart is believed to provide an efficient use of drug testing resources while allowing an effective method of monitoring for drug use. It is not a tool to be used for child placement or visitation decisions.



* Dirty = missed or positive test

FEMALE UA PROCEDURE

Check ID to verify identity (if person is not known).

Complete a Breathalyzer (e.g. Alco-Sensor III) test and document results.

Client and staff enter collection area.

Client retrieves a UA collection “hat” (speci-pan)

UA collection “hat” placed over commode, client hands are visible and placed on either knees or sides of stall before urination begins.

Client pours 60 ml. of urine from collection “hat” into UA collection bottle with temp strip.

Staff complete necessary information on Chain of Custody form, including: date of collection; time of collection; breathalyzer test result; temperature of urine sample; listing of medications taken or drugs used in the last 72 hours; client identifier number; printed names of client/staff; and client/staff signatures.

Label is placed over the lid of the collection bottle to ensure that no tampering occurs, client then initials the label verifying the specimen has not left her sight.

A label (from Chain of Custody form) with date of collection, client name, and collector’s name is placed around bottle.

Bottle is placed in UA refrigerator until bagged for pick-up.

One copy of the Chain of Custody form is placed in filing, one in a bag to be sent to lab with UA specimen, and one is given to the client.

MALE UA PROCEDURE

Check ID to verify identity (if person is not known).

Complete a Breathalyzer (e.g. Alco-Sensor III) test and document results.

Client and staff enter collection area.

Client pulls outerwear (e.g. pants) and under garment(s) down to knees.

Client receives a (Dixie) collection cup and begins urinating into it.

Client pours 60 ml. of urine from collection cup into UA collection bottle with temp strip and gives the bottle to the staff person.

Staff complete necessary information on Chain of Custody form, including: date of collection; time of collection; breathalyzer test result; temperature of urine sample; listing of medications taken or drugs used in the last 72 hours; client identifier number; printed names of client/staff; and client/staff signatures.

Label is placed over the lid of the collection bottle to ensure that no tampering occurs, client then initials the label verifying the specimen has not left his sight.

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DRUG TESTING

Screening Levels

The concentration in the urine sample has to be at or above the cutoff level to be reported as positive.

The screening cutoff concentrations are consistent with those set as a standard by SAMHSA (Substance Abuse and Mental Health Services Administration). Those cutoff levels are as follows:

Amphetamines	1000 ng/ml
Barbiturates	300 ng/ml
Benzodiazepines	300 ng/ml
Cannabis/Marijuana/THC	50 ng/ml
Cocaine	300 ng/ml
Methadone.....	300 ng/ml
Methamphetamines	1000 ng/ml
Opiates.	2000 ng/ml
PCP	25 ng/ml
Tricyclic Antidepressants.....	1000 ng/ml

These are the minimum concentrations for a drug test to come back as positive. Confirmation testing is much more sophisticated and may have a lower cutoff/sensitivity level.

There are not as of yet formal standards set for oral or hair tests.

In general, cut-off levels for urinalysis have been established to reduce the possibility of an evidential false positive result, and still be sensitive enough to reduce the number of false negatives.

Detection times

	Urine	Oral
Amphetamine	24-72 hours	minutes-48 hours
Barbiturates	1-21days	minutes-48 hours
Benzodiazepines	2-28 days	minutes-48 hours
*Cannabis/Marijuana/THC	1-21+ days	minutes-24 hours
Cocaine	24-96 hours	minutes-48 hours
Methadone.....	72 hours	minutes-48 hours
Methamphetamines	24-72 hours	minutes-48 hours
Opiates	24-72 hours	minutes-48 hours
PCP	14-30 days	minutes-48 hours
Tricyclic Antidepressants.....	10 days	
Alcohol...after absorption (~1hour) blood alcohol decreases by ~0.02 %/hour		

*Cannabinoids detection time-urinalysis

Light smoker or acute dosage	1-3 days
Moderate use (4x / week).....	3-5 days
Heavy smoker (daily).....	10 days
Heavy, chronic use (5+ joints/day)	10-21+ days
Oral ingestion	1-5 days

Passive inhalation – In general, routine passive exposure to marijuana smoke will not result in a positive result for carboxy-THC. Only under unrealistic conditions, a person may test positive for carboxy-THC, but concentrations are generally below the routine cut off levels.

GENERAL INFORMATION ON DRUG TESTS

Drug Detection and Identification

Screens (initial test at a lab) are performed by a variety of tests. These tests can include screening by enzyme immunoassay (EIA), radioimmunoassay (RIA), thin-layer chromatography (TLC). These tests largely detect a broad range of metabolites related to a drug. This test is sensitive to drug groups as opposed to a specific drug or its metabolite. It is good at detecting drugs when they are present but is subject to interference, which can result in false positives and false negatives. Positive screen results must be confirmed if the person denies use. Related drugs, as well as some other substances can cause false positive results on a screening test. Screening tests are intended to be broad screens, which then must be verified (“confirmed”) by a more accurate and reliable method such as GC/MS.

Confirmation testing is most often performed by Gas Chromatography with Mass Spectrometry detection (GC/MS). This test is based on the physical and chemical properties of the specific drug or metabolite to be measured. Drug identification is achieved BOTH by chromatographic retention time and by mass spectrometry, which is the “drug fingerprint.” This test is very specific and robust with respect to interference. This confirmation test is legally defensible evidence of drug use.

Reports from the lab will state the screen was negative or positive for the listed substances. Most will also report a concentration level. Labs express concentrations for urine and saliva tests in nanograms per milliliter (ng/ml), for hair the concentration is expressed in nanograms per milligram (ng/mg).

Higher concentration levels can indicate heavier use and/or use that is more recent. The urine drug level does not correlate well with the initial dose. Individuals metabolize substances at varying rates for a variety of reasons including body composition, level of activity, and diet. A positive result simply means that there has been use. Two or more serial determinations may be helpful in determining new versus prior use. “Fat-soluble” drugs (such as THC) are a particular problem because they are retained in the body for relatively long periods of time and metabolites are released into the urine at variable rates depending in part upon how, and the extent to which the fat is metabolized by the body.

Creatinine – Reports will also include a creatinine level. The urine creatinine level measure is useful, when performed with the drug screen because it is an indicator of specimen validity.

Creatinine is a muscle breakdown product, which is excreted in the urine at a steady rate. Therefore, the urine creatinine level changes, as the urine becomes more dilute or more concentrated. The urine becomes more dilute when a person drinks larger amounts of water. Most normal urine samples will have a creatinine value between 20 and 350 mg/dl (milligrams per deciliter). A specimen with a urine creatinine level less than 20 mg/dl is considered “dilute.” It is recommended that negative drug test results be disqualified when the specimen has a creatinine level less than 20 mg/dl (substituted). A drug test result that has a creatinine level between 10.0 and 1.0 may be recollected to determine if the person was trying to dilute out the system. Conversely, a positive result on a dilute specimen should not be disqualified, because this shows that the drug was in such high concentrations that it was detected even though the urine is dilute.

The THC/CR ratio should decrease over time when there is no new use. The rule-of-thumb is that when comparing two results, the THC/CR ratio should decrease over relatively long periods of time depending on the individual. A light or infrequent user will decrease faster than a heavy or frequent user. The advantage and difficulty with detection of marijuana/THC use through urinalysis is that THC is fat-soluble and is stored in the body for longer periods of time than most other drugs of abuse. This results in the metabolites of THC being released into the urine long after the drug has been used. The distinct advantage to this is that we can detect use for rather lengthy periods. The disadvantage is that positive UA results can continue for lengthy periods with no additional use. Even more problematic is the positive results do not necessarily decrease in a linear manner. They can vary in quantity from test to test – sometimes increasing briefly over time. The metabolism of stored body fat (with its THC content) can vary from day to day and, therefore, THC content sloughed (given off by the body into the urine) today could be more than yesterday. The more body fat the person has, the more of a problem this presents.

Once THC use is detected, UA screening for continued use is complicated by the fat solubility of THC and the non-linear rate in which the body sloughs the THC metabolites, which are detected by the UA screen. It is likely (though not always) that screens seven (7) days apart will show a linear decrease in THC quantity. It is likely that screens a few days apart will show variable results – sometimes lower, sometimes higher than the previous screening results. This becomes more unpredictable the lower the quantity and the closer together the UA samples are taken. The screening cut-off levels and concentration or dilution of urine coupled with the variability of THC sloughing by the body can contribute to inaccurate interpretation of results as indicating use.

Methamphetamine

When methamphetamine is used, some is metabolized to amphetamine, and both are excreted in the urine. Therefore, a report may show a positive for both methamphetamine and amphetamine, even if only methamphetamine was used. Also for methamphetamine to be called positive there must be at least 200 ng/ml of Amphetamine in the urine.

Hair tests – generally can detect use within 4-7 days of using. It takes approximately that long for affected hair to grow above the scalp. Hair grows at approximately ½ inch per month. Therefore, each ½ inch of hair length represents 1 month of history. Typically, hair is considered to show use within a 90-day period. Some drugs migrate through the hair, which means with those drugs that length of hair does not represent 1 month of history and could be longer or shorter. Coarse hair is more likely to retain drugs. Hair from different parts of the head may have variable amounts of the drug. Positive hair test results can be the result of environmental exposure or ingestion. Sophisticated labs can distinguish what is environmental versus ingestion by taking a large enough sample from one area of the body, splitting the sample, washing one half (which reduces environmental positives), testing both halves.

Meconium tests

These tests are on the first stool(s) of newborns and show the substance(s) ingested by the mother during the third trimester of the pregnancy. There have been no norms created to give information about how much of a substance the mother consumed during that 3 month period and likewise, you cannot determine exactly when the using occurred.

Sweat Patch Information

These are FDA approved and recommended by the Department of Health and Human Services, along with hair and oral fluids for use in federally mandated testing programs.

The patch consists of an adhesive plastic film that holds an adsorption pad in place against the skin and collects accumulating sweat on an absorbent cellulose pad. The patch acts as a collector for nonvolatile components excreted through perspiration, including drugs of abuse: cocaine, opiates PCP, amphetamines/methamphetamine, and marijuana.

The adhesive film of the patch is a semi-permeable barrier that allows oxygen, carbon dioxide, and water vapor to pass through so that the skin can breathe normally. Larger molecules (such as drugs) are trapped in the absorption pad. Contaminants from the environment cannot penetrate the adhesive barrier from the outside, so the patch can be worn during normal activities, including bathing and swimming.

The adhesive plastic film cannot be reapplied once removed, and a unique serial number prevents fraud and tampering. The sweat patch specimen cannot be diluted or altered without showing signs of tampering.

The patch is designed to be worn for several days and can be worn for up to 14 days. The patch retains drugs used at any time approximately 2 days prior to application and during its wear period until removal. It provides for continuous monitoring 24 hours a day throughout the wear period. The patch is gender neutral as it can be worn on the upper arm, the lower midriff, or the lower back. The skin where the patch will be worn is thoroughly cleaned with alcohol wipes prior to application. The Patch should be worn for a minimum of 24 hours to ensure that an adequate amount of sweat is collected. After the Patch is worn, the absorption pad is removed and sent with a completed chain-of-custody form to a lab for testing. Immunoassay (ELISA or RIA) technology is currently used for the screening test. A positive screening test is confirmed by GC/MS (Gas Chromatography / Mass Spectrometry). The confirmation test detects both the drug metabolite and the parent drug insuring that a drug was ingested and metabolized by the body.