

Drug Testing Sample Collections and Chain of Custody

Overview

The use of performance-enhancing drugs can jeopardize the integrity of sporting competitions. For international events like the Olympics Games or World Cup Soccer, it can affect the reputations of countries and careers of athletes. Because of the stakes involved, intense emphasis is placed on ensuring that any drug testing conducted is accurate and legitimate.

The World Anti-Doping Agency (WADA) is the global organization responsible for establishing standards for banned substances and their testing. With a few exceptions, most international and professional sports associations follow WADA guidelines. Testing is handled by Doping Control Centers that must be accredited by WADA. The testing technologies used in today's Doping Control Centers make it virtually impossible for any medalist to get away with using performance-enhancing drugs. For example, they can detect anabolic steroids that were used as much as 10 months prior to competition.

The accredited Doping Control Centers employ strict sample-processing procedures, known as "chain of custody," that virtually eliminate the possibility of a false positive result. At the Olympics themselves, the security and chain of custody employed are often more rigorous than those used in criminal investigations.

Notification

The process begins immediately following a competitive event. Representatives from the event's organizing committee notify those athletes who have been selected for testing, which typically includes the medal winners and 1 or 2 randomly selected athletes. The representatives accompany each athlete to the doping control station. The athlete must remain within sight of the designated representative or the doping control center officials until the end of the sample collection process. At the doping control station, the officials confirm the identity of the athlete. An official then informs the athlete of his rights and responsibilities during the drug testing process. The athlete signs a notification form to indicate his consent to undergo testing.

Collection

The athlete selects his or her own individually sealed clear plastic collecting vessel and proceeds to the urine collection room. The athlete then provides a urine sample under observation of an official of the same gender. Another representative from the athlete's team may also be present. The official checks that the pH and specific gravity of the sample are within laboratory ranges. If not, the athlete will have to provide another sample. After providing the sample, the athlete chooses a pre-packaged kit which will be used to contain, identify and secure the sample. The kit contains two bottles – labeled "A" and "B" -- and secure containers, all of which have the same identification number etched on the plastic. The athlete pours approximately two-thirds of the urine from the vessel into the "A" bottle and one-third into the "B" bottle. Both bottles are closed and sealed with special tape and secured in the containers. At that stage, the identity of the athlete is separated from the sample by use of the identification number

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instead of the athlete name. A doping control form records the identification number on each bottle and container as well as any other labeling codes used. The athlete also documents on the form all medicines or drugs that he or she may be taking. The athlete and several officials certify that there are no irregularities by signing the doping control forms. There are at least three copies of this form and any associated paperwork. One copy goes to the anti-doping organization (ADO) associated with that event, one goes to the athlete and one goes to the testing laboratory. The laboratory copy does not contain the name of the athlete.

Transportation

The information recorded at the doping control station initiates a chain of custody that identifies the custodian of the sample at every stage. This chain of custody extends from urine collection through storage, transport, delivery to the lab, testing and reporting. The sealed "A" and "B" containers are transported under guard to the laboratory as quickly as possible. The urine samples are stored under refrigeration to inhibit bacterial growth and the activity of endogenous steroids, which can complicate subsequent analysis. The containers are delivered to an accredited Doping Control Center. Upon delivery, the laboratory verifies that the transport bag and transport containers have not been tampered with and that the contents match the enclosed documentation. The laboratory then signs receipt of the sample and continues to document the chain of custody.

Analysis

The "A" sample is analyzed, while the "B" sample remains securely stored. The laboratory analyzes the sample as quickly as possible using approved methods. Analytical instruments of ever-increasing sensitivity and precision are used to ensure accurate results. Scientifically validated procedures have been developed for each class of banned substances. A procedure constitutes all of the sample preparation, chemical work-up, software and hardware calibrations needed for routine analysis. The laboratory first screens samples using an Agilent 6890N gas chromatograph. This instrument provides rapid preliminary detection of any banned substances. If the screening test indicates a positive result, then the laboratory performs a followup analysis using a highly accurate Agilent 6890N/5973 gas chromatography/mass spectrometry (GC/MS) system. The Agilent GC/MS provides unambiguous identification of drugs or metabolites to confirm a positive result.

Follow-Up Testing And Reporting

Should a banned substance be detected in an athlete's sample, the laboratory manager immediately informs the relevant ADO and WADA. If the positive sample turns out to be an actual athlete's sample, rather than a quality-control spiked sample, then the ADO notifies the head official of the athlete's delegation, and determines a specific time for analyzing the "B" sample. If no banned substances are detected in the "A" sample, then sample "B" is destroyed. The analysis of the "B" sample is carried out by different technicians within the laboratory, under the supervision of a member of the ADO with representatives of the athlete's delegation present. One of these representatives may

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be the tested athlete. The result of the "B" analysis is considered the final identification of the drug. If the "B" sample tests positive, the ADO will call a hearing to determine whether a rule violation has occurred as well as determine what sanctions will be imposed. If the "B" sample does not confirm the "A" sample analysis, then no further action will be taken.

Each ADO has its own rules regarding the public release of details regarding sanctions.
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