

LEGISLATIVE FINANCE-HOUSE / SENATE FINANCE COMM. FILES 8879

SB 18

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SENATE COMMITTEE REPORT

FURTHER

3/8/89

DATE TURNED INTO OFFICE

3/16/89

Mr. President:

Finance

Committee considered

SB 18

marijuana; efd

and recommended

- replace with \_\_\_\_\_ CS \_\_\_\_\_ )  same title
- or adopt \_\_\_\_\_ CS SB 18 (ind) )  new title
- attached amendment(s) and  technical title change (HB only)
- \_\_\_\_\_ letter of intent adopted

do pass

do not pass

no recommendation

individual recommendations

further referral to \_\_\_\_\_

7 FN's coming

- FISCAL NOTE(S)  zero  fiscal impact  appropriation no FN
- new  updated  previous
- same as previous fiscal note(s) published \_\_\_\_\_

MEMBERS SIGNING DO PASS

OTHER RECOMMENDATIONS

*[Handwritten signatures]*

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Chairman signature and recommendation

Committee Backup attached

*[Handwritten signature]*

CO-CHAIR

DR. DANCE

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)

PUBLISH DATE: \_\_\_\_\_

FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Department of Law  
BRU: Prosecution

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: Third & Fourth Districts,  
Crim Justice Litigation, Crim Appeals

EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY-94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

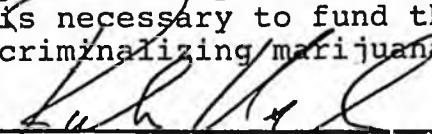
FUNDING: (THOUSANDS OF DOLLARS)

GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS: It is the intent of the Senate Finance Committee that the department may request a supplemental appropriation if it is necessary to fund the costs of defending the law recriminalizing marijuana.

PREPARED BY:   
SENATOR RICK UEHLING, CO-CHAIRMAN  
SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE NO.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)  
PUBLISH DATE: \_\_\_\_\_

FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Department of Administration  
BRU: Public Defender Agency

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: Third & Fourth Judicial  
Districts

EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (THOUSANDS OF DOLLARS)

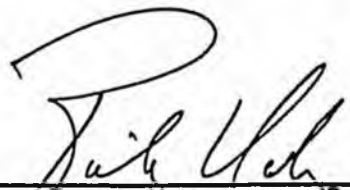
GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS:

PREPARED BY:

  
 \_\_\_\_\_  
 SENATOR RICK UEHLING, CO-CHAIRMAN  
 SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE No.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)  
PUBLISH DATE: \_\_\_\_\_

FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Department of Administration  
BRU: Office of Public Advocacy

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: \_\_\_\_\_

EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (THOUSANDS OF DOLLARS)

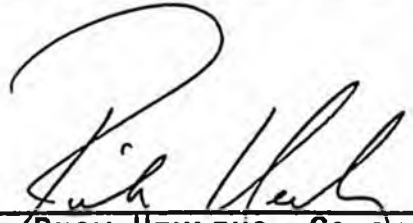
GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS:

PREPARED BY:

  
 SENATOR RICK UEHLING, CO-CHAIRMAN  
 SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE NO.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)

PUBLISH DATE: \_\_\_\_\_

## FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Dept/Health & Social Services  
BRU: Alcohol & Drug Abuse Services

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: Administration

### EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
OPERATING						
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

### FUNDING: (THOUSANDS OF DOLLARS)

GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

### POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS:

PREPARED BY:

  
SENATOR RICK UEHLING, CO-CHAIRMAN  
SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE NO.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)

PUBLISH DATE: \_\_\_\_\_

FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Department of Public Safety  
BRU: Alaska State Troopers

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: Detachments, CIB & VPSO

EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (THOUSANDS OF DOLLARS)

GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS:

PREPARED BY: \_\_\_\_\_

  
SENATOR RICK UEHLING, CO-CHAIRMAN  
SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE No.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)  
PUBLISH DATE: \_\_\_\_\_

### FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Alaska Court System  
BRU: Trial Courts

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: \_\_\_\_\_

#### EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

#### FUNDING: (THOUSANDS OF DOLLARS)

GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

#### POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

#### ANALYSIS:

PREPARED BY:   
SENATOR RICK UEHLING, CO-CHAIRMAN  
SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE NO.: 465-4821

STATE OF ALASKA  
1989 LEGISLATIVE SESSION

BILL VERSION: CS SB 18 (Judiciary)

PUBLISH DATE: \_\_\_\_\_

FISCAL NOTE

REQUEST: \_\_\_\_\_

REVISION DATE: \_\_\_\_\_  
TITLE: An Act relating to  
marijuana

AGENCY: Department of Corrections  
BRU: \_\_\_\_\_

SPONSOR: Fischer, Faiks, et al  
REQUESTOR: Senate Finance

COMPONENTS: \_\_\_\_\_

EXPENDITURES/REVENUES: (THOUSANDS OF DOLLARS)

OPERATING	FY 89	FY 90	FY 91	FY 92	FY 93	FY 94
PERS. SERVICES	0	0	0	0	0	0
TRAVEL	0	0	0	0	0	0
CONTRACTUAL	0	0	0	0	0	0
SUPPLIES	0	0	0	0	0	0
EQUIPMENT	0	0	0	0	0	0
LAND/BUILD.	0	0	0	0	0	0
GRANTS/CLAIMS	0	0	0	0	0	0
MISCELLANEOUS	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0
CAPITAL	0	0	0	0	0	0
REVENUE	0	0	0	0	0	0

FUNDING: (THOUSANDS OF DOLLARS)

GENERAL FUNDS	0	0	0	0	0	0
FEDERAL FUNDS	0	0	0	0	0	0
OTHER	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0

POSITIONS:

FULL-TIME	0	0	0	0	0	0
PART-TIME	0	0	0	0	0	0
TEMPORARY	0	0	0	0	0	0

ANALYSIS:

PREPARED BY:

  
SENATOR RICK UEHLING, CO-CHAIRMAN  
SENATE FINANCE COMMITTEE

DATE: March 16, 1989  
PHONE No.: 465-4821

Original sponsors: Fischer, Faiks,  
Kelly, et al.

1 IN THE SENATE BY THE JUDICIARY COMMITTEE

2 CS FOR SENATE BILL NO. 18 (Judiciary)

3 IN THE LEGISLATURE OF THE STATE OF ALASKA

4 SIXTEENTH LEGISLATURE - FIRST SESSION

5 A BILL

6 For an Act entitled: "An Act making the possession of less than eight  
7 ounces of marijuana a class B misdemeanor and making  
8 specific findings that constitute a legitimate and  
9 compelling state interest to prohibit the possession  
10 of less than eight ounces of marijuana; and providing  
11 for an effective date."

12 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

13 \* Section 1. FINDINGS. The legislature finds that marijuana use is a  
14 health problem for the reasons set out in this section. Many of the rea-  
15 sons are based on new information obtained since 1975. Each of the follow-  
16 ing constitutes a legitimate and compelling state interest:

17 (1) Marijuana and other cannabis preparations contain more than  
18 420 different compounds, including 60 cannabinoids that have mind-altering  
19 properties.

20 (2) Marijuana induces biochemical alterations in the central  
21 nervous system that result in the five characteristics that identify addic-  
22 tive, dependence producing drugs: primary pleasurable reward, reversible  
23 neuropsychological impairment, abstinence syndrome, tolerance, and self-  
24 administration.

25 (3) The breakdown products or metabolites of marijuana are fat  
26 and lipid soluble and may remain in the body for extended time periods.

27 (4) The tetrahydrocannabinol (THC) content of street samples of  
28 marijuana generally has increased in potency from approximately one to two  
29 percent in marijuana obtainable 10 years ago to as high or higher than 5 to

1 10 percent in marijuana obtainable in 1989.

2 (5) Recent research has yielded findings that demonstrate that  
3 marijuana may have a detrimental effect on

4 (A) respiratory and cardiovascular systems, in that

5 (i) sinusitis, pharyngitis, bronchitis, and emphysema  
6 may be associated with chronic marijuana use;

7 (ii) habitual marijuana smoking may produce precancer-  
8 ous change in the lung;

9 (iii) during a marijuana "high," the user may experience  
10 tachycardia as the heart rate increases to as much as 130 - 150  
11 beats a minute;

12 (B) reproductive systems, in that

13 (i) marijuana affects the network of glands and hor-  
14 mones that are involved in reproduction;

15 (ii) a pregnant woman who uses marijuana takes an  
16 increased risk that the chemical compounds in the marijuana will  
17 pass across the placenta to the developing fetus;

18 (C) the brain, in that

19 (i) THC may accumulate in brain cell membranes;

20 (ii) marijuana and its metabolites may alter neuro-  
21 chemicals and their receptor sites;

22 (iii) use of marijuana may impair visual tracking and  
23 depth perception and may reduce coordination, reaction time, and  
24 vigilance, making it dangerous to drive, fly, or operate machin-  
25 ery;

26 (iv) chronic marijuana use, particularly by adoles-  
27 cents, may interfere with reading comprehension, verbal and  
28 mathematical problem solving, perception of time and distance,  
29 short term memory, and the ability to concentrate, and reduce

1 motivation;

2 (v) the psychological effects of marijuana use may  
3 include anxiety, panic, paranoia, psychosis, illusions, and  
4 hallucinations, and some studies link marijuana to schizophrenia;  
5 and

6 (D) the body's immune system, in that marijuana use

7 (i) may depress the immune system and alter the funda-  
8 mental cellular defenses against disease; and

9 (ii) may reduce the chromosomes in T-lymphocyte cells.

10 (6) There is a common perception by youth and others that the  
11 current Alaska Statutes "legalize" marijuana, and this misperception has a  
12 social effect that is detrimental to the public health and welfare in that  
13 it encourages drug use.

14 \* Sec. 2. AS 11.71.060(a) is amended to read:

15 (a) Except as authorized in AS 17.30, a person commits the crime  
16 of misconduct involving a controlled substance in the sixth degree if  
17 the person

18 (1) uses or displays any amount of a schedule VIA con-  
19 trolled substance;

20 (2) [OR] possesses one or more preparations, compounds,  
21 mixtures, or substances of an aggregate weight of less than one-half  
22 pound [ONE OUNCE OR MORE] containing a schedule VIA controlled sub-  
23 stance [ON A PUBLIC STREET OR SIDEWALK OR ON THE PREMISES OF A PUBLIC  
24 CARRIER OR BUSINESS ESTABLISHMENT OR IN ANY OTHER PUBLIC PLACE]; or

25 (3) [(2) KNOWINGLY POSSESSES ANY AMOUNT OF A SCHEDULE VIA  
26 CONTROLLED SUBSTANCE WITHIN THE IMMEDIATE CONTROL OF THAT PERSON WHILE  
27 OPERATING A PROPELLED VEHICLE;

28 (3) BEING UNDER 19 YEARS OF AGE, POSSESSES ONE OR MORE  
29 PREPARATIONS, COMPOUNDS, MIXTURES, OR SUBSTANCES OF AN AGGREGATE

1       WEIGHT OF LESS THAN FOUR OUNCES CONTAINING A SCHEDULE VIA CONTROLLED  
2       SUBSTANCE;

3               (4) POSSESSES ONE OR MORE PREPARATIONS, COMPOUNDS, MIX-  
4       TURES, OR SUBSTANCES OF AN AGGREGATE WEIGHT OF FOUR OUNCES OR MORE  
5       CONTAINING A SCHEDULE VIA CONTROLLED SUBSTANCE; OR

6               (5)] refuses entry into a premises for an inspection au-  
7       thorized under AS 17.30.

8       \* Sec. 3. AS 12.45.155(a) is amended to read:

9               (a) In a prosecution under AS 11.71.010 - 11.71.060 [AS 11.-  
10       71.010 - 11.71.070], a complete copy of an official laboratory report  
11       from the Department of Public Safety or a laboratory operated by  
12       another law enforcement agency is prima facie evidence of the content,  
13       identity, and weight of a controlled substance. The report must be  
14       signed by the person performing the analysis and must state that the  
15       substance which is the basis of the alleged offense has been weighed  
16       and analyzed. In the report, the author shall state with specificity  
17       findings as to the content, weight, and identity of the substance.

18       \* Sec. 4. AS 17.30.080(b) is amended to read:

19               (b) A person who violates (a) of this section, or who otherwise  
20       manufactures, distributes, dispenses, or conducts research with a  
21       controlled substance in the state without fully complying with 21  
22       U.S.C. 811 - 830 (Controlled Substances Act), and regulations adopted  
23       under those sections, is guilty of misconduct involving a controlled  
24       substance under AS 11.71.010 - 11.71.060 [AS 11.71.010 - 11.71.070] in  
25       the degree appropriate to the circumstances as described in those  
26       sections.

27       \* Sec. 5. AS 11.71.070 is repealed.

28       \* Sec. 6. This Act takes effect immediately under AS 01.10.070(c).

CS FOR SENATE BILL NO. 18 (Judiciary)

"An Act making the possession of less than eight ounces of marijuana a class B misdemeanor and making specific findings that constitute a legitimate and compelling state interest to prohibit the possession of less than eight ounces of marijuana; and providing for an effective date."

SENATE FINANCE COMMITTEE Action:

March 16, 1989 - Reported out with seven zero fiscal notes

FISCAL NOTES:

Fiscal notes for the original bill and the CS (Jud) were the same.

A - Dept of Law	259.1
B - Dept of Administration (Public Defender)	173.7
C - Dept of Administration (Public Advocacy)	172.3
D - Dept of Health & Social Services	-0-
E - Dept of Public Safety	-0-
F - Court System	34.5
G - Dept of Corrections	108.0

(Fiscal note G was presented to the Committee for the first time at the March 16 meeting by Bill Parker.)

The Committee zeroed all fiscal notes because it was felt that, since it is already illegal to possess marijuana in public, there would be no new expenses incurred. The Committee felt it was doubtful there would be any arrests for private possession -- no cases to prosecute, no inmates to incarcerate -- in FY 90. However, should the departments incur expenses, they could make a supplemental appropriation request before the Legislature next year. The Committee took a wait-and-see attitude.

STATE OF ALASKA  
THE LEGISLATURE

POUCH Y - STATE CAPITOL  
JUNEAU, ALASKA 99811  
907-465-3800

LEGISLATIVE AFFAIRS AGENCY

MEMORANDUM

January 12, 1989

SUBJECT: House Bill 22 -- sectional analysis  
TO: Representative Alyce Hanley  
FROM: Jack Chenoweth  
Legislative Counsel

This bill "criminalizes" the possession of small amounts (less than eight ounces) of marijuana, making that possession a class B misdemeanor.

The draft combines a "Findings" statement prepared at your direction, and substantive provisions that duplicate what was introduced in 1987 as Senate Bill 32. I have added two sections, appearing as bill sections 3 and 4, as technical amendments made to conform existing laws to the changes proposed in the substantive sections.

Background:

The following information may be useful.

Under a 1968 revision of the drug laws and until amended in 1975, possession of marijuana for personal use was a criminal offense that carried a penalty of up to one year in jail and a fine of not more than \$1,000.

The criminal code classifies marijuana as a schedule VIA controlled substance, the only substance within that classification. Under current law,

-- possession of eight ounces or more of marijuana anywhere constitutes misconduct involving a controlled substance in the fifth degree, and is defined as a class A misdemeanor, AS 11.71.050(a)(3); for the violation of a class A misdemeanor, one may be imprisoned for up to one year and be fined not more than \$5,000;

-- possession of four ounces or more of marijuana constitutes misconduct involving a controlled substance in

the sixth degree, and is defined as a class B misdemeanor, AS 11.71.060(a)(4); for the violation of a class B misdemeanor, one may be imprisoned for up to 90 days and be fined not more than \$1,000;

-- possession in a public place of one ounce or more of marijuana but less than four ounces also constitutes misconduct involving a controlled substance in the sixth degree, AS 11.71.060(a)(1), a class B misdemeanor.

Also, under current law, possession of less than one ounce in a public place is a violation. AS 11.71.070. A "violation" is an offense that is not criminal. For conviction of a violation, no jail sentence may be imposed. See AS 11.81.900(a)(56). A fine may be imposed. While, generally, the maximum fine for a violation may not exceed \$300, AS 12.55.035(b)(5), under current law applicable to possession of small amounts of marijuana, the fine may not exceed \$100. AS 11.71.070(b).

Based in part on a state Supreme Court decision, Ravin v. State, 537 P.2d 494 (Alaska, 1975), possession of less than four ounces of marijuana other than in a public place is not currently defined as a criminal offense. In other words, no provision defines as criminal possession of less than four ounces if that possession occurs other than in a public place.

Principal provisions of this bill:

Sections 2 and 5 are the operative provisions of the legislation.

As drafted, bill section 2 principally affects "simple" possession. It makes a possession of up to eight ounces, or one-half pound, of schedule VIA controlled substance a class B misdemeanor. (As earlier noted, possession of eight ounces or more is, and would remain, a class A misdemeanor.) At the same time, as to other current marijuana possession provisions, this bill repeals one paragraph, paragraph (2), that defines possession within a propelled vehicle, and two other paragraphs, paragraphs (3) and (4), that eliminate distinctions on possession by persons under 19 years of age, and by persons possessing four or more ounces.

If enacted, the effect of the changes made by bill section 2 would be to make simple possession of less than one-half

Representative Alyce Hanley  
Page 3  
January 12, 1989

pound by anyone, in any location, subject to the criminal penalty. No distinction would remain as to possession in a propelled vehicle, and, of course, a distinction based on possession of four or more ounces or less than four ounces would no longer be necessary.

By way of enforcement, if a law enforcement officer finds evidence of possession, the person in possession may be criminally charged.

Bill section 5 repeals AS 11.71.070(a), misconduct involving a controlled substance in the seventh degree, a section that addresses possession of very small amounts of marijuana for sale or in public places. These situations or circumstances are addressed in AS 11.71.060, as revised by bill section 2.

\*

The operative provisions are, as I've noted, based on last legislature's SB 32. When drafted and offered in late 1986 for introduction in the 1987 session, the draft of SB 32 was accompanied by a memorandum that said:

The accompanying bill draft was prepared in response to your request for a draft patterned after [the 14th Legislature's] SB 163. This draft makes the possession of any amount of marijuana illegal. The proposed amendment to AS 11.71.060(a) specifically concerns possession of any amount less than one-half pound and makes it a misdemeanor.

This provision conflicts with the right to privacy under art. 1, sec. 22 of the Alaska Constitution. In the case of Ravin v. State, 537 P.2d 494 (Alaska, 1975), the Alaska Supreme Court ruled that this right to privacy within the home prevailed over an inadequately compelling governmental interest in preventing marijuana possession and use by adults in the home. The policy arguments made in the bill are not, in my opinion, sufficiently weighty to overcome the constitutional protection recognized in the Ravin decision.

Substantively, all that is different between the 1987 bill draft and the one that accompanies this memorandum is the "Findings" provision, bill section 1.

The changes made are significant. The changes are based upon an editing of the findings set out in the earlier ver-

Representative Alyce Hanley  
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sion, together with addition of material based, in part, on testimony obtained by the House Health, Education, and Social Services Committee.

The question set out in the memo I prepared last year and that is quoted above, applicable to the 1987 version of this legislation, remains: Does the right to privacy in the home prevail over the governmental interest stated in the "Findings" section as revised in April and May of 1988, the basis of this bill draft?

Last session, speaking to the Senate-passed version, CSSB 32 (HESS), I wrote

In Ravin, the court acknowledged that the right of privacy is limited by the "legitimate needs of the State to protect the health and safety of its citizens." 537 P.2d 494 at 501. Responding to the evidence marshalled by the state in defense of its prosecution, the court determined that

. . . It appears that effects of marijuana on the individual are not serious enough to justify widespread concern, at least as compared with the far more dangerous effects of alcohol, barbiturates, and amphetamines. Moreover, the current patterns of use in the United States are not such as would warrant concern that in the future consumption patterns are likely to change.

Ravin, supra., at 509 - 510. The court did not close the door to debate or to the adoption of legislation that would survive constitutional scrutiny:

Research is continuing extensively. Scientific doubts persist, however, and that fact has significance for our application of the law. It is a long-standing rule of law that statutes designed to protect the public health will receive a liberal construction. . . . There is a presumption in favor of public health measures; when there is substantial doubt as to the safety of a given substance or situation for the public health, controls intended to obviate the danger will usually be upheld.

Ravin, supra., at 510. But, the court concluded:

. . . no adequate justification for the state's intrusion into the citizen's right to privacy by its prohibition of possession of marijuana by an adult for personal consumption in the home has been shown. The privacy of the individual's home cannot be breached absent a persuasive showing of a close and substantial relationship of the intrusion to a legitimate governmental interest. Here, mere scientific doubts will not suffice. The state must demonstrate a need based on proof that the public health or welfare will in fact suffer if the controls are not applied. [Emphasis added]

Ravin, supra. at 511.

In my handling of the drafting and related legal work that attaches to the privacy issue, I have tried to remind legislative committees that the court's decision in Ravin necessitates that the legislature needs to try to meet the burden placed on the state to "demonstrate a need based on proof that the public health or welfare will in fact suffer if [the proposed] controls are not applied." What is in balance is, as the court has said

. . . the general proposition that the authority of the state to exert control over the individual extends only to activities of the individual which affect others or the public at large as it relates to matters of public health or safety, or to provide for the general welfare. . . . The state cannot impose its own notions of morality, propriety, or fashion on individuals when the public has no legitimate interest in the affairs of those individuals. . . .

Ravin, supra., at 509.

In this legislation, then, the "findings" are quite important. Bill section 1 of each version purports to set out factual conclusions from which the legislature has decided to proceed to "recriminalize" marijuana. The content of these findings may well determine whether the legislation passes constitutional muster.

Other provisions:

Bill sections 3 and 4 are technical conforming amendments.

Representative Alyce Hanley  
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January 12, 1989

The legislation is given an immediate effective date by bill section 6.

\*

If the analysis prompts questions, please contact me.

JC:gc  
WKG5/084

RECEIVED MAR 15 1989

Paul Kenniston  
9170 Riverwood Drive  
Juneau, Alaska 99801

Senator John Binkley  
Pouch V  
Juneau 99811

Dear Senator Binkley,

I want you to support Senate Bill 18 for the following reasons: (1) it recriminalizes marijuana; (2) it imposes tougher laws on users. I am fifteen, and I urge you, as co-chair, to bring this issue under consideration of the committee its in.

Sincerely,

Paul Kenniston

cc: Senate Finance Committee

RECEIVED MAR 15 1989

Paul Gerber  
Mendenhall Loop C-0  
Juneau, AK 99801

March 12, 1989

Pouch V  
Juneau, AK 99811

Dear Senator Binkly:

I am an 18 year old student attending Community Christian High School. I would urge you to vote yes on Senate Bill 18, which would recriminalize Marijuana. Though I do not think this bill imposes a strong enough penalty on people who possess this drug, I think it is the best choice at present.

Sincerely,

Paul Gerber

cc: Senate Finance Committee

RECEIVED MAR 15 1989

Greg Brayton  
4224 Ptarmigan St.  
Juneau, AK 99801

Pouch V  
Juneau, AK 99811

Dear Senators Binkley & Uehling,

I strongly urge you to support HB 18. The bill would make the possession of marijuana illegal. This is what the law should be anyway. I am a 15 year old high-school student, but since I have such strong convictions about the issue, I felt that it was my duty to inform you of my opinion.

As the co-chairs of the Senate Finance Committee please schedule this legislation for a hearing.

Sincerely,  
Greg Brayton

cc: Senate Finance Committee

FEB 02 1989

BILL NO: SB 18

DATE: February 2, 1989

TITLE: "An Act relating to marijuana; and providing for an effective date."

CONTACT: Gayle A. Horetski  
Deputy Commissioner  
465-4322

DEPARTMENT OF PUBLIC SAFETY

This bill makes possession of any amount of marijuana (less than one-half pound) in any place a class B misdemeanor offense. A class B misdemeanor carries a maximum penalty of 90 days in jail and a \$1,000 fine.

The limited resources and staffing level of the Alaska State Troopers drug enforcement units requires that these officers concentrate their enforcement efforts on drug suppliers and dealers, leaving little time to actively pursue those who merely possess small amounts of marijuana. Suppliers and dealers usually have substantial amounts of marijuana which are destined for sale in small amounts to individuals. It is more efficient to seize substantial amounts of the drug at its source than to seize small amounts from individuals.

Since possession of any amount of marijuana in public, on a school ground, by a minor, or while operating a motor vehicle is presently a crime, the trooper on routine patrol or working traffic enforcement has the power to arrest and charge when confronted with these situations.

Although passage of this legislation may well deter some people from possessing small amounts of marijuana in their homes (because it would be illegal), the enforcement efforts of the Alaska State Troopers would not change much from its present focus on suppliers and dealers. Passage of this legislation would bring Alaska's marijuana laws in line with federal laws and those in other states. Because of the Alaska Supreme Court's decision in Ravin v. State, 537 P. 2d 494 (1975), the new penalty provisions contained in this bill will almost certainly be subject to constitutional challenge, probably resulting in protracted litigation.

The Department of Public Safety is neutral on this legislation.



Arthur English  
Commissioner

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- |    | <u>Voter I.D. #</u>           | <u>Printed Name</u> | <u>Signature</u>           |
|----|-------------------------------|---------------------|----------------------------|
| 1. | 949113                        | Dorothy Ann Wright  | <i>Dorothy Ann Wright</i>  |
|    | <u>306 Doe Field Dr.</u>      | <u>Anchorage</u>    | <u>349-4962</u>            |
|    | Address                       |                     | Telephone                  |
| 2. |                               | Kathleen Kuorikoski | <i>Kathleen Kuorikoski</i> |
|    | <u>PO Box 90211</u>           | <u>99509</u>        |                            |
|    | Address                       |                     | Telephone                  |
| 3. |                               | Sharon M. Rude      | <i>Sharon M. Rude</i>      |
|    | <u>13421 Wimmerush Cir.</u>   |                     | <u>345-2857</u>            |
|    | Address                       |                     | Telephone                  |
| 4. |                               | Loretta Foster      | <i>Loretta Foster</i>      |
|    | <u>4620 Golden Spring Cir</u> | <u>99507</u>        | <u>346-1565</u>            |
|    | Address                       |                     | Telephone                  |
| 5. |                               | LANA TRULLO         | <i>Lana Trullo</i>         |
|    | <u>1701 Elcadmic #3</u>       | <u>99507</u>        | <u>344-1438</u>            |
|    | Address                       |                     | Telephone                  |
| 6. |                               | Carol Fuller        | <i>Carol Fuller</i>        |
|    | <u>12810 Troy St., Anch</u>   |                     | <u>345-3411</u>            |
|    | Address                       |                     | Telephone                  |
| 7. |                               | ROBERT E. WEIMER    | <i>Robert E. Weimer</i>    |
|    | <u>1620 WINTERSET DR ANCH</u> |                     | <u>562-5647</u>            |
|    | Address                       |                     | Telephone                  |

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"Shall Alaska Statute 11.71.060(a) be amended to classify the use, display, or possession of any amount of marijuana up to one-half pound as a class B misdemeanor?"

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<u>Voter I.D. #</u>	<u>Printed Name</u>	<u>Signature</u>
1. 729353	Nancy J. Beardsley	Nancy J. Beardsley
13201	Reef Pt. Anch, AK 99515	345-4764
	<u>Address</u>	<u>Telephone</u>
2. 1409276	Linda K. Vost	Linda K. Vost
13624	Venus Way Anch, AK 99515	345-5329
	<u>Address</u>	<u>Telephone</u>
3. 1442815	Marcia K. Hastings	Marcia K. Hastings
7136	Condace Cir 99516	346-2524
	<u>Address</u>	<u>Telephone</u>
4. <del>Nancy O Hamilton</del>	<del>Nancy O Hamilton</del>	<del>Nancy O Hamilton</del>
P.O. Box 1915	99511	346-2524
	<u>Address</u>	<u>Telephone</u>
5. Judy A. Houlahan	Judy A. Houlahan	Judy A. Houlahan
3431	Spinnaker Dr. 99516	345-0562
	<u>Address</u>	<u>Telephone</u>
6. Peggy Lee Kirtia	Peggy Lee Kirtia	Peggy Lee Kirtia
12831	Monterey Cir 99510	345-5016
	<u>Address</u>	<u>Telephone</u>
7. Marie Lee Tremblay	Marie Lee Tremblay	Marie Lee Tremblay
7850	Arctic Dr. 99516	345-0720
	<u>Address</u>	<u>Telephone</u>

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- |    | <u>Voter I.D. #</u>  | <u>Printed Name</u> | <u>Signature</u>             |
|----|----------------------|---------------------|------------------------------|
| 1. |                      |                     |                              |
|    |                      | Dean E Nelson       | <i>Dean E Nelson</i>         |
|    | 2621 W 69th          | ANCH, AK 99502      | 748-1814                     |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 2. | 260103               | DAVID ONEILSON      | <i>David Oneilson</i>        |
|    | 2621 W 69th          | ANCHORAGE 99502     | 748-1814                     |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 3. | 311377               | LeeAnn Crumbley     | <i>Lee Ann Crumbley</i>      |
|    | 630 Cedar Pt. Cir.   | Anchorage, AK 99515 | 907-344-5175                 |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 4. | 367257               | ALICE RICHARDSON    | <i>Mary Alice Richardson</i> |
|    | 1521 Sunrise Dr.     | Anchorage, 99508    | 277-5770                     |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 5. |                      |                     |                              |
|    | 6740                 | Anchorage, AK       | 248-4418                     |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 6. | 850883               | Rhonda J. Schlerm   | <i>Rhonda Schlerm</i>        |
|    | 2711 Cutwater Cir.   | Anchorage 99516     | 345-7363                     |
|    | <u>Address</u>       |                     | <u>Telephone</u>             |
| 7. |                      | MARY CAROL WRIGHT   | <i>Mary Carol Wright</i>     |
|    | 15650 Southpark Loop | Anchorage           | 345-6432                     |
|    | <u>Address</u>       | 99516               | <u>Telephone</u>             |

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Voter I.D. #	Printed Name	Signature
1.	ANETTE C. SHOWALTER	<i>Anette C. Showalter</i>
	2320 TASHA DR., ANCHORAGE, 99503	348-3153
	Address	Telephone
2.	Patricia A. Jackson	<i>Patricia A. Jackson</i>
	15210 Pollock Dr. Anchorage, 99516	345-1434
	Address	Telephone
3.	Leslie Wiederholt	<i>Leslie W. Wiederholt</i>
	12831 Trent Circle	345-5979
	Address	Telephone
4.		
	Address	Telephone
5.		
	Address	Telephone
6.		
	Address	Telephone
7.		
	Address	Telephone

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- |    | <u>Voter I.D. #</u>                     | <u>Printed Name</u> | <u>Signature</u>         |
|----|---|---------------------|--------------------------|
| 1. | 367708                                  | Glenn H. Lundell    | <i>Glenn H. Lundell</i>  |
|    | 3011 Brittany Place, Anchorage AK 99504 |                     | 333-0054                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 2. | 378268                                  | Christine Lundell   | <i>Christine Lundell</i> |
|    | 3011 Brittany Pl. Anchorage, AK 99504   |                     | 333-0054                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 3. | 413369                                  | JOHN J BENTZ        | <i>John Bentz</i>        |
|    | P.O. Box 112663 Anchorage AK 99511      |                     | 345-6557                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 4. | 156255                                  | DOROTHY TONEY       | <i>Dorothy Toney</i>     |
|    | 2502 Brenewood Dr 99517                 |                     | 243-8402                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 5. | 452698                                  | MARTHA M. NELSON    | <i>Martha M. Nelson</i>  |
|    | 12870 BEN CT ANCH. AK. 99515            |                     | 345-0007                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 6. | <del>DAVID F. NELSON</del>              |                     | <del>345-0007</del>      |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |
| 7. | 2382853                                 | Sheilahi Silva      | <i>Sheilahi Silva</i>    |
|    | 3407 Dorbrandt St. Anch, AK.            |                     | 565-3194                 |
|    | <u>Address</u>                          |                     | <u>Telephone</u>         |

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- |    | <u>Voter I.D. #</u>                   | <u>Printed Name</u> | <u>Signature</u>         |
|----|---------------------------------------|---------------------|--------------------------|
| 1. | 113751                                | EVA J REESE         | <i>Eva J Reese</i>       |
|    | 3602 21st Dr. Anch AK 99517           |                     | 243-5998                 |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 2. | 2166659                               |                     | <i>Lefora Otnobruken</i> |
|    | P.O. Box 110412 / 4901 Hillandale Dr. |                     | 345-0671                 |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 3. | 2166989                               |                     | <i>[Signature]</i>       |
|    | P.O. Box 110412 / 4901 Hillandale Dr. |                     | 345-0671                 |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 4. | 04551586                              | DARLENE NELSON      | <i>Darlene Nelson</i>    |
|    | 2621 W 69th Ave. Anch 99502           |                     | 248-1814                 |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 5. |                                       | Paul Rohwer         | <i>Paul Rohwer</i>       |
|    | 10845 OUR RD Anch. AK                 |                     | 907 346 1655             |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 6. |                                       | Ellen Rohwer        | <i>Ellen Rohwer</i>      |
|    | 10845 OUR RD Anch AK                  |                     | 907 346 1655             |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |
| 7. |                                       | JERRY W KIZLEY      | <i>Jerry W Kizley</i>    |
|    | 19811 Olympic Dr Anch AK 99515        |                     | 907-344-5850             |
|    | <u>Address</u>                        |                     | <u>Telephone</u>         |

183964

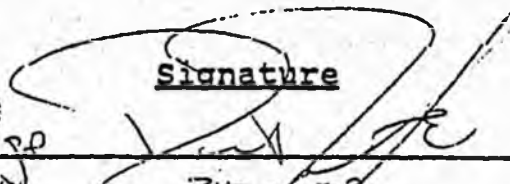
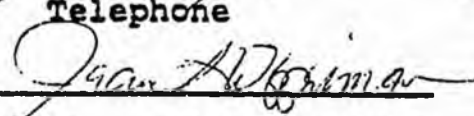
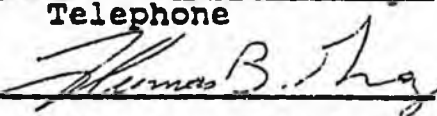
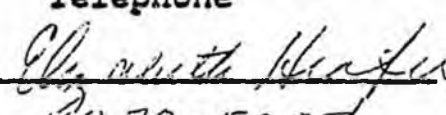

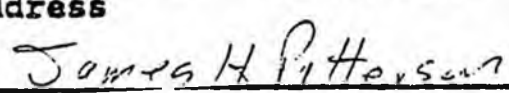
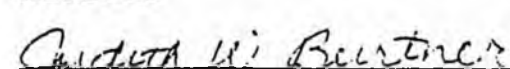
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- |    | <u>Voter I.D. #</u>                      | <u>Printed Name</u> | <u>Signature</u>  |
|----|--|---------------------|---|
| 1. | 1951994                                  | Rick Davison        |    |
|    | 3501 Admiralty Bay Anch. AK              | 199515              | 349-7329  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 2. | 4197259                                  | Jean Wappaman       |    |
|    | 1284 Silver Springs Dr Anch 99516        |                     | 345-2455  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 3. | 4766771                                  | Thomas Gray         |   |
|    | 13131 BISCAYNE CIRCLE ANCHORAGE AK 99516 |                     | 345-1356  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 4. |  | Elizabeth Heffer    |  |
|    | 1143 S H. Woodbury Ave AK                |                     | 272-5257  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 5. |  | Teresa Pelt         |   |
|    | 3500 LaTouche #260 99508                 |                     | 562-2969  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 6. |  | James H. Pitterson  |    |
|    | 3500 LaTouche St                         |                     | 345-3215  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |
| 7. |  | Christa M. Burtner  |    |
|    | Green Hills PO Box 111041                |                     | 345-1598  |
|    | <u>Address</u>                           |                     | <u>Telephone</u>  |

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- |    | <u>Voter I.D. #</u>                                       | <u>Printed Name</u> | <u>Signature</u>                      |
|----|---|---------------------|---------------------------------------|
| 1. | <del>246312</del><br>2205 Boniface Pkwy #33               | Alice S Green       | <i>Alice S Green</i>                  |
|    | <u>Address</u>  | <u>Telephone</u>    | 337-3084                              |
| 2. | 771320  | Ernest Schlereth    | <i>Ernest Schlereth</i>               |
|    | <u>Address</u>  | <u>Telephone</u>    | 345 7363<br>272 5549                  |
| 3. | <del>3267011</del><br>4931 Omega Cir                      | Margie Gilchrist    | <i>Margie L. Gilchrist</i>            |
|    | <u>Address</u>  | <u>Telephone</u>    | 345-0644                              |
| 4. | <del>JOHN L. JAWAY</del><br>12802 BREEZE WOOD DR.         | JOHN L. JAWAY       | <i>John L. Jaway</i>                  |
|    | <u>Address</u>  | <u>Telephone</u>    | 249-8402                              |
| 5. | <del>4708759</del><br>12102 Lilac Circle, Anch., AK 99516 | DENISE WRIGHT       | <i>Denise Wright</i>                  |
|    | <u>Address</u>  | <u>Telephone</u>    | (907) 345-8568                        |
| 6. | 1152701   | ROBERT A. WHITE     | <i>Robert Allen White</i>             |
|    | <u>Address</u>  | <u>Telephone</u>    | Box 11219 Anchorage AK 99511 345-3922 |
| 7. | <del>Maria M Hill</del><br>2308 Union St Anchorage 99507  | Maria M Hill        | <i>Maria M Hill</i>                   |
|    | <u>Address</u>  | <u>Telephone</u>    | 344-2424                              |

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	<u>Voter I.D. #</u>	<u>Printed Name</u>	<u>Signature</u>
1.	1216996	Jean Higgins	Jean Higgins

	<u>Address</u>	<u>Telephone</u>
2.		

	DAVID J. LORAN	David J Loran
--	----------------	---------------

	12431 CLIPPERSHIP DR ANCHORAGE	345-3920
--	--------------------------------	----------

3.	7801 Upper DeArmour	Elizabeth B. Hudson	345-6731
----	---------------------	---------------------	----------

	JOSEPH S. CALDARERA	349-1561
--	---------------------	----------

4.	5301 COUNTRY CLUB, ANCH. AK.	
----	------------------------------	--

	<u>Address</u>	<u>Telephone</u>
5.		

	<u>Address</u>	<u>Telephone</u>
6.		

	<u>Address</u>	<u>Telephone</u>
7.		

	<u>Address</u>	<u>Telephone</u>

\*This page may be duplicated for additional sponsors.

Page 10 of 13

"Shall Alaska Statute 11.71.060(a) be amended to classify the use, display, or possession of any amount of marijuana up to one-half pound as a class B misdemeanor?"

WE, the undersigned, have read and support the above stated initiative. We are all qualified voters residing in the State of Alaska, and as sponsors, are committed to circulate the petition throughout the State in person and collect sufficient signatures to place the initiative on the next statewide election ballot.

	<u>Voter I.D. #</u>	<u>Printed Name</u>	<u>Signature</u>
1.	2935416	M. Barbara Weiflick	<i>M. Barbara Weiflick</i>
	<u>Address</u>	<u>Telephone</u>	
	PO Box 113502, Anch. Alaska 99511	346-1481	
2.	639617	Kathleen K. Jackson	<i>Kathleen K. Jackson</i>
	<u>Address</u>	<u>Telephone</u>	
	12021 Forelands Circle, Anchorage, AK 99515	522-15201	
3.	15346	Lois E. KENNY	<i>Lois E. Kenny</i>
	<u>Address</u>	<u>Telephone</u>	
	3304 Greenland AA Anch. AK 99517	277-7352	
4.	293046	Jacqueline F. Jones	<i>Jacqueline F. Jones</i>
	<u>Address</u>	<u>Telephone</u>	
	P.O. Box 112604, Anchorage, AK 99511	345-1221	
5.	682825	Sandra M. Peck	<i>Sandra M. Peck</i>
	<u>Address</u>	<u>Telephone</u>	
	12305 Wilderness Anchorage AK 99516	345-3207	
6.	4121538	Gerald K. Van Kooten	<i>Gerald K. Van Kooten</i>
	<u>Address</u>	<u>Telephone</u>	
	4551 E 135 <sup>th</sup> Anch AK 99516	345-7900	
7.	7735 Port Orford	Marlene Taus	<i>Marlene Taus</i> 346 2403
	<u>Address</u>	<u>Telephone</u>	

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	<u>Voter I.D. #</u>	<u>Printed Name</u>	<u>Signature</u>
1.	1779866	MONA L. BRYANT	<i>Mona Bryant</i>
	1539 HARRIET CT. ANCH. AK. 99515		907-345-4344
	<u>Address</u>		<u>Telephone</u>
2.	55913	Jay R. Melville	<i>Jay R. Melville</i>
	6641 Teslar Dr Anch 99509		907-349-1167
	<u>Address</u>		<u>Telephone</u>
3.		Judith L Melville	<i>Judith L Melville</i>
	6641 Teslar Dr Anch 99509		907-349-1167
	<u>Address</u>		<u>Telephone</u>
4.		ROBERT L. RICHMOND	<i>Robert L. Richmond</i>
	11200 SNOWLINE DRIVE		276-5727
	<u>Address</u>		<u>Telephone</u>
5.	571956	CAROL V. RICHMOND	<i>Carol V. Richmond</i>
	11200 Snowline Dr. Anch 99516		346-1246
	<u>Address</u>		<u>Telephone</u>
6.	421520	Sue A. Wise	<i>Sue A. Wise</i>
	3140 Merganser Anch. 99516		349-1544
	<u>Address</u>		<u>Telephone</u>
7.			
	<u>Address</u>		<u>Telephone</u>

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Page 12 of 13

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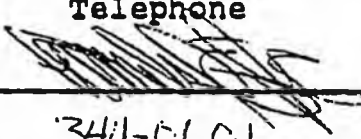
- |    | <u>Voter I.D. #</u>         | <u>Printed Name</u>                   | <u>Signature</u>            |
|----|-----------------------------|---------------------------------------|-----------------------------|
| 1. | 586949                      | Carolyn Craft Ludwig                  | <i>Carolyn Craft Ludwig</i> |
|    |                             | 10510 Lone Tree Drive 99516           | 346 3115                    |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 2. | FRANCES M. O'MEARA (930358) | Frances M. O'Meara                    | <i>Frances M. O'Meara</i>   |
|    |                             | 12440 Bainbridge Rd. 99516            | 345-4794                    |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 3. | CAROL A. FARREN (152768)    | Carol A. Farren                       | <i>Carol A. Farren</i>      |
|    |                             | 12800 Ridgewood Rd Anchorage AK 99516 | 345-0786                    |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 4. |                             |                                       |                             |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 5. |                             |                                       |                             |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 6. |                             |                                       |                             |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |
| 7. |                             |                                       |                             |
|    |                             | <b>Address</b>                        | <b>Telephone</b>            |

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- |    | <u>Voter I.D. #</u>                     | <u>Printed Name</u> | <u>Signature</u>   |
|----|---|---------------------|--|
| 1. | 3-3044217                               | Brian E. Houlihan   | Brian E. Houlihan  |
|    | <u>3-1955</u>                           |                     |  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 2. | 3-1957956                               | Cathleen T. Miller  | Cathleen T. Miller   |
|    | <u>925 Coral Ln Anchorage 99515</u>     |                     | <u>345-1844</u>  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 3. | 01782663                                | Pamela D. Eagle     |  |
|    | <u>Box 110152 Fairbanks, AK 99711</u>   |                     | <u>344-0601</u>  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 4. |   | Steven D Gordon     | Steven D Gordon  |
|    | <u>3820 Robin St Anchorage AK 99504</u> |                     | <u>333-9541</u>  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 5. |   |                     |  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 6. |   |                     |  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |
| 7. |   |                     |  |
|    | <u>Address</u>                          |                     | <u>Telephone</u>   |

\*This page may be duplicated for additional sponsors.



Senator Paul A. Fischer  
Alaska State Senate

RESOLUTIONS/STATEMENTS FOR RECRIMINALIZATION OF MARIJUANA

EDUCATION RELATED ORGANIZATIONS

Anchorage School District  
Galena City School District  
Galena School District Board of Education  
Haines Borough School Board of Education  
Juneau City and Borough School District  
Juneau Douglas High School Student Council  
Kanal Peninsula Borough School District  
Kerny Lake High School  
Ketchikan Gateway School District  
Northwest Arctic Borough School District  
Wrangell Junior and Senior High School  
Alaska Parent Teacher Association  
Association of Alaska School Boards  
Alaska Association of Secondary School Principals  
Alaska Association of School Governments/General Assembly  
Alaska Association of School Governments/Student Leaders  
Alaska Municipal League  
Alaska State PTA Association

LAW AND RELATED ORGANIZATIONS

Anchorage Police Department  
Alaska Peace Officers Association  
Anchorage Crime Commission  
Galena City Drug Task Force  
Galena City Police Department  
Juneau Police Department  
Department of Public Safety  
FBI National Academy Associates-Alaska Chapter  
Wrangell Police Department  
Alaskans for Drug Free Youth  
Michael R. Spain/United States Attorney  
Anchorage Crime Commission  
Sitka Police Department  
Alaska Association of Chiefs of Police

OTHER ORGANIZATIONS

Boys and Girls Clubs of America  
Central Council (Tlingit and Haida Indian Tribes of Alaska)  
Cook Inlet Council on Alcohol and Drug Abuse  
Ketchikan Elks Lodge #1429  
Ketchikan Rotary Club 200  
Kiwanis Clubs of Anchorage  
Valdez Rotary Club  
Wrangell Junior and Senior High Schools  
Rotary International  
Ketchikan Soroptomists  
Tongass Baptist Association/Southeast Alaska  
Safa Homes-Juneau  
Juneau Alliance of the Mentally Ill  
Juneau Elks Lodge 420

MUNICIPALITIES

City and Borough of Juneau  
Municipality of Anchorage  
City of Ketchikan  
City of Galena  
Togiak City Council  
City of Saxman  
City of Valdez  
City of Haines  
City of Togiak  
Northwest Arctic Borough Assembly  
City and Borough of Sitka  
City of Wrangell  
Alaska Municipal League

CHAMBER OF COMMERCE

Anchorage Chamber of Commerce  
Greater Sitka Chamber of Commerce  
Juneau Chamber of Commerce

POLITICALLY RELATED

1986 Republican Party Convention Platform

JAN 11 1969



ALASKA ASSOCIATION OF ELEMENTARY SCHOOL PRINCIPALS  
ALASKA ASSOCIATION OF SECONDARY SCHOOL PRINCIPALS  
ALASKA ASSOCIATION OF SCHOOL ADMINISTRATORS

• ALASKA COUNCIL OF SCHOOL ADMINISTRATORS •  
326 Fourth St., Suite 408 Juneau, Alaska 99801 586-9702

## RESOLUTION FOR THE RECINDING OF LAW ALLOWING GROWTH AND POSSESSION OF MARIJUANA IN ALASKA

The Alaska Council of School Administrators urges the Legislature and Governor to pass legislation to recind the current law regarding marijuana.

### RATIONAL:

- (A) The problem of drug and alcohol abuse by our society, particularly by children in our schools, is rising.
- (B) The President of the United States has asked for a national crusade to help solve this problem.
- (C) Many of the students using drugs, particularly marijuana, obtain it from homes where parents grow their own marijuana for personal use.
- (D) There is substantial proof that marijuana is harmful to health and safety of it's users.
- (E) There is a common perception by youth and others that the current Alaska Statutes "legalize" marijuana, and this misperception has a social effect that is detrimental to the public health and welfare in that it encourages drug use.
- (F) We have observed young people use marijuana and have had to deal first hand with it's effects to learning and behavior.

*Alaska*  
**MUNICIPAL**  
*League*

TELEPHONE  
(907) 586-1373  
FAX 463-5487

217 SECOND STREET, SUITE 200  
JUNEAU, ALASKA 99801

6 February, 1989

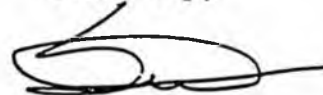
FEB 08 1989

Senator Paul Fischer  
Alaska State Legislature  
P.O. Box V  
Juneau, Alaska 99811

Dear Senator Fischer,

As you requested in your letter of February 3, I have enclosed a copy of Alaska Municipal League Resolution #89-54, "A Resolution Supporting Repeal of AS 11.71.070 and Amendment of AS 11.71.060(a) to make Marijuana Illegal." In addition, I have included a letter and resolution from Mayor Gamble of Angoon on the same subject.

Sincerely,



Scott A. Burgess  
Executive Director

Enclosure

**Resolution of the Alaska Municipal League**

**Resolution No. 89-54**

**A RESOLUTION SUPPORTING REPEAL  
OF AS 11.71.070 AND AMENDMENT OF  
AS 11.71.060(a) TO MAKE MARIJUANA ILLEGAL**

WHEREAS, the Alaska Municipal League recognizes the serious individual and public safety problems that exist in all communities in Alaska as a result of substance abuse (*AML Policy Statement: Part III, Public Safety; D. State Assistance*), and

WHEREAS, Alaska is the only state in the union with a permissive statute for personal possession of marijuana, and

WHEREAS, findings of local, state and federal authorities conclude that marijuana is detrimental to the health, welfare, and public safety of all people, and

WHEREAS, the Supreme Courts of other states and the U.S. Supreme Court have upheld state statutes prohibiting the use and possession of marijuana, and

WHEREAS, current Alaska state statutes are not in conformity with federal drug enforcement laws controlling drug abuse, and

WHEREAS, the conflict between federal and state law pertaining to marijuana causes unnecessary barriers for local police and Alaska State Troopers in protecting the public from drug abusers, and

WHEREAS, the Anchorage Crime Commission has for the past three years concluded that Alaska's permissive laws on marijuana should be repealed, and

WHEREAS, representatives of 60 Alaskan high schools at the Alaska Association of School Governments' Annual Fall Conference on October 18, 1986, unanimously passed a resolution to repeal the current marijuana law and make the drug in all its forms illegal in Alaska;

NOW, THEREFORE, BE IT RESOLVED that the Alaska Municipal League urges the Governor of the State of Alaska and the Alaska State



# Alaskans for Drug-Free Youth

Revised - February 6, 1989

An Affiliate Member of the National Federation of Parents for Drug-Free Youth.

## RESOLUTION IN SUPPORT OF SB18 & HB22 "An Act Relating to Marijuana..."

**WHEREAS** - Alaskans for Drug-Free Youth are concerned about the prevalent use of the drug marijuana by adults, as well as children.

**WHEREAS** - Adults may now possess up to 4 oz. of marijuana for their own personal use in their homes, even though in these homes may reside children. Studies show a correlation between adult use and child use.

**WHEREAS** - Research has demonstrated that marijuana usage is occurring more frequently in earlier age groups.

**WHEREAS** - The metabolites of marijuana are fat and lipid soluble and may remain in the body for extended periods of time.

**WHEREAS** - The THC content of street samples of marijuana generally have increased in potency from approximately less than one percent at the time of the Ravin Decision in 1975 to as high as 15.30 percent of samples taken from police-confiscated marijuana in Ketchikan during 1988. The Ravin Case in reference to higher potency levels in the future, states, "if such a shift were to occur, then marijuana use could be characterized as a serious health problem."

**WHEREAS** - Recent research has yielded findings that demonstrate that marijuana does, when used at least once a week, have a detrimental effect on respiratory and cardiovascular systems, on reproductive systems, on the brain, and on the body's immune system.

**WHEREAS** - Evidence strongly suggests that marijuana used regularly during pregnancy may result in infants with characteristics compatible with fetal alcohol syndrome.

**WHEREAS** - SB18 and HB22 address these health findings.

WHEREAS - The State of Alaska statutes pertaining to marijuana are not in conformity with National and International Laws.

WHEREAS - The Supreme Court of Alaska has stated that "no one has the right to do things in their own home which will affect others adversely." \*

WHEREAS - The Supreme Court of Alaska further stated "when there is a substantial doubt as to the safety of a substance or situation of Public Health, controls to obviate the danger will usually be upheld."

THEREFORE - Be it resolved that Alaskans for Drug-Free Youth respectfully urge our public officials in the State Government including the legislature to make the possession of any amount of marijuana illegal by passing SB18 and HB22.

\* Reference - Ravin Case 1975



P.O. BOX 189  
ANGOON  
ALASKA  
99820

RECEIVED  
FEB 06 1989  
ALASKA MUNICIPAL LEAGUE  
PHONE:  
(907) 788-3653

February 1, 1989

Scott A. Burgess  
Executive Director  
Alaska Municipal League  
217 Second Street, Suite 200  
Juneau, Alaska 99801

Dear Mr. Burgess:

The Council of the City of Angoon reviewed and approved the enclosed resolution at a special meeting held on January 31, 1989.

The City of Angoon would appreciate your effort to share this information with other members of the A.M.L.

The joint Insurance plan and the directory are two valuable efforts to assist the outlying municipalities. Keep up the good work.

Sincerely,

Edward J. Gamble, Sr.  
Mayor

Enclosed: (copy) Resolution 89-03



P.O. BOX 189  
ANGOON  
ALASKA  
99820

PHONE:  
(907) 788-3653

RESOLUTION NO. 89-03

WHEREAS, Angoon is a Second Class incorporated City under the State of Alaska, and

WHEREAS, laws that govern the State of Alaska directly impact the laws that govern the municipality of Angoon, and

WHEREAS, the law that allows the possession of any amount of marijuana has a negative impact with the Community of Angoon and the School System, and

WHEREAS, the City of Angoon has a strong position that people who are involved with the importation of illegal drugs should be dealt with in a criminal manner, and

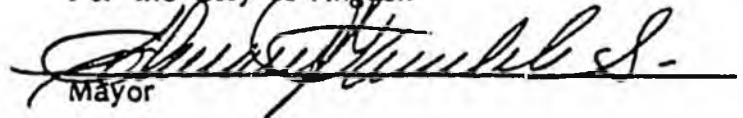
WHEREAS, the State of Alaska has the governing power to develop the laws that can assist the municipalities and School Districts to cope with the existing "drug problem" that appears to be growing annually;

NOW THEREFORE BE IT RESOLVED: That the Alaska State Legislature make it illegal to possess any amount of marijuana;

BE IT FURTHER RESOLVED: That any person involved in the trafficking of illegal drugs be charged with a criminal offense.

Passed at a City Council Meeting held on January 31, 1989 by a vote of 5 Yeas,  
0 Nays, 2 Absent, 0 Abstain.

For the City of Angoon

  
Mayor

ATTEST: Arnthia S. Paul  
City Clerk

SEAL



# BRISTOL BAY AREA HEALTH CORPORATION

P.O. BOX 130 • DILLINGHAM, ALASKA 99576

(907) 842-5201 or (907) 842-5202

---

February 2, 1988

The Honorable Senator Fischer  
Rm. 508, Capitol  
P.O. Box V, Juneau 99811

Dear Senator Fischer,

My Organization on behalf of the 32 villages in the Bristol Bay Area that we by Resolution are authorized to represent for all health matters, wants you to know that we fully support S.B. 18 "for the act relating to marijuana; and providing for an effective date".

You can count on our support and count on us as one of the many (we hope) in favor of your proposed bill, as well as H.B. 22.

Thank you and good luck.

Sincerely,



Robert Clark  
Executive Director

cc: Jay Toth, C.O.O.  
Christy Tilden, Alcohol Program  
Executive Committee  
Representative Jacko  
Senator Zharoff



TANANA CHIEFS CONFERENCE, INC.  
Board of Directors  
Resolution 88-74

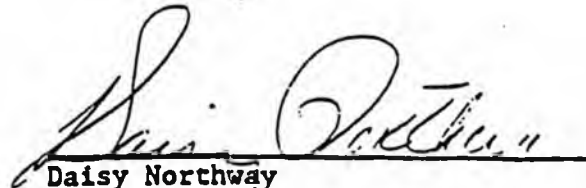
RECRIMINALIZATION OF MARIJUANA POSSESSION AND SALE  
OF DRUG PARAPHERNALIA

- WHEREAS, the sale and public use of marijuana, and possession by minors are already illegal under Alaska State statutes; and,
- WHEREAS, possession and use of small amounts of marijuana in an individual's personal residence have been legal in Alaska since a 1975 Supreme Court ruling on privacy; and,
- WHEREAS, it has been clearly indicated that use of marijuana poses a hazard to the health of the individual user, increases the risk of accidental death and injury, and contributes to community crime and social problems; and,
- WHEREAS, the present legality of home possession of marijuana and sale of drug paraphernalia sends the wrong message to young people making critical choices about personal behavior;

NOW THEREFORE BE IT RESOLVED that the Tanana Chiefs Conference, Inc. Board of Directors hereby supports enactment of legislation by the State of Alaska reinstating the illegality of possession of any amount of marijuana at any time, and making the sale of drug paraphernalia illegal in Alaska.

CERTIFICATION

I hereby certify that this resolution was duly passed by the Tanana Chiefs Conference, Inc. Board of Directors on March 17, 1988 at Fairbanks, Alaska and a quorum was duly established.



Daisy Northway  
Secretary-Treasurer  
Tanana Chiefs Conference, Inc.

Submitted by: TCC Executive Board

accompanied by a small appropriation to DHSS to fund its planning and implementation. DHSS might be encouraged to use these funds to develop common district boundaries for all major DHSS grant programs.

MARIJUANA - Contact Persons: Mike Walleri, Lisa Jaeger,  
Paul Sherry

The Tanana Chiefs Conference is opposed to liberal marijuana laws. The Conference feels that the present leniency of laws regarding home possession of marijuana and sale of drug paraphernalia sends the wrong message to young people making critical choices about personal behavior. If the laws regarding marijuana possession statewide cannot be tightened in the political arena, Tanana Chiefs villages have expressed an interest in more local control of marijuana in the villages. The matter of reinstating the illegality of possession of marijuana under state law could be addressed by individual communities through a local option election process similar to the local option law for possession of alcohol. The main issue is a problem of enforcement. When communities make the decision to ban possession of marijuana as a whole there is more resolve to cooperate with the decision. Enforcement costs are also community related.



# City and Borough of Sitka

FEB 15 1989

304 LAKE STREET . SITKA, ALASKA . 99835

February 13, 1989

Senator Paul Fischer  
Senate District D  
P.O. Box V  
Juneau, Alaska 99811

**SUBJECT: Re-Criminalize Marijuana**

Dear Senator Fischer:

At their regular meeting of January 30, 1989, the Assembly of the City and Borough of Sitka voted unanimously to support the re-criminalization of marijuana. The Assembly did not name a particular legislative bill for endorsement, however, they supported the re-criminalization of the use, display or possession of any amount of marijuana.

Sincerely,

John E. Dapcevich, Mayor  
City and Borough of Sitka



# CITY of WRANGELL, ALASKA

INCORPORATED JUNE 15, 1903

BOX 531, 99929 (907) 874-2381  
FAX: (907) 874-3952

February 21, 1989

FEB 23 1989

Honorable Steve Cowper  
Governor - State of Alaska  
P. O. Box A  
Juneau, Alaska 99811-0101

Dear Sir:

Enclosed is a copy of City of Wrangell Resolution No. 02-89-310 urging the Legislature to re-criminalize marijuana. The City Council supports House Bill No. 22 and Senate Bill No. 18 and urges passage without diluting the intent. The Federal, State and local governments have spent millions of dollars enforcing drug laws and providing medical assistance to drug users, including newborn babies that are addicted from their parent's drug use.

On behalf of the City Council, I urge you to support this legislation. We do not believe the message now given to our youth by the existing laws governing marijuana is the message we want to give.

Sincerely,

Fern Neimeyer  
Mayor

FN/JR/fv

enclosure

cc: Senator Lloyd Jones  
Representative Robin Taylor  
Representative Cheri Davis  
Senator Paul Fischer

CITY OF WRANGELL, ALASKA

RESOLUTION NO 02-89-310

A RESOLUTION OF THE COUNCIL OF THE CITY OF WRANGELL, ALASKA, URGING THE ALASKA LEGISLATURE TO CRIMINALIZE THE ACT OF POSSESSION OF MARIJUANA IN ANY AMOUNT.

WHEREAS, THC is the ingredient in marijuana that goes into the fatty tissues of the brain and other internal organs and takes thirty days to be eliminated from the body; and

WHEREAS, THC is reported to cause effects to a person that may result in the birth of deformed or undersized offspring; and

WHEREAS, the THC content of a marijuana cigarette is as high as ten percent today as compared to one percent ten years ago; and

WHEREAS, numerous psychological and physical reactions result from the use of marijuana which impair the health and well being of the public; and

WHEREAS, Alaska's law which allows the possession of certain amounts of marijuana is contrary to the Federal Government's laws and the "war on drugs" being waged across the nation by Cities and States.

NOW, THEREFORE BE IT RESOLVED BY THE COUNCIL OF THE CITY OF WRANGELL, ALASKA, that the Alaska Legislature is urged to amend the law to criminalize the act of possession of marijuana in any amount in the best interests of the public, except as authorized in AS 17.301. Be it further resolved that copies of this Resolution be forwarded to Governor Steve Cowper, Senator Lloyd Jones, Representative Robin Taylor and Representative Cheri Davis.

PASSED AND APPROVED February 14, 1989

Tom Nimmerger  
MAYOR

ATTEST: Tranette Vincent  
ACTING CITY CLERK

## PULMONARY HAZARDS OF SMOKING MARIJUANA AS COMPARED WITH TOBACCO

TZU-CHIN WU, M.D., DONALD P. TASHKIN, M.D., BEHNAMEH DJAHED, M.D., AND JED E. ROSE, Ph.D.

**Abstract** To compare the pulmonary hazards of smoking marijuana and tobacco, we quantified the relative burden to the lung of insoluble particulates (tar) and carbon monoxide from the smoke of similar quantities of marijuana and tobacco. The 15 subjects, all men, had smoked both marijuana and tobacco habitually for at least five years. We measured each subject's blood carboxyhemoglobin level before and after smoking and the amount of tar inhaled and deposited in the respiratory tract from the smoke of single filter-tipped tobacco cigarettes (900 to 1200 mg) and marijuana cigarettes (741 to 985 mg) containing 0.004 percent or 1.24 percent  $\Delta^9$ -tetrahydrocannabinol.

As compared with smoking tobacco, smoking marijuana was associated with a nearly fivefold greater increment in the blood carboxyhemoglobin level, an approximate-

ly threefold increase in the amount of tar inhaled, and retention in the respiratory tract of one third more inhaled tar ( $P < 0.001$ ). Significant differences were also noted in the dynamics of smoking marijuana and tobacco, among them an approximately two-thirds larger puff volume, a one-third greater depth of inhalation, and a fourfold longer breath-holding time with marijuana than with tobacco ( $P < 0.01$ ). Smoking dynamics and the delivery of tar during marijuana smoking were only slightly influenced by the percentage of tetrahydrocannabinol.

We conclude that smoking marijuana, regardless of tetrahydrocannabinol content, results in a substantially greater respiratory burden of carbon monoxide and tar than smoking a similar quantity of tobacco. (N Engl J Med 1988; 318:347-51.)

WE have previously shown that the habitual smoking of 3 or 4 marijuana cigarettes a day is associated with the same frequency of the symptoms of acute and chronic bronchitis<sup>1</sup> and the same type and extent of epithelial damage in the central airways<sup>2</sup> as the regular smoking of more than 20 tobacco cigarettes a day. A possible explanation for these findings is that a greater quantity of smoke particulates and noxious gases is delivered to and deposited or absorbed in the lungs by marijuana than by a similar amount of tobacco, possibly as a result of differences in the way each type of cigarette is smoked. To investigate this possibility, we examined the dynamics of smoking a marijuana or a tobacco cigarette and measured the particulates delivered to the smoker's mouth during the smoking of a single cigarette of each type.

### METHODS

We studied fifteen men who were habitual smokers (mean age  $\pm$  SD, 31.5  $\pm$  7.1 years), each of whom smoked both tobacco and marijuana. The subjects smoked an average of 29.9  $\pm$  16.7 tobacco cigarettes per day and had smoked an average of 16.1  $\pm$  12.2 pack-years of tobacco (one pack-year equals one pack of tobacco cigarettes per day times the number of years of smoking); they smoked an average of 16.5  $\pm$  17.1 marijuana cigarettes per week, and had smoked an average of 54.8  $\pm$  34.8 joint-years of marijuana (one joint-year equals one cigarette [joint] of marijuana per day times the number of years of smoking). All were in good general health and had normal or nearly normal values for forced vital capacity (101  $\pm$  8.7 percent of predicted values<sup>3</sup>) and forced expiratory volume in one second (96  $\pm$  14 percent of predicted values<sup>3</sup>). None reported intravenous drug abuse or smoking other illicit substances besides marijuana.

Each subject was studied on a single day after refraining from smoking tobacco for at least one hour and marijuana for at least six hours. During the study session, each subject smoked his own brand

of filter-tipped tobacco cigarette, followed, in single-blind fashion, first by a placebo marijuana cigarette (from which nearly all  $\Delta^9$ -tetrahydrocannabinol [ $\Delta^9$ -THC] had been extracted, so that the concentration was 0.004 percent) and next by a marijuana cigarette of similar weight containing 1.24  $\pm$  0.06 percent  $\Delta^9$ -THC. An interval of approximately 30 minutes separated the smoking of each two cigarettes. The tobacco cigarettes weighed 900 to 1120 mg and had a tar yield of 4.6 to 23.1 mg (mean, 12.0  $\pm$  5.7 mg) and a nicotine yield of 0.4 to 1.4 mg (mean, 0.84  $\pm$  0.32 mg) by Federal Trade Commission analysis. The placebo marijuana cigarettes weighed 741 to 940 mg (mean, 840 mg) and those containing 1.24 percent  $\Delta^9$ -THC weighed 849 to 985 mg (mean, 907 mg); both were supplied by the National Institute on Drug Abuse, were stored at 4°C to minimize chemical degradation, and were maintained in a humidifier at 60 percent humidity and 21°C for 24 hours before the study, to reduce harshness.

The subjects were asked to smoke both the tobacco cigarette and the two marijuana cigarettes in a manner as similar as possible to their usual pattern of smoking tobacco and marijuana. Peripheral venous blood was withdrawn anaerobically immediately before and two minutes after the first two cigarettes were smoked for measurement of the percentage of carboxyhemoglobin saturation, with use of a carbon monoxide-oximeter (Model 282, Instrumentation Laboratory, Lexington, Mass.). After smoking each of the marijuana cigarettes, the subjects were asked to rate their level of intoxication on a scale of 0 to 100 percent, with 100 percent representing the greatest "high" they had ever experienced.

The volume, duration, and number of puffs and the intervals between puffs were measured with a 00 Fleisch pneumotachygraph (linear from 5 to 100 ml per second) connected through a differential pressure transducer (Model MP54-3, Validyne, Northridge, Calif.) (range,  $\pm$  2 cm of water) to an oscilloscopic recorder with a differential integrator-computer and a rapid photographic writer (Model VR6, Electronics for Medicine, Pleasantville, N.Y.). To prevent the pneumotachygraph screen from becoming clogged by smoke particles,<sup>4</sup> the pneumotachygraph was connected through wide-bore Tygon tubing (length, 70 cm; internal diameter, 1 cm) to the distal end of a glass cylinder (length, 12 cm; diameter, 5 cm) that contained two ventilation ports (each 1 cm in diameter) and was sealed at its proximal end by a rubber stopper. The tobacco or marijuana cigarette was held in a small plastic holder inserted through the rubber stopper. The ventilation ports were left open between puffs to prevent either the extinction of the lighted cigarette or the excessive accumulation of carbon monoxide. During a puff, the smoker covered the ventilation holes with his index and middle fingers so that the entire volume of air drawn through the cigarette could be measured by the pneumotachygraph. The resistance of the pneumotachygraph (0.0068 cm of water per milliliter per second) was considerably lower than that of the cigarette (0.51 cm of water per milliliter per second for tobacco; 0.17 cm of water per milliliter per second for marijuana); therefore, the pneumotachygraph itself was

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not likely to have a substantial effect on smoking dynamics. The duration of a puff was timed from the pneumotachygraphic flow tracing. The interval between puffs was defined as the period between the end of one puff and the start of the next.

To measure "wash-in" volume (the volume of air inhaled), inductive plethysmographic coils (Respirace Ambulatory Monitoring Systems, Ardsley, N.Y.) were placed around each subject's rib cage and abdomen.<sup>5,6</sup> A demodulator converted changes in electrical inductance in the coils during respiratory movements into voltage signals proportional to changes in the volume enclosed by the coils. Changes in the volume of the respiratory system were calculated from the weighted sums of the signals from the rib cage and abdomen; the weights were determined by the least-squares calibration method.<sup>7</sup> The accuracy of the calibration was confirmed by comparing the inhaled volumes calculated from respiratory inductive plethysmography with spirometric values; the measurements obtained by spirometry and inductive plethysmography agreed within  $\pm 10$  percent. The amount of time the inhaled smoke was retained in the lungs (smoke-retention time) was calculated as the interval between the times corresponding to one third of the maximum inhaled volume and two thirds of the maximum volume exhaled following breath holding (Fig. 1). The no-smoking interval was timed from the end of the smoke-retention time to the start of the next puff.

A previously described proportional smoke-trapping device<sup>8</sup> was connected to the apparatus for measuring the volume of puffs in order to measure the amount of smoke particulates delivered to the smoker's mouth. This device consisted of a plastic cigarette holder through which the mainstream smoke was diverted into two parallel pathways, one containing one capillary tube (pathway A) and the other seven parallel capillary tubes (pathway B). A Cambridge filter pad trapped the smoke that passed through pathway A. The tar trapped by the filter was extracted with methanol and analyzed by means of a spectrophotometer (wavelength, 400 nm). A constant fraction of the tar ( $12.5 \pm 0.53$  percent) was retained in the filter over a wide range of puff volumes (30 to 60 ml), puff durations (1 to 4 sec), and puff flow rates (20 to 100 ml per second).<sup>8</sup> This apparatus, therefore, permitted the actual quantity of smoke particulates delivered to the mouth to be calculated by multiplying the amount of particulates trapped in the Cambridge filter pad in pathway A by seven. At the end of the period of breath holding after each puff, the subjects turned their heads slightly to one side and exhaled the smoke into the large end (diameter, 26 cm) of an adjacent megaphone device, the distal end (diameter, 4.5 cm) of which was fitted with a high-efficiency filter attached to a vacuum system as described by Hinds et al.<sup>9</sup> After the tar was extracted from the filter with methanol, the exhaled particulates were measured with a spectrophotometer. The amount of smoke retained (deposited) in the respiratory tract was expressed as a percentage of the amount inhaled: percentage deposited =  $[1 - (\text{amount of exhaled particulates} / \text{amount of inhaled particulates})] \times 100$ .

Each subject's measurements were averaged for each cigarette smoked. These mean values, as well as the number of puffs, the quantity of particulates inhaled, the percentage of inhaled particulates deposited, and the increment in carboxyhemoglobin saturation per cigarette, were averaged for all 15 subjects for each type of cigarette smoked. The subjects' ratings of their degree of intoxication after marijuana smoking were also averaged for all subjects for each type of marijuana cigarette (placebo and 1.24 percent  $\Delta^9$ -THC). Two-way analysis of variance (for subject and type of cigarette) was used to determine the significance of differences in smoking patterns, the delivery and deposition of particulates, and the increase in carboxyhemoglobin saturation among types of cigarette.<sup>10</sup> Pairwise comparisons were then performed using testing for least significant differences<sup>11</sup>; differences were considered significant if P values were  $< 0.05$ .

## RESULTS

Descriptive data about smoking in the group of 15 subjects are shown in Table 1. Placebo marijuana and marijuana containing approximately 1.24 percent  $\Delta^9$ -THC were smoked in a similar manner. However,

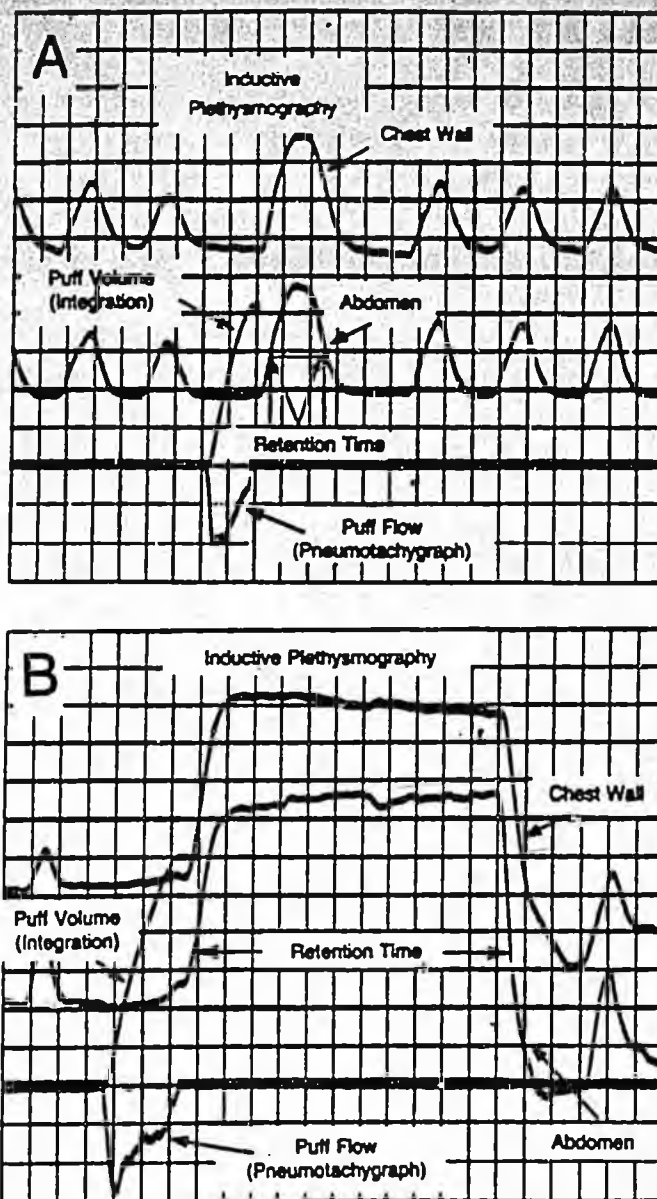


Figure 1. Analogue Tracings of Voltage Signals from Inductive Plethysmographic Coils around the Chest Wall and Abdomen of a Representative Subject and Simultaneous Flow and Integrated Volume Signals from a Pneumotachygraph Incorporated into a Puff-Volume Measuring Device during the Smoking of a Tobacco Cigarette (A) and a Marijuana Cigarette (B).

Note that during marijuana smoking, there is greater amplitude of the voltage signals representing puff volume (measured by the pneumotachygraph) and inhaled volume (measured by the inductive plethysmograph) than during tobacco smoking.

the average volume of puffs was about 70 percent larger ( $P < 0.001$ ) and the duration of puffs about 60 percent longer ( $P < 0.01$ ) during the smoking of marijuana than the smoking of tobacco, regardless of whether the marijuana contained 1.24 or 0.004 percent  $\Delta^9$ -THC; significantly more puffs were taken from the tobacco cigarette than from either the placebo marijuana cigarette or that containing 1.24 percent  $\Delta^9$ -THC ( $P < 0.001$ ). Although the interval between puffs was less for tobacco than for marijuana smoking ( $P < 0.05$ ), the no-smoking interval, which did not include the breath-holding time after

Table 1. Characteristics of 15 Subjects' Smoking of Tobacco, Placebo Marijuana (0.004 Percent  $\Delta^9$ -THC), and Marijuana Containing 1.24 Percent  $\Delta^9$ -THC.\*

INDEX	TOBACCO	MARIJUANA		P VALUE†
		0.004% $\Delta^9$ -THC	1.24% $\Delta^9$ -THC	
mean $\pm$ SD				
Puff volume (ml)	49.4 $\pm$ 15.2	68.3 $\pm$ 24.8	78.0 $\pm$ 22.8	<0.001
Puff duration (sec)	2.4 $\pm$ 1.1	3.8 $\pm$ 1.9	4.0 $\pm$ 2.2	<0.01
No. of puffs	13.5 $\pm$ 4.0	7.5 $\pm$ 2.3	8.5 $\pm$ 3.1	<0.001
Interval between puffs (sec)	27.0 $\pm$ 8.2	35.3 $\pm$ 12.2	37.6 $\pm$ 14.5	<0.05
Inhaled volume (liter)	1.31 $\pm$ 0.22	1.82 $\pm$ 0.66	1.75 $\pm$ 0.52	<0.002
Smoke-retention time (sec)	3.5 $\pm$ 1.3	13.8 $\pm$ 9.2	14.7 $\pm$ 10.2	<0.001
No-smoking interval (sec)	23.5 $\pm$ 8.5	21.5 $\pm$ 6.4	23.0 $\pm$ 8.8	NS

\*All subjects were habitual smokers of both tobacco and marijuana. They smoked their own brands of tobacco cigarettes.  $\Delta^9$ -THC denotes  $\Delta^9$ -tetrahydrocannabinol; NS denotes not significant.

†P values indicate the significance of comparisons between tobacco and each strength of marijuana; none of the comparisons between the two different strengths of marijuana (0.004 percent vs. 1.24 percent  $\Delta^9$ -THC) was statistically significant.

smoke was inhaled, was similar for both substances. The mean inhaled volume was 36 percent greater ( $P<0.002$ ) and the smoke-retention time was four times longer ( $P<0.001$ ) during marijuana smoking than tobacco smoking.

The volume of the portion of the proportional smoke-trapping device through which smoke was delivered was approximately 13 ml. After the first puff, this volume was filled with smoke that was delivered in subsequent puffs; thus, after the first puff, no additional volume of air not containing smoke was included in the measurement of puff volume. When the pneumotachygraph was disassembled from the proportional smoke-trapping device and used to measure puff volume, the difference in the mean volume was negligible (4.2 $\pm$ 2.0 ml lower without the smoke-trapping device). Similarly, inhaled volumes determined directly from the cigarette by the inductive plethysmograph, without the attachment of either the pneumotachygraph or the proportional smoke-trapping device, were similar to (within 50 ml) the inhaled volume determined when the subjects smoked through these devices.

The amounts of particulates inhaled, the percentage of inhaled particulates deposited in the respiratory tract, and the differences between the carboxyhemoglobin levels before and after smoking each type of cigarette are shown in Table 2. The major significant difference between smoking marijuana cigarettes containing 0.004 percent  $\Delta^9$ -THC (placebo) and smoking cigarettes containing 1.24 percent  $\Delta^9$ -THC was that the latter caused a greater degree of intoxication. In addition, the amount of particulates inhaled from marijuana containing 1.24 percent  $\Delta^9$ -THC was slightly but significantly greater (20 percent) than that delivered from placebo marijuana ( $P<0.05$ ). In contrast, smoking either type of marijuana was associated with the inhalation of 2.8 to 3 times more insoluble particulates (tar) and with the deposition of 32 to 35 percent more of these inhaled particulates than smoking the subject's own brand of tobacco ( $P<0.001$ ). Consequently, marijuana smoking resulted in a tar burden to the respira-

tory tract that was 3.5 to 4.5 times greater than that produced by tobacco smoking in the same subjects. Furthermore, smoking a single marijuana cigarette caused a fourfold greater increment in carboxyhemoglobin saturation ( $P<0.001$ ) than did smoking a single tobacco cigarette.

## DISCUSSION

Long-term adverse pulmonary consequences of tobacco smoking have been shown to be related to dose.<sup>12</sup> For example, the incidence of chronic obstructive pulmonary disease or bronchogenic carcinoma in smokers of fewer than 5 to 10 tobacco cigarettes a day is substantially less than in habitual smokers of more than 20 tobacco cigarettes a day.<sup>13</sup> Although regular tobacco smokers consume more than 15 tobacco cigarettes a day, most current smokers of marijuana smoke less than 1 marijuana cigarette a day.<sup>12</sup> Even among the estimated 6 million daily smokers of marijuana in the United States,<sup>14</sup> smoking more than five marijuana cigarettes a day is unusual. In view of the many similarities in the smoke contents of marijuana and tobacco,<sup>15,16</sup> it has been argued that habitually smoking only a few marijuana cigarettes a day may have a proportionately less harmful long-term effect on the lungs than regularly smoking several times more tobacco cigarettes. This argument assumes that the number of cigarettes smoked is directly proportional to the dose of smoke contents inhaled; however, this assumption ignores the ways in which the characteristics of smoking may influence the delivery of the combustion products of cigarettes.<sup>17,18</sup>

Table 2. Inhalation and Deposition of Particulates, Increases in Blood Carboxyhemoglobin Saturation, and Levels of Intoxication Associated with the Smoking of Tobacco and Marijuana in 15 Smokers of Both Substances.\*

INDEX	TOBACCO	MARIJUANA	
		0.004% $\Delta^9$ -THC	1.24% $\Delta^9$ -THC
mean $\pm$ SD			
Inhaled particulates (optical density)	4.9 $\pm$ 2.0	13.5 $\pm$ 6.0†	16.3 $\pm$ 6.3†‡
Percentage of particulates deposited	64.0 $\pm$ 8.9	84.4 $\pm$ 6.9†	86.1 $\pm$ 6.7†
Increase in carboxyhemoglobin saturation (%)	0.60 $\pm$ 0.52	2.99 $\pm$ 1.51†	—§
Degree of intoxication (maximum "high" = 100%)	—	15.3 $\pm$ 6.9	63.9 $\pm$ 18.3†

\* $\Delta^9$ -THC denotes  $\Delta^9$ -tetrahydrocannabinol.

†Significantly greater than values for tobacco ( $P<0.001$  by analysis of variance and testing for least significant difference).

‡Significantly greater than values for marijuana containing 0.004 percent  $\Delta^9$ -THC ( $P<0.05$  by analysis of variance and testing for least significant difference).

§Not measured.

Few studies have been carried out in which the actual dose of smoke contents delivered to and retained in the respiratory tract during natural smoking has been measured. In our study, both the amount of particulate matter that was inhaled and the amount that was deposited in the respiratory tract were quantified during tobacco and marijuana smoking by means of a simple, new, noninvasive device.<sup>8</sup> These measurements allowed us to compare the actual dose to the smoker of particulate matter from the smoke of marijuana with that from tobacco. At the same time, the characteristics of smoking were determined in order to ascertain the relation between behavioral variables in smoking and the delivery and retention of smoke contents in the respiratory tract for each type of cigarette. The proportional smoke-trapping device had little measurable influence on smoking dynamics.

Findings from the present study indicate that approximately three times as much particulate matter is delivered to the smoker's mouth during the smoking of a single marijuana cigarette than during the smoking of a single tobacco cigarette of the smoker's own brand. These results are similar to those obtained in studies that used smoking machines to simulate conditions thought to be representative of marijuana and tobacco smoking.<sup>19,20</sup> Our results also revealed that approximately one third more of the particulates inhaled from the smoke of marijuana are retained in the respiratory tract than is the case when tobacco is smoked. Consequently, the net respiratory burden of particulates was approximately four times greater during marijuana smoking than tobacco smoking.

Several explanations are possible for the greater burden of particulates to the lungs from marijuana than from a similar quantity of tobacco. First, in all 15 cases, the tobacco cigarettes were more densely packed than the marijuana cigarettes and, unlike the marijuana cigarettes, were filter-tipped; therefore, the filtration efficiency of the tobacco cigarettes was greater. Second, the average residual length of the marijuana cigarettes ( $23 \pm 13$  mm) was smaller than that of the tobacco cigarettes ( $37 \pm 12$  mm), thereby further reducing the filtration efficiency of the marijuana cigarette. However, because the tobacco cigarettes were initially longer and because the filter tip was included in the tobacco butt, the actual quantities of tobacco and marijuana consumed were similar. Third, the subjects' patterns of inhalation in smoking the two types of cigarettes were markedly different; marijuana was smoked with a puff volume that was more than two thirds larger, an inhaled volume one third greater, and a retention time four times longer than the values for tobacco. Although the larger puff volumes for marijuana were partially offset by a smaller number of puffs, this factor may still have contributed to the greater mass of smoke particulates delivered to the mouth in marijuana smoking. The deeper inhaled volumes and, in particular, the severalfold longer retention times during marijuana smoking than during tobacco smoking may have accounted for the greater

percentage of the inhaled particulates from marijuana smoke deposited in the respiratory tract.

The four-to-five-times-greater increments in carboxyhemoglobin saturation during marijuana smoking than tobacco smoking were probably due mainly to differences in how the cigarettes were smoked rather than in the amount of carbon monoxide produced, since syringe-simulated puffs of similar volumes and durations from lit cigarettes yielded approximately 25 percent lower concentrations of carbon monoxide from marijuana than from tobacco. This finding is consistent with the more complete combustion of the more loosely packed marijuana. On the other hand, the subjects' deeper inhalations and, in particular, their considerably longer retention of smoke in the lungs during marijuana smoking than during tobacco smoking made possible a greater uptake of carbon monoxide by the pulmonary microcirculation by means of passive diffusion. We measured the increment in blood carboxyhemoglobin after placebo marijuana (from which the cannabinoids had been extracted), and not after marijuana containing  $\Delta^9$ -THC. However, we would not expect appreciable differences between the effects of real marijuana and those of placebo marijuana on blood carboxyhemoglobin levels, since the smoking dynamics and the carbon monoxide delivery of the two types of marijuana cigarettes were similar. The expected physiologic consequences of the markedly greater boost in carboxyhemoglobin levels from a single marijuana cigarette are a higher degree of impairment in oxygen transfer in the lung,<sup>21</sup> a reduction in the oxygen-carrying capacity of the blood, and impairment in the release of oxygen from hemoglobin in the tissues.<sup>22</sup> Moreover, the  $\Delta^9$ -THC in marijuana causes dose-related increases in heart rate<sup>23,24</sup> and thus in cardiac work and myocardial oxygen requirements. Therefore, in persons with underlying coronary artery disease who smoke marijuana, the combined effects of a marked rise in the level of carboxyhemoglobin and the cardioacceleration induced by  $\Delta^9$ -THC could lead to a critical imbalance between reduced myocardial oxygen supply and increased demand.

Interestingly, no significant differences in smoking dynamics were noted between placebo marijuana and marijuana containing 1.24 percent  $\Delta^9$ -THC, despite marked differences in the subjects' perceived level of intoxication. These findings differ from previous observations in tobacco smokers that puff volume increases when low-nicotine cigarettes are smoked.<sup>25</sup> Our results in marijuana smokers are consistent with data from other studies,<sup>26,27</sup> however, and suggest that the pattern of smoking marijuana is not immediately adjusted to alter the inhaled dose of  $\Delta^9$ -THC but, instead, probably represents a learned technique based on previous experiences and interactions.

In conclusion, our findings demonstrate that smoking behavior differs markedly between marijuana and tobacco smoking and that these differences are associ-

ated with a respiratory burden of smoke particulates and absorption of carbon monoxide that are approximately four times greater in the case of marijuana smoking. These results may account for previous findings that smoking only a few marijuana cigarettes a day (without tobacco) has the same effect on the prevalence of acute and chronic respiratory symptoms<sup>1</sup> and the extent of tracheobronchial epithelial histopathology<sup>2</sup> as smoking more than 20 tobacco cigarettes a day (without marijuana). These observations justify concern about the potential long-term pulmonary consequences of the habitual smoking of only a few marijuana cigarettes a day.

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# Prevalence of Drug-Taking Behavior Among Alaskan Youth: Comparisons With National Findings<sup>1</sup>

by Bernard Segal, Ph.D.<sup>2</sup>

## ABSTRACT

The present research identified the prevalence and patterns of drug-taking behavior among a statewide sample of youth in grades 7-12. The findings indicated that lifetime experience with psychoactive substances was fairly high. When a comparison was made with national data, prevalence rates within Alaska were found to be quite higher than rates reported among youth in the lower-48 states. Some of the reasons for this high level of drug use and the implications of the findings are discussed.

## INTRODUCTION

The United States has witnessed an increase in the frequency and intensity of substance abuse since the late 1960's. The non-medicinal use of illicit mood-altering drugs by elementary, junior and senior high school students, in particular, has become a problem of national concern. Although legal and social sanctions exist against non-medicinal use of psychoactive drugs for recreational or social purposes, drugs continue to be taken, and those youth who take them place themselves at risk for potential legal, social and health problems.

Interest in learning more fully about the nature and extent of drug-taking behavior among the nation's youth prompted the National Institute on Drug Abuse (NIDA) to sponsor a number of national surveys and specific research studies (1-3). Alaska, however, was not included in any of these projects. The current research was undertaken to gain comparable information about Alaska because educators, community planners, policy makers, legislators, and governmental officials and authorities needed to have contemporary knowledge about drug abuse in the state to most efficiently allocate resources to address the problem. High levels of drug use were anticipated due, in part, to the state's last

frontier atmosphere which helped to attract many troubled people to the individualistic risk-taking attitude that prevails in the youthful population, and to significant disposable income, among other contributing factors.

The specific research objectives of this study were: (1) to assess the nature and extent of drug-taking behavior among Alaskan youth, (2) to examine age-cohort differences with respect to drug-taking behavior, (3) to identify psychosocial correlates of drug use, and (4) to explore some of the implications that such phenomena have for treatment and prevention programs. This paper presents the major findings pertaining to the prevalence of drug use in Alaska among youth, compares the findings with results from national surveys, and briefly reviews their implications. The findings pertaining to psychosocial correlates and age differences, as well as a complete description of the project, have been presented elsewhere (4-6).

## METHODS

From 1981 through 1982 an extensive statewide study was undertaken to estimate the prevalence of drug use among Alaskan youth. The statewide survey involved eight widely separated urban and rural school districts, representative of the different regions of Alaska except for the Aleutian chain. The locations were Anchorage, Barrow, Bethel, Fairbanks, Juneau, Kotzebue, Nome, and Sitka. Sites were selected in order to obtain a representative sample of the state's junior and senior high school students, rather than sampling school districts. The schools in the sample contain over 75% of the state's junior and senior high school students. Representative samples in the Anchorage and Fairbanks school districts were obtained from each of the junior and senior high schools. Districts in the other locations contained only one junior and senior high school, of which the entire school populations were surveyed.

The sampling procedure within the schools involved two methods, each contingent upon the conditions prescribed by the school district: (1) a random sample from among all students in grades 7-12 whose parents

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**Table 2**  
**FREQUENCY AND REGENCY OF DRUG-TAKING BEHAVIOR**  
**Past Year Experience**

Percent of Students Who Have Tried/Taken a Drug

Drug	(N = 3,609)		Frequency* (N = 2,021)						Total Once or More
	Percent of Sample Responding	Percent of Sample Who Tried Within Past Year	Once a Month or Less	2-3 Times a Month	Once a Week	2-5 Times a Week	Daily	More Than Once a Day	
Marijuana	88.0	42.6	19.0	7.1	4.0	6.0	2.6	2.8	41.5
Hallucinogens	82.0	7.1	4.9	0.7	0.2	0.2	0.2	0.0	6.4
Cocaine	83.0	15.6	11.0	2.5	0.6	0.7	0.3	0.4	15.5
Heroin	81.9	1.7	1.7	0.2	0.1	0.1	0.1	0.3	2.5
Inhalants	82.6	11.9	7.4	1.4	0.5	0.4	0.4	0.4	10.5
Stimulants	83.1	22.0	12.2	4.0	1.7	1.3	0.8	0.9	20.9
Depressants	82.2	11.8	7.3	2.1	0.6	0.6	0.2	0.5	11.3
Tranquilizers	81.7	11.4	6.5	1.4	0.6	0.3	0.2	0.4	9.4

\*Because of missing responses, those who report having tried a drug in the past year will not always correspond to the percent who reported ever trying a drug.

describing frequency of students' use thus represent an aggregation of only seven districts (excluding Anchorage), while the findings pertaining to the recency of use represent the total sample.

Table 2 describes the recency and frequency of drug-taking behavior during the past year. The results indicate that marijuana is the drug experienced most, with 41.5% of the students indicating having experienced it one or more times, and 42.6% having used it during the past year.

Experiences with stimulants and cocaine are less extensive than those shown for marijuana, but are, respectively, the most commonly used substances. Most of the students who tried them did so less than 10 times and once-a-week or less. Experiences with the other drugs tended to be less frequent, with students expressing modest experiences with depressants, inhalants, and tranquilizer type substances. Except for marijuana, and to a lesser degree stimulants and cocaine, use of other drugs appeared to have been chiefly experimental.

### 3. Gender and Drug-Taking Behavior

Table 3 indicates that a higher percentage of males experienced all the mood-altering drugs except stimulants, for which females showed a slightly higher percentage. This finding is comparable to that reported by Johnston et al. (2) in describing drug use among high school seniors.

**Table 3**  
**LIFETIME EXPERIENCES WITH**  
**PSYCHOACTIVE DRUGS BY GENDER**

Drugs	Females and Males Who Reported Ever Having Tried a Drug*	
	MALES (N = 1,770)	FEMALES (N = 1,732)
	Percent of Males who Tried a Drug	Percent of Females who Tried a Drug
Marijuana	51.1	48.3
Hallucinogens	10.5	8.7
Cocaine	19.8	17.0
Heroin	3.2	1.2
Inhalants	17.9	15.1
Stimulants	26.3	28.2
Depressants	15.4	13.6
Tranquilizers	12.4	10.9

\*107 students did not report gender.

### 4. Drug-Taking Behavior by Grade

As reflected in Table 4, there was a steady increase in experiences with all types of drugs rising to a peak at grades 11 and 12. The major exception to this pattern was for inhalants, where incidence of use peaked sharply

**Table 6**  
**COMPARISONS OF LIFETIME EXPERIENCE WITH**  
**PSYCHOACTIVE DRUGS BY HIGH SCHOOL SENIORS**

Drug	Percent Trying			
	Alaskan Seniors (N = 345)	1982* National Seniors (N = 17,500)	1983* National Seniors (N = 16,300)	1984* National Seniors (N = 15,900)
Marijuana	70**	58	57	54.9
Hallucinogens	15	13	12	10.7
Cocaine	37	16	16	16.1
Heroin	1	1	1	1.3
Inhalants	17	13	14	14.4
Stimulants	41	36	36	27.9
Depressants	18	12.8	13.6	13.3
Tranquilizers	15	14	13	12.4

\*Source: Johnson (2), National Institute on Drug Abuse.

\*\*Figures are rounded to nearest whole number.

The comparisons show that the rates for experience with drugs among Alaskans aged 12-17 exceeded the rates obtained in the national sample for every substance. The magnitude of the differences range from a low of 2:1 to a high of 3:1. It is apparent that drug-taking behavior occurred at a higher rate among Alaskan youth than among those reported in the national survey, but because of differences in sampling procedures and time of sampling, these differences should be interpreted as a relative comparison rather than exact differences. Nevertheless, the question that arises is: Why are the differences so extensive? One answer may lie in the sampling procedure: youth may be less reluctant to report drug use in a questionnaire than in a personal interview. Another possible explanation is that drug use in Alaska is actually higher. The latter explanation tends to be supported when a comparison is made between high school seniors in Alaska and seniors in Johnston et al's (2) national study. Representative findings from these more comparable surveys are presented in Table 6. Except for heroin, drug experience rates for Alaskan seniors exceed the rates obtained in the national senior sample.

### CONCLUSIONS

The results of this study indicate a pattern of drug-taking behavior that is consistent among adolescents across the state. Furthermore, prevalence levels for lifetime experiences in Alaska, despite limitations in comparing the Alaskan data with national household data, are higher than the prevalence rates reported in the national survey, and in the national survey of high

school seniors. Another possible limitation to the study is the fact that it is not known whether the respondents who reported taking a drug actually took the "real thing" as opposed to a "look-alike" or substitute substance, except for marijuana.

While this problem is common to all forms of survey research, it need not detract from the basic findings. What is important to consider is that the respondents, regardless of whether they may have taken real or substitute drugs, reported that they were involved in some form of drug-taking behavior, and it is *their* account of their behavior in which we are interested. Additionally, the issue of the reliability and validity of self-reports concerning drug-taking behaviors always comes into question, but sufficient research has been conducted on this problem to conclude that self-reports are generally reliable and valid and tend to be free from systematic bias.

The major question that arises is: Why are the prevalence rates so high in Alaska? Part of the answer seems to be that drugs are readily available, and that many young people are actively interested in seeking these drugs. Furthermore, mood-altering drugs may have become incorporated into the "Alaskan life-style." In this context, experimental or recreational drug-taking behavior is viewed primarily as a social phenomenon and not as deviant behavior. In Alaska this life style pattern takes on a special quality. Perhaps many who try or use drugs recreationally perceive their drug-taking behavior as part of a life-style that represents a breaking away from the traditional estab-

in use until 1986) should consider having their water tested for lead content. This measure is particularly important if there are small children in the household. Many people with lead plumbing will prove to have lead-free water because lime salts have formed an internal coating in their pipes, but the only proof is a negative test result.

People who live in an area known to have high levels of radon should begin with a test of the household atmosphere. If airborne radon is found at high levels, and if the house depends on well water, the water should be among the suspected sources.

A rule of thumb for people drinking water from private or shared wells would be to have a one-time test for lead, petrochemicals (if a gas tank is located near the well), and specific pesticides or herbicides that may have been used in the area. Thereafter, such tests can be done at the user's discretion. Water from such sources should be tested yearly for bacteria.

The Safe Drinking Water Hotline (800-426-4791) can answer general questions about water safety, but questions about specific water sources should be directed to the local water supplier. Other agencies that can provide information include state departments of public health or environmental engineering, as well as the regional offices of the Environmental Protection Agency.

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## Marijuana: Rough Stuff

Daily smokers of marijuana may damage their lungs as badly as smokers of tobacco cigarettes—even though most people smoke many fewer joints than cigarettes.

As part of a study of how lung diseases develop, researchers at the University of Arizona have been following a group of healthy Tucson residents for about 15 years. Every couple of years, the subjects have been asked about smoking. Many of them inquired whether they

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should count their use of marijuana. So the investigators began including systematic inquiries about "non-tobacco" cigarette smoking in 1981-83.

The 990 subjects, who were between the ages of 15 and 40, were asked about symptoms of chronic lung disease (such as cough, phlegm production, and wheezing), and their lung function was tested.

As might be expected, people who smoked both tobacco and marijuana were much more likely than nonsmokers to report symptoms. People who smoked only marijuana were almost twice as likely as complete nonsmokers to report phlegm production and wheezing; so they were hardly symptom-free. On some tests of lung function, smoking marijuana but not tobacco led to worse results than smoking tobacco but not marijuana.

Careful tests for evidence of obstruction in the airways (a warning sign of chronic bronchitis or emphysema) revealed significant abnormalities in the men who regularly smoked marijuana but not tobacco. Marijuana-smoking women gave no evidence of airway obstruction, probably because they tended to smoke less often and less heavily than the men (*British Medical Journal*, December 12, 1987, pp. 1516-1518).

These findings are consistent with those from another study, conducted at the University of California at Los Angeles School of Medicine. The California investigators showed that marijuana cigarettes, as normally smoked by people experienced with both tobacco and marijuana, put more harmful material into the lung. About 5 times the amount of carbon monoxide is inhaled from a marijuana cigarette as from a single, filter-tipped cigarette, and 3 times the amount of tar is deposited in the airways. Exposure to these substances is increased with marijuana at least partly because inhaling is deeper and breath-holding continues longer than with tobacco (*New England Journal of Medicine*, February 11, 1988, pp. 347-351).

The lungs of anyone who smokes daily are damaged. At this frequency of use, the level of damage from marijuana and from tobacco do not differ all that much.

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## Correlation between Drug Use by Teenagers and Drug Use by Older Family Members\*

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### ABSTRACT

This study examines the relationship between drug use by teenagers and older family members living in the same household, using data from the National Survey on Drug Abuse. Drug use by teenagers was found to be correlated with drug use by fathers, mothers, and older siblings, in that teenagers were more likely to be drug users if the older adult was also a drug user. Correlations were significant across different drug types, but the most consistent relationship was between marijuana use by youth and marijuana use by the adult.

### INTRODUCTION

The purpose of this paper is to examine the relationship between teenage drug use and drug use by older family members living in the same household, in terms of the statistical correlations in the prevalence of use of various drugs. Drug use here includes cigarette and alcohol use, as well as use of marijuana and cocaine. Rittenhouse and Miller recently performed a similar analysis using data from 1974-1977 [1]. The present study analyzes more recent (1979-1982) data from the same source and compares results to the previous study. Several new issues are also examined in the present

\*The views presented in this paper are not necessarily those of the National Institute on Drug Abuse or the U.S. Department of Health and Human Services.

study, including the relationship between marijuana use by parents and teenage drug use.

A number of previous studies indicate that teenage drug use is correlated with drug use of older family members [1-13]. Generally, mothers' and siblings' drug use have been found more highly correlated with teenage drug use than has drug use by fathers [1, 2, 6-8]. However, some studies have shown a high correlation between fathers' drug use and drug use by their offspring [2, 3, 7, 9-13].

Relatively few studies have been done which involve pairs of teenagers and older siblings [1]. Also, much of the previous research on adult and youth drug use has been based on specialized populations or has been based on adult drug use reported by youth. Thus, although the research is consistent in supporting the relationship between teenage drug use and older adult drug use, questions still remain regarding the relative strength of the relationship for the different older family members. There have also been conflicting results regarding differences in parental influence depending on the sex of the teenager [7-9, 12, 13]. In addition to these questions concerning more refined descriptions of the relationship between teenage and adult drug use, there has also been debate regarding the explanation of the relationship in general. As Fawzy *et al.* state [10], the two prominent interpretations are the social learning model and the family circumstance model. The social learning model suggests that teenagers imitate adult behavior by responding to what adults define as appropriate. One version of this theory [9] is that teenagers imitate their parents' use of alcohol and cigarettes and thus become more likely to advance to the use of illicit drugs. The family circumstance model implies that correlations between adult and teenage drug use are not drug specific, but are more general and result from unfavorable family circumstances related to adult drug use. Thus, drug use by youths becomes more likely as a result of the circumstances in the household, not because of imitation.

The present study is intended to further investigate these issues, using a nationally representative sample of youth-adult pairs in which each individual reported his/her own drug use.

#### METHODS

A file of youth-adult pairs from the 1979 and 1982 National Surveys on Drug Abuse was used for the study [14, 15]. The National Survey is a

national probability sample survey of households which is sponsored by the National Institute on Drug Abuse (NIDA) and conducted periodically. In sample households, interviews are conducted with either (1) no persons, (2) one adult (age 18+) only, (3) one youth (age 12-17) only, or (4) one adult and one youth. To encourage honest reporting, respondents use self-administered forms to answer drug use questions. Data from each sample person are assigned sampling weights which reflect selection probabilities, nonresponse adjustment, and poststratification. These weights allow the computation of nationally representative estimates of drug use in the household population.

Using data from households in which both a youth and adult were interviewed, a file of youth-adult pairs was created. Based on data from several questions regarding relationships between household members, the youth-adult pairs file was restricted to pairs in which the adult was a parent or older sibling of the youth. All youths in this study are age 14 to 17, older siblings are 18 to 25, and parents are 30 to 64. The restrictions on youth and older sibling age were made because levels of drug use for 12-13 year olds are low and also to be consistent with the earlier study. The restriction on parent age was made to exclude cases that involve unlikely age combinations of youth and parent which may have occurred if the adult was incorrectly coded as the parent.

These selection criteria resulted in a file of 1,177 youth-adult pairs. Of these, 303 included fathers, 450 included mothers, and 424 included older siblings. To compensate for varying selection probabilities and nonresponse, each pair was assigned a weight equal to the product of the individual youth and adult weights. This is appropriate since within every household, the selection of a youth and an adult was independent. Some bias is introduced by factoring the household nonresponse adjustment twice into the pair weight, but this bias is probably small since the survey obtains over 80% response. In any event, the data necessary to correct this bias were unavailable. Pair weights were further adjusted to provide estimates that give equal weight to the 1979 and 1982 data.

Analyses were carried out separately for each of the three types of youth-adult pairs: youth-father, youth-mother, and youth-older sibling. Logistic regression analysis was used to test the significance of the correlation between adult drug use and drug use by youth [16]. All test statistics were adjusted to account for the design effect ( $deff = 1.5625$ ) of the survey and the equal weighting of the 1979 and 1982 data.

The first stage of the analysis was the computation of estimates of drug use prevalence for youths in each of the three subsamples. In each sub-

sample, estimates of youth drug use were computed separately for youth-adult pairs in which the adult was a drug user and for pairs in which the adult was not a drug user. Differences in prevalence were evaluated using *t* tests, and zero-order correlations between adult and youth drug use were also computed. This preliminary analysis provided a basic description of the relationship between youth drug use and older adult drug use. However, the *t* tests and zero-order correlations can be misleading in studying the relationship, since high correlations could result from the fact that both persons in each youth-adult pair are living in the same environment. To control for this effect, logistic regression analysis was used to test the correlation between adult drug use and drug use by youth, with geographic region and population density, as well as age of youth included as independent variables in all logistic regression models. Several measures of youth drug use were employed as dependent variables one at a time, and several measures of adult drug use were entered one at a time as independents and tested for statistical significance with *F* tests. In this manner, the relationship between youth and adult drug use was tested for significance, after controlling for age of youth, geographic region, and population density.

To investigate specific issues such as differences in correlations by sex of the youth and the degree to which family circumstances explain correlations, other independent variables were introduced into the models as controls and also to be tested for significance. Also, some models were tested on specific subgroups of the population as a way of controlling for certain factors.

The methodology used in this study is similar but not identical to the approach taken by Rittenhouse and Miller. The inclusion of nonresponse and poststratification adjustments to the weights here was not done in the previous analysis, but this should have little impact on the results. The use of logistic regression analysis is an enhancement on the previous study, but should not yield significantly different results. The *F* tests used in the present study are equivalent to two-tailed *t* tests, whereas the previous study employed one-tailed tests. Two-tailed tests are used here to allow for the possibility that adult and youth drug use may be negatively correlated in some cases. For positive correlations this difference in testing, in addition to variance adjustments done in the present study, will make the tests slightly more conservative than in the previous study so that some nonsignificant results here may have been determined significant using the methodology of the previous study.

## RESULTS

Tables of prevalence estimates were too numerous to include, but Tables 1-3 serve as examples of these data. Tables 1-3 demonstrate that teenagers are more likely to be drug users if their father smokes, if their mother has used marijuana, or if their older sibling uses marijuana. In particular, these three measures of adult drug use are highly correlated with youth marijuana use. Teenagers are twice as likely to have tried marijuana if these older adult drug use patterns are present in the household. Other tables such as these also show significant differences in youth drug use according to use of other drugs by older adult family members.

Table 1. Youth Drug Use (in %) According to Past Month Cigarette Use by Father

Youth drug use <sup>a</sup>	Father current smoker (n = 146)	Father not current smoker (n = 157)	Statistical significance (p value)	Correlation coefficient
Current cigarette use	18.9	7.6	.026	.17
Current alcohol use	52.3	27.1	.001	.26
Moderate alcohol use	24.8	6.8	.001	.25
Lifetime marijuana use	58.6	33.3	.001	.25
Current marijuana use	34.8	9.9	.001	.31
Lifetime cocaine use	10.8	2.4	.025	.17

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

Table 2. Youth Drug Use (in %) According to Lifetime Marijuana Use by Mother

Youth drug use <sup>a</sup>	Mother has used marijuana (n = 165)	Mother never used marijuana (n = 285)	Statistical significance (p value)	Correlation coefficient
Current cigarette use	37.2	11.2	.001	.25
Current alcohol use	42.1	37.1	N.S.	.04
Moderate alcohol use	31.1	16.1	.009	.13
Lifetime marijuana use	76.7	34.2	.001	.30
Current marijuana use	48.3	23.5	.001	.19
Lifetime cocaine use	38.7	9.9	.001	.29

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

Table 3. Youth Drug Use (in %) According to Past Month Marijuana Use by Older Sibling

Youth drug use <sup>a</sup>	Older sibling used marijuana (n = 130)	Older sibling did not use marijuana (n = 294)	Statistical significance (p value)	Correlation coefficient
Current cigarette use	35.5	15.3	.002	.23
Current alcohol use	50.1	37.0	.067	.12
Moderate alcohol use	24.9	11.1	.017	.18
Lifetime marijuana use	66.8	35.0	.001	.30
Current marijuana use	30.2	13.0	.005	.21
Lifetime cocaine use	3.6	7.3	N.S.	-.07

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

The results of the basic logistic regression analysis which included controls for age of youth, geographic region, and population density are summarized in Tables 4-6. The tables show the level of statistical significance for each measure of adult drug use in the models when different measures of youth drug use are inserted as the dependent variable. Current marijuana use by fathers and mothers were excluded from models because there were too few cases in the sample in which parents reported such use. An example of the interpretation of the data in Tables 4-6 is that the relationship between fathers' and youths' current cigarette use (Table 4) is significant at the .031 level. Small *p* values indicate strong relationships. Readers should be aware that significance levels refer to individual tests and are not adjusted for multiple testing. Since many tests are performed in this analysis, it is expected that a small number of the significant results are incorrectly specified.

In general, the analysis showed a strong correlation between drug use by youths and drug use by the mothers, fathers, and older siblings of youths. Although not shown by these tables, every significant correlation was positive in that for families where the parent or older sibling used a drug, the youths were more likely to be drug users.

Youth cigarette use was related less with fathers' drug use than it was with mothers' and older siblings' drug use. Alcohol use by youth was related to drug use by all three adult categories. Youth marijuana use was the most strongly related to adult drug use. Youth lifetime marijuana use was significantly related to use of each drug by fathers, mothers, and older

Table 4. Significance (*p* values) of Correlation between Drug Use of Fathers and Youths, after Controlling for Age of Youth, Geographic Region, and Population Density

Youth drug use <sup>a</sup>	Fathers' drug use			
	Current cigarette use	Current alcohol use	Moderate alcohol use	Lifetime marijuana use
Current cigarette use	.031	N.S.	N.S.	N.S.
Current alcohol use	.001	.001	.001	.051
Moderate alcohol use	.015	N.S.	N.S.	N.S.
Lifetime marijuana use	.001	.001	.001	.001
Current marijuana use	.001	.006	.002	.001
Lifetime cocaine use	.041	N.S.	N.S.	N.S.

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

Table 5. Significance (*p* values) of Correlation between Drug Use of Mothers and Youths, after Controlling for Age of Youth, Geographic Region, and Population Density

Youth drug use <sup>a</sup>	Mothers' drug use			
	Current cigarette use	Current alcohol use	Moderate alcohol use	Lifetime marijuana use
Current cigarette use	.001	.065	.051	.001
Current alcohol use	N.S.	.001	.003	N.S.
Moderate alcohol use	.054	.012	.073	.002
Lifetime marijuana use	.008	.001	.001	.001
Current marijuana use	.007	.001	.001	.001
Lifetime cocaine use	.001	.001	.010	.001

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

siblings at the .008 level of significance or less. Of the drugs used by adults, marijuana was the most strongly associated with both lifetime and current marijuana use by youth. Youth cocaine use was not significantly related to drug use by fathers or other siblings, but was related to mothers' drug use.

The relationship between adult drug use and youth lifetime marijuana use was explored further by repeating significance tests using a restricted sample of youths—those who had used both cigarettes and alcohol in their

Table 6. Significance (*p* values) of Correlation between Drug Use of Older Siblings and Youths, after Controlling for Age of Youth, Geographic Region, and Population Density

Youth drug use <sup>a</sup>	Older siblings' drug use				
	Current cigarette use	Current alcohol use	Moderate alcohol use	Lifetime marijuana use	Current marijuana use
Current cigarette use	.011	.014	.054	.001	.001
Current alcohol use	N.S.	.001	.012	.006	N.S.
Moderate alcohol use	N.S.	.016	.001	N.S.	.001
Lifetime marijuana use	.008	.001	.001	.001	.001
Current marijuana use	.030	.051	N.S.	.001	.004
Lifetime cocaine use	N.S.	N.S.	N.S.	N.S.	N.S.

<sup>a</sup>Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime. *p* values greater than or equal to .1 are designated N.S.

lifetime. For this restricted sample, the strength of the relationship was reduced, but it remained significant in most cases, indicating that even among youths who have already tried cigarettes and alcohol, marijuana use is more likely to occur if parents or older siblings use drugs. This is especially true if older adults have used marijuana. However, current cigarette and current alcohol use by fathers, current cigarette use by mothers, and current alcohol use by older siblings were not significantly related to youth lifetime marijuana use in this restricted sample of youths.

The significant correlations found between adult marijuana use and youth drug use were explored further by introducing controls for adult cigarette and alcohol use. If these controls diminished the strength of the correlations, it would have indicated that the correlations may have occurred spuriously, simply because parents who used cigarettes and alcohol were more likely to have tried marijuana. However, this was not the case. The inclusion of current cigarette and moderate alcohol use by adults as independent variables in the models generally resulted in little change in the significance levels of the relationship between youth drug use and adult marijuana use (Table 7). Thus, even after controlling for adult cigarette and alcohol use, marijuana use by adults was still correlated with youth drug use. Two exceptions were found, however. The significant relationship between mothers' lifetime marijuana use and youth current marijuana use became nonsignificant when the mothers' moderate drinking was included as an independent variable. Similarly, the significant relationship between siblings' lifetime marijuana use and youth current alcohol use became nonsignificant when siblings' moderate drinking and current smoking were included in the model.

The interactive effect of current cigarette and moderate alcohol use by adults was also tested during this stage of the analysis. The interaction was significant in only one of 18 separate tests (six youth drug use measures for father, mother, and sibling pairs), and that was at the .015 level of significance. The significant result implies that the effect of sibling use of both cigarettes and alcohol on youth current alcohol use is less than the sum of the effect of cigarettes and alcohol separately. The fact that most tests were not significant indicates that, in general, the effects of adult cigarette and alcohol use are additive.

Differences in parental influence for teenage boys and girls were studied by testing the interaction of sex of youth with fathers' and mothers' drug use in relation to current alcohol and lifetime marijuana use by youths. Only three tests out of 16 were significant at the .1 level. Current alcohol use

Table 7. Significance ( $p$  values) of Correlation between Marijuana Use of Adults and Drug Use of Youths, after Controlling for Age of Youth, Geographic Region, Population Density, Adult Current Smoking, and Adult Moderate Alcohol Use

Youth drug use*	Adult marijuana use			
	Fathers' lifetime marijuana use	Mothers' lifetime marijuana use	Older siblings' lifetime marijuana use	Older siblings' current marijuana use
Current cigarette use	N.S.	.009	.002	.002
Current alcohol use	N.S.	N.S.	N.S.	N.S.
Moderate alcohol use	N.S.	.076	N.S.	.081
Lifetime marijuana use	.001	.001	.001	.004
Current marijuana use	.025	N.S.	.016	.042
Lifetime cocaine use	N.S.	.074	N.S.	N.S.

\*Current use is defined as used at least once in the past month. Moderate use is defined as used at least 4 days in the past month. Lifetime use is defined as used at least once in lifetime.  $p$  values greater than or equal to .1 are designated N.S.

by mothers was more strongly correlated with boys' current alcohol use than with girls' current alcohol use ( $p$  value = .003). The relationship between mothers' moderate alcohol use and youth current alcohol use was stronger for girls than for boys ( $p$  value = .058). Fathers' current cigarette use was more strongly related to their sons' lifetime marijuana use than it was to their daughter's lifetime marijuana use ( $p$  value = .021). There appeared to be no consistent overall pattern to these interactions, and since most tests were not significant, the general result is that parental influence is similar for teenage boys and girls.

To study the relationship between levels of drug use by older adults and teenage drug use, the independent variable "days used alcohol in the past month" was tested in the logistic models for all three adult-youth groups. These models were tested on the subset of adult-youth pairs in which the adult had used alcohol at least once in the past month. Also, "days used marijuana in the past month" by older siblings was tested, again restricting the analysis to siblings with at least one day of marijuana use in the past month. For most measures of youth drug use, days of use by older adults was not significantly correlated. Several exceptions were noted, however. Youths became more likely to be lifetime marijuana users as days of alcohol use by fathers ( $p$  value = .004) and mothers ( $p$  value = .091) increased, and also as older siblings' days of marijuana use increased ( $p$  value = .017). Increases in days of marijuana use by older siblings were also associated with

a greater likelihood of current cigarette use by youth ( $p$  value = .006). Finally, teenagers became more likely to have moderate alcohol use as older siblings' days of alcohol use increased ( $p$  value = .091).

Data collected in the National Survey on Drug Abuse regarding family circumstances are rather limited, so investigation of the impact of this factor must be considered as merely suggestive. All statistical testing shown in Tables 4-6 was redone after adding family circumstance variables into the models as controls. These variables were family income for fathers, mothers, and siblings, and marital status for fathers and mothers. Significance levels were essentially unchanged for youth-father and youth-sibling samples, indicating little impact of family circumstances and supporting the social learning theory. For the youth-mother sample, marital status was highly correlated with youth drug use, in that teenagers with divorced or separated mothers were more likely to be drug users. As a result, when marital status was included in the logistic models, several of the significant correlations indicated in Table 5 became nonsignificant. Most did remain significant, however, providing evidence that the social learning process is an important factor in teenage drug abuse.

## DISCUSSION

The results of this study clearly support previous results which show a strong relationship between teenage drug use and drug use by older family members. The majority of the statistical tests of regression coefficients for adult drug use were significant, and all of these coefficients, without exception, indicated a positive correlation.

More specific issues can be addressed by the results of the study. In contrast with the previous study using 1974-77 data [1], the present study found fathers' drug use, as well as that of mothers and older siblings, to be correlated with teenage drug use. The previous study found no correlation with fathers' drug use. The reason for this different result is unknown. Given the more conservative nature of the statistical testing done here, it is unlikely that the different result is due to random variation. Regarding the different theories attempting to explain the correlations, the results suggest that although family circumstances are an important factor, the social learning process plays a major role in youth drug use. While the results are not conclusive, they may provide evidence of a "generalized imitation" of older adult behavior which is not drug-specific and which occurs for all older

adult types. Significant relationships were found across different drug types for fathers, mothers, and older siblings. However, some specificity was evident, particularly for marijuana, as indicated by the significant correlations between adult and youth marijuana use after controlling for adult cigarette and alcohol use (Table 7). The specificity of the youth and adult marijuana correlation is further supported by the significance of the relationship even among youths who have already used cigarettes and alcohol. This result contradicts the theory [9] that youths learn alcohol and cigarette use from parents, and thus become more likely to use marijuana mainly because of their experience with the licit drugs. On the contrary, there appears to be a more direct relationship between parent and youth marijuana use.

Since teenagers and their older siblings have the same parents, the parental influence on their children's drug use would be expected to occur for the older siblings also. Thus, correlations between youth and older sibling drug use might occur as a result of this common parental influence. It is not possible from this study to evaluate the independent effect of older sibling drug use on teenage drug use, after controlling for parental drug use, since only two persons per household were interviewed. However, the fact that youth-older sibling correlations were just as strong as youth-parent correlations suggests that there is some independent effect of older sibling drug use.

The level of alcohol use by adults, measured by the number of days used in the past month (excluding adults with no use), was not correlated with youth drug use as strongly as was the qualitative variable, defined as use vs nonuse of alcohol in the past month. In other words, for most drugs the likelihood that teenagers had used that drug did not significantly decrease as the level of adult alcohol use decreased, except when the level of adult use became total abstinence. This was the case for all three older adult groups and also for the level of marijuana use by siblings. This suggests that even infrequent use of drugs by adults may influence teenagers to experiment with drugs themselves.

The interactive effect of adult cigarette and alcohol use on youth drug use was not found significant, in contrast to the previous study which did find significant interaction. In both studies this test did involve small cell sizes, so random variation could possibly explain the different results.

The results here indicate that fathers' and mothers' influence on teenage drug use is not significantly different for teenage boys and girls. Once again, however, small cell sizes suggest caution in interpreting this result.

Differences in results between this study and the previous study involving a similar design indicate the need for further investigation of these issues.

Certainly the issue of differences and similarities in influence by fathers, mothers, and older siblings has not been resolved since the two studies had conflicting results for fathers. Also, the significant correlation between adult and youth marijuana use found here needs further study. Since the only measure of parent marijuana use that was tested in this study was "ever used," questions arise regarding the meaning of the correlation. In some cases, parental use may only have occurred before the youth was born. Information on recency of parental use in relation to the age of the youth would be helpful in addressing this. Unlike cigarette and alcohol use, some parental and older sibling use of marijuana might occur without the knowledge of the teenager, raising further questions about interpreting the relationship between adult and youth marijuana use. Youth perception of adult marijuana and other illicit drug use may therefore be important to consider. Parental attitudes about marijuana use may also be important to consider since the correlation between parents' lifetime use and teenage use may reflect a more tolerant attitude on the part of parents who have previous experience with marijuana. Further study of the impact of parental marijuana use on teenage marijuana use will have increasing importance in the coming years as larger proportions of teenagers will have parents that have used marijuana. This phenomenon is shown by comparing marijuana use of parents of teenagers in this study to that of parents of younger children. Application of weights to produce nationally representative estimates from this study resulted in lifetime marijuana prevalences of 17% for fathers of 14-17 year olds and 14% for mothers of 14-17 year olds. For comparison, estimates of lifetime marijuana prevalence for parents whose oldest child is under age 12 were computed from the 1982 National Survey on Drug Abuse [17]. Results showed that 54% of these fathers and 42% of these mothers had used marijuana. This represents a tripling of marijuana experience among parents of future teenagers.

Unfortunately, the analysis conducted here and in the previous similar study will not be possible with future National Survey data, since a maximum of one respondent will be selected per household beginning with the 1985 Survey. However, further and more powerful analyses could be done by combining data from all of the Surveys from 1974 through 1982.

In conclusion, despite some unanswered questions regarding specific issues in this study, there is clearly a strong correlation between drug use by teenagers and drug use by older family members. While there are certainly other influences on youth drug use (such as peer influence) which were not addressed, the data analyzed here indicate that prevention of drug use by

teenagers may be promoted by fathers, mothers, and older siblings abstaining from the use of cigarettes, alcohol, and marijuana.

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## Heroin Availability and Aggregate Levels of Use: Secular Trends in an Urban Black Cohort

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## ABSTRACT

The influence of heroin availability on the aggregate level of use of this drug was investigated for a normal Black cohort (born between 1952 and 1957) who grew up in Harlem (New York City). Data obtained on the second and third waves of a panel study were used to estimate annual rates of heroin initiation and cessation from the mid-1960s through 1983. The aggregated time-series variables indicated that initiation into heroin use was largely confined to adolescence and that cessation rates exhibited substantial year-to-year fluctuations with no apparent relationship to either chronological age or calendar year. Respondents born before 1955, however, had much higher rates of heroin use than those born in later years. Temporal trends in initiation and cessation were uncorrelated with changes in the purity of heroin sold in New York City between 1973 and 1983, suggesting that aggregate levels of heroin use in this sample were little affected by changes in supply. More speculatively, cohort differences in lifetime prevalence may reflect varying availability at the times younger and older cohorts entered adolescence. This possibility could not be directly tested because of the absence of reliable purity data going back sufficiently far in time.

## INTRODUCTION

Over the last decade or so, considerable information has been gathered for tracking national, state, and local trends in the nonmedical use of psychoactive substances (see Reference Note). These data, augmented with studies documenting ebbs and flows in drug use for more remote times [1, 2], clearly

and physical disabilities. Furthermore, careful of giving rare to their trail junking, five babies.

expensive hospital and home treatments, sort and encouragement for parents, market for low birthweight babies" during of life, according to a report in the July 255 infants born weighing 4 pounds or less them from poor rural families. About half ned to an "infant development program," asive care unit, these babies were put on and provided with daily activities, includ- ed motion exercises, oral stimulation with recordings of parents' voices, classical an heartbeat. Parents participated in art and were taught exercises to use with e from the hospital. Parents also received n infant care needs and difficulties.

ies and their parents were given the care arily provided in such cases. nmental program had significantly higher J physical development scales at 1 and 2 hael B. Resnick and his colleagues of the College of Medicine in Gainesville. Only 4 mental group had severe impairments of at age 2, compared with 26 percent of the

how interventions cost about \$3,600 per low cost" preventive technique, say the e search will focus on how long-lasting the e methods were most critical.

recent research done while he was at the Agriculture Depart- ment's Human Nutrition Research Center on Aging in Boston, indicates that is not necessarily the primary reason malnutri- tion affects night vision.

Rats fed a growth-stunting diet (having only a third to a fifth of their normal protein intake) along with four times the daily requirement for vitamin A suffered night blindness, despite maintaining sufficient levels of vitamin A in the eye. Rats fed a fully balanced diet, but with only enough calories to maintain the size and weight of animals on the protein-deficient diet, suffered even worse night vision — again while maintaining normal eye levels of vitamin A. Bankson says this suggests that a lack of protein and/or energy can also cause night blindness.

### How marijuana may affect immunity

It has been known for years that smoking marijuana harms the body's immune system, says Eliezer Huberman of Argonne (Ill.) National Laboratory. His new cell-culture studies now suggest why. He has found that although tetrahydrocannabinol (THC), the main psychoactive ingredient in marijuana, stimulates maturation of key immune-system cells called mono- cytes, "this maturation is defective." Monocytes not only help stimulate antibody production, but also can kill and engulf foreign cells, like bacteria.

When Huberman treated "highly immature" monocyte- precursor cells with THC, the maturation suddenly stopped in a middle, incomplete stage. Huberman says that if similar monocyte impairment occurs in heavy marijuana smokers, it could heighten their susceptibility to infection. Details of the study will appear in the Aug. 15 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES.

initial success, possibly beca- dome islets were collected. A sure was time to collect many is- Rapotte says his group has also extracting high yields of pure isl surgeons isolate sufficient quan- trials scheduled to begin shortly.

Another potential advantage certain freeze-thaw conditions selectively killing off donor pas- blood cells that trigger an im- tissue. Rapotte's group has cryopreserved rat islets grafted i- rejection longer than grafted i- researchers have not yet proved th- are in fact solely responsible for.

Working on the assumption th- tissue and leukocytes different colleagues at the Medical Rese- England, are looking for the best i- rejection of the transplanted isl- that the survival of islets is optim- thaw procedure. Taylor suspect- leukocytes. Since there has been cytes do poorly when frozen quic- least some islets can survive und- nary conclusion is that they can- says Taylor, islets appear to be ab- range of cryopreservation condi- system. "Why this should be," he uppermost in cryobiologists' min-

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While no actual link between marijuana use and disease has been shown, immunological tests have produced some troubling results.

Frequent marijuana smokers may be at increased risk from viruses, foreign bacteria, and disease, warn researchers at the University of Illinois in Chicago.

When THC, or tetrahydrocannabinol, the psychoactive ingredient in marijuana, was placed into human blood samples, researchers David Ou and Mark Wiederhold noticed blood-cell changes that could suppress the ability of the body's immune system to combat disease.

What they observed were decreased numbers of proteins, called receptors, on the outer membrane of disease-fighting white blood cells. Without the receptors, immunologist Wiederhold says, the white blood cells can't identify or interact with other substances and thus might not be able to coordinate counterattacks against invader diseases.

Although no actual link between marijuana use and disease has been shown, the two researchers' findings not only cast a shadow across the frequent recreational use of marijuana but raise doubts about the medical advisability of using marijuana and its chemical components, known as cannabinoids, to prevent nausea in patients undergoing chemotherapy for cancer and to treat increased eye pressure associated with glaucoma.

"Possibly a slight modification in the structure of the cannabinoid molecule," Ou, a pathologist, says, "would be all that is required to preserve the drug's useful purposes, while decreasing undesirable effects."

—Eric Mishara

"Jesus said love one another. He didn't say love the whole world."

—Mother Teresa

Relaxing may be hazardous to your mental health.

"We were relaxing a woman whom we had hooked up to an apparatus that measures heart rate, muscle temperature, and finger temperature," explains Dr. David Barlow, director of the Phobia and Anxiety Disorders Clinic of the State University of New York at Albany. "She was doing very nicely and beginning to relax. Then, much to our surprise, she had a massive panic attack: full-blown, unadulterated terror. Her heart rate doubled in a minute."

When a second patient had the same response, Barlow and colleagues looked back and found that sharply increased anxiety



Relaxation exercise: Lay back, tune in, freak out?

was often reported by clinicians as a side effect of relaxation therapy. Thomas Borkovec of Pennsylvania State University noted that as many as 54 percent of his patients reported anxiety during meditation; 30 percent,

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### VIP: 'Very important peptide' in AIDS?

Scientists at the National Institute of Mental Health (NIMH) in Bethesda, Md., recently found a small protein that blocks the AIDS-causing virus, known as human immunodeficiency virus (HIV), at receptor sites on critical T4 immune cells (SN: 12/20&27/86, p.388). The protein, dubbed Peptide T, was isolated from the HIV envelope protein and is being tested on Swedish and U.S. AIDS patients (SN: 6/13/87, p.376).

At a seminar last week, the NIMH investigators described evidence suggesting that Peptide T may protect brain and immune cells by mimicking a naturally occurring peptide — vasoactive intestinal peptide (VIP). The two peptides contain a similar "core" sequence of five amino acids, says one of the researchers, Candace B. Pert, and both appear to attach to T4 receptors in the brain.

In experiments directed by Douglas E. Brenneman, VIP and Peptide T similarly protected mouse neurons in laboratory cultures from dying after exposure to low concentrations of the HIV envelope protein. On their own, significant numbers of the neurons perished at the same concentrations. Three other peptides that act on the brain and are related to VIP offered no protection against the cell destruction inflicted by the AIDS virus, says Brenneman.

Preliminary work suggests that VIP acts at three T4 receptor subtypes, says NIMH's Joanna M. Hill. Peptide T may act at only one of those subtypes, she notes. Furthermore, there are numerous T4 receptors in the cerebellum and basal ganglia, brain structures implicated in the dementia and muscular disorders that often accompany AIDS.

"My working theory, which is still largely speculative," says Hill, "is that much of AIDS dementia and motor dysfunction is caused by HIV envelope protein binding to T4 receptors in the brain and preventing normal VIP functions."

A preliminary clinical trial of five patients in the early stages of AIDS injected with Peptide T for 30 days resulted in all the subjects reporting more energy, says Peter Bridge of NIMH. Skin diseases, such as psoriasis, subsided in three of the patients, as did persistent, watery diarrhea in one subject. But the ability to copy a complex geometric figure from memory was severely impaired in four of the patients, observes Bridge.

Peptide T's usefulness in treating AIDS, and particularly in reversing the loss of concentration and memory, remains unclear, he says. A trial of six patients treated with the protein and six given a placebo is now underway at the University of Southern California in Los Angeles. Subjects have been difficult to recruit, he adds, often because they are unwilling to give up other unconventional AIDS treatments during Peptide T trials.

### Facelift for newborn imitation

Within days of birth, can a newborn infant imitate the facial expressions of an adult, such as a happy face, a sad face or a look of surprise? Several recent studies have suggested that newborns are indeed capable of this skill, but a report in the January *DEVELOPMENTAL PSYCHOLOGY* sounds a note of caution.

Marsha Kaitz of Hebrew University in Jerusalem and her colleagues say that 1- to 2-day-old babies often respond to facial expressions of an adult by opening their mouths or pouting their lips, but do not actually imitate the expressions. The 20 female and six male newborns in their sample were held by a female who modeled a happy, sad and surprised expression on separate trials. Two observers rated the newborns' facial responses. When the model stuck her tongue out, however, the infants usually did so as well. The researchers say this indicates that a motor response associated with breast feeding, such as protruding the tongue, can be triggered by an adult's expression, but voluntary imitation of emotional expressions is not within a newborn's repertoire.

### Gold-filled discovery in transplants

Tissue transplantation may have a shining future — if gold proves to be as precious as recent research on neural transplants suggests. By filling envelopes made of viruses with colloidal gold and fusing them with nerve cells, scientists at the University of South Florida in Tampa have been able to track the migration of transplanted cells and measure their survival.

Used for years as a cell marker, the gelatin-like colloidal gold is easily distinguished by its yellow or bright white appearance through a microscope. Gary W. Arendash and his co-workers took advantage of gold's shining qualities and devised a model system applicable to transplantation science. As reported in the Feb. 5 *SCIENCE*, the researchers used a known technique to introduce the gold into cells: They mixed gold with a solution of harmless Sendai viruses that had been broken apart by a detergent. Pieces of the viral envelopes spontaneously re-grouped as detergent was removed, forming whole envelopes that contained the gold colloid. Made from a virus that avidly fuses to vertebrate cells, the gold-filled Sendai virus envelopes attached to neural cells that were later transplanted into rats.

By scanning transplanted tissue for signs of gold, the scientists were able to follow the migration of transplanted cells through areas of the rats' brains, and to determine that the transplanted cells survived at least three months. Both location and viability are crucial to understanding the fate of nerve-tissue transplants, which have attracted attention and controversy as potential treatments for conditions like Parkinson's disease (SN: 11/28/87, p.341). Arendash said in an interview that it should be possible to similarly label other types of cells used for transplants, and that the gold/Sendai system might settle the debate over whether adrenal cells transplanted into the brain for treating Parkinson's actually survive, or instead release nerve-cell-stimulating factors before their death. Although tissue must be removed when the colloidal gold technique is used, the scientists are now evaluating another marker that is already being used in clinical imaging techniques and that might be engulfed by reforming Sendai virus envelopes — thus providing a way to follow grafts *in vivo*.

### Lungs hit harder by pot than by cigarettes

Taking a puff from a marijuana cigarette carries more punch than previously thought, according to study results released last week by the University of California at Los Angeles. By measuring carbon monoxide in the blood and inhaled tar in the lungs of men who had smoked tobacco or marijuana cigarettes, researchers found that a single marijuana cigarette may be as unhealthy as smoking five cigarettes made of tobacco.

In research published last year, the same scientists had concluded that habitual smoking of three or four marijuana cigarettes a day caused the same amount of bronchitis symptoms and lung-cell damage as smoking more than 20 tobacco cigarettes daily. The group reports its more recent findings in the Feb. 11 *NEW ENGLAND JOURNAL OF MEDICINE*.

Included in the study were 15 men who had smoked both marijuana and tobacco for at least five years. Measurements were taken after they had smoked one or the other type of cigarette, as well as after they had smoked marijuana from which the active ingredient THC had been removed. Carbon monoxide levels, which have been associated with coronary heart disease, were nearly five times higher after marijuana smoking than after tobacco smoking. Marijuana smoking also resulted in three times the amount of tar inhaled and one-third more tar retained in the lungs and respiratory tract. The presence or absence of THC had minimal effects on test results, say the scientists, who attribute the differences to the way marijuana is inhaled more deeply and held in the lungs.

...the most popular  
...perhaps least understood illegal  
psychoactive substance.

So far, studies of pot's health effects suggest what many who've smoked it would predict: For most people, occasional use probably isn't particularly harmful. Heavy use over long periods is likelier to be dangerous, although

...the most at risk include young people, pregnant and nursing women, heart patients and the emotionally unstable. Harvard psychiatrist and drug researcher Norman Zimberg summarizes the inadequate and conflicting data this way: "Nothing's been proved, but there's reason to worry."

There's a pressing reason to learn more about marijuana's effects: The pot on the street has increased in

...many of the cities in which it's grown, from a cottage industry into a multimillion-dollar-a-year agribusiness. These knowledgeable farmers use sophisticated technologies like hydroponics to cultivate pot powerful enough to command astronomical prices—more than \$100 an ounce in big cities.

Recent studies show there are plenty of customers, though not quite as many as there used to be. Pot



Pot mellowed the  
hippies, but can make  
yuppies uptight.

## Signs of Trouble

"There are no simple signs that a person has a serious problem with marijuana, but there are some common patterns," says Dr. Robert Millman, of the New York Hospital-Payne Whitney Clinic. "An interaction of the drug, the person and the environment is usually involved." According to the American Psychiatric Association, 4% of adults in this country suffer from "cannabis dependence" at some time in their lives.

Doctors stress that it can be very difficult to distinguish whether a pot problem is a symptom or a cause. The problem is that users in trouble often have pre-existing personality or mood disorders, which are aggravated by

the drug. However, indications of a dependence on marijuana include:

- A pattern of daily or almost daily use, usually developed over a long period. Chronic heavy users generally increase the frequency of smoking over time, rather than the dose. But they also find, with long-term use, that they eventually get less pleasure from smoking.
- Impaired ability to function socially or on the job.
- Use of other drugs together with marijuana.
- Lethargy.
- Anhedonia—the inability to feel pleasure.
- Attention and memory problems.

more than 400 chemicals of the Cannabis sativa plant, especially the 60 or so that are unique to it—the cannabinoids (see "Medical Benefits?" p.96). Some of these may contribute only minimally to the "high," but THC (delta-9-tetrahydrocannabinol) produces most of the psychoactive effects. While the potency of street drugs varies greatly, the average concentration of THC by weight has increased from about 1% or less in the '60s and '70s to anywhere from 4% to 10% in the '80s.

When marijuana is smoked, THC enters the lungs, passes into the blood stream and is carried to the brain in minutes. Both THC and its chemical by-products dissolve in fatty tissue—such as the brain, the adrenals, the gonads and the placenta—and remain there for three or more days. (These chemicals can be detected in the urine of frequent smokers for four weeks or more.) It's worrisome that these compounds lin-

ger in the body and accumulate with repeated smoking, but there's no evidence yet that they cause harm.

In the brain itself, according to Dr. Billy Martin, a professor of pharmacology at the Medical College of Virginia in Richmond, THC seems to turn on a number of biochemical systems. In low concentrations it may cause two or three changes; in stronger doses, 10 or 12. Says Martin: "The high is probably a combination of effects—sedation, euphoria and perceptual alterations—each caused by a separate mechanism." He thinks that molecules of THC produce their effects by fitting into special receptor cells in the brain, like keys in locks. If Martin and his colleagues could prove the existence of the receptors, their discovery would suggest that a THC-like biochemical occurs naturally—the body's own version of marijuana. "Such a substance could serve in the maintenance of mental health," Martin says, "per-

haps by helping the individual to calm down or protect himself against stress."

### High Anxiety

During the marijuana high, which lasts for two to four hours after smoking, users often experience relaxation and altered perception of sights, sounds and tastes. One of pot's commonest side effects is the "munchies"—a craving for snacks, especially sugary ones. Participants in a study at Johns Hopkins ate more snacks—and consumed more calories per day—while they had access to marijuana in a social situation.

The high can be subtle and somewhat controllable, and intoxicated users can seem sober to themselves and others. But this *feeling* of sobriety is one of pot's greatest risks to well-being. Hours after the sensation of being stoned is over, the drug can still impair psychomotor performance.

The user's coordination, visual perceptions, reaction time and vigilance are reduced, which can make it dangerous to drive, fly or operate machinery. In a study done at Stanford University, simulated tests of pilots' skills showed they were affected for up to 24 hours after smoking, although they felt sober and competent. Another California study showed that a third of the drivers in fatal car crashes had been smoking marijuana. Driving under the influence of pot may be especially dangerous, because the driver may not know when his ability to function is askew.

Short-term memory and learning ability are also curtailed for hours after smoking. This delayed effect could be a serious problem for students, especially frequent smokers. Because the

*Marijuana may have  
some medical uses, but  
it's no wonder drug.*

## Medical Benefits?

Marijuana can be a useful medicine, but it's no wonder drug. People have used it for 5,000 years to assuage a variety of complaints, most recently in the effort to help treat glaucoma, asthma, spasticity, seizures and certain other nervous system irregularities, as well as the nausea that accompanies chemotherapy. In fact, doctors can now legally prescribe THC, pot's most active ingredient—usually in a capsule marketed as Marinol—for chemo patients.

However, marijuana has not proved itself to be superior to other drugs for most patients. So far, it's just an alternative that may work better for certain people. Many scientists doubt it will ever be a truly significant addition to the pharmacopeia. Its action is neither

potent nor focused enough to produce the predictable, clear, isolated effects of first-class drugs. Moreover, the intoxication it causes often makes THC medication undesirable.

On the other hand, marijuana does have limited but documented medical potential. With further research, its components could be teased apart. Those that produce the desired effects—say, the suppression of vomiting or relaxation of muscles—could be isolated, and the rest, causing euphoria and sedation, could be eliminated. Its remedial action is sometimes different from that of standard drugs, which could point pharmacologists to new research directions—one reason scientists are dismayed over the reduction of research funds.

duration and extent of marijuana's psychomotor effects are not known for sure, the practice of testing urine to determine workers' competence is very controversial. "For the first two to four hours, say, on a Saturday night, the drug decreases one's ability to think, drive and work," says Dr. Reese Jones, a drug researcher and professor of psychiatry at the University of California, San Francisco. "But it's yet to be determined if those effects are still present on Monday morning."

Dr. Robert Millman, director of the alcohol and drug abuse service of the New York Hospital-Payne Whitney Clinic, agrees. "Most of the urine screenings that test positive for drugs pick up signs of pot—a very widely used drug," he says. "Companies are confused about what to do—should they fire everybody?"

Evaluating marijuana's impact on

mental ability is difficult, but gauging its effects on emotional health is even more so. Responses are subjective and unpredictable. Marijuana is often associated with a feeling of mellowness, but it causes anxiety as well. It might make one user drowsy, and another—or the same user on a different occasion—hyperactive. One smoker becomes chatty, another withdrawn.

The strength of the drug, frequency of use, and physiological differences among users—for example, in body size and neural sensitivity to the drug—help account for the wide range of reactions. "About a third of people who smoke it feel no effects, a third feel ill and a third feel high," says Dr. Renaud Trouvé, a drug researcher and assistant professor of anesthesiology at Columbia-Presbyterian Medical School in New York.

What Timothy Leary and others called "set and setting"—the mental

state of the user and the environment in which the drug is taken—also plays a part in emotional reactions to marijuana. According to Millman, many people now in middle age found smoking pot relaxing as youths within the laid-back '60s counterculture. As they've increased in age, power and responsibility, they've tuned out, turned off and dropped in.

"There's a natural history to marijuana use," he says. "The baby boomers have acquired a sense of their vulnerability and of the finiteness of time—'This is my life we're talking about!'" he says. "Feeling lethargic and giving up control make them anxious now."

That fear of losing control, or even one's mind, can induce paranoia and anxiety—pot's commonest unpleasant side effects—in people who would not have had these problems if they hadn't taken the drug, according to Millman. Moreover, he says, "marijuana can open a door to psychosis in predisposed persons similar to the action of many hallucinogens like LSD." Many doctors suspect that in these rare instances of users losing touch with reality, the drug has simply activated a latent psychiatric problem. Because of marijuana's potential for stirring up the psyche, psychiatrists say those with pre-existing disorders should stay away from it.

However, after Harvard's Dr. Norman Zinberg, author of *Drug, Set, and Setting* (Yale University Press, \$10.95), studied a group of marijuana smokers, he concluded that "essentially, marijuana doesn't cause psychological problems for the occasional user." Many of his colleagues agree. Most of Zinberg's subjects described the drug as not particularly deleterious to normal functioning, and difficult

(though not impossible) to abuse; they tended to restrict smoking to leisure time and special occasions, often planned around food.

### Deadheads & Other Potheads

The researchers' consensus on long-term heavy marijuana smokers is bleaker, although hard data are more elusive than those on the drug's acute effects. For the vast majority of users, pot isn't physically addictive. It ranks far below drugs such as cocaine and heroin—or alcohol and tobacco—in inviting compulsive use. Nonetheless, a significant number of smokers use the drug frequently, often daily. Such regular use is one of the most obvious

signs of a serious marijuana problem; heavy daily smokers are usually at least a bit out of it (see "Signs of Trouble," p. 94).

Being out of it is less noticeable in the countries where the three large field studies of chronic users were conducted than in the fast-paced United States. Marijuana is widely accepted in Jamaica and Costa Rica, and within certain subcultures in Greece. These studies found that pot smokers were by and large as healthy—and functioned as well—as nonsmokers. However, although these surveys didn't prove any major, permanent health consequences of long-term pot use, that doesn't mean there aren't any. Researchers caution that the sub-

jects of these studies were mostly poorly educated, working-class adults who have lower standards for productivity and health than middle-class Americans. And it took decades, not years, to determine the serious risks now known to be associated with alcohol and tobacco.

For those who look on pot as a buffer against stress, so-called "self-medication" can be dangerous: The person who smokes in an effort to "treat" his depression, anxiety or personality quirks may only add to his trouble. The psychological problem most often associated with chronic marijuana smoking is the "amotivational syndrome." Those thought to have it—many of them teens and

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*Some teens smoke  
to give themselves an  
excuse for failure.*

young adults—show diminished goal-orientation, passivity and an inability to master new problems. However, the syndrome poses a chicken-or-egg question: Does heavy pot use cause poor motivation, or vice versa?

New York Hospital's Millman prefers the term "aberrant motivation" to describe the inert attitude of some heavy smokers. "When parents arrive at my office with a son in a ponytail and a tie-dyed shirt, they don't have to say a word. The kid is abusing drugs and doing badly in school and at home—but somehow he can get himself to a Grateful Dead concert in Ohio with \$7 in his pocket. He doesn't lack motivation, he's just focusing it in the wrong direction."

Millman, who thinks such flawed motivation is caused by the combination of pot and pre-existing psychological problems, has found that some adolescents smoke grass not only to escape from their troubles, but to explain them. Such self-handicapping protects their egos against feelings of failure. "Many of the kids I see have made pot smoking the rationalization for psychopathology—they and their peers can say they act weird because of dope, rather than because they have an untreated learning disability or an emotional disorder," he says.

Children and teenagers are endangered by any drug, because their bodies and minds—especially their judgment—are immature. A study of

middle-class adolescents dependent on marijuana, reported in the May 1987 issue of the journal *Clinical Pediatrics*, helped identify those who may be at highest risk from the drug. Many were learning-disabled, had family histories of alcoholism, and personal and academic problems. Their parents and in some cases therapists hadn't suspected their pot smoking for a year after they started, perhaps because other problems may have disguised the drug use.

The connection between pot, poor motivation and learning disabilities is particularly troubling in an era when 28% of students drop out of high school. The sedation, skewed psychomotor functioning and involvement

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*Marijuana has more carcinogens than tobacco does.*

with other drugs and drug-abusing peers associated with marijuana make any use by teens unwise. A kid who tries pot also has an estimated 10% risk of becoming a daily smoker—and frequent use, at this age, can become truly disastrous.

## Revving Up the Heart

Proof of the physical risks of marijuana is as elusive as proof of its dangers to the mind. The lack of comprehensive long-term human studies and the limits of animal research frustrate scientists like Renaud Trouvé. He's convinced that marijuana stresses the heart, lungs and immune and endocrine systems, particularly when it's used frequently. "As for the short-term physiological effects of marijuana, one can believe what is written," he says. "As for the long-term effects, we just don't know."

For example, it seems reasonable that pot smoking would be bad for the lungs. Marijuana contains more tar and carcinogens than tobacco and is inhaled longer and harder. But while heavy users do show a measurable airway obstruction and seem more prone to bronchitis and sinusitis, no links to serious lung diseases like cancer or emphysema have been established. In fact, perhaps the worst threat to the lungs of pot smokers is the herbicide paraquat, which was sprayed widely on marijuana fields, especially in Mexico. The use of the chemical, which can cause severe lung damage, has been discontinued, although it's being considered as a way to deter growers in California and Hawaii.

The effects of marijuana on the reproductive system also seem ominous, but remain unproved. The drug temporarily lowers the level of the sex

*American Health March '88*

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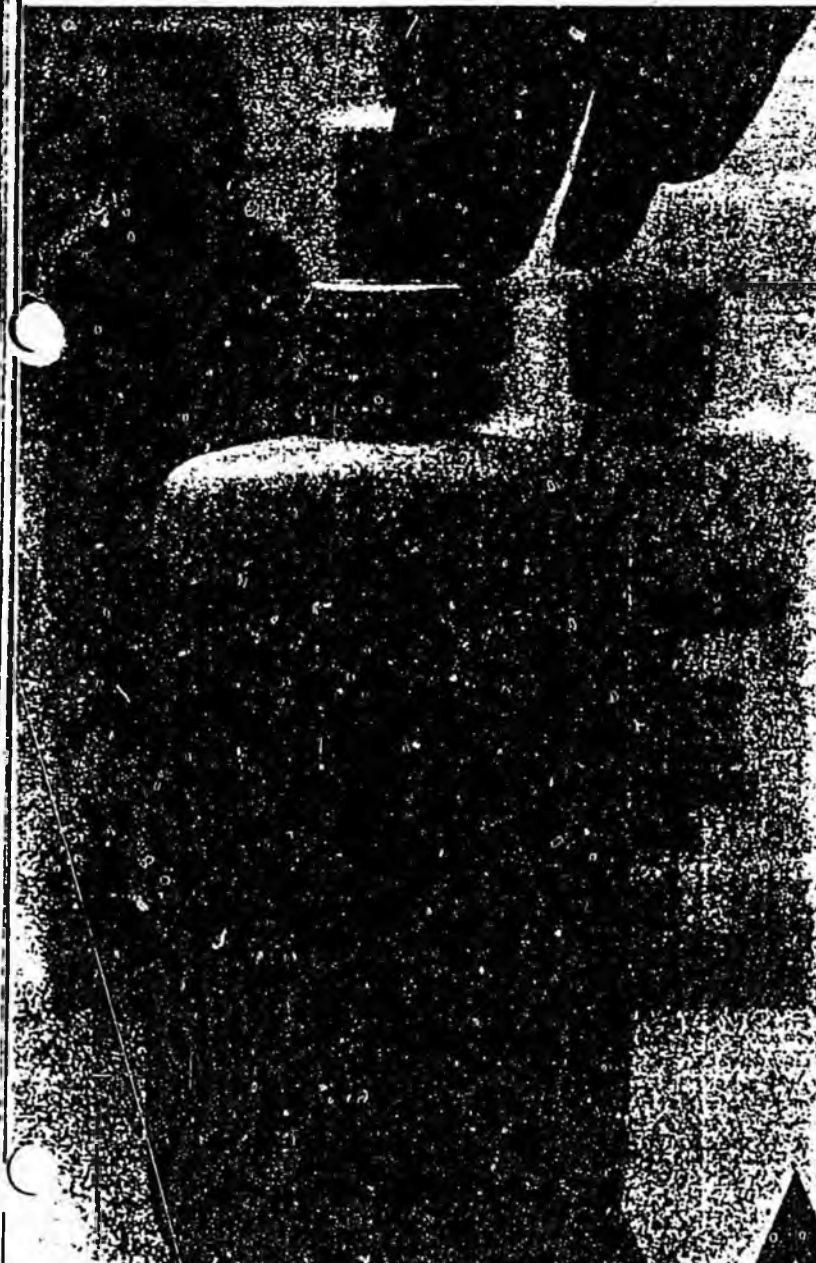
*Pot can change sex hormone levels, for men and for women both.*

hormone testosterone in men, and decreases the number, quality and motility of sperm, but the impact on fertility is unknown. However, testosterone also helps govern puberty's changes in boys. Some researchers think that low levels of the hormone could impair adolescent development.

Women who smoke heavily may experience menstrual irregularities, including a failure to ovulate. When pregnant monkeys, rats or mice are exposed to heavy doses of pot, their offspring are more likely to have a low birth weight or to be stillborn. There's no clear proof that marijuana causes

birth defects, but doctors urge pregnant and nursing women to treat pot with the same caution they give to alcohol and tobacco.

Similarly grim but inconclusive observations suggest that marijuana use can adversely affect other organs and systems in the body. Some research-



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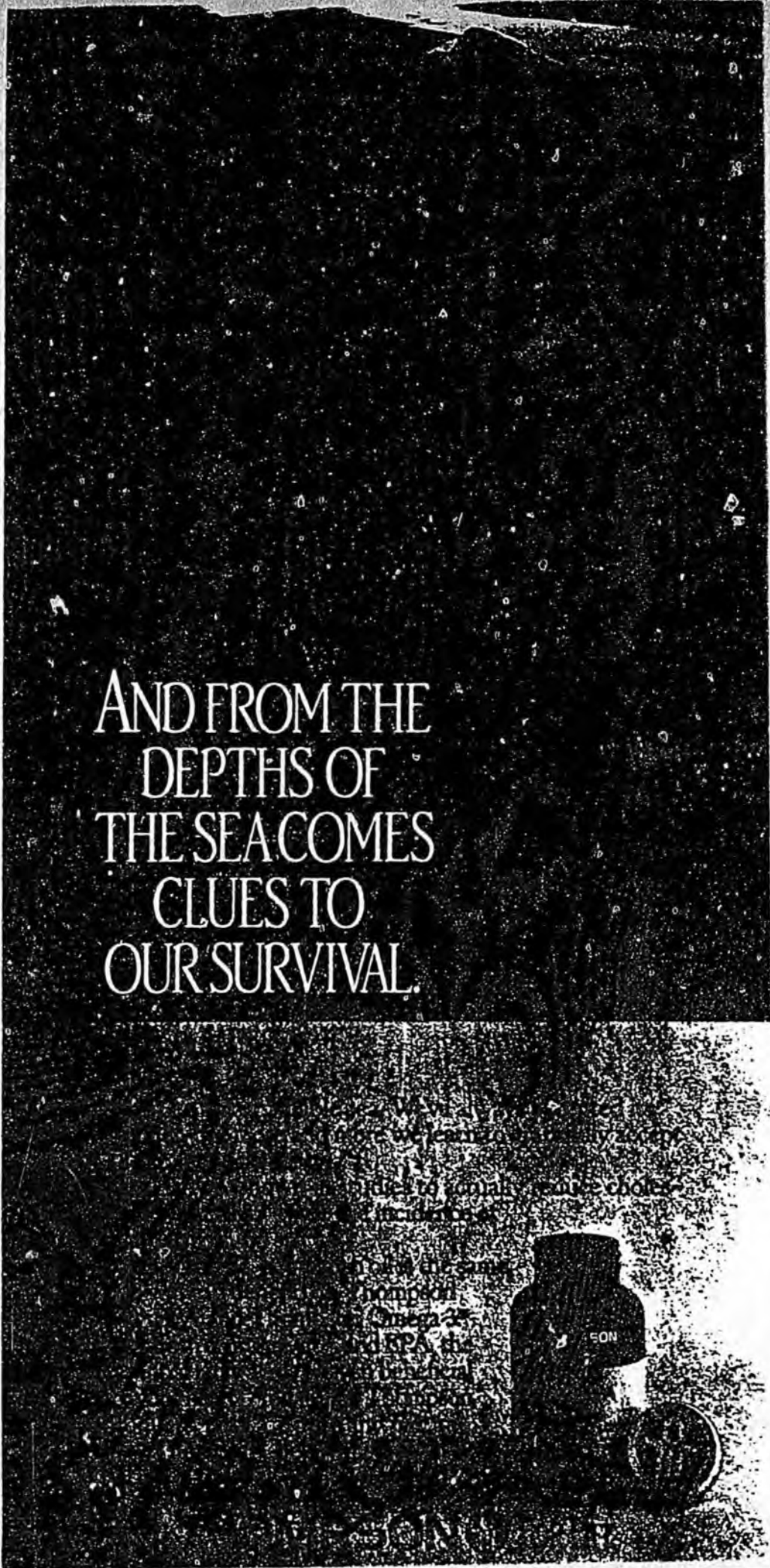
ers have found that marijuana can cause microscopic brain-cell damage in monkeys—but human brain damage hasn't been shown. Some studies suggest that marijuana can suppress immune function to some extent, but scientists don't yet know whether that degree of dysfunction affects health. What's more, marijuana increases the heart rate by as much as 90 beats per minute. This added workload could be very dangerous for those with cardiovascular disorders such as angina, but there's no evidence that it causes any permanent harm to healthy hearts.

#### Toward a Sound Pot Policy

What state-of-the-art marijuana research tells experts is that we need to know more. In 1982, the Institute of Medicine published "Marijuana and Health," a 188-page report based on solid research and compiled by a committee of 21 scientists. Its conclusion, echoed by many marijuana researchers today: "Marijuana has a broad range of psychological and biological effects, some of which, at least under certain conditions, are harmful to human health. Unfortunately, the available information does not tell us how serious this risk may be."

The uncertainty that surrounds marijuana use is compounded when it's compared to the nation's other drugs—both legal and illegal. Despite increasing decriminalization and public tolerance of pot, half of all drug arrests made by local police in 1985—almost 500,000—involved marijuana, according to *The New York Times*. Many citizens consider this police enforcement an inappropriate use of resources that could be used to fight the greater menace of deadly drugs like heroin and cocaine—or, for that matter, tobacco

*American Health, March '88*



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and alcohol, which cause hundreds of thousands of deaths each year.

It's unlikely that either of these two legal, lethal drugs would be lawful if they were discovered today. "The light use of marijuana is certainly not as bad for you physically as alcohol or tobacco," says Harvard's Zinberg. "Our drug policy is based on morals, not on health considerations. The person with a drink in his hand says to himself, 'I'm bad enough, but that guy smoking pot over there is worse.'"

Zinberg says the best approach toward a sound policy on marijuana would be continued decriminalization accompanied by 15 years of serious long-term research. By then, the public would have enough information to make personal choices and public policy decisions. Reese Jones believes that, regardless of policy changes, marijuana's popularity may gradually die out as the group of heavy users ages.

The one point on which all those concerned with marijuana agree is that having so little knowledge of the drug is a dangerous thing. Despite its prevalence and the unanswered questions about its use, federal support for marijuana research, still in its infancy, has decreased—diverted to less-used but "hotter" drugs like cocaine. "I'm a researcher with conservative views on drug use who hasn't found the hard data on the health effects of marijuana," says Jones. "There's a lot of uncertainty about it—you can't say it's unsafe, but there's no proof it's benign, either. We should be studying it to find out, but all the research money is going to help figure out how to detect it in people's urine instead." ♥

Winifred Gallagher is a Senior Editor of American Health.

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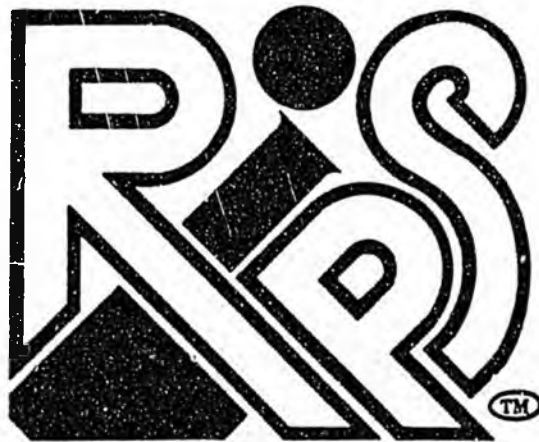
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REPORT #28

October 1, 1988 - December 31, 1988

  
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## SUMMARY

As of December 31, 1988, the Project has analyzed and compiled data on 10464 Marijuana, 737 Hashish and 275 Hash Oil samples. Thirty-five percent of the marijuana samples are from domestic seizures representing 48 states.

The highest concentration of Delta-9-THC found in a marijuana sample is 18.83% from a 1986 domestic seizure in the state of Washington. From this quarter, the highest concentration of THC was 17.64% from a 1988 seizure from Roane, West Virginia.

During this report period, samples from all DEA regional laboratories were analyzed with normalized THC concentrations ranging from 1.60% THC to 4.10% THC from SERL and WRL respectively.

Normalized and non-normalized THC concentrations decreased from 1984 through 1986. However, the % THC increased in 1987 and appears to be rising. This is also the trend for Domestic Cannabis.

INTRODUCTION

As of December 31, 1988, samples from 11476 seizures of marijuana, hashish and hash oil have been analyzed. Of these 10464 were marijuana, 737 were hashish and 275 were hash oil. Composite analytical data on these samples show the following:

% by Dry Weight of  $\Delta^9$ -THC in all Samples analyzed by the Project as of December 31, 1988

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Marijuana	10464	2.68	18.83	Trace*
Hashish	737	3.00	27.69	Trace
Hashish Oil	275	17.01	43.18**	0.04

For this report period October 1, 1988 through December 31, 1988, samples from 512 seizures have been analyzed -- 504 marijuana, 7 hashish, and 1 hash oil.

Composite analytical data on the samples analyzed during this quarter is as follows:

% by Dry Weight of  $\Delta^9$ -THC in samples analyzed between October 1, 1988 to December 31, 1988

	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Marijuana	3.19	17.64	0.05
Hashish	4.82	18.64	0.06
Hashish Oil	5.25	5.25	5.25

\*Less than 0.0095%

\*\*Highest hash oil analyzed as confiscated material

Cannabis plant material, categorized by physical description of the samples, showing the high and low  $\Delta^9$ -THC concentration is as follows:

% by Dry Weight of  $\Delta^9$ -THC in all Samples analyzed by the Project as of December 31, 1988

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Loose Plant Material	8251	2.42	13.56	Trace*
Kilobricks	1036	1.80	7.65	0.03
Buds	797	4.52	14.97	0.16
Sinsemilla	343	7.17	18.83	0.19
Thai Sticks	37	3.84	8.92	0.05

% by Dry Weight of  $\Delta^9$ -THC in samples analyzed between October 1, 1988 to December 31, 1988

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Loose Plant Material	385	2.44	9.70	0.08
Kilobricks	30	2.93	5.21	0.43
Buds	41	4.27	9.91	0.40
Sinsemilla	48	8.14	17.64	2.93
Thai Sticks	0	0	0	0

\*Less than 0.0095%

$\Delta^9$ -THC concentrations by year confiscated are shown in Table 2.