Drug	Urinary Metabolite	Detection Time
Alprazolam (Xanax)*	hydroxyalprazolam	1-3
Bromazepam (Lectopam)	hydroxybromazepam	1-3
Nordiazepam (Clorazepate,Tranxene)*	oxazepam	3-12
Chlordiazepoxide (Librium)*	oxazepam	3-12
Clonazepam (Klonopin, Clonopin)	aminoclonazepam	3-8
Diazepam (Valium)*	oxazepam	3-12 days
Estazolam (Prosom)	hydroxyestazolam	2-5 days
Flunitrazepam (Rohypnol, Roofies)	aminoflunitrazepam	(1-2 days)
Flurazepam (Dalmane)	hydroxyethylfluazepam	2-4 days
Lorazepam (Ativan)*	lorazepam	3-7 days
Medazepam (Nobrium)*	oxazepam	3-8 days
Midazolam (Versed)	hydroxymidazolam	1-3 days
Nitrazepam (Mogadon)	aminonitrazepam	3-7 days
Oxazepam (Serax)*	oxazepam	1-3 days
Prazepam (Centrax)*	oxazepam	3-12
Quazepam (Doral)	noroxoquazepam	2-4
Temazepam (Restoril)*	oxazepam	1-3 days
Triazolam (Halcion)	hydroxytriazolam	1-3 days

Effects on the User

Desirable effects include sedation. Prolonged use can lead to dependency.

Drug Testing Results

Daypro, a non-benzodiazepine, can cause a false positive result on the immunoassay screen test but the GC/MS confirmation will be negative. Norchem confirms by GC/MS for the presence of the following benzodiazepines: hydroxyalprazolam, lorazepam, nordiazepam, oxazepam and temazepam.

Cut-off Levels

The federal government does not mandate the cut-off levels. Norchem Laboratory employs the following cut-off levels:
Immuno-Assay screen test. . . 300 ng/ml
GCMS confirmation test. . . . . 300 ng/ml

Toxicity

The primary danger associated with the overdose of benzodiazepines is central nervous system (CNS) depression, especially when other CNS depressants, like alcohol, are used concurrently.

Second-hand Marijuana Smoke

It is frequently claimed that a positive THC test resulted from passive marijuana smoke inhalation (second-hand smoke). Repeated studies have consistently demonstrated that this is very unlikely. The following studies show no instance where passive inhalation of marijuana smoke, even under extreme conditions, caused urine specimens of non-marijuana users to test positive for THC using the screening cut-off of 50 and the confirmation cutoff level of 15 ng/mL.

Perez-Reyes and co-workers conducted the first study in 1983. The experiment consisted of three different phases, one conducted in an automobile and two in a small room. Of the specimens collected for analysis, two specimens were found positive for THC metabolites by the EMIT screening test at a cut-off level of 20 ng/ml. One of these was measured by gas chromatography-mass spectrometry (GC/MS) and gave only 3.9 ng/ml, well below cut-off.

In 1984 Law and colleagues performed a passive inhalation study in a 120 square foot room. Four nonsmokers played cards over a 3 hour period while six others smoked marijuana in this small room. The THC concentrations found in the urine of the card players did not exceed 7 ng/ml. The authors concluded that the amount of THC metabolites detected in the urine of nonsmokers is clearly dependent on the size and ventilation of the room and on the amount of marijuana smoked.

Morland performed a study in 1985 using a car with smokers who puffed

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either marijuana or hashish in the presence of nonsmoking subjects. Analysis of the urine samples from the nonsmokers showed no detectable levels of THC in the hashish study. Those passively exposed to marijuana smoke did show occasional urine levels that were positive at concentrations ranging from 14 to 30 ng/ml, but none above cut-off.

Cone and co-workers performed a series of rigorous double-blind studies between 1986 and 1987. The exposure conditions of these studies were more severe than would be expected under "real world" conditions. The maximum urine concentration of THC by

GC/MS analysis was only 12 ng/ml.

Mule and coworkers conducted a study in 1988 involving eight marijuana smokers, each smoking four cigarettes and three nonsmokers passively inhaling the marijuana smoke in a closed 100 square foot room with no windows. He consistently reported less than 10 ng/ml of THC metabolites as a result of passive inhalation.

All these studies show that although it is true that passive inhalation of marijuana smoke results in absorption of THC in the body, none of the levels from the non-marijuana users were high enough to cause a positive result, by current cut-off standards.

A list of references for these published articles is available on request.

In the News

Ecstasy Linked to Brain Damage

British researchers have recently released results of studies showing that users of ecstasy may suffer memory loss, even after discontinuing the drug. Subjects who had ceased using the drug for up to one year demonstrated continued memory impairment. Previous research with monkeys has shown lasting brain toxicity, but this is the first in-depth human study of its kind. Prolonged or irreversible damage to nerve transmission within the brain has been theorized as a likely result of the drug's use.

Battles Lost and Won in the War On Drugs

Out-going drug czar, Barry McCaffrey, recently cited statistics showing a 21% decline in teenage drug use over the past two years. Drug related crimes have also declined sharply, due primarily to the drop in crack cocaine use. McCaffrey credits successful law enforcement efforts in tackling drug traffickers.

Barry McCaffrey

Countering this positive news is the disturbing report that both ecstasy and steroid use are on the rise. Confiscated ecstasy doses have increased thirteen-fold in two years. Use is higher on the east coast but moving rapidly westward. Steroid use has also increased dramatically with youthful bodybuilders, as well as athletes in general.

More Evidence that Marijuana Use Decreases Fertility

For over thirty years, studies have demonstrated reduced sperm counts among marijuana users. Now recent research has identified a receptor on human sperm cells, which may be altered by THC and thereby, reduce sperm count and sperm function. THC was found to slow down sperm motility and also reduce the sperm's ability to bind to the egg. A natural chemical known as anandamide has been isolated from human seminal fluid. It is necessary for optimal sperm function, but its effect is blocked or inhibited by THC.

Drug Testing Quarterly is published by Norchem Drug Testing Laboratory and is intended to share information with others interested in preventing drug abuse. The information herein is intended to be informative but should not be interpreted as legal advice. Please direct inquiries to:

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