SDRL Laboratory

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What is *NORMAL* Human Urine?

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Many drug users attempt to evade detection of their drug abuse by adding various materials (adulterants) to their specimen in order to produce a false negative result when the specimen is screened by immunoassay for drugs of abuse. Adulteration methods include addition of water to dilute the urine, substitution with a drug free liquid that looks like urine, addition of readily available household items (e.g. vinegar, baking soda, liquid drain opener, detergent, etc.) or addition (tampering) with readily available adulterants for sale on the internet such as Urine-Aid (which contains glutaraldehyde) or Klear (which contains potassium nitrate) etc.

Normal human urine, when voided, will have a temperature that approximates the body temperature. This temperature measurement should be done at the collection site and immediately after the subject has voided the sample. The temperature should be 90-100 degrees Fahrenheit, typically 93-95 degrees Fahrenheit. Any addition of water or room temperature fluids will drastically reduce the temperature. The collection and measure of this temperature will sort out this purposeful adulteration. The urine should also look normal. It should have a pale yellow to light orange color. It is suggested that a "bluing" agent be used in the collection bathroom to prevent the addition of toilet water, and ideally the water to the sink should be shut off.

At a minimum, a creatinine test for adulteration should be done. This test should be done at the laboratory along with the drug testing. The result of the creatinine test will indicate whether or not more extensive adulteration testing should be done on the sample.

Creatine is synthesized from amino acids in the kidney, liver and pancreas. The creatine is then transported in the blood to other organs where it is synthesized into creatinine. In the absence of kidney disease, the urinary creatinine is excreted in rather constant amounts and represents glomerular filtration and active tubular excretion of the kidney.

Because creatinine is excreted from the body at a constant rate, there are expected values for creatinine in normal human urine. Specimen validity testing is the evaluation of the specimen to determine if it is consistent with normal human urine (creatinine values greater than 20 mg/dL). When abnormally large quantities of fluids are consumed, the urine becomes diluted and the creatinine levels are substantially reduced. At the same time, the dilution of the urine reduces the amount of drugs and their metabolites that may be present. Alternately, a donor may try to beat a test by adding water to the urine cup to dilute the drug level. San Diego Reference Laboratory includes the test for creatinine as part of the routine drug panels. The creatinine result will be reported as mg/dL and each result will have one of the following messages attached:

Consistent with Normal Urine - creatinine values greater than 20 mg/dL
Possible Diluted Urine Sample - creatinine values between 6 and 20 mg/dL
Possible Substituted Urine Sample - creatinine values of 5 mg/dL or less

Next months issue will be:

Urine Drug Testing: Controlling for Alteration

??? Did You Know ???

The process of recovery is highly personal and occurs via many pathways. It may include clinical treatment, medications, faith-based approaches, peer support, family support, self-care, and other approaches. Recovery is characterized by continual growth and improvement in one's health and wellness that may involve setbacks. Because setbacks are a natural part of life, resilience becomes a key component of recovery. Resilience refers to an individual's ability to cope with adversity and adapt to challenges or change. Resilience develops over time and gives an individual the capacity not only to cope with life's challenges but also to be better prepared for the next stressful situation. Optimism and the ability to remain hopeful are essential to resilience and the process of recovery.
Source: SAMHSA

Question of the Month

Question: How do I get a question answered by San Diego Reference Laboratory?

Answer: Please send an email to toxicologytimes@sdrl.com and have your questions answered by our knowledgeable staff and published in a future edition of Toxicology Times! You may also fax in your questions to 858-677-7998 ATTN: Toxicology Times, or feel free to call us at 800-677-7998 ext. 117