

Cotinine

Overview

Nicotine, a highly abused, highly toxic alkaloid found in tobacco products such as cigars, cigarettes and chewing tobacco is metabolized into cotinine in the body. Cotinine is typically present in the urine for **at least** 24-72 hours after the last tobacco use. Oral fluid and serum cotinine will dissipate or metabolize out of the system in a shorter period of time.

In general, cotinine can probably be detected between a few days and a week after smoking cessation.

The length of time cotinine is detectable in an individual's bodily fluid is variable. It depends upon:

- Amount of cotinine in the person's body at the time he stops smoking (heavy smokers would have more cotinine than a light smoker)
- Rate at which the individual metabolizes/eliminates cotinine (the elimination half life varies from 10 to 40 hours on average around 24 hours, this means that half of the original amount of cotinine found in the body when the person stops smoking will be in his body 1 day later). This rate is often affected by gender, height and weight.
- Person's state of hydration

ExamOne utilizes a **very specific** immunoassay to test for the presence of cotinine. The assay is a highly customized reagent and is research developed in-house. This assay has been validated with confirmation studies utilizing GC/MS (Gas chromatography-mass spectrometry) technology. The screening immunoassay employs a very specific antibody to cotinine and this antibody will react with cotinine that is present in the bodily fluids from someone smoking, chewing tobacco, using an e-cigarette with a nicotine cartridge or wearing a nicotine patch. *The urine cutoff level of 0.30 ug/ml (which ExamOne recommends) is set at 20 - 30 times higher than the level you would expect to see in the urine of an individual exposed to second hand smoke.* The serum and oral fluid cotinine cutoff levels are also set accordingly.

GC/MS confirmation is available upon request, although we feel that test is unnecessary. The GC/MS will confirm the presence of *cotinine* and *hydroxycotinine* (nicotine is metabolized in the system first as cotinine and then to hydroxycotinine). Someone that stops smoking, chewing or using a nicotine patch will have the cotinine metabolize and disappear first, then the metabolite of the cotinine - hydroxycotinine - will follow. ExamOne confirmed well over 3000 specimens in a validation study in 2008: 500 random cotinine positive specimens and another 2500 specimens where the specimen tested positive for cotinine and the applicant had denied tobacco use.

100% of those screened (testing at various positive levels of cotinine concentration) in the validation study were confirmed with a positive GC/MS.