

CREATININE AND SPECIFIC GRAVITY MEASUREMENT IN URINE SPECIMENS TESTED FOR PROHIBITED SUBSTANCES

The issue of urine specimen validity and identifying circumstances where program participants may be attempting to mask or hide drug or alcohol use by intentional acts of specimen dilution, substitution or adulteration is a significant concern in Professional Health Monitoring programs. As a result, most PHM programs request that testing laboratories provide creatinine and specific gravity measurements on each urine specimen as indicators of potentially “invalid” or “suspect” specimens.

In recent years the Department of Health and Human Services and the US Department of Transportation have addressed specimen validity testing at drug testing laboratories, including the criteria for considering a urine specimen dilute, invalid, adulterated or substituted (e.g. not consistent with physiologically produced human urine). Based on the research and findings of the Federal drug testing programs, the following are general guidelines that FirstLab recommends for PHM programs in reference to creatinine and specific gravity information.

1. Specimens reported as negative with creatinine 5-20 mg/mL AND specific gravity >1.0010 and <1.0030 — should be considered negative dilute. If the program wants to require a re-collection of the specimen under direct observation it should be done as soon as practical and with little prior notice to the employee. If the second specimen is also negative dilute, the test should be considered acceptable. Dietary practices, including intake of water or other fluids as part of a healthy lifestyle can produce dilute urine specimens. It is impossible to distinguish “intentional water-loading” several hours prior to a specimen collection from a regular regime of significant fluid intake.
2. Specimens reported as negative with creatinine between 2 and 5 mg/dL and specific gravity >1.0010 and <1.0030 , should be reviewed and interpreted by an MRO, or the program might consider requiring an alternative specimen (i.e hair) for testing. Data shows that it is highly unlikely that dietary practices, fluid intake or physiological conditions will produce urine specimens with creatinine in the 2-5 mg/dL range. The MRO interview with the participant and review of pertinent medical and other data may be able to aid in determining whether this is a circumstance of attempt to defraud or subvert the testing program.
3. Specimens with creatinine <2 mg/dL and specific gravity ≤ 1.0010 or ≥ 1.0200 are considered substituted - they are not physiologically possible as human urine. These specimens should be considered a refusal to test and a program violation. It is recommended that the participant be offered an MRO interview/review if they disagree with the laboratory findings.
4. Specimens with creatinine <2 mg/dL and specific gravity >1.0010 and <1.0200 are considered invalid and possibly suspected of some manipulation by the participant. These tests should be reviewed by the MRO and considered for alternative specimen (hair) testing.

Based on all the information FirstLab has available, we strongly advise PHM programs against taking disciplinary actions based SOLELY ON CREATININE LEVELS. The creatinine measurement should always be interpreted in conjunction with the specific gravity.

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