

Drug Testing for Heroin

Question:

Will a standard five-panel urine-based drug test detect heroin use?

Response & Analysis:

It depends. Heroin, along with several other legal and illegal substances, falls under the “opiate” drug classification¹. The standard five-panel urine test will test for opiate use but cannot tell the employer which specific drug is responsible for the positive result. This uncertainty could potentially allow applicants or employees to mask heroin use with other legally prescribed or obtained opiates. Furthermore, a person may use heroin but still test negative for opiates due to the cut-off level used by laboratories—which is typically set at 2,000 ng/mL.

The first issue for employers is that a positive opiate result using the standard five-panel drug test still does not allow an employer to definitively confirm that heroin was used. Because heroin is quickly metabolized and not excreted in urine to any appreciable extent, tests to identify heroin use typically look for one of its metabolites—morphine or 6-acetylmorphine (6-AM)². The standard five-panel urine test will only detect the first metabolite—morphine—which may be problematic for employers because morphine is also a metabolite of a number of other legal and illegal drugs. Because of this, a positive result for morphine will not necessarily allow an employer to confirm heroin use.

It may be important for the employer to differentiate between those individuals who test positive due to heroin use and those individuals who test positive due to some other legally prescribed or over-the-counter opiate because heroin is a Schedule I drug in the United States with no legitimate medical use.

¹ Please note, the standard five-panel drug screen only tests for “natural opiates” and does not test for synthetic and semisynthetic opiates—such as hydrocodone (e.g. Vicodin), hydromorphone (e.g. Dilaudid), oxycodone (e.g. OxyContin, Percocet), and oxymorphone—because they do not metabolize to codeine, morphine, or 6-AM. However, employers can add on additional testing for these specific synthetic and semisynthetic drugs. See Robert B. Swotinsky, M.D., M.P.H., *The Medical Review Officer’s Manual* 253 (5th ed. 2015).


² *Id.*

CONTACT US:

Truescreen, Inc.

truescreen.com

888.276.8518

A close-up, slightly blurred image of a white drug test strip. The strip has several rectangular windows. One window is labeled 'C' and another 'T'. Below these, there are labels for 'C THC' and 'T THC'. At the bottom left of the strip, there are markings for 'neg' and 'pos' with corresponding symbols.

This leads to the second potential issue when using the standard five-panel drug test to screen for heroin—heroin users may be able to explain a positive opiate result by providing a valid opiate prescription, thus leaving the heroin use undetected. If morphine is detected in a specimen provided by an applicant or employee, that individual could produce a valid codeine or morphine prescription to explain the positive result. Thus, if the individual is using heroin, this use would go undetected since the morphine prescription is an acceptable explanation for the positive result and can, therefore, be used to mask any heroin use.

The final issue with using the standard five-panel test to screen for heroin is that the applicant or employee's heroin use may not be significant enough to clear the typical confirmation cut-off level of 2,000 ng/mL for opiates, producing a false-negative result. When testing specimens for potential drug use, labs use "cut-off levels" to determine whether the concentration is significant enough to report a positive result. Ideally, the chosen cut-off level will optimize drug detection and minimize the number of false-positive results. Federally mandated screening and confirmation cut-off levels for opiates were recently increased from 300 ng/mL to 2,000 ng/mL. While this increase makes it less likely that specimens will produce false positives due to things like poppy seed ingestion, it also makes it more likely that some heroin use will not be significant enough to clear the higher cut-off level, thus producing a false-negative result for heroin.

In order to address these issues, employers are starting to follow U.S. Department of Transportation (DOT) guidelines by adding a 6-AM test to the standard five-panel urine-based drug test. 6-AM is a metabolite that is unique to heroin and is only produced by the body after heroin use. Recognizing the benefits of testing for this unique metabolite, the DOT adopted a rule in October 2010 that made 6-AM testing a required part of the standard initial DOT drug screen.


6-AM is rapidly created in the body following heroin use and then is either metabolized into morphine or excreted in the urine. Since 6-AM is a unique metabolite to heroin, its presence in the urine confirms that heroin was the opiate used (or at least one of the opiates used), and thus allows the laboratory to verify the result as positive for heroin, even if the donor has an opiate prescription or another plausible explanation for a positive

CONTACT US:

Truescreen, Inc.

truescreen.com

888.276.8518

A grayscale photograph of a person wearing a white lab coat, holding a tablet computer with both hands. The person's face is not visible, and the background is blurred.

opiate result³. Thus, by testing for 6-AM, employers can make it more difficult for applicants to mask heroin use with other legally-prescribed opiates.

Another benefit to screening for 6-AM is the previously discussed issue of heroin use not being significant enough to clear the typical confirmation cut-off level of 2,000 ng/mL for morphine, resulting in a false negative on a standard five-panel drug screen. According to the DOT, data shows that 6-AM-positive tests almost always have morphine levels that are above this confirmation cut-off or the laboratory's level of detection, however, there are cases where a specimen is positive for 6-AM but no morphine is detected⁴. Thus, testing for 6-AM may allow employers to confirm an applicant's heroin use even if the applicant tests negative for opiates.

However, please note that the absence of 6-AM does not rule out heroin use because trace amounts of 6-AM are only excreted for approximately 2 to 8 hours following heroin use (or slightly longer for heavy or chronic usage)⁵, requiring a urine specimen to be collected soon after the last heroin use in order for it to be detected. Thus, it is a best practice for employers to continue to use the standard five-panel urine-based drug test—which includes screening for opiate use—but to also add a 6-AM metabolite test to more specifically screen for heroin.

³ *Id.* at 257.

⁴ *6-AM CG/MS analysis has a 10 ng/mL cutoff level, significantly lower than for morphine, making it a very sensitive and specific test to detect heroin use. See Id.*

⁵ *Id.* at 255.

CONTACT US:

Truescreen, Inc.

truescreen.com

888.276.8518