Approved 3/28/88
Date

MINUTES OF THE SENATE COMMITTEE ON FEDERAL AND STATE AFFAIRS.

The meeting was called to order by SENATOR EDWARD F. REILLY, JR. at
Chairperson

11:00 a.m./~~p.m.~~ on March 25, 1988 in room 254-E of the Capitol.

All members were present except:

Committee staff present:

Mary Galligan, Legislative Research
Emalene Correll, Legislative Research
June Windscheffel, Committee Secretary

Conferees appearing before the committee:

Attorney General Robert Stephan
Mr. Chuck Yunker, Adjutant, Kansas American Legion
The Reverend Richard Taylor, Kansans for Live at its Best
Mr. James Todd, Governor's Commission on Firefighter Safety and Education
Mr. Jerry Marlett, President, Kansas State Council of Firefighters
Ms. Susan Irza, Department of Administration

Senator Martin moved the introduction of a bill which had been requested for introduction (7 RS 2742, Attachment #1, Minutes of March 22, 1988), concerning emission standards for nuclear generating facilities; prescribing duties for the secretary of health and environment. The motion was seconded by Senator Morris. The motion carried.

Senator Martin moved the introduction of a bill which had been requested for introduction (7 RS 2618), Attachment #2, Minutes of March 22, 1988), concerning employment providing for unpaid leave of absence for certain employees who are new parents. The motion was seconded by Senator Morris. The motion carried.

The Committee directed the Committee to turn its attention to SCR1616, a constitutional amendment concerning raffles and other lotteries operated by nonprofit organizations.

He welcomed the first conferee, a proponent, Attorney General Robert Stephan. The General gave his statement, asking the Committee to pass the Senate Concurrent Resolution. (Attachment #1)

Mr. Chuck Yunker, Adjutant of the Kansas American Legion, was the next proponent to speak in favor of the Resolution. He also represented the Sunflower Club in these remarks. (Attachment #2)

The Reverend Richard Taylor appeared in opposition to the Resolution. His testimony expressed that society experiences social decay with the legalization of gambling. (Attachment #3)

The Chairman thanked the conferees for appearing and said that would conclude the hearing on SCR1616, which the Committee will take under consideration.

HB2812, concerns firefighter clothing or equipment which fail to meet certain standards. This bill, as amended, would enact a new law making it a class D felony for persons not abiding by this if it were law. Mr. James Todd, representing the Governor's Commission on Firefighter Safety and Education, was the first proponent. He spoke of their support of the bill and displayed certain items of clothing. The Chairman then welcomed Mr. Jerry Marlett, President of the Kansas State Council of Firefighters, who also spoke in support of the bill and of Mr. Todd's statement as to the Governor's Commission as having endorsed this bill. The Chairman asked for other conferees. There were none. This concluded the hearing on HB2812.

MINUTES OF THE SENATE COMMITTEE ON FEDERAL AND STATE AFFAIRS,

room _____, Statehouse, at 11:00 a.m./~~p.m.~~ on March 25, 1988

The Chairman thanked the conferees, and stated that would conclude hearings on HB2812.

SB699, pertaining to lottery prize winnings subject to setoff and reporting to SRS child support enforcement, was called to the Committee's attention by the Chairman. This was heard by the Committee on March 23, 1988. He asked for staff comments. Staff said the concern that is attempted to be addressed in SB699 was addressed in the terms of the setoffs in HB3023, which was passed out of Committee yesterday. Senator Morris moved to report the bill adversely. Senator Bond seconded the motion. The motion carried.

The Chairman said that SB643, concerning drug testing, and which had had hearings by this Committee earlier, was now before the Committee for discussion and any action. He also called attention to the Committee of material which had been distributed to the Committee for its study earlier from the ACLU (Attachment #4). Also proposed amendments to the bill (Attachment #5) due to a question which arose as to how the language regarding applicants would apply to governor and lieutenant governor and how to define applicant. The Department of Administration came up with these amendments. Senator Martin moved the adoption of these amendments with an additional amendment by striking the word "illegal" on line 27. Seconded by Senator Daniels. Senator Bond made the substitute motion to include only those people who were in state law enforcement and carrying firearms and delete the rest. The motion was seconded by Senator Arasmith. The motion carried.

The Chairman asked what the penalty provision is if anyone who is found to be a user. Ms. Susan Irza, of the Department of Administration, said the issue is not so much a penalty, as to identify persons who need assistance with their problems and to get them into counseling as soon as possible. The other things can be dealt with in rules and regulations.

Senator Arasmith moved to add confidentiality and provisions to promulgate rules and regulations by the Secretary of Administration. His amendment was seconded by Senator Morris. The motion carried.

Senator Morris made the motion that the bill be reported favorably as amended. The motion was seconded by Senator Bond. The motion carried. Senators Daniels, Martin, and Strick asked to be recorded as voting "no."

The Chairman referred the Committee to SB598, farm wineries. Senator Arasmith moved that on line 92, to change "shall" to "may." (That had been suggested by the Secretary of the State Board of Agriculture.) The motion was seconded by Senator Vidricksen. The motion carried.

Senator Vidricksen made the conceptual motion to allow the distributors to have tasting rooms on their premises. This would be inclusive of all wine wholesalers. The motion was seconded by Senator Bond. The motion carried.

Senator Martin said that on p. 1, line 0024, rather than to change the current distribution system in Kansas he would make a motion. Senator Martin's motion was to limit farm wineries to distributing only to wine distributors and retailers. The motion was seconded by Senator Strick. The motion carried.

Senator Strick moved the bill be passed out favorably as amended. The motion was seconded by Senator Vidricksen. The motion carried.

The Minutes of March 22, 1988, were before the Committee. Senator Arasmith moved they be approved. The motion was seconded by Senator Vidricksen. The motion carried.

The meeting was adjourned at noon.

STATE OF KANSAS

OFFICE OF THE ATTORNEY GENERAL

2ND FLOOR, KANSAS JUDICIAL CENTER, TOPEKA 66612-1597

ROBERT T. STEPHAN
ATTORNEY GENERAL

MAIN PHONE: (913) 296-2215
CONSUMER PROTECTION: 296-3751

Testimony of

Attorney General Robert T. Stephan

On SCR 1616

Before the Senate Federal and State

Affairs Committee

March 25, 1988

I am appearing before you today to ask you to pass Senate Concurrent Resolution No. 1616 which would allow the people of Kansas to vote on a constitutional amendment which would permit charitable lotteries, or raffles, to be held by non-profit groups in Kansas.

Every week people call or write my office--from five to twenty times a week--asking how they can raise money for their charity by giving away a prize, such as a quilt or a dinner for two, without accidentally violating our gambling laws. They represent little league baseball teams, church groups, school bands, women's clubs and almost any other non-profit organization you can imagine. They can't understand why it is all right for the state to run a lottery when they can't legally sell chances for a prize to raise the money they need to continue their good works. Frequently, even though they try very hard not to, they violate the law. I believe that the people of Kansas should have the opportunity to vote to change this situation.

This amendment would allow the legislature to define what charitable groups could legally conduct such lotteries, prescribe what types of games would be permitted, and place other limitations the legislature deemed appropriate. It would also prohibit non-profit groups from contracting with professional vendors to operate the games for them.

Thank you for your consideration.

Senate FSA
3/25/88
Attachment #1

STATEMENT ON SENATE CONCURRENT RESOLUTION NO. 1616

BY

CHUCK YUNKER, ADJUTANT

KANSAS AMERICAN LEGION

MARCH 25, 1988

Thank you for allowing me this opportunity to come before you today in support of Senate Concurrent Resolution No. 1616. The reasons for The American Legion's support of Resolution 1616 are economic in that inflation and other costs such as high liability insurance premiums coupled with decreases in revenues have limited many of the Legion's 350 Posts ability to conduct or continue their community service programs.

Decreases in our Post's revenues stems from a general decrease in liquor consumption by our members and increased competition from Bingo parlors and the Kansas Lottery. Several of our Posts have ceased operation of Bingo games in recent years while our smaller Posts in rural Kansas only conduct one or two fund raising activities each year. I might add that few Legion Posts sell Kansas Lottery tickets because their hours of operation and potential clientele are limited thus the revenue from these sales would be very small.

Last year, with 82% of our Posts reporting their activities, The American Legion spent in excess of $540,000 and accounted for nearly 100,000 volunteer hours in youth work alone. These activities benefited more than 125,000 young Kansans while similar figures were reported for other community service work such as providing food, shelter and financial aid for the needy. Unfortunately if current trends continue we will be unable to provide such services due to increased costs and decreasing revenues. Without our programs, especially our youth programs such as American Legion Baseball; an increased burden will be placed on cities and untimately the state to provide activities for youth and quick temporary aid for the needy, etc.

Resolution 1616 would provide our Posts an avenue to at least maintain their civic programs at their current levels and hopefully increase them. This would be especially true for our smaller Posts in rural Kansas who conduct only one or two fund raising activities a year.

I doubt very seriously Resolution 1616 would effect the state's revenue from its Lottery sales. In fact the state would benefit financially from the issuance of licenses or permit fees under Resolution 1616.

Therefore I urge your support of Senate Concurrent Resolution 1616.

Thank you.

Chuck Yunker

Senate FSA
3/25/88
Attachment #2

Hearing on SCR 1616, March 25, 1988
Senate Federal & State [illegible]fairs [illegible]ittee

Rev. Richard Taylor
KANSANS F[illegible]LIFE AT [illegible]S BEST!

When parimutuel gambling was before the voters in Minnesota, Roman Catholic Bishops there issued a position paper that included these statements.

"It appears, based upon the evidence we have available, that a society experiences social decay with the legalization of gambling. Such a decay affects all of us and the duty to respond to this erosion cannot be dismissed as a responsibility of others."

This is the position of the United Methodist Church adopted by their General Conference. "Gambling is a menace to society, deadly to the best interests of moral, social, economic, and spiritual life, and destructive of good government. As an act of faith and love, Christians should abstain from gambling, and should strive to minister to those victimized by the practice. Community standards and personal lifestyles should be such as would make unnecessary and undesirable the resort to commercial gambling, including public lotteries, as a recreation, as an escape, or as a means of producing public revenue or funds for support of charities or government."

Non-church groups such as the Wall Street Journal say the same thing in a different way. "Gambling is 'technically a swindle: the payoffs on bets must be less than fair, and the overwhelming majority of the 'investors' must eventually lose their money, if the gambling enterprise is to survive and prosper.' Therefore, the case for legalized gambling is 'simply an argument in favor of the government raising revenues by swindling its citizens rather than by taxing them.'"

When the legislature was considering a parimutuel gambling amendment in 1981, KBI Director Thomas Kelly told this committee, "There is a definite impact of parimutuels on law enforcement when it comes into a state. Parimutuel wagering in Kansas would mean increases in crime, including illegal gambling, bribery, race-fixing, fraud and corruption in the race organizations."

I called the Secretary of State this morning and learned there are around 10,000 bona fide nonprofit organizations in Kansas. Think of the law enforcement problem that will come when all of those can print their own raffle lottery tickets and sell them on every street corner, offering a raffle prize of $10,000 or $50,000 or one million dollars. Raffle lottery tickets are not sold openly today because they are illegal.

We could probably look forward to computer on-line raffles also. There might be something good in this amendment. The Kansas Lottery would have lots of competition and their sales would probably drop.

As 1616 is now written, "lotteries" includes every form of gambling. Kansas could have slot machines, roulette, craps and all. We would be the third state with casino gambling. I understand you plan to change that.

An interesting feature of 1616 is this requirement. "No such nonprofit organization shall contract with a professional lottery vendor to operate such a lottery."

Honest lawmakers and gambling promoters should have included that requirement in the parimutuel amendment. Race track gambling was approved by lawmakers and voters because it would be nonprofit.

We tried to tell the public this was nothing but a facade for groups who would make millions contracting to build and run the tracks. But the media used the word "nonprofit" without explaining what it really meant.

Now we have RACING CHARITIES OF KANSAS INC., WICHITANS FOR CHARITABLE CONTROL OF PARIMUTUEL RACING, GREYHOUND RACING CHARITIES OF KANSAS, INC., and other front groups who will contract out the track to those who will get very rich from the gambling losses of Kansas poor people. Nonprofit organizations make some people very wealthy. Under 1616, these groups can also sell raffle lottery tickets.

As you go by the old cage elevator and down the stairs, on the south tunnel wall is a prayer with this request.

"Help us, Father, to understand just what are the foundation stones which make for a great state. May we be wise enough to build on those principals that support true greatness. We do not want to wake up some morning and wonder why Kansas is crumbling."

"Society experiences social decay with the legalization of gambling." Please vote NO on SCR 1616.

Respectfully yours,
Richard Taylor

Senate FSA
3/25/88
Attachment 3

SB643

AMERICAN CIVIL LIBERTIES UNION
of Kansas and Western Missouri

March 17, 1988

Office Address
106 East 31st Terrace
Kansas City, Missouri 64111
(816) 531-7121

Dick Kurtenbach
EXECUTIVE DIRECTOR

Carla Mahany
ASSISTANT DIRECTOR

The Hon. Edward F. Reilly
Senate Committee on Federal and State Affairs
Statehouse, Box 3
Topeka, KS 66612

Dear Senator Reilly:

16 copies of the Los Angeles Times article, "Drug Tests' Reliability is Limited, Experts Say," are enclosed for distribution to the Federal and State Affairs Committee. Also enclosed for the committee are copies of another Times article, "Drug Test Shows Positive -- Now What?"; a copy of legislation passed by the state of Vermont which includes a section regarding the testing of job applicants; and an article from the journal, Clinical Pharmacology & Therapeutics, regarding passive exposure to marijuana smoke.

Also, the following case citings are offered:

Lovvorn v. City of Chatanooga, TN, 647F.supp.875 p.880, 1986.
Drug testing of public employees in safety-sensitive positions (fire fighters) found unconstitutional under the Fourth Amendment.

McDonell v. Hunter 612F.supp.1122 p.1130, Iowa 1985.
Regarding the testing of job applicants; the court found that general urinalysis was allowable only when part of a comprehensive physical exam.

Feliciano v. City of Cleveland 661F.supp.578 p.586, 1987.
Testing of police academy applicants found unconstitutional under the Fourth Amendment.

Reiterating director Dick Kurtenbach's earlier letter to committee members, we would urge you to give this bill an unfavorable recommendation from the committee. ACLU opposes drug testing not only because it represents an unconstitutional search and seizure and an invasion of privacy, but also because the tests are demonstrably inaccurate and expensive.

Sincerely,

Carla L Mahany

Carla Mahany
Assistant Director

Senate FSA
March 25, 1988
Attachment #4

ENACTED 5/22/87

AN ACT RELATING TO EMPLOYEE DRUG TESTS

It is hereby enacted by the General Assembly of the State of Vermont:

Sec. 1. 21 V.S.A. chapter 5, subchapter 11 is added to read:

Subchapter 11. Drug Testing

§ 511. DEFINITIONS

As used in this subchapter:

(1) "Applicant for employment" means an individual seeking or being sought for employment with an employer.

(2) "Designated laboratory" means a laboratory designated by the department of health under section 518 of this title.

(3) "Drug" means a drug listed or classified by the U.S. Drug Enforcement Administration as a Schedule I drug, or its metabolites, and alcohol. It shall also mean other drugs or their metabolites which are likely to cause impairment of the individual on the job, which are: amitriptyline, amphetamines, barbituates, benzodiazepines, cannabinoids, cocaine, doxepin, glutethimide, hydromorphone, imipramine, meperidine, methadone, methaqualone, opiates, oxycodone, pentazocine, phenytoin, phencyclidine, phenothiazines, and propoxyphene. In addition, the commissioner of health may, pursuant to chapter 25 of Title 3, add drugs to this list not recognized as being commonly abused and likely to cause impairment of the employee on the job at the time of the passage of this act.

(4) "Drug test" means the procedure of taking and analyzing body fluids or materials from the body for the purpose of detecting the presence of a regulated drug as defined in chapter 84 of Title 18 or a drug as defined in subdivision (3) of this section.

(5) "Employee" means any person who may be permitted, required or directed by any employer, in consideration of direct or indirect gain or profit, to perform services.

(6) "Employer" means any individual, organization, or governmental body including partnership, association, trustee, estate, corporation, joint stock company, insurance company or legal representative, whether domestic or foreign, or the receiver, trustee in bankruptcy, trustee or successor thereof, and any common carrier by mail, motor, water, air or express company doing business in or operating within this state, which has one or more individuals performing services for it within this state, or which has offered or may offer employment to one or more individuals.

(7) "Employment agency" means a person who undertakes, with or without compensation, to procure, refer, recruit or place for an employer or person, the opportunity to work for an employer.

§ 512. DRUG TESTING OF APPLICANTS; PROHIBITIONS; EXCEPTIONS

(a) General prohibition. Except as provided in subsection (b) of this section, an employer or an employment agency shall not, as a condition of employment, do any of the following:

(4) Administration. The drug test is administered in accordance with section 514 of this title.

§ 513. DRUG TESTING OF EMPLOYEES; PROHIBITIONS; EXCEPTIONS

(a) General prohibition. Except as provided in subsection (c) of this section, an employer shall not, as a condition of employment, promotion or change of status of employment, or as an expressed or implied condition of a benefit or privilege of employment, do any of the following:

(1) Request or require that an employee take or submit to a drug test.

(2) Administer or attempt to administer a drug test to an employee.

(3) Request or require that an employee consent, directly or indirectly, to a practice prohibited under this subchapter.

(b) Random or company-wide tests. An employer shall not request, require or conduct random or company-wide drug tests except when such testing is required by federal law or regulation.

(c) Exception. Notwithstanding the prohibition in subsection (a) of this section, an employer may require an individual employee to submit to a drug test if all the following conditions are met:

(1) Probable cause. The employer or an agent of the employer has probable cause to believe the employee is using or is under the influence of a drug on the job.

(1) Request or require that an applicant for employment take or submit to a drug test.

(2) Administer or attempt to administer a drug test to an applicant for employment.

(3) Request or require that an applicant for employment consent, directly or indirectly, to a practice prohibited under this subchapter.

(b) Exception. An employer may require an applicant for employment to submit to a drug test only if all of the following conditions are met:

(1) Conditional offer of employment. The applicant has been given an offer of employment conditioned on the applicant receiving a negative test result. A conditional offer of employment shall not be necessary if the applicant resides more than 200 air miles from the place the applicant is to be tested.

(2) Notice. The test is given not less than ten days from the date the applicant received written notice. The notice shall list the drugs to be tested. The notice shall also state that therapeutic levels of prescription drugs tested will not be reported. The notice required under this subdivision may not be waived by the applicant.

(3) Physical examination. The drug test is given as part of or in conjunction with a comprehensive physical examination, but the test and examination need not be taken or administered at the same time.

(2) Written policy. The employer shall provide all persons tested with a written policy that identifies the circumstances under which persons may be required to submit to drug tests, the particular test procedures, the drugs that will be screened, a statement that over-the-counter medications and other substances may result in a positive test and the consequences of a positive test result. The employer's policy shall incorporate all provisions of this section.

(3) Blood samples. An employer may not request or require that a blood sample be drawn for the purpose of administering a drug test.

(4) Designated laboratory. The employer shall use only a laboratory designated by the department of health.

(5) Chain of custody. The employer shall establish a chain of custody procedure for both sample collection and testing that will verify the identity of each sample and test result.

(6) Urinalysis procedure. If a urinalysis procedure is used to screen for drugs, the employer shall:

(A) require the laboratory performing the test to confirm any sample that tests positive by testing the sample by gas chromatography with mass spectrometry or an equivalent scientifically accepted method that provides quantitative data about the detected drug or drug metabolites; and

(B) provide the person tested with an opportunity, at his or her request and expense, to have a blood sample drawn at the time the urine sample is provided, and preserved in such a way that it can be tested later for the presence of drugs.

(7) Laboratory reports. A laboratory may report to an employer that a urine sample is positive only if both the initial test and confirmation test are positive for the particular drug. Test results shall only be provided by written report in accordance with subdivision (9) of this section.

(8) Negative test results. The detection of a drug at a therapeutic level as defined by the commissioner of health shall be reported as a negative test result. The laboratory's report shall not contain any information indicating the presence of a drug at a therapeutic level as defined by the commissioner.

(9) Information to be supplied. The laboratory shall simultaneously provide the employer and the applicant or employee with identical copies of the written report of the drug test result that includes all of the following information:

(A) The name of the person tested.

(B) The type of test conducted for both initial screening and confirmation.

(C) The results of each test.

(D) The detection level, meaning the cut-off or measure used to distinguish positive and negative samples, on both the initial screening and confirmation procedures.

(E) The name and address of the laboratory.

(F) Any other information provided by the laboratory to the employer concerning that person's test.

(10) Preservation of samples. The employer shall ensure that a portion of any positive sample is preserved in a condition that will permit accurate retesting for a period of not less than 90 days after the person tested receives the result.

§ 515. POSITIVE TEST RESULTS; OPPORTUNITY TO RETEST

(a) An employer shall provide an employee or applicant who has a positive test result an informal meeting to explain the results and explain why the result may not be accurate.

(b) The employer shall provide any applicant or employee who has a positive test result with an opportunity to retest a portion of the sample at an independent laboratory at the expense of the person tested and shall consider the results of the retest.

§ 516. CONFIDENTIALITY

(a) Any information concerning drug test results taken by an employer pursuant to authority under this subchapter shall be confidential and shall not be released to anyone except the employer, applicant or employee, as the case may be, and may not be obtained by court order or process, except as provided in this section.

(b) Employers, laboratories and their agents, who receive or have access to information about drug test results, shall keep all information confidential. Release of such information under any other circumstance shall be solely pursuant to a written consent form signed voluntarily by the person tested, except where such release is compelled by a court of competent jurisdiction in connection with an action brought under this subchapter.

(c) If information about drug test results is released contrary to the provisions of this subchapter, it shall be inadmissible as evidence in any judicial or quasi-judicial proceeding, except in a court of competent jurisdiction in connection with an action brought under this subchapter.

§ 517. EMPLOYER'S AUTHORITY

This subchapter shall not restrict an employer's authority to prohibit the non-prescribed use of drugs or alcohol during work hours, or restrict an employer's authority to discipline, suspend or dismiss an employee for being under the influence of drugs or alcohol during work hours, except as that authority is restricted under subsection 513(c)(3) of this title in reference to participation in an employee assistance program or suspension.

§ 518. DESIGNATED LABORATORY; RULE MAKING AUTHORITY OF THE COMMISSIONER

(a) The department of health shall designate laboratories to test body fluids or materials for drugs. Such laboratories must be able to document competency in regard to personnel, quality assurance programs, methodology and equipment, on site confirmation of positive screening tests, security, confidentiality and expert testimony.

(b) A laboratory that fails to comply with the provisions of this subchapter relating to the confirmation and reporting of test information and the release of confidential information shall lose its designation under this subsection.

(c) The commissioner of health shall adopt rules pursuant to chapter 25 of Title 3 establishing non-therapeutic levels of therapeutic drugs by establishing a range of values considering average medical use for each particular drug or metabolite authorized to be tested under this subchapter.

§ 519. ENFORCEMENT

(a) Private right of action. An applicant or employee aggrieved by a violation of this subchapter may bring a civil action for injunctive relief, damages, court costs and attorney's fees.

(b) Burden of proof. In a private right of action alleging that an employer has violated this subchapter, the employer has the burden of proving that the requirements of sections 513, 514 and 516 of this title have been satisfied. In any civil action alleging that a laboratory has violated the reporting or confidentiality sections of this subchapter, the laboratory shall have the burden of proving that the requirements of sections 514 and 516 of this title have been satisfied.

(c) State action to obtain civil penalty. A person who violates any provision of this subchapter shall be subject to a civil penalty of not less than $500.00 nor more than $2,000.00.

(d) State action to obtain criminal penalty. A person who knowingly violates any provision of this subchapter shall be fined not less than $500.00 nor more than $1,000.00 or shall be imprisoned not more than six months, or both.

§ 520. TRANSITORY PROVISIONS

(a) On or before July 1, 1989, the commissioner of health pursuant to chapter 25 of Title 3 shall set non-therapeutic levels of therapeutic drugs by establishing a range of values by considering average medical use for each particular drug or metabolite authorized to be tested under this subchapter.

(b) Until July 1, 1989, the test shall be administered to detect the presence of alcohol or drugs as defined in subdivision 511(3) of this title. Sections 514(1) and 514(8) insofar as they apply to testing only for non-therapeutic levels shall not take effect until July 1, 1989.

(c) Until July 1, 1989, if an applicant receives a positive test result and has a valid pre-dated prescription for the drug tested, the positive test result may not in and of itself be sufficient reason for not hiring an applicant. Until July 1, 1989, if an employee receives a positive test result and has a valid pre-dated prescription for the drug tested, the positive test result may not in and of itself be sufficient reason for requiring that the employee participate in an employee assistance program or for disciplining or dismissing the employee.

(d) The commissioner of health on or before January 15, 1989 shall issue a progress report to the house and senate committees on general affairs on the ability of the commissioner to comply with subsection (a) of this section.

Sec. 2. EFFECTIVE DATES

(a) Sec. 1, except for 21 V.S.A. §§ 518(a) and 520, shall take effect September 1, 1987.

(b) Sec. 2 and 21 V.S.A. §§ 518(a) (laboratories to be designated) and 520 (transitory provisions) shall take effect from passage.

CLINICAL PHARMACOLOGY & THERAPEUTICS
VOLUME 40 NUMBER 3
SEPTEMBER 1986

ORIGINAL ARTICLES

Contact highs and urinary cannabinoid excretion after passive exposure to marijuana smoke

Five healthy men were passively exposed under pre- and postplacebo controlled conditions to sidestream smoke from four and 16 standard marijuana cigarettes (2.8% delta-9-tetrahydrocannabinol [Δ-9-THC]) for 1 hour each day for 6 consecutive days. Subjective effects produced by the 16-cigarette exposure conditions were similar to those observed after active smoking of one 2.8% Δ-9-THC marijuana cigarette. Effects after the four-cigarette condition were less pronounced. Concurrent physiologic measurements showed no clear trends or effects of smoke exposure for either condition. Daily mean plasma levels of Δ-9-THC ranged from 2.4 to 7.4 ng/ml with an individual high of 18.8 ng/ml for the 16-cigarette condition. With the use of EMIT cannabinoid assays with 20 ng/ml (EMIT 20) and 100 ng/ml (EMIT 100) cutoffs, urines positive per subject under the four- and 16-cigarette passive exposure conditions were 4.6 ± 2.2 and 35.2 ± 3.8, respectively, for the EMIT 20 and 0.0 and 1.0 ± 0.8, respectively, for the EMIT 100 assay. From the results of these studies, caution is clearly indicated for individuals who might be substantially exposed to heavy marijuana cigarette smoke environments and for those interpreting marijuana screening data. (CLIN PHARMACOL THER 1986;40:247-56.)

Edward J. Cone, Ph.D., and Rolley E. Johnson, Pharm.D. *Baltimore, Md.*

From the National Institute on Drug Abuse, Addiction Research Center.
Supported in part by the United States Navy.
Received for publication Dec. 11, 1985; accepted Feb. 20, 1986.
Reprint requests to: Dr. Edward J. Cone, Laboratory of Chemistry and Drug Metabolism, Addiction Research Center, NIDA, c/o Francis Scott Key Medical Center, Building C, 4940 Eastern Ave., Baltimore MD 21224.

Inhalation of psychoactive substances in marijuana smoke is an extremely efficient means of drug delivery to the central nervous system because of the large surface area, abundant blood flow, and permeable nature of lung alveolar and epithelial membranes. It has been estimated that the major active component of marijuana smoke, delta-9-tetrahydrocannabinol (Δ-9-THC),

reaches the brain within 14 seconds of inhalation.[1] During the actual smoking process, the rate of increase of Δ-9-THC in plasma becomes maximal after about 3 minutes of smoke inhalation and declines progressively thereafter.[2] Peak plasma levels of Δ-9-THC occur midway through smoking a marijuana cigarette. After smoking, the pattern of subject-rated "high" and plasma levels of Δ-9-THC become quite similar to those after intravenous injection of Δ-9-THC.[3]

Passive inhalation of sidestream marijuana smoke also involves inhalation of Δ-9-THC, because a significant portion is vaporized into room air during the smoking of marijuana.[4] The question of whether a subject can passively absorb sufficient amounts of Δ-9-THC to produce a "contact high," physiologic signs, and detectable levels of cannabinoid metabolites in urine has arisen. Zeidenberg et al.[5] have reported that a placebo-controlled subject living among chronic marijuana users on a locked clinical ward became dizzy and nauseated, showed tachycardia and conjunctivitis, and excreted cannabinoid metabolites in urine. The results of that study have been questioned.[6] Also, subsequent passive inhalation studies in controlled environments have been unable to confirm development of a "contact high" or other subjective effects from marijuana smoke exposure, but have found Δ-9-THC in plasma and cannabinoid metabolites in urine, albeit at low levels.[7-12] Perez-Reyes et al.[12] reported a maximal plasma level of 2.2 ng/ml and two minimally positive urine samples for cannabinoid metabolites, both collected from a nonsmoking subject shortly after exposure for 1 hour to the smoke of 4 marijuana cigarettes (2.8% Δ-9-THC). Seventy-eight other urine samples collected from subjects after passive smoke exposure were negative for cannabinoids. Law et al.[7] reported a complete lack of Δ-9-THC in blood and <7 ng/ml of cannabinoid metabolites in the urine of subjects exposed for approximately 1 hour to the smoke of 6 marijuana cigarettes containing an average of 17.1 mg Δ-9-THC. Morland et al.[10] recently reported detection of Δ-9-THC in the blood of subjects exposed to marijuana smoke in a small closed car. Blood levels ranged from 1.3 to 6.3 ng/ml immediately after exposure. Passive inhalation also resulted in the detection of cannabinoids in urine by RIA and EMIT d.a.u. assay (Syva Co.).

Absorption of Δ-9-THC from room air in sufficient quantity to produce detectable subjective effects, plasma levels, and urinary metabolites would depend on a variety of factors including duration and frequency of smoke exposure, room air concentration of Δ-9-THC, and individual sensitivity to marijuana. We assessed the subjective and physiologic effects of passive inhalation of marijuana smoke under highly controlled conditions, as well as the appearance of Δ-9-THC in blood and the excretion of cannabinoid metabolites in urine. Passive exposure sessions for 1 hour each day for 6 days to the smoke of four and 16 marijuana cigarettes simulated multiple-exposure conditions to moderate and highly smoke-laden environments in which marijuana is combusted.

METHODS

Subjects. Five of the subjects (A to E) were healthy, drug-free men with a history of marijuana use and two subjects (F and G) were healthy drug-free men from the staff with no history of marijuana use. Subjects were housed on a closed ward under close surveillance. The study was conducted under guidelines for the protection of human subjects. Characteristics of these subjects and marijuana histories are shown in Table I.

Study protocol. Five subjects (A to E) with 14 consecutive days of cannabinoid-free urine samples were exposed under double-blind conditions to the smoke of 16 marijuana cigarettes (2.8% Δ-9-THC) for 1 hour each day for 6 consecutive days. Marijuana cigarettes were provided by the National Institute on Drug Abuse. Smoke exposure was carried out at the same time each day (8:30 to 9:30 AM). Eight marijuana cigarettes were burned during the period 8:30 to 8:45 AM, and eight were burned between 9 and 9:15 AM. During the entire exposure period subjects sat quietly in assigned places in the exposure room. Goggles were worn during exposure to minimize eye irritation from smoke and to prevent color discrimination between placebo and active marijuana cigarettes. Before and after the days of marijuana smoke exposure, subjects A to E were exposed in a similar fashion to the smoke of 16 placebo marijuana cigarettes for 2 days.

A second exposure study was performed with subjects A to E with four marijuana cigarettes (2.8% Δ-9-THC) for 6 days under identical conditions, but preceded and followed by only 1 day of placebo marijuana smoke exposure.

In a third study, subjects F and G were exposed to the smoke of 16 marijuana cigarettes (2.8% Δ-9-THC) for 6 days, but without blind conditions and placebo marijuana smoke exposure.

General exposure conditions consisted of smoke generation by a cigarette smoking manifold located centrally in a small unventilated room (8.21 × 6.83 × 8.00 ft). The approximate volume of the room after adjustment for contents and the presence of five subjects was 12,225.8 L. The rate of cigarette burn was controlled by a pneumatic valve located outside the room

Table I. Subject characteristics and marijuana history

Subject	Weight (kg)	Age (yr)	Marijuana history		
			Last use	Duration of use (yr)	Frequency of use
A	85.2	54	<6 mo	>10	Weekly
B	86.5	22	<6 mo	7-9	3-4/wk
C	61.4	26	<6 mo	7-9	Daily
D	72.7	33	*	*	*
E	66.7	40	>1 yr	>10	Weekly
F	84.1	37	Naive	—	—
G	66.1	42	Naive	—	—

*Subject failed to complete marijuana use history form but verbally reported recent use of marijuana.

and adjusted for an average burn time of 12 minutes. The manifold was capable of smoking up to 10 cigarettes simultaneously. Only sidestream smoke was released into the exposure room; mainstream smoke was removed from the manifold through tubing to traps located outside the room. After each burn session (0 to 12 minutes and 30 to 42 minutes), the cigarette butts were removed by the subjects with tweezers and placed in a holding tray on the smoking manifold. The subjects then loaded the remaining cigarettes and lit them at the designated time. Throughout the exposure session, subjects were visually monitored through a plexiglass wall. Room air samples were withdrawn at times intervals through a wall port for Δ-9-THC determination.

Subjects A to E also participated in an active marijuana smoking study in which each subject smoked two cigarettes (two placebo cigarettes or one placebo and one marijuana [2.8% Δ-9-THC] cigarette) in a double-blind, crossover procedure. The smoking experiment was performed in an open ventilated room. Cigarettes were presented in random order. The first cigarette was smoked at 8:30 AM and the second was smoked at 9 AM. The same measurements at equivalent times were made as in the passive inhalation study to compare effects under passive inhalation and active smoking conditions.

Subjective and physiologic measures. Subjective and physiologic effects were assessed at 1 hour (7:30 AM) and 0.5 hours (8 AM) before smoke exposure and thereafter at 9:30, 10:30, and 11:30 AM and 12:30 PM. Subjective effects were measured with subscales of the Addiction Research Center Inventory (MAR 15, MBG, LSD, PCAG),[13] single-dose questionnaire (Feel Drug, Drug Identification, Symptoms, Liking),[14] and a visual analog scale (VAS). The latter scale consisted of a 200 mm line on which subjects rated the "high" or positive effects and "bad" or negative effects of the test conditions. A rating mark in the center of the line designated neutral or no effect, whereas rating marks to the left of center indicated graded negative effects and rating marks to the right indicated graded positive effects. Physiologic measures at similar times were made of pupillary diameter, respiration rate, and standing and supine pulse, systolic blood pressure, and diastolic blood pressure.

Biologic fluids. All urine specimens were collected from the subjects during their participation in the smoke exposure and active smoking studies. Samples were collected ad libitum; in addition, subjects A to E were asked daily to urinate at 8 AM, 4 PM, and midnight to complete the collection period. Specimens were collected in subject-coded polypropylene beakers. Time, date, subject code, and approximate volume of each specimen were recorded by a nurse at the time of collection; the specimens then were removed for chemical analysis.

Venous blood samples were collected 30 minutes before and 20 to 30 minutes after each smoke exposure session. Samples were collected in heparinized tubes and centrifuged, and plasma was removed and frozen until analysis.

Analytic measures. Urine specimens were analyzed daily for cannabinoids with an EMIT assay.[15] All urine samples were screened with the EMIT d.a.u. cannabinoid 20 assay with a 20 ng/ml low calibrator. Samples with absorbance rates equal or greater than the 20 ng/ml calibrator were redetermined. If the average rate of duplicates minus background rate was greater than the 20 ng/ml calibration standard, the sample was designated "positive" for cannabinoids (EMIT 20 assay). Specimens with rates greater than that of the medium calibrator (75 ng/ml) were assayed by the EMIT d.a.u. cannabinoid assay, which uses a 100 ng/ml low calibrator. Samples with rates equal or greater than that of

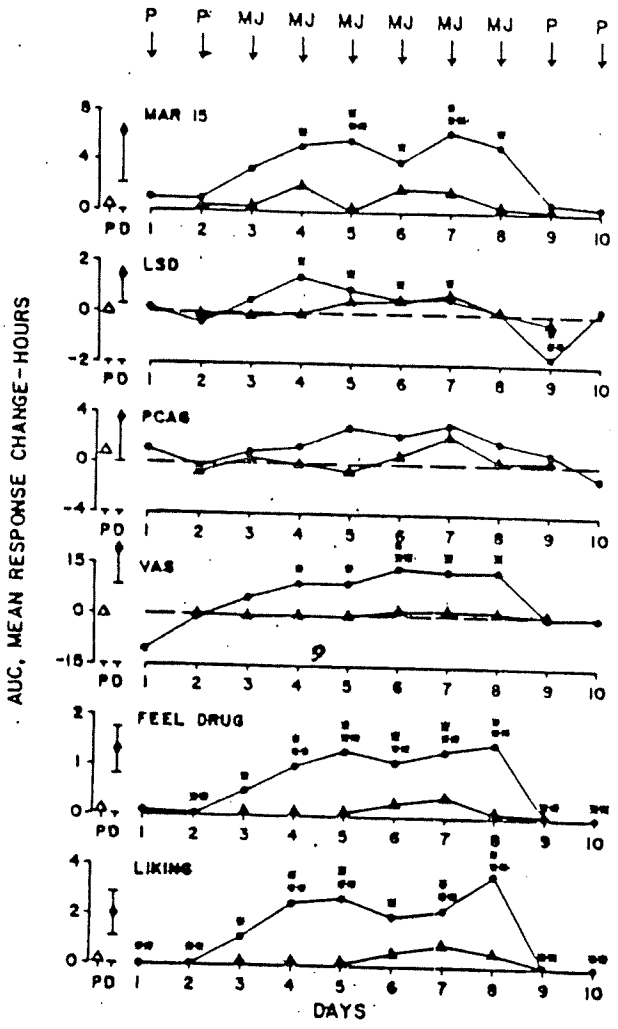

Fig. 1. Subjective effects induced by passive inhalation of marijuana smoke. Mean AUC data (n = 5) for the response (minus control) over time are presented after exposure to the smoke of 16 (●) and 4 (▲) marijuana cigarettes *(MJ)* or placebo marijuana cigarettes *(P)*. *Significant difference ($P < 0.05$) compared with day 2 response. **Significant difference ($P < 0.05$) compared with day 3 response. Mean (± SE) drug *(D)* AUC data in the same subjects also are shown after active smoking of one marijuana and one placebo cigarette (♦) and after active smoking of two placebo cigarettes (△).

the 100 ng/ml calibration standard were redetermined. If the average rate of the duplicates exceeded the rate of the low calibrator, the sample was designated "positive" for cannabinoids (EMIT 100 assay). Urinary cannabinoids were also determined by RIA and the metabolite, Δ-9-THC carboxylic acid, was measured by GC/MS. The results of these latter assays will be published elsewhere.

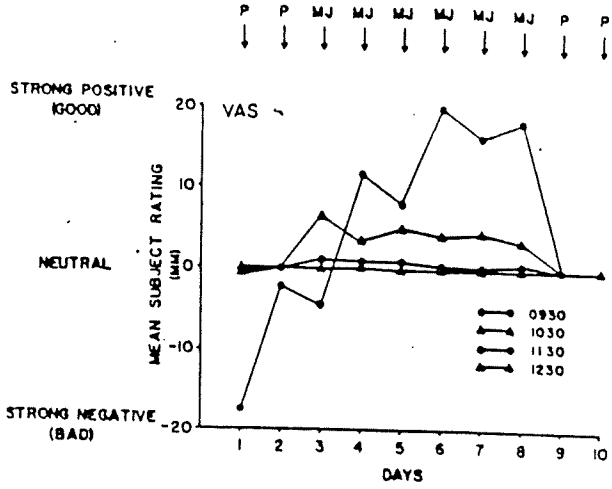

Fig. 2. Mean VAS scores from five subjects at specified times after exposure to the sidestream smoke of 16 placebo *(P)* or marijuana *(MJ)* cigarettes.

Plasma levels of Δ-9-THC were measured by RIA.[16] Air concentrations of Δ-9-THC were measured by gas chromatography.[17]

Data analysis and statistical methods. Subjective and physiologic responses were analyzed as differences between responses after smoke exposure and the mean of two control responses before smoke exposure. The AUC for the response over time was calculated by the trapezoidal rule. If ANOVA of the AUC between study days was significant ($P < 0.05$), a Tukey test was applied to determine if significant differences in mean responses occurred on marijuana smoke exposure days vs. placebo marijuana smoke exposure days. The placebo marijuana smoke exposure day immediately before the first marijuana smoke exposure day was arbitrarily chosen for statistical comparison of differences.

RESULTS

Subjective effects of passively inhaled marijuana smoke. After both four- and 16-marijuana cigarette smoke exposure sessions, responses were elevated on the MAR 15, LSD, PCAG, VAS, Feel Drug, and Liking scales (Fig. 1) but were not changed on the MBG scale (data not shown). Responses on these scales after exposure to the smoke of four marijuana cigarettes were modest and did not differ significantly from responses to placebo marijuana smoke. Responses after exposure to smoke from 16 marijuana cigarettes were more robust and differed significantly from responses to exposure to placebo marijuana smoke on the MAR 15, LSD, VAS, Feel Drug, and Liking scales but not on the PCAG scale. Significant differences ($P < 0.05$) were also

Table II. Urine samples tested positive for cannabinoid metabolites by EMIT assay after passive exposure to marijuana smoke

Subjects	*Four-cigarette smoke exposure*		*16-Cigarette smoke exposure*		
	EMIT 20 assay		*EMIT 20 assay*		*EMIT 100 assay, 100 ng/ml*
	20 ng/ml	*75 ng/ml*	*20 ng/ml*	*75 ng/ml*	
A	3	0	27	1	0
B	1	0	30	2	0
C	12	0	49	5	4
D	0	0	33	1	0
E	7	0	37	2	1
Total	23	0	176	11	5
Mean ± SE	4.6 ± 2.2	—	35.2 ± 3.8	2.2 ± 0.7	1.0 ± 0.8
F	—	—	48	32*	34*
G	—	—	23	0	—
Total			71	32	34
Mean ± SE			35.5 ± 12.5	16 ± 16	—
Overall Total	—	—	247	43	39
Mean ± SE	—	—	35.3 ± 3.8	6.1 ± 4.4	6.5 ± 5.5

*Two urine samples with reaction rates that approached but did not exceed the rate of the 75 ng/ml calibration standard in the EMIT 20 assay tested positive in the EMIT 100 assay.

of four and 16 marijuana cigarettes, together with the results of the marijuana-naive subjects F and G after exposure to the smoke from 16 marijuana cigarettes, are shown in Table II. An average of 4.6 ± 2.2 urine samples per subject were positive for cannabinoid metabolites by EMIT 20 assay during the 6-day period of smoke from exposure to four marijuana cigarettes. In the 16-cigarette smoke exposure study, the average number of positive EMIT 20 urine samples increased to 35.2 ± 3.8 per subject. A similar number of urine samples tested positive for cannabinoid metabolites from subjects F and G under the same exposure conditions. There was considerable between-subject variability in results obtained in the EMIT 20 assay in the four-marijuana cigarette exposure study; the number of urine samples positive for cannabinoid metabolites ranged from none (subject D) to 12 (subject C). Subject C also produced the greatest number of urine samples positive by EMIT 20 assay in the 16-marijuana cigarette exposure study.

During the four-marijuana cigarette exposure study, the urine samples that were positive by EMIT 20 had assay rates consistently below that of the medium calibration 75 ng/ml standard; consequently, none were tested by EMIT 100 assay. During the 16-marijuana cigarette exposure studies, all subjects except subject G produced urine samples that had an excretion rate exceeding that of the medium calibrator. Retesting these samples with the EMIT 100 assay produced a total of 39 positive samples. None of these samples had rates that exceeded the medium calibrator standard (400 ng/ml). The samples that tested positive by EMIT 100 assay came from three subjects (C, E, and F), with most originating from subject F.

The time course of appearance of cannabinoid metabolites in urine after passive smoke exposure to 16 marijuana cigarettes was similar for most subjects (Fig. 4). Six of the seven subjects produced positive EMIT 20 urine samples after the first exposure session. Subject D produced his first positive urine sample after the second exposure session. After exposure to the smoke of four marijuana cigarettes, the results were more variable. Two subjects, C and D, produced positive EMIT 20 urine samples after the first exposure session; subject B produced a positive EMIT 20 urine sample after the second exposure session; subject A produced a positive EMIT 20 urine sample after the third exposure session; and subject D produced no positive EMIT 20 urine samples throughout the 6 days of exposure, although reaction rates for many of his samples approached the cutoff rate for the 20 ng/ml calibration standard. In general, assay rates appeared to be positively related to the specific gravity of the urine specimen and usually decreased as specific gravity decreased during the course of the day. Urine samples that tested positive for cannabinoids by EMIT 20 (Table II) had an overall confirmation of the metabolite Δ-9-THC carboxylic acid by GC/MS of 84.9%.

found between responses on the MAR 15, VAS, Feel Drug, and Liking scales on the first day of exposure to the 16 marijuana cigarette condition vs. other marijuana exposure days. There was a significant depression ($P < 0.05$) of scores on the LSD scale on the ninth day of smoke exposure (first placebo day after marijuana smoke exposure) during the 16-cigarette study.

Responses on most scales to passive marijuana smoke exposure were time related, with peak effects immediately at the end of smoke exposure. An example of the time-response relationship is shown in Fig. 2 for responses on the VAS scale after exposure to smoke from 16 marijuana cigarettes. On days 1 and 2, the group mean 9:30 AM response to placebo smoke was negative. These effects disappeared quickly and were absent 3 hours later. The initial 9:30 AM response on day 3, the first day of marijuana smoke exposure, also was negative but was elevated 1 hour later. All subsequent 9:30 AM responses after marijuana smoke exposure were highly positive. These effects also disappeared rapidly and generally were absent 3 hours later. Neutral responses at all times were obtained to placebo smoke exposure on days 9 and 10.

After the passive exposure experiments, subjects A to E participated in a placebo-controlled, crossover study in which marijuana cigarettes were actively smoked and measures were taken at times equivalent to those in the passive experiments. AUC measures of subjective responses to smoking one marijuana cigarette were similar to those found in the 16-marijuana cigarette passive exposure study (Fig. 1).

Physiologic effects of passively inhaled marijuana smoke. Physiologic measures were highly variable both in response to passive exposure to the smoke of four and 16 marijuana cigarettes and to active smoking of one marijuana cigarette (Fig. 3). Mean increases in the integrated response were occasionally noted after exposure to the smoke of 16 marijuana cigarettes for supine and standing pulse and systolic and diastolic blood pressures. Infrequently, some of the differences in response between marijuana and placebo days reached significance ($P < 0.05$). Significant differences in some responses also occurred infrequently after exposure to the smoke of four marijuana cigarettes, but these responses (supine pulse and standing diastolic blood pressure) were highly erratic. Occasional significant differences occurred between marijuana test days and placebo test days as compared with the first marijuana test day (day 3). Pupillary diameter and respiration rate showed no significant changes.

Chemical analysis of body fluids. Results of urine testing of subjects A to E after exposure to the smoke

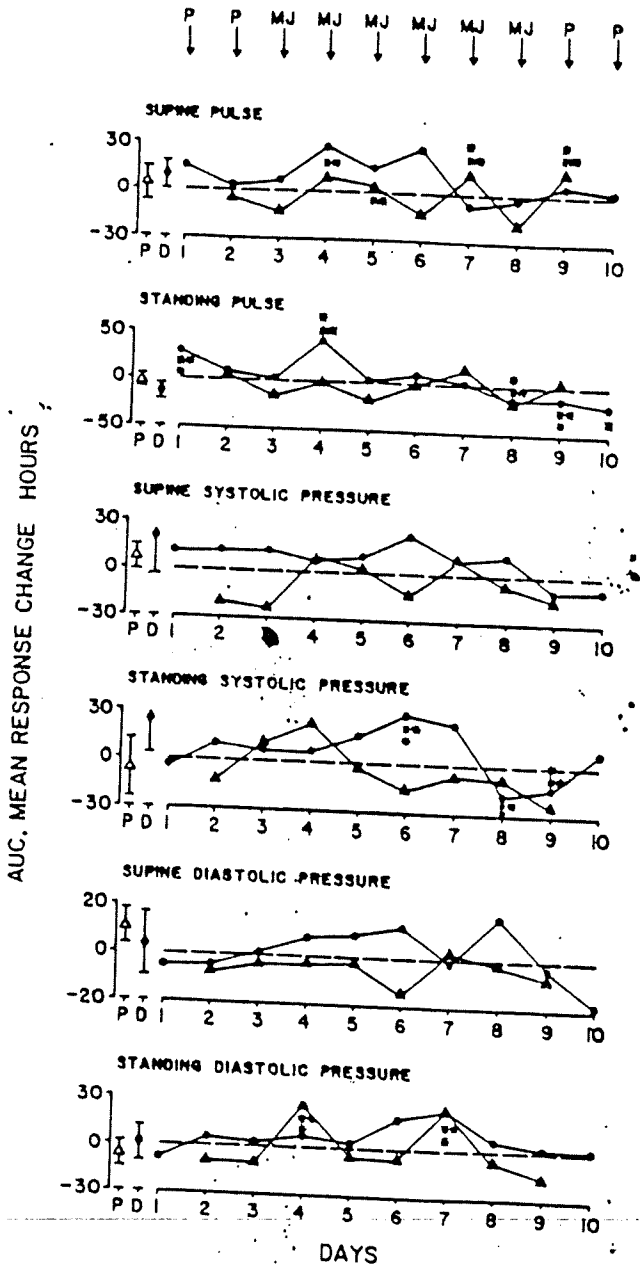

Fig. 3. Physiologic measures after passive inhalation of marijuana smoke. Mean AUC data ($n = 5$) for the response (minus control) over time are presented after exposure to the smoke of 16 (●) and 4 (▲) marijuana cigarettes *(MJ)* or placebo marijuana cigarettes *(P)*. *Significant difference ($P < 0.05$) compared with day 2 response. **Significant difference ($P < 0.05$) compared with day 3 response. Mean (± SE) drug *(D)* AUC data in the same subjects also are shown after active smoking of one marijuana and one placebo cigarette (♦) and after active smoking of two placebo cigarettes (△).

Measurable plasma levels of Δ-9-THC were attained during passive exposure to the smoke of four or 16 marijuana cigarettes (Fig. 4). After exposure to the smoke of 16 marijuana cigarettes, daily mean plasma levels ranged from 2.4 to 7.4 ng/ml for subjects A to E. The highest mean concentration of Δ-9-THC occurred on the last day (day 8) of active marijuana smoke exposure, with an overall individual highest plasma level of 18.8 ng/ml for subject E. Only one subject (subject D) was eligible to provide blood during the four-marijuana cigarette smoke exposure study. His levels of Δ-9-THC were 0.8 to 2.5 ng/ml during the course of the 6-day study.

DISCUSSION

Our results demonstrate that passive inhalation of a substantial amount of sidestream marijuana smoke can produce subjective effects, plasma levels of Δ-9-THC, and urinary cannabinoid metabolites in subjects similar to those found after the active smoking of marijuana. The profile of subjective effects in five subjects after passive exposure to the smoke of 16 marijuana cigarettes over 1 hour was quantitatively equivalent in magnitude to smoking one standardized marijuana cigarette (2.8% Δ-9-THC) in the same subjects. Passive exposure to four marijuana cigarettes produced a reduced but qualitatively similar response. This lower dose of marijuana smoke exposure is approximately equivalent to the highest dose studied in other passive inhalation experiments.[7-12] It appears that the four-marijuana cigarette condition approximates the "threshold" exposure level necessary for the production of marijuana-like subjective effects and cannabinoid urinary metabolites detectable by EMIT 20 assay. Such a "threshold" level could be expected to vary considerably between individuals, as was seen in this study. Intersubject variability could be influenced by a host of factors, including differences in respiration characteristics, body weight, age, sex, renal function, and liver function. This threshold exposure level was clearly exceeded in our subjects when exposure was increased to 16 marijuana cigarettes.

Contrary to positive subjective effects, physiologic effects were highly variable and showed no trends at either exposure level. After active marijuana smoking, the increase in heart rate is one of the most reliable dose-related measures.[2] This effect generally peaks shortly after smoking and declines rapidly to control levels in a biphasic manner. Smoking a second marijuana cigarette was shown to produce a similar psychologic "high," but accelerated heart rate only 50% of the rate increase from the first cigarette. It was suggested that the reduced response resulted from a possible combination of acute tolerance development and acclimatization of the subjects to environmental and psychologic factors.[2] Both facts are possible contributors in the present study to account for the lack of significant pulse changes on marijuana exposure days. Acclimatization to the smoke-filled room during passive exposure was apparent in the pulse rate responses during the first 2 study days, both of which involved exposure to the smoke of 16 placebo marijuana cigarettes. Pulse rates after the second exposure session (day 2) were markedly lower than after the first session. Increases in supine pulse rate after the exposure to smoke of 16 marijuana cigarettes (days 4 to 6) occurred but were not significantly different from those after exposure to placebo smoke on day 2. Under the same exposure conditions, standing pulse was significantly increased ($P < 0.05$) on day 4, the second day of active marijuana smoke exposure, but was not increased on subsequent days. The development of tolerance to these effects with multiple exposure would presumably present a similar pattern, but its role in our studies cannot be clearly established. In the pulse rate measures of our subjects during active marijuana smoking experiments,

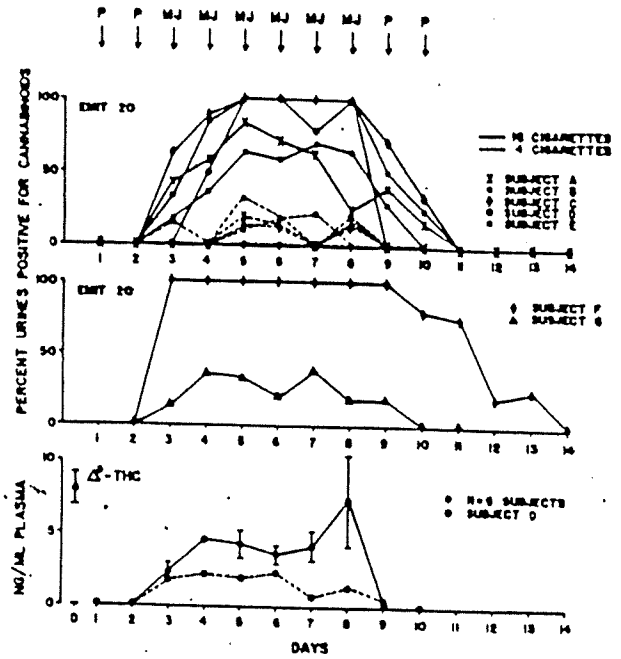

Fig. 4. Individual urinary excretion of cannabinoid metabolites *(upper two panels)* and mean Δ-9-THC plasma levels after passive exposure to the smoke of marijuana cigarettes *(MJ)* or placebo *(P; lower panel)*. Mean (± SE) drug (D) plasma levels (♦) in the same five subjects ~1 hour after active smoking of one marijuana cigarette *(MJ)* are also shown in the *lower panel*.

a significant increase was also not observed. This lack of effect on pulse rate was likely a result of the time delay before the initial observation, which ranged from 20 to 50 minutes after passive exposure or active smoking. Most of the initial drug effect on pulse would have dissipated by this time.

The relationship of plasma levels of Δ-9-THC to subjective effects after active smoking has been the subject of considerable scrutiny.[2,3,18-23] What has been found is that the initial peak plasma level of Δ-9-THC precedes subject-rated "high" by ~15 minutes. After this early distribution phase in which effects are out of sequence with plasma levels, compartment equilibrium is reached and the intensity of subject-rated effects becomes more directly related to plasma levels of Δ-9-THC.[18] After a smoked dose of marijuana, plasma levels of Δ-9-THC may initially rise to concentrations >100 ng/ml but fall rapidly to ~10 ng/ml in 60 to 90 minutes, while subjective effects have just begun to decline. Plasma levels of Δ-9-THC and subjective effects continue to decline and approach baseline levels in 3 to 6 hours. In subjects passively exposed to marijuana smoke, Perez-Reyes et al.[12] found maximal plasma levels of Δ-9-THC of only 2.2 ng/ml and no observable subjective effects. Moreland et al.[10] reported Δ-9-THC levels of 1.3 to 6.3 ng/ml in the blood of subjects passively exposed to marijuana smoke in a small closed car; their subjects also reported a lack of feelings of "euphoria." In the present study the maximal plasma level of Δ-9-THC measured after exposure to the smoke of 16 marijuana cigarettes was 18.8 ng/ml at a time when subjective effects were reported. Other subjects in this same study reported marijuana-like subjective effects at times when their plasma levels of Δ-9-THC were in the range of 1 to 8 ng/ml. Because these measures were made 15 to 30 minutes after the last marijuana cigarette was burned, it is likely that maximal plasma levels occurred much earlier during the course of passive smoke exposure.

Although a specific minimum blood level of Δ-9-THC associated with impairment has not been defined, Barnett et al.[24] found a significant correlation between human performance decrements in tests to assess perceptual motor performance related to driving and Δ-9-THC plasma levels over the range of 5 to 25 ng/ml for ~2 hours after marijuana smoking. Mason and McBay[25] suggested that an arbitrary limit of Δ-9-THC of 10 ng/ml in serum and 5 ng/ml in blood be established as evidence of functional impairment. By these conservative standards, our subjects were generally near or below this level when tested, but were likely to have exceeded this limit during the course of exposure to the smoke of 16 marijuana cigarettes. Two complicating factors in the definition of an arbitrary blood limit for Δ-9-THC are development of tolerance and drug accumulation after chronic dosing. Tolerance is considered to develop to the effects of marijuana when high doses are used over an extended period of time.[20,26-29] The finding of accumulation of Δ-9-THC in the blood of heavy smokers of marijuana could also interfere with the definition of a blood level of Δ-9-THC indicating functional impairment. At present, definitive studies on these issues regarding the chronic use of marijuana have not been performed.

Accumulation of marijuana between passive exposure sessions was initially suspected in our present study because of the significant increase in subjective effects observed on day 4 vs. day 3 (Fig. 1, *lower panels*). This was generally ruled out by chemical analyses of the remaining marijuana after burning and room air concentrations of Δ-9-THC to which the subjects were exposed. The total marijuana cigarette weight burned was 10% less on day 3 than on subsequent test days. Furthermore, room air concentrations of Δ-9-THC on day 3 were generally less than half those of subsequent days, possibly a result of initial adsorption on room surfaces. Thus it appears that the five subjects were exposed to less smoke generated from active drug on day 3 than on subsequent days, and accumulation of Δ-9-THC was not likely the cause of increased subjective effects on day 4. However, this does not rule out the possibility of accumulation occurring after multiple passive inhalation sessions, because the terminal phase $t_{1/2}$ for Δ-9-THC in human plasma ranges from 25 to 36 hours.[30]

The excretion of cannabinoid metabolites in urine after passive marijuana smoke exposure increased as a function of the number of marijuana cigarettes burned. After one or more passive exposure sessions to the smoke of 16 marijuana cigarettes, the percent of urine samples positive for cannabinoids was nearly equivalent to that after active smoking of one marijuana cigarette. Exposure to the smoke of four marijuana cigarettes produced positive EMIT 20 assay results for cannabinoids in urine from four of five subjects and appeared to be near the minimal smoke exposure level for these subjects. Although the presence of cannabinoid metabolites in urine is not generally correlated with the appearance of subjective effects, the excretion of high urinary cannabinoid concentrations by the five subjects after high smoke exposure in our present study is entirely consistent with the magnitude of their reported subjective effects.

The excretion of cannabinoid metabolites in urine

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after passive marijuana smoke exposure has been reported, with the suggestion that the conditions used for smoke exposure were the maximum tolerable limits for their subjects.[9,11] Irritation to the smoke of the 16–marijuana cigarette condition was partially alleviated by our subjects wearing colored eye goggles. Most subjects preferred to wear them, but some spent part of their exposure time without their goggles. Also, although the subjects were free to leave the smoke-filled room at any time, none left during any of the 18 1-hour passive exposure sessions. Only minor throat irritation was reported during and after these exposure sessions, not unlike those effects reported after active marijuana smoking. From these studies, it appears that somewhat higher tolerable limits of marijuana smoke exposure are possible than were originally considered.

Passive ingestion of Δ-9-THC adsorbed from smoke onto foodstuffs and liquids was prevented in our studies by not allowing food and water ingestion during the smoke exposure sessions. The potential for ingestion of marijuana adsorbed onto food and other surfaces is obvious, but nothing is known concerning the possible contribution of this mode of passive ingestion to observable drug effects. The amount of orally ingested Δ-9-THC needed to produce measurable subjective effects would be quite large in comparison with a smoked dose of marijuana, because oral Δ-9-THC has a systemic availability of about one third that when smoked.[22] However, oral marijuana adsorbed to foodstuffs during passive exposure might be an important contributing factor to subsequent production of urine samples positive for cannabinoid metabolites.

Clearly, societal and legal implications arise if a subject can develop marijuana-like subjective effects and test positive for urinary cannabinoid metabolites as a result of passive inhalation. A positive urine test for marijuana when confirmed by specific analytic assay is perceived as evidence for recent active use or abuse. A second unvalidated assumption often made on the basis of positive urine results is that performance impairment occurred in the recent past for that individual, although no correlation is generally made with current behavior. Our present results suggest caution both to individuals who might be passively exposed to heavy marijuana smoke and to those who interpret marijuana screening data, because with sufficient time and high marijuana smoke exposure conditions, it becomes difficult to distinguish between active smoking and passive inhalation.

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3/25/88
Attachment #5

Session of 1988

SENATE BILL No. 643

By Committee on Federal and State Affairs

2-12

AN ACT relating to state officers and employees; concerning a drug screening program for applicants for and current employees in safety sensitive positions in state government.

Be it enacted by the Legislature of the State of Kansas:

Section 1. (a) The director of the division of personnel services of the department of administration shall have the authority to establish and implement a drug screening program for applicants for safety sensitive positions in state government. The director also shall have the authority to establish and implement a drug screening program for persons currently holding safety sensitive positions in state government based upon reasonable suspicion of illegal drug use by any such person.

(b) "Safety sensitive positions" means state law enforcement officers who are authorized to carry firearms, state correctional officers, the governor and lieutenant governor, heads of state agencies who are appointed by the governor and employees on the governor's staff.

Sec. 2. This act shall take effect and be in force from and after its publication in the Kansas register.

and designated executive branch positions

and

. (c) "Designated executive branch positions" means

, but such term shall not include candidates for governor and lieutenant governor