



K29 Evaluation of Data From Non-Physiological Workplace Drug Testing Urine Samples

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After attending this presentation, attendees will understand complexity related to the evaluation of pilot urine samples for specimen validity.

This presentation will provide authorities with information for carefully assessing the possibility of non-physiological sample submission and related alteration confirmation when evaluating all workplace urine drug test results.

Safety sensitive workers in the transportation industry are required by federal law to provide valid urine samples for workplace drug testing. A number of readily available adulterants may effectively disrupt such urine testing, allowing workers to circumvent this mandate. In addition, water loading may dilute a drug below its analytical detection limit in urine. Several lawsuits involving airline personnel in such cases have already been litigated. This study documents types of altered urine samples received from aviation pilots and mechanics. During 1999-2001, laboratory litigation packages from 50 cases of suspected alterations were submitted through the FAA's Drug Abatement program to the Civil Aerospace Medical Institute for expert review. Methods from laboratories performing these drug and alteration analyses were examined for forensic defensibility. Data were evaluated for the types of urine-modifiers present in these cases. Six different types of alterations were found. There were 17 cases of adulteration with chromate, 15 with nitrite, 5 with acid, 2 with glutaraldehyde, and 1 with soap—7 of these 40 cases involved multiple adulterant additions and/or dilutions. The remaining 10 cases, out of 50 total, were only diluted or substituted, wherein creatinine concentrations were less than 20 or 5 mg/dl, respectively. In approximately 30 of the 50 cases, the initial drug assays were negative, suggesting possible masking of drug use. However, detection of non-physiological conditions flagged these particular urine samples for further testing. Drug confirmations were successful in 2 cases, even though adulterated. Alterations of urine were confirmed in all 50 cases. Donors may alter their urine in many ways. Laboratories use a wide variety of screening and confirmation assays in verifying these alterations. Therefore, aeromedical authorities must carefully assess the possibility of non-physiological sample submission and related alteration confirmation when evaluating all workplace urine drug test results.

Forensic Urine Drug Testing, Specimen Validity Testing, Specimen Alterations