



**Testimony
Before the
Subcommittee on Highways and Transit
Committee on Transportation and Infrastructure
United States House of Representatives**

**Products Used to Thwart Detection in
Drug Testing Programs**

Statement of

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Mr. Chairman, and Members of the Subcommittee, I am Robert L. Stephenson, Director of the Division of Workplace Programs at the Center for Substance Abuse Prevention in the Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S. Department of Health and Human Services (HHS). On behalf of Terry Cline, SAMHSA Administrator, we thank you for holding this important hearing. We welcome this opportunity to provide testimony about our experience with and knowledge about products that claim to prevent detection of certain substances by drug testing programs. This testimony updates testimony previously presented on May 17, 2005, before the House Energy and Commerce Subcommittee on Oversight and Investigations for the same intended purpose: to address products developed and marketed to thwart detection in drug testing programs.

The Drug Testing Responsibilities of the Division of Workplace Programs

The Federal Agency Drug-Free Workplace Program was established by Executive Order 12564 in 1986, and mandated by Public Law 100-71 in 1987. Together they assigned major responsibilities for the establishment and operation of the Federal Drug-Free Workplace Program to HHS. Most of the responsibilities for day-to-day operation and oversight were delegated to what is now SAMHSA's Division of Workplace Programs.

SAMHSA is responsible for certifying laboratories that perform accurate reliable forensic drug testing in accordance with the Mandatory Guidelines for Federal Workplace Drug Testing Programs. These Mandatory Guidelines were first published as a Final Notice in the Federal Register on April 11, 1988, and the first 10 laboratories were certified to perform drug testing in

December 1988. These Guidelines provide critical support for the overarching Federal Drug-Free Workplace Program that currently covers an estimated 1.8 million non-military Executive Branch Federal employees in 120 Federal agencies. The Guidelines include requirements for the chemical analysis of urine specimens from selected Executive Branch job applicants and employees to determine whether that specimen contained the parent drug or specific metabolic byproducts from marijuana, cocaine, opiates (with the focus on heroin), amphetamines, and phencyclidine.

Even in 1988, based on information from other drug testing programs already in existence, it was known that some non-Federal employee specimen donors used household products and chemicals to try to beat the drug test and mask the presence of illicit drugs in their urine. A few examples of commonly used household products used at that time were drain cleaners (sodium hydroxide), vinegar from the kitchen (dilute acetic acid), and soothing eye drops (a dilute salt solution). Since the late 1980's, many more sophisticated products have been developed and marketed by those in business to sell products to illicit drug users to beat their drug test. The increased use of the Internet in the mid-1990's brought an explosion of new products to the marketplace, openly sold for the sole purpose of defeating a drug test.

The Scope of the Federal Agency Workplace Drug Testing Program

Within the Executive Branch, currently about 502,000 of the 1.8 million non-uniformed services employees are in Testing Designated Positions, based on their Agency or Department mission and approved drug testing plan. Increased national security concerns have increased Federal

agency workplace drug testing from 100,000 to over 212,000 tests per year in 2006. The vast majority, well over 99 percent, of those tested are negative on their drug tests. Since my last appearance before Congress to testify on this issue, the number of adulterated and invalid urine specimens tested in our HHS-certified laboratories for Executive Branch Federal employees and job applicants has significantly increased. Specimens from Federal agency employees reported as adulterated increased from 13 in Fiscal Year (FY) 2003 to 78 in FY 2006. Likewise, invalid specimens not suitable for testing (i.e., containing an unidentified adulterant, containing an unidentified interfering substance, having an abnormal physical characteristic, or having an endogenous substance at an abnormal concentration that prevents the laboratory from completing testing or obtaining a valid drug test result) increased from 14 in FY 2003 to 410 in FY 2006. Although these numbers have remained a very small percentage of the total tested, every one of those adulterated, substituted, and invalid tests represents a potential threat to national security and/or public safety. Further, the discovery of any use of adulterants has required us to further test the remaining specimens at an added cost in time and resources. Perhaps most important is the fact that there were individuals subject to Federal workplace drug testing who were not being deterred from beginning or continuing to use illicit substances. These individuals and numerous young adults soon to enter our national workforce may turn to adulterants, masking agents, and substitution products in the mistaken belief that they can beat any drug test that they may be required to take.

Under separate authorities, other Federal Government programs require workplace drug testing using the HHS-certified laboratories for their covered populations, including industries regulated by the Department of Transportation (DOT) and the Nuclear Regulatory Commission. There are

over 11 million employees and job applicants covered by these federally-mandated workplace drug tests.

Many of the same drug testing products and testing procedures are also used for criminal justice testing, school-based student testing, testing in the Uniformed Services, the U.S. Postal Service, and non-Federal public and private sector employers, with some portion voluntarily tested under our Mandatory Guidelines. It is estimated that 20 to 40 million drug tests are performed each year, with the accuracy of many of these test results particularly vulnerable to undetected adulterant use by those being tested.

Adulterants – The Marketplace

SAMHSA's experience with and knowledge about products marketed to "beat the drug test" came through its national leadership role of setting standards for urine drug testing and certifying laboratories to perform accurate and reliable drug testing. Drug testing has become a necessity for job applicants and workers in jobs that directly impact public safety and positions requiring security clearances. This widespread use of drug testing has resulted in sophisticated marketing of products to beat a drug test, so that illicit drug users can continue their drug use AND be hired for, and stay employed in, jobs where drug testing is a requirement. The 2006 SAMHSA National Survey on Drug Use and Health reports that 74.9% of current illicit drug users aged 18 years old or older are employed.

By 2005, these products were primarily focused on beating the drug test for marijuana, since marijuana was and remains America's most widely used illicit drug. Most of the U.S. workforce specimens that test positive do so for marijuana. One very large laboratory drug testing system reports that in 2006, of all the specimens that test positive in the general U.S. workforce, 49.5% tested positive for marijuana. Cocaine positive drug tests make up 15%, and opiates (focused on heroin) follow with 6.6% of the total (Quest Diagnostics Drug Testing Index, 2006).

Monitoring of Adulterant Products

Between January 2002 and May 2005, SAMHSA had identified more than 400 products marketed to beat a urine, saliva, hair or blood drug test. These products were openly advertised in print media, available in "head shops," through dietary supplement retailers, and through the Internet.

Internet marketing of these products continues to proliferate. In September 2002, an online Internet search of "beat a drug test" revealed 158,000 hits in 0.4 seconds. In October 2007, that same search revealed 2,250,000 hits in 0.04 seconds; an Internet search of "pass a drug test" revealed 2,700,000 hits in 0.13 seconds. There are also newer forms of sharing information over the Internet such as blogs and video sharing sites such as YouTube. Each of these has a long list of informational presentations and discussions on "how to beat a drug test." Searching blogs on the Internet, we found over 26,000 blogs that contained related information. YouTube had 79 videos on the subject; they not only talk about what the products do but give explicit video instructions on how to use them. Employees and job seekers can join listservs and ask others for

information on the issue and receive global responses to products and techniques. There has been a surge of new and more technically skilled users with our growing youth population entering the workforce and having a higher degree of technological abilities.

Internet Product Advertising and Availability

Initially, Internet advertising and access to information on these products primarily focused on job applicants and workers who used marijuana. In fact, some Internet sites had an interactive questionnaire, which asked questions such as: 1) what type of drug test? Urine, Blood/Sweat/Saliva, Hair, or Don't Know; 2) Will you know the exact date and approximate time of the test; and then would guide the inquirer through more questions to gather enough information to be able to recommend products to use to beat the particular type of drug test (e.g., how much of which product to add to the urine specimen, or how to wash the hair with specialized shampoos) and be successful in beating the drug test.

Concerning marijuana use, the questionnaires asked just how much marijuana he or she uses and how frequent that use was to better advise on which product and what quantity to use. Heavy drug users were advised to use more of the product to beat the test. Additionally, some advertisements on Internet home pages stated that the products worked for all toxins and every testing method. They were so confident in the effectiveness of their products that they offered a 200 percent money back guarantee!

The primary change over time in the Internet advertising for these and similar products has shifted the written text to address nicotine detection, and some still offer a 200 percent money back guarantee, but only for nicotine. This is only a facade by the manufacturers and marketers of these products, which are still sold with an understanding that they are also helpful for other tests.

The Types of Adulterants

Since urine drug testing has been used in the civilian Federal and federally regulated workplace since the late 1980's, several product types have developed over the years focused specifically on beating the urine drug test. We stated in our May 2005 testimony that there were four major product types: 1) dilution products; 2) cleansing products; 3) adulteration additives; and 4) substitute urines with actual reservoirs, catheters, and life-like prosthetic delivery devices. We believe that these are still the same categories of products available today; however, we have not updated the master product list and purchasing sources since that testimony.

1. Dilution Products

Efforts to dilute urine include those that add water to a small volume of the donor's urine and natural diuretics, such as caffeine, that expedite the elimination of urine from the body. Simply trying to dilute the concentration of drug below the testing cut-off can be done by drinking very large quantities of water, on the order of 120 ounces of fluid. Water loading may be a very effective (but sometimes dangerous) method for beating a drug test, especially if the donor

knows when the drug test specimen will be collected, as in the case of pre-employment drug testing.

2. Cleansing Products

Cleansing products, such as internal colonics, goldenseal, psyllium husks, and specially formulated cleansing drinks, are marketed to “cleanse the body of toxins,” more specifically in this case, illicit drugs. For example, one product is advertised as a dietary supplement, guaranteed to “work” in less than an hour. The ingredients label lists very common items in many other drinkable fluids, such as filtered water, fructose, maltodextrin, natural and artificial flavors, citric acid, potassium citrate, potassium benzoate, potassium sorbate, ascorbic acid, red 40, and riboflavin. These cleansing products likely work along the same lines as products advertised to dilute the urine.

3. Chemical Adulterants

Some products that have been developed and openly offered for sale are actually highly caustic and corrosive chemicals, such as acids and aldehydes, chemical oxidants such as nitrites, chromium VI (a carcinogen), and bleaches. The key step is that these harsh chemicals must be added to the donor’s specimen, which is easily accomplished when the donor is given the privacy of a restroom stall to provide the specimen. These chemicals were purposely sold in easily concealable small vials and tubes, so they could be brought into the collection site bathroom concealed on the body, or in the donor’s clothing, socks, or underwear.

4. Prosthetic Devices Delivering Synthetic or Drug-free Human Urine

The most cumbersome, yet highly effective, way to beat a urine drug test is to use a physical belt-like device hidden under the clothing which contains a reservoir to unobtrusively hold real human urine from another person that is free from drugs, and deliver that bogus urine specimen into the collection container through a straw-like tube, or through a prosthetic device that looks like real human male anatomy, even color-matched. This last described device was heavily marketed in 2005 and continues to be marketed today for workplace drug testing and criminal justice urine collection situations that require directly observed urine specimens to be provided. Synthetic urine can be used in place of real drug-free human urine. As with the adulterants, containers of clean urine specimens can sometimes be successfully carried into the collection area by a creative donor and simply placed into the collection container, rather than a personal, actual specimen.

Concerns to the Federal Workplace Drug Testing Program - The Need to Require Specimen Validity Testing and to Propose Alternative Specimen Drug Testing

In the late 1990's, it became evident that increasing numbers of federally regulated donor specimens contained chemicals intended to mask or beat the drug test. These compounds were identified through routine drug tests that were conducted but gave unusual and unreasonable chemical results. It then became necessary for SAMHSA to establish general testing criteria and issue guidance to laboratories to ensure more consistent analysis of chemicals added to the urine by donors with the intent of beating the drug test. In 1998, testing criteria and guidance were initially provided to the laboratories in an informal manner, with final comprehensive urine

specimen validity testing requirements published in the Federal Register on April 13, 2004. This Notice also required that each and every Federal job applicant or employee urine specimen be tested not only for illicit drugs, but also to determine if the specimen provided is a valid one, i.e., consistent with normal human physiology. These criteria did not solve the problem entirely, because the very nature of some products, particularly those that deliver synthetic urine or drug-free human urine, test negative for illicit drugs and pass specimen validity tests because the specimen tested is in fact drug-free urine. Following the publication of SAMHSA's new urine testing requirements, the advertising for this prosthetic type of device and clean urine has increased.

In 2006, the number of specimens being reported as adulterated by our HHS-certified laboratories for regulated industries has decreased, and the number of invalid specimens reported by laboratories has increased significantly. This is because the companies who produce and market the chemical masking agents are familiar with the chemistry of the specimen validity tests that are currently required for Federal employee drug testing (and optional for DOT-regulated industry drug testing programs as of this time). Some of these firms have continued to formulate new versions of the adulterants so that they are not detected by the current required specimen validity tests.

The Effectiveness of Specimen Validity Testing

The effectiveness of required specimen validity testing has been limited because, as adulterants were identified and reported by laboratories and tests developed for them, the products

themselves were changed by their manufacturers to avoid being detected. One example is the chemical oxidant potassium nitrite, an active ingredient in many adulterants. As soon as the Federal drug testing program established methods to detect potassium nitrite and thresholds beyond which to report it in specimens, new formulations of adulterants were released that had lower concentrations of that compound, so it would not be detected. Additionally, the adulterant product contained more acid, to make that formulation more effective – and undetected. Other marketers of adulterant products containing potassium nitrite chose to actually change the active component to one that the laboratories could not detect.

One of the most disconcerting calls received by SAMHSA staff was from the Perry Nuclear Power Plant located east of Cleveland, Ohio. In September 2002, staff at a drug testing collection site at the Plant found evidence in a refuse container from a specific adulterant product. This product contained a small plastic bottle with a temperature indicator strip attached, two small plastic vials of white crystalline material, and instructions for use. Per the instructions, the user would add a microvial of urine to water and the product and mix to dissolve. In about 30 seconds, the drug-free sample would be ready to be utilized in place of the donor's own specimen. Since it was unclear who or how many applicants used this product, that entire day's group of applicants had to submit another set of urine specimens, which were then tested, and 9 of them drug-tested positive for marijuana use. If it had not been for the careless discard of the package in a trash can near the collection site, the use of this product to beat the drug test, which was required as part of a pre-employment fitness for duty test in order to gain access to a nuclear reactor, would have gone undetected.

The Effectiveness of the Products

In order to know what was in products that were being marketed to beat a urine drug test, SAMHSA had them purchased and tested according to package direction to evaluate their effectiveness. If the specimen adulterant was effective, chemical analyses were performed on them to identify their active ingredients. The goal of most drug test masking agents is to “fool” the initial screening test into showing that there is no drug present in the specimen, so that it does not go on to further confirmatory testing.

SAMHSA and its National Laboratory Certification Program contractor devised an experiment to evaluate the effectiveness of some of these masking agents. Certified negative urine was “spiked” with marijuana metabolite (THCA, delta-9-tetrahydrocannabinol-9-carboxylic acid), cocaine metabolite (benzoylecgonine), phencyclidine, opiate metabolite (morphine), and methamphetamine. The concentration of each analyte was twice the screening test cutoff. This standard analytical approach, taken with each substance that was added to the donor’s specimen, was applied to more than 30 products purchased.

Several versions of one particular product were tested and found to be able to significantly mask a positive drug test, especially for marijuana and morphine. What is most noteworthy is that each successive formulation of this product was more effective in masking the drug test. Each formulation of that product had been somewhat effective in masking the presence of marijuana, cocaine, morphine, phencyclidine, and methamphetamine. The chemical composition of each formulation also changed, which was pointed out in its marketing as an asset.

One adulterant manufacturer changed its product formula approximately every 6 to 9 months to stay ahead of the drug testing labs. It was openly stated that if a certain formula stays on the market too long, its product would be reverse-engineered by the labs and eventually become detectable. Older formulations were exchanged for a current formulation free of charge. More recently, the frequency of changes to products has decreased, but not stopped, and the marketing language has shifted from masking illicit drug use to masking nicotine use in health insurance and pre-employment testing. Changing the marketing language has not changed the sale or use of these products by job applicants and employees to try to beat their drug tests.

One product that was purchased in April 2001 contained chromate, an oxidant that became known after it had been used for a time. Another version, which was purchased in April 2002, contained hydrofluoric acid, a powerful corrosive acid that can etch glass, and sodium nitrite, a strong oxidizing agent. Again, after a time, this combination became known, and the formulation again changed. A subsequent product, purchased July 2002, was a newly designed system, this time consisting of two vials of chemicals added sequentially to urine in the donor's specimen collection cup. One of the vials contained an iodine-containing compound, the other vial contained hydrochloric and hydrofluoric acids. Another more recent version of the product is currently available and was recently purchased by the investigator from the Government Accountability Office. We have made arrangements to acquire and test this product.

In addition, our tests of these products have elicited the following points:

- Some products focus on both marijuana and opiates.
- Some products do not affect the initial screening, but affect the mass-spectrometry process used to confirm a positive result from the initial screening, as is required by the Mandatory Guidelines.
- Some products are effective, and then disappear on their own.
- Ironically, some products are marketed and sold as being able to beat a drug test but have no effect at all.

Continued Impact of Adulterants on Public Health and Safety

These products have continued to be marketed with the intent to beat a drug test and are used with a “catch me if you can” attitude by donors who use illicit drugs and want to continue that illicit drug use while engaged in a public health and safety sensitive job. Today the open marketplace for products to beat a drug test, whether for urine, hair, or oral fluid tests, is perhaps more guarded and crafty, but still thriving. Products and suppliers are readily available, as is the information about the use of these products. As noted previously, the Internet has continued to serve as a primary tool to advertise, market, and provide testimonials as to just how effective these products are, in addition to serving as a point of purchase.

The Next Marketing Opportunity for Adulterant Sales

By 2004, SAMHSA’s knowledge of the multitude of products available to beat drug tests compelled the Agency to consider adding specimen validity testing requirements for hair, oral

fluid, and sweat because products were being openly marketed and sold to beat any drug test, no matter what specimen was collected. By 2005, there were seven products designed and marketed to remove drugs from hair, and there were four products designed and marketed to remove drugs from oral fluid.

This year, the number and identity of new or continuously marketed adulteration products for urine, oral fluid, sweat, or hair specimens are not known by this office. However, we believe that recent increases in use of alternative specimen drug testing by commercial testing laboratories will likely create strong financial incentives for manufacturers and marketers to sell these kinds of products to current and future users of illicit drugs.

Conclusion

In closing, I want to repeat my earlier concern that although there were relatively few Federal agency employee specimens reported in Fiscal Year 2003 as adulterated, substituted, and invalid, there is a continuing concern about the significant increase in invalid specimens identified through 2006. We believe that there may also be an increase in the use of non-urine and “clean urine” substitutions to foil workplace drug testing programs. It is important to remember that, although the numbers remain a very small percentage of the total tested, every one of those adulterated, substituted, and invalid tests represents a potential threat to national security and/or public safety.

Thank you for the opportunity to provide this information to you. I would be happy to answer any questions you may have.