COMMENTS: DRAFT "ANALYSIS OF THE DOMESTIC CANNABIS PROBLEM AND THE FEDERAL RESPONSE

General: This paper seems to break a lot of policy rules, i.e., it gives a lot more credibility to the pro-marijuana lobby than they deserve, it quotes NORML as a legitimate source of information and is full of such words as "market," "garden," and "commercial value."

p. 1 "Almost every state reported large commercial operations..." This implies that large commercial operations are quite prevalent. Can this be substantiated?

p. 6 Table 1: It can probably be assumed that the "kilobricks" are foreign; however, it cannot be assumed that the sinsemilla is domestic.

p. 8 Para. 3. The weights given for a healthy sinsemilla plant output are approximately double the standard used by DEA (0.75 lb). Are the weights stated wet or dry?

p. 10 Para 3. Recommend deleting the remarks made by the grower in Hawaii. The remarks, in and of themselves, don't have any meaning.

p. 15-16 Para 3ff: It is fine to give both sides of the issue; however, this appears to give NORML a lot more credibility than it deserves. NORML is a special interest group and is prone to "hyping up" statistics to further their objectives. In addition, the anecdotal estimates of domestic production are given too much weight in the report, considering the fact that these are all subjective judgments based on limited perspectives. (If a Coast Guard official working in the Caribbean were asked how much of the U.S. marijuana supply came from domestic production, the answer would probably be much different from those quoted.) In fact, the NNICC is the only source quoted which has access to all necessary information and basically has no special interest other than defining the problem in the most accurate way possible. The paragraph on page 15 is not really objectionable; however, the first paragraph on page 16 shows nothing except that the situation may appear to be different depending upon perspective.

p. 17 Para. 1: Here again NORML stats are contrasted against DEA stats. Does NORML have the same credibility as DEA?

p. 19 WSIN estimates that 40 percent of cultivated plots are on public lands. Is WSIN making estimate for only the Western States or for entire United States?

p. 22 The analysis of ads for indoor cultivation accessories is a good piece of staff work.

p. 27 Para. 2. The severity index of smoking pot (1.42) compared to smuggling and selling (10.49) is probably the same ratio as buying a stolen watch compared to burglarizing homes. The point is too weak to illustrate public opinion.

p. 30 The White House Office of Drug Abuse Policy (ODAP) was in existence during the Carter Administration. This should read the White House Drug Abuse Policy Office (DAPO) which has been in existence since the start of the Reagan Administration.

p. 30 1985 National Strategy should read 1984 National Strategy. No Strategy was done in 1985.

p. 33 Para. 3. The estimate of DEA programs costs is probably underestimated at $3.15 million. For example, DEA had assigned over 50 workyears of agent coordinator time at approximately $100,000 per agent. This is approximately $5 million alone.

p. 53 Para. 3. The recommendation for a task force to penetrate domestic cultivators or organizations is weak. These are almost all Class III or IV violators. Even if convicted, they would be imprisioned for no more than six months.

p. 54 Para 2. The DEA program cannot be restricted to a few states because of the dynamics of the small cannabis grower -- he will easily shift the vensue of operations. Cost per plant for eradication (79 cents versus $11.71) is a poor comparison. The $11.71 cost may have been a start-up state and besides, a full-grown plant yields approximately $1,000.

p. 56 Para. 2. The availability of military police to assist in state eradication operations is very questionable. First, MP's (numberwise) are a very small part of all military organizations -- certainly not in enough numbers to aide in eradication operations.

p. 57 Para. 2. Suggest that increased PI money be made available to aide in recruiting informants in regard to location of cannabis plots. This may be cheaper and more effective than aerial surveillance.

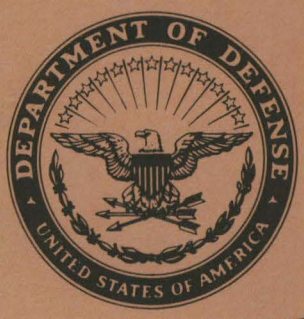
p. 58 Para 5. There may be serious legal implications in the use of local business resources or local volunteers for eradication activities?

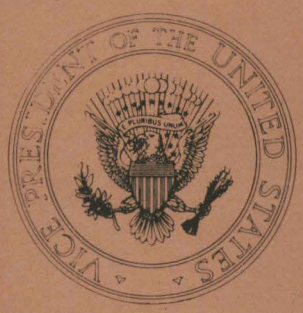
CTS copy Phil Baridon

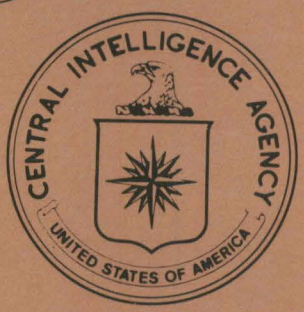
National Drug Enforcement Policy Board

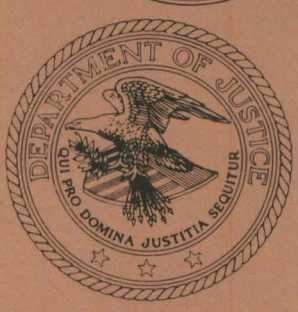
Analysis of the Domestic Cannabis Problem and the Federal Response

Staff Report









June 1986

THE NATIONAL DRUG ENFORCEMENT POLICY BOARD

ANALYSIS OF THE DOMESTIC CANNABIS PROBLEM AND THE FEDERAL RESPONSE

Staff Report

June 1986

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Within the last decade, the United States has become a significant producer of cannabis. In 1984, more than 12% of the marijuana consumed in the United States was believed to have been domestically grown. Almost every state reported large commercial operations producing high-potency cannabis.

This report, prepared at the request of the National Drug Enforcement Policy Board (NDEPB), assesses the extent of domestic cannabis cultivation, discusses related policy issues, analyzes law enforcement initiatives, and recommends ways to strengthen the national program.

Roughly 22 million Americans are current (past month) users of cannabis. An additional 10 million have experimented with the drug or use it infrequently. Despite these large numbers, the marijuana use trends are encouraging. Daily use among high school seniors has dropped an estimated 6% since 1978, and data suggest that increasing levels of disapproval and perceived risk are associated with marijuana.

The social costs of marijuana abuse are borne by all Americans. These include increased motor vehicle and industrial accidents, worker productivity losses, violence, environmental damage, and adverse health consequences for users.

Excluding hashish, which constitutes a very small portion of the American cannabis market, the average THC content of all cannabis products has risen from about 1% in 1977 to over 3½% in 1985. Since 1982, the potency of imported cannabis has climbed steadily, apparently as a competitive response to the increasing popularity of American sinsemilla, a potent form of cannabis. An important result of these market forces is that American consumers are now purchasing a much stronger product at a lower price per milligram of THC.

In the 1960s, imported cannabis from Mexico supplied most of the developing U.S. market. "Home-grown" was scorned by the average user because of its low THC content. That situation changed during the mid-1970s as technical improvements in cultivation and the fear of Paraquat-contaminated Mexican marijuana boosted the demand for high-potency American cannabis. By 1978, domestic cultivation had become a serious problem.

Domestic production accounts for about 12% of the total U.S. supply, according to the National Narcotics Intelligence Consumers Committee. Various public and law enforcement officials believe that the percentage is significantly higher. About one-third of domestic production is sinsemilla; the remainder consists of less potent commercial grade cannabis.

The violence associated with cannabis cultivation usually occurs among competing growers and between growers and "patch pirates." Almost all of this violence is concentrated during the last 45 days of the local season,

when crops are nearing maturity and are most exposed. Data suggest that in some areas the level of violence may have peaked. Interestingly, both law enforcement authorities and growers appear to have a similar explanation for this trend. Vigorous eradication activities in areas of high cultivation have elevated the visibility of the domestic cultivation issue, including the problem of violence. Violence is bad for business and directly conflicts with most growers' political agenda of building popular support for legalizing the cultivation and consumption of marijuana.

Growers normally try to avoid detection by employing a variety of tactics aimed at concealing their product from view. However, in areas where eradication activities are likely to be conducted, some growers locate one of their larger plots in plain view - a so-called "give-up patch." Growers believe that law enforcement authorities will be less likely to search nearby, less accessible areas after expending the effort to cut down and haul away the "give-up patch." Although the merits of this tactic are unknown, it does suggest that deliberate overplanting is practiced in regions of extensive cultivation.

From the growers' perspective, many problems are solved by moving their operations indoors. Such operations require less protection, are difficult to detect, provide accelerated growth cycles with positive environmental control, and are free of predatory insects and wildlife. Using fast-growing hybrids, an indoor grower can raise three crops a year. Although the extent of indoor cultivation is not known, the technical advantages, combined with continuing law enforcement pressure on outdoor plots, appear to have accelerated the trend toward indoor growing.

Another important trend in recent years has been the rise of commercial operations with outside financial backing. Investors provide many growers with money or land, or both, to cultivate cannabis. Some investors are entrepreneurs with no relevant cultivation experience; others are former growers with connections to technical assistance and distribution networks. A convicted grower interviewed by NDEPB staff reported that the biggest change in the last five years has been the influx of urban money into rural cultivation operations. Although there appears to be little or no traditional organized crime (La Cosa Nostra) involvement in domestic cannabis production, field and case reports in at least a dozen states have revealed highly developed regional cultivation and distribution structures, significant outside investment, and well-established shipping networks for domestic marijuana.

Federal and state law enforcement officials were interviewed about the possibility of interlocking domestic production and drug importing organizations. All believed that common networks were rare, although some individuals have worked for both types of organizations. DEA and IRS investigators also report that proceeds from some domestic cultivation operations have been transferred to legitimate domestic businesses as well as off-shore havens.

THE FEDERAL RESPONSE

As the cultivation of domestic cannabis expanded during the late 1970s, state and local law enforcement authorities were unable to respond effectively to the rapidly emerging problem. In 1979, the Drug Enforcement

Administration (DEA) began providing funding and material support to law enforcement eradication efforts in California and Hawaii. By 1985, federal agencies with land management responsibilities and state and local agencies in all 50 states had joined the DEA's Domestic Cannabis Eradication/Suppression Program. The goals of the program are to suppress cultivation in established areas, deter cultivation in potential growing areas, and minimize product availability through crop destruction.

In FY 1985, $3.15 million, approximately 1% of the DEA budget, was allocated to the Domestic Cannabis Eradication/Suppression Program. As part of its cooperative law enforcement effort, the U.S. Forest Service committed $2.1 million to cannabis eradication on federal lands in 1985. Most of the money helped the states offset direct expenses, such as officer overtime and aircraft rental. Interviews conducted by NDEPB staff revealed a strong consensus that if the federal government withdrew its financial support, state and local operations would shrink to token levels.

In December 1981, Congress enacted legislation that modifies the posse comitatus restriction to give the DoD, including the National Guard, an important role in civilian drug law enforcement. Despite implementation guidelines and a variety of measures taken since then, National Guard/DoD resources still are not fully utilized in many cultivation areas. The problems most commonly cited by law enforcement agencies are: liability for damage to DoD equipment, high operating costs, scheduling conflicts, flight time constraints, and poor communication between military and civilian authorities.

An effective domestic cannabis program must balance competing pressures, especially in two areas: the division of functions among federal, state and local governments; and the allocation of law enforcement resources between eradication and investigation activities. Sensitivity about operational control, resource distribution, and selection of tactics is a frequent concern among participating agencies. While the DEA program emphasizes investigation and deterrence, the federal effort is largely confined to assisting the states in eradication activities.

There appear to be four reasons that almost all prosecutions are at the state and local level: (1) most investigations and arrests are made by state and local police because of DEA's written policy of "supporting the state/local efforts with resources other than manpower . . ."; (2) efficient crop destruction is too labor-intensive to be compatible with case investigative work; (3) eradication teams often opt for possession cases, which are far less complex than cultivation cases; and (4) there is little enthusiasm for prosecution in many rural southern and western states because of anti-federal sentiment and the perceived economic benefits of illegal cultivation.

A by-product of the eradication-oriented federal policy is that less attention is given to intelligence collection. Without a more robust intelligence component, the DEA program is handicapped in its effort to develop an overall policy based on reliable information about the domestic cannabis problem. This is especially true now, during a period of rapid change.

Several aspects of the domestic cannabis problem go beyond the boundaries and capabilities of state and local law enforcement agencies. The emergence of multi-state criminal organizations that finance and distribute domestic cannabis in some parts of the country requires federal participation and leadership. The trend toward indoor commercial operations requires an adjustment in law enforcement tactics. Finally, federal assistance is needed to allow state and local governments to conduct effective operations in rural growing areas where the tax base is low and cultivation is high.

The specific recommendations presented in this report (pp. 51-64) cover the following areas:

Investigation and Prosecution

- o Targeting criminal organizations
- o Upgrading planning and intelligence
- o Strengthening Title 21
- o Facilitating prosecution
- o Minimizing violence

Eradication

- o Enhancing operational efficiency
- o Eliminating waste
- o Reducing procedural barriers

Public Support

- o Expanding domestic public support
- o Improving foreign drug-law cooperation

A strong federal program must be guided by clear goals and sustained by broad public support. The recommendations offered in this report address these needs, as well as the need to balance local interests and national priorities.

ANALYSIS OF THE DOMESTIC CANNABIS PROBLEM AND THE FEDERAL RESPONSE

Introduction

Within the last decade, the U.S. has become a significant producer of cannabis. In 1984, more than 12% of the marijuana consumed in the U.S. was believed to have been domestically grown. Almost every state reported large commercial operations producing high-potency cannabis.

In response to this situation, the National Drug Enforcement Policy Board (NDEPB) asked for a staff report to describe the cannabis cultivation problem, to evaluate federal measures taken to control the problem, and to make appropriate recommendations. In preparation for this report, the staff conducted an extensive review of published literature and agency documents, including law enforcement, congressional committee and GAO reports.* Federal agencies with relevant policy or programmatic functions provided information on their areas of responsibility in reply to specific requests prepared by the staff. The responding agencies were: the Drug Enforcement Administration; National Institute on Drug Abuse; U.S. Forest Service; Bureau of International Narcotics Matters; and the land management bureaus within the Department of Interior. The staff conducted site visits and extensive interviews in Georgia, Florida, California, Hawaii and the District of Columbia. Those interviewed included: federal and state prosecutors; federal, state and local law enforcement officials; federal and local judges; managers of public lands; private citizens; convicted cannabis cultivators; and a public defender. Finally, the staff also

---

* Additional discussion of methodology can be found in Appendix A.

examined non-traditional sources of information including underground publications, press releases and advertising.

This report assesses the extent and characteristics of domestic cannabis cultivation, discusses related policy and practical issues, describes and analyzes law enforcement initiatives, and concludes with a set of recommendations to strengthen a national program for controlling this problem.

THE CANNABIS PROBLEM

I. HISTORICAL OVERVIEW

In 1937 President Roosevelt signed the Marijuana Tax Act. Technically, this legislation was regulatory because of concerns that outright prohibition would not pass constitutional scrutiny. Shortly after passage of the Act, legal consumption of cannabis diminished sharply because of the regulatory burden and the availability of more effective medications. By 1942, medical use of marijuana ended when it was dropped from the United States Pharmacopeia.

In the late 1930s, the Federal Bureau of Narcotics (FBN) organized several drives to eradicate domestically grown cannabis. Most early law enforcement measures, however, were focused on marijuana use and the criminal activity thought to be associated with it. Despite some lurid accounts of "marijuana crimes," the 1937 Congressional hearings seemed to

evoke very little interest in the subject from the general population.* Most non-medical cannabis use was confined to Mexican agricultural laborers and poor southern Blacks; these groups together may have included about 50,000 users.

The demand for cannabis products remained fairly low and stable until the mid-1960s. Imports from Mexico and limited domestic cultivation were sufficient for a small and unorganized market. Wild cannabis ("ditchweed") also flourished on thousands of acres in the East and Midwest. Planted by Spanish and English settlers for hemp fiber, its commercial utility had gradually declined except for a brief period during World War II.

In the mid-1960s, marijuana use increased dramatically among middle-class youth. Marijuana became a symbol of rebellion in a period of complex social transformation. In 1969, the first Gallup Poll on marijuana showed that four percent of the American people and 22 percent of all college students had used the drug at least once. Initially, imported cannabis from Mexico had supplied most of the developing U.S. market. "Home-grown" was scorned by the average user because of its low THC content.** That situation changed during the mid-1970s as growers became increasingly sophisticated about the effects of breeding, nutrients and light on THC content. The spread of technical improvements in cultivation and the fear of Paraquat-contaminated Mexican marijuana created a powerful boost to the

---

* Based on a review of the relative frequency of articles on marijuana appearing in the Readers Guide to Periodical Literature: 1890-1977.

** THC is short for delta 9 - Tetrahydrocannabinol, the psychoactive component in Cannabis Sativa L.

production of high-potency American cannabis. By 1978, domestic cultivation had graduated from a nuisance to a serious problem.

The legal response to changes in domestic and international drug trafficking began with the 1961 Single Convention on Narcotic Drugs. As a party to the Single Convention, the United States agrees to prohibit cultivation of the cannabis plant and "take appropriate measures to seize any plants illicitly cultivated and to destroy them."* The United States is also a party to the 1970 Convention on Psychotropic Substances, which regulates THC and certain chemical analogues. In the same year, pressure for more effective domestic legislation resulted in passage of the Controlled Substances Act.** The Act prohibits the manufacture, distribution, or dispensing of a controlled substance. The term "manufacture" includes cultivation. Marijuana or, more precisely, Cannabis Sativa L., is designated as a controlled substance in Schedule I.*** Schedule I drugs have no currently accepted medicinal use in the U.S.****

---

* Articles 22 and 37. The U.S. also agrees to "adopt such measures as may be necessary to prevent the misuse of, and illicit traffic in, the leaves of the cannabis plant" (Art. 28); and to "make arrangements at the national level for coordination of preventive and repressive action against the illicit traffic" (Art. 35).

** 21 U.S.C. 801 et seq.

*** 21 U.S.C. 812(c)(I)(c)(10); 21 CFR 1308.11(d)(13).

**** For regulatory purposes, marijuana is considered separately from its psychoactive ingredient, delta 9-THC. This distinction also applies to Dronabinol, a synthetic THC recently approved in a special formulation for medical use as an antiemetic. This special formulation has been placed in Schedule II.

Within the larger sphere of drug control activities, U.S. treaty compliance on cannabis has become an important symbol of our intentions among other producer nations. The success of American initiatives to assist foreign countries in the eradication of narcotic plants depends upon a shared perception of strong U.S. resolve in this area.

II. CANNABIS PRODUCTS, CULTIVATION AND SOCIAL COSTS

Principal products

There are four major drug products derived from the cannabis plant: marijuana, sinsemilla, hashish and hashish oil. Marijuana is distinguished from sinsemilla in appearance by fewer buds and many seeds. Buds, from male and female plants, are often sold separately because of their typically higher potency. Hashish is normally a brown, gummy substance made from dried resin and compressed flowers from the female plant. Hashish oil is produced by boiling hashish in a solvent such as ethyl alcohol and then filtering out waste by-products.* Other names (e.g., Thai sticks, lamb's bread, etc.) may denote origin or packaging characteristics, but do not indicate a fundamentally different product.

All forms of cannabis are normally smoked, although some users will mix marijuana or hashish into food and then cook it. Oral ingestion has frequently been associated with acute panic attacks among unsuspecting consumers or from unexpectedly large doses. Unlike smoking, which allows

---

* Hashish and hashish oil are almost always imported. Regional conflicts in the Middle East, product costs, and the rise of American sinsemilla have made hashish relatively scarce and unattractive since 1980. About 150 metric tons were imported during 1984, according to The National Narcotics Intelligence Consumers Committee. This constitutes a very small portion of the American cannabis market. Narcotics Intelligence Estimate. Washington, D.C.: The Drug Enforcement Administration, 1984 (hereinafter: NIE).

the user to adjust dosage based on rapidly apparent effects, the effects of eating THC-laced food do not appear for 30-40 minutes. THC is not water-soluble or injectable.

Excluding hashish, the average potency of all cannabis products has risen from about 1% in 1977 to over 3 1/2% in 1985. The following table displays this trend by year and major product forms.

Table 1

Comparison of THC Concentrations in Different Forms by Year Confiscated: 1977-1985*

	Domestic and Foreign (Mixed)				Domestic		Foreign	
	Buds		Marijuana		Sinsemilla		Kilo Bricks	
YEAR	(N)	%THC	(N)	%THC	(N)	%THC	(N)	%THC
1977	(7)	1.38	(63)	1.27	(15)	3.20	(165)	0.53
1978	(25)	2.11	(43)	1.47	(1)	6.28	(60)	0.96
1979	(11)	3.03	(181)	1.57	(10)	3.66	(18)	0.79
1980	(6)	3.81	(114)	1.02	(27)	6.40	(5)	0.63
1981	(33)	3.52	(182)	1.48	(32)	6.38	(3)	0.78
1982	(50)	5.14	(410)	2.63	(14)	7.10	(0)	2.89**
1983	(126)	4.99	(1080)	2.95	(16)	7.55	(0)	3.55**
1984	(176)	4.36	(870)	2.91	(32)	6.73	(22)	4.07
1985	(16)	4.24	(109)	3.49	(UNK)	5.04	(15)	3.75

The potency of domestic sinsemilla has risen from about 3 1/2% during the late 1970s to an average of 6 1/2% during the last five years. In all categories, a sharp rise in potency occurred between 1977 and 1985. The 600% increase in the potency of imported bulk marijuana between 1977 and

---

* Data for this table were derived from "Report #14," the Potency Monitoring Project, University of Mississippi, August, 1985. All numbers enclosed by parentheses are the samples analyzed for each category. The comparisons are based on non-normalized or unweighted arithmetic means.

** Since no actual figures were available for these two years, the known domestic marijuana was factored out for each year, yielding a potency estimate for a mixed category of foreign and domestic. Application of this procedure to known data suggests that the resulting estimates are good proxies.

1985 is especially striking. There are several factors that may explain this trend. Law enforcement pressure against foreign cannabis (eradication and interdiction) disrupted the steady flow of imported marijuana into the U.S., thus creating conditions that favored the expansion of domestic production. At the same time, diffusion of advanced growing technology within the U.S. enabled American growers to increase their share of the market. In an effort to reverse this trend, foreign growers appear to have made a decision to upgrade the quality of their product. Normally, this level of competition would depress prices and increase availability. However, presumably as the result of foreign and domestic law enforcement efforts, prices have risen slightly since 1982, and the supply has remained essentially unchanged. Although competing forces have helped maintain market stability, American users are now purchasing a much stronger product at a lower price per milligram of THC.

Domestic cultivation

Although cannabis can be grown almost anywhere, the value of the product depends heavily on the quality of its environment and the skill of the grower. Ideal conditions include at least five hours of sunlight, sufficient water, and well-drained soils with high levels of organic matter.*

Seeds are normally planted in late May about two weeks after the last frost. By late July or August male plants begin to flower. At this point many growers remove all male plants to prevent pollination. The remaining

---

* Bat guano is a favorite fertilizer. Growers have voiced concern recently that the declining bat population will increase their overhead costs.

female plants flower rapidly for 6-8 weeks, developing large buds along the stems. This process normally produces a high concentration of THC in the buds or "colas." Since the resulting female plants have not been pollinated, they are also seedless, hence the term "sinsemilla" ("without seed" in Spanish).* If the male plants are not removed (thus allowing pollination), the resulting product is commercial marijuana, which is a less potent mixture of male and female plants.

Harvesting, grading and manicuring cannabis is a labor intensive process. Outside help is required for large plots. In the Southwest and West, Mexican illegals are often employed for about $10 per hour. Filipino laborers are used in Hawaii, and a loose network of migrant workers, farmers and relatives performs these tasks in the Southeast.

The value of the plant in the illicit traffic is established by grading its components according to potency. From high to low, the most potent parts are: main top colas, small side colas, immature buds, leaves with flowers and leaves. As an example, one healthy, mature sinsemilla plant produces 14 to 20 ounces of buds and 12 to 16 ounces of leaves. After grading and manicuring, the plants are cured (dried). Normally, drying takes about one week to 10 days in an enclosed space such as a shed. Rapid curing methods with water and dry ice are also used.

---

* Mexican growers claim credit for the sinsemilla process. Although it first appeared in the U.S. about 1971, its importance in the marketplace was not established until the late 1970s.

Product prices

The prices vary somewhat, depending upon regional availability and potency. Some buyers will pay more for specialty or "name-brand" products (e.g., Gainsville Green, Stillwell Tops, Kauai Electric, etc.). Producers usually discount very large orders of more than 100 pounds.

Table 2 shows how wholesale prices vary for the most common cannabis products. Prices are based on data developed by the DEA and IRS, NDEPB staff interviews of convicted cannabis growers, and market surveys by pro-drug publications.

Table 2

Mid-1985 Wholesale Prices of the
Most Common Cannabis Products

	Wholesale (per pound)*
Domestic Sinsemilla	$1,000 - 1,500
Domestic Commercial	400 - 650
Colombian Premium	650 - 800
Colombian Commercial	450 - 600
Mexican Premium	750 - 1,000
Mexican Commercial	500 - 650

Social costs

The costs of converting land from normal use to cannabis production are borne by all Americans. In some areas the destruction of foliage and wildlife by growers has been extensive. Poisons such as Warafin and Havoc are used in numerous areas where deer have acquired a taste for cannabis plants. Growers illegally killed more than 1,600 deer in California in 1984. In some areas growers have used as much as 300 pounds of

---

* For orders less than 100 pounds.

rodenticides per acre. Such massive use not only kills the rodents, but also birds and other small wildlife, thus introducing these poisons into the human food chain in non-lethal amounts.

Growers often protect their plots with armed guards or booby traps. Pipe bombs, punji pits, animal traps, electric fences, and guard dogs have been used by growers to deter the confiscation or theft of their crops. Unfortunately, those devices can be activated by anyone, including unsuspecting visitors or law enforcement personnel. A real estate agent set off two booby traps in Butte County, California while she was attempting to show property. A vice officer in Hawaii now wears boots with steel soles after a punji board pierced his foot.

The presumption of public access to public lands does not always apply in areas of extensive, illegal cultivation. Parks and forests in Hawaii and California were closed to visitors and employees on several occasions until law enforcement authorities reclaimed the land. Although rare, violent confrontations have occurred between growers and police. In August 1985, a U.S. Forest Service officer shot and killed an armed grower in the Plumas National Forest. In 1984, a grower on the Big Island of Hawaii boasted to a friend in a letter that he had "lotsa firepower" (a .357 magnum, an AR-7, and assorted high explosive devices). He said, "I got my orders. Somebody comes in our patch, my job is to shoot first, prisoners if (I) can, nobody gets away. We don't f___ around. Plenty places to dump a body."*

---

* In January 1985 a U.S. District Court judge sentenced that grower to 12 years in prison. Ten of the 12 years were for violation of 26 U.S.C. 5861 (firearms).

The drug produced by growers is also dangerous. Adverse health consequences of marijuana abuse have been documented extensively. The Addiction Research Foundation, for example, has more than 1,200 books and articles in its library on the effects of marijuana on health. The National Institute on Drug Abuse and the National Academy of Sciences publish comprehensive reports on the subject. In 1982, Surgeon General Everett Koop concluded that "marijuana has a broad range of psychological, physiological and biological effects, many of which are dangerous and harmful."* An indirect effect of marijuana use may be to lower the barrier to poly-drug use. According to some experts, once the decision is made to use one illegal drug, the predisposed user has few reasons not to experiment with others. Epidemiological studies have shown that individuals who have used marijuana on 100 or more occasions are statistically more likely to use cocaine.**

Some of the most pernicious social costs of marijuana abuse are borne by the non-users. These costs include motor vehicle and industrial accidents, productivity losses, and a restricted learning pace in schools because of intoxicated children. A recent study by the National Institute on Drug Abuse found significant impairment of driving skills after smoking only one marijuana cigarette.*** Using a simulator, the marijuana-intoxicated drivers were significantly more likely than the placebo group

---

* A summary of the effects of marijuana on health can be found in Appendix B.

** The National Survey on Drug Abuse. National Institute on Drug Abuse. DHHS pub. (ADM) 84-1263. Washington, D.C.: Supt. of Docs., U.S. Government Printing Office, 1984 (hereinafter: The Household Survey).

*** Effects of Drugs on Driving: Driving Simulator Tests of Secobarbital, Diazepam, Marijuana and Alcohol. National Institute on Drug Abuse. DHHS pub. (ADM) 85-1386. Washington, D.C.: Supt. of Docs., U.S. Government Printing Office, 1985.

to crash. These deficiencies became more acute among subjects given both alcohol and marijuana, duplicating a condition widely encountered in social settings. Absenteeism and poor productivity associated with cannabis and other drug abuse are reported to be serious problems in some areas of the private sector. Even more disturbing is the prospect of military readiness being compromised by impaired judgment and functioning. Children and adolescents may be the most vulnerable to the drug's physiological and behavioral effects. Important lessons, whether at home or in school, are not improved by a chemically-induced haze.

III. DOMESTIC CONSUMPTION

About 21.5 million Americans are current users of cannabis.* An additional 10 million have experimented with the drug or use it infrequently. Among adolescents aged 12-17, 2.7 million have used marijuana within the past month. One-fourth (26%) of all high school students reported current marijuana use in 1985.

Despite these large numbers, the marijuana use trends are encouraging. One of the most troublesome categories, daily use, dropped from 10.7% among high school seniors in 1978 to 4.9% in 1985.** Current use (past month) within the general population also declined by more than 9% since 1981.***

---

* One or more times per month. This estimate covers the total U.S. population including institutionalized persons, college students and others not included in the Household Survey.

** Drug Use Among American High School Students: National Trends Through 1985. National Institute on Drug Abuse. DHHS pub. (ADM) 86-1450. Washington, D.C.: Supt. of Docs., U.S. Gov. Printing Office, 1986 (hereinafter: High School Survey).

*** Analysis of the 1985 survey data suggests that cannabis use among high school seniors is leveling off after six years of steady decline.

These trends suggest increasing levels of disapproval and perceived risk attached to marijuana use. Among high school seniors in 1978, only 35% believed that regularly smoking marijuana posed a "great risk of harm," while in 1985 the proportion had risen to 70%. By 1985, over one-half (51%) of the seniors disapproved of smoking marijuana "once or twice," and almost 86% disapproved of "regular" use.*

User profile

Most marijuana users are in the 18-34 year old age group, and in every age group the majority of users is male. This majority is smallest (56%) for the very young (under 17) and largest (90%) for users over the age of 35. Fewer than one third of the marijuana users are married, and more than 80% are gainfully employed. Regarding other drug use, 15% of past-month marijuana users also used cocaine during the past month, and 64% had used cocaine at least once in their life. Most smoked cigarettes and reported alcohol use.**

IV. CANNABIS PRODUCTION

Foreign

Section 481 of the Foreign Assistance Act of 1971 established an international narcotics control function, delegated by the President to the Secretary of State. The State Department's Bureau of International Narcotics Matters (INM) funds and coordinates overseas efforts, including

---

* High School Survey, ibid.

** Based on data prepared for NDEPB staff by the Division of Epidemiology and Statistical Analysis, National Institute on Drug Abuse.

bilateral and multilateral assistance for crop control, a top priority in the United States' foreign relations with source countries.

Foreign cannabis is typically cultivated on large tracts of land, thus making aerial application of herbicides an efficient and cost effective mode of eradication. Relying on technical and financial assistance from the U.S., Mexico began spraying Paraquat on its cannabis fields in 1976.* This development signaled an important recognition of the problem's magnitude by a major producer. Today, foreign source countries use the full range of methods (manual, mechanical and herbicidal) for illegal crop control.** Mexico and Colombia, the two largest producers, eradicated an estimated 7,580 hectares of cannabis in 1984.

Many production areas still remain unobserved or under local protection. In 1984 about 12,000 metric tons of cannabis were shipped to the United States. The largest exporters were: Colombia (48%), Mexico (24%), Jamaica (16%), and Belize (8%).***

---

* In August 1978, "The Percy Amendment" enjoined the federal government from aiding any foreign government eradicating cannabis with Paraquat, until National Environmental Policy Act (NEPA) requirements were fulfilled. After assurances regarding the minimal negative health effects of smoking marijuana treated with Paraquat, Congress repealed the Percy Amendment in 1981. A year later, to comply with NEPA requirements, the Department of State filed a full public environmental impact statement on Paraquat. Subsequently, in 1986, the Department of State filed a supplementary environmental impact statement that adopted the DEA study and extended the Department's NEPA compliance to include the herbicides glyphosate and 2,4-D for the eradication of cannabis.

** Manual eradication is done by uprooting or chopping down individual plants by hand, usually with a machete or "Brush Axe." Mechanical eradication relies on heavy equipment such as "Bush Hogs" or bulldozers.

*** NIE (1984), op. cit.

Domestic

Prior to 1978, imported cannabis, mostly from Mexico and Colombia, supplied nearly all American consumers. Although some domestic cultivation had existed for years, particularly in Hawaii and California, it was insignificant by comparison to the thousands of tons being imported annually. In 1977-1978 the market for Mexican marijuana nearly collapsed. The Mexican Paraquat eradication program took Mexican producers and American consumers by surprise. Despite a strong demand, the fear of tainted marijuana kept American buyers away. Underground laboratories sprang up offering to test for Paraquat.

American growers were quick to help fill the void with a quality product, guaranteed to be free of contamination. Domestic production soared, exceeding 2,000 metric tons by 1982. In 1984, aggressive eradication efforts held net domestic production to an estimated 1,700 tons, accounting for about 12% of the U.S. supply.*

Anecdotal evidence suggests that the 12% estimate may be low. Projections made by a senior U.S. Forest Service official indicate that domestic production could be about 50% of U.S. supply. In addition, the Oregon Deputy Attorney General, in testimony before the House Select Committee on Narcotics Abuse and Control, stated that the correct figure "may be as high as 50%." During the interviews conducted by the NDEPB staff for this project law enforcement officials offered estimates ranging

---

* NIE (1982-1984), op. cit.

from 30% to 60%.* It is important to emphasize that these high estimates are impressions rather than conclusions based on firm data.

The relative proportion of domestic sinsemilla to the less potent commercial grade of cannabis is also disputed. Based on eradication statistics, DEA estimates that about one-third of domestic production is sinsemilla.** Some growers claim that most of the cultivated plants are seedless, arguing that the price differential (about 250%) dictates cultivation preferences. Although sinsemilla commands a higher price, its production requires much more attention and expertise than commercial grade cannabis. The sinsemilla process requires identification and removal of all male plants. Failure to remove a single plant will lead to accidental pollination, thus reducing the value of the plot. Last year a convicted grower with a business degree prepared an economic analysis for the Internal Revenue Service (IRS). He estimated that sinsemilla accounts for about 30% of domestic production. Interview data also support the DEA estimate of one-third.

Fifteen states produce more than one-half of the domestic cannabis crop. In alphabetical order they are: Alabama, Arkansas, California,

---

* Since this issue cannot be resolved without additional data, an interim solution is to consider the 12% estimate as the lower end of a range. It is also important to note that these interviews were conducted in only five states, and may not be representative of law enforcement opinions generally.

** Of the nearly four million plants eradicated during 1985, 33% were sinsemilla. Domestic Cannabis Eradication/Suppression Program. Final Report. Washington, D.C.: The Drug Enforcement Administration, 1985 (hereinafter: the DEA Cannabis Report).

Georgia, Hawaii, Kentucky, Michigan, Missouri, Montana, North Carolina, Oklahoma, Oregon, Tennessee, Texas and Washington. No consensus exists about the street value of domestically produced marijuana; estimates range between $6 billion and $18 billion.

V. THE GROWERS

There are two primary categories of cannabis cultivators in the U.S.: "commercial" growers and "personal use" growers. The distinction is one of scale and intent.* Within each primary category are three identifiable levels of cultivator skill or sophistication: "amateurs," "journeymen," and "horticulturists."

The "amateurs" are independents with little or no information about the drug culture, drug distribution networks or cannabis cultivation techniques. They are, however, opportunists and may attempt commercial scale cultivation. As one Gulf Coast sheriff of a poor county explained: "The hurricane killed the oysters; okra is 19¢ a pound; and there aren't enough outboard motors to steal; so they grow dope." Most commercial growers appear to be "journeymen," who have a solid working knowledge of the business and little interest in botany issues that don't affect their bottom lines. A number of the "horticulturists" have relevant educational backgrounds; some are self-taught. They are not large scale producers because of the intensive labor requirements for exotic plants. Some

---

* Production of 20 plants or more per year is considered commercial, with a presumed intent to sell for profit.

supplement their income, however, by serving as consultants to commercial growers. Horticulturists are the smallest group, and see themselves as distinct from the big commercial growers who are profiteers. They complain that too many outsiders are now financing and controlling cultivation operations. This last point will be discussed more fully in the next section.

Between July 1, 1983 and September 30, 1985, U.S. District Courts sentenced 79 cannabis growers for violations of 21 U.S.C. 841 (manufacture) or 21 U.S.C. 846 (conspiracy/attempt). Eight additional growers were sentenced for related crimes. The NDEPB project staff prepared a profile of these growers based on pre-sentence investigation (PSI) and disposition data requested from the Administrative Office of the United States Courts (AOUSC).

The typical grower is a male (85%) Caucasian (88%) between the ages of 30 and 50 (74%).* One-half (49%) were married at the time of arrest and one-half (52%) had been gainfully employed during the preceding year. Slightly more than one-half (56%) had finished high school, and an additional 9% had college degrees. Intake interviews revealed that 28% had drug/alcohol dependency problems and 8% had psychiatric disorders. Fifty-five percent had prior adult convictions, mostly for drug offenses.

---

* These data were compared with the results from a survey in 1984 (hereinafter: the "Grower's Survey") of 681 growers conducted by Sinsemilla Tips, a publication for cannabis growers. Survey data indicated that 60% were in the 25-34 age group compared with 40% among the U.S. District Court cases. The distribution of men and women was similar across the two groups. Both data sources are consistent with impressions from interviews, suggesting that this profile provides a representative glimpse of the cannabis cultivator population.

Two-thirds (68%) of the defendants received prison terms ranging from one to 120 months; the mean sentence was just over two years (24.4 months). Split sentences were also common, with fines ranging from $1,000 to $35,000.

Grower tactics

The Western States Intelligence Network (WSIN) estimates that 40% of the cultivated plots are on public lands.* The "Growers' Survey" reported that 39% of personal use growers and 51% of commercial growers cultivated on public lands. An additional 26% of the commercial growers admitted cultivating on private property without consent or knowledge of the owner.

The level of violence among competing growers and between growers and "patch pirates" has risen with the profits and potential losses from this illegal crop.** Among growers surveyed, 18% admitted being armed while tending their plants, and 19% admitted using booby traps. The actual figures are probably much higher. A recent survey done by the California Attorney General's office reported that 77% of the growers were armed by the end of the season. According to U.S. Forest Service and CAMP*** authorities, almost all of the violence is concentrated during the last 45 days of the local season, when crops are nearing maturity and are most exposed. California law enforcement authorities reported 20 violent

---

* WSIN is one of the seven components of the Regional Information Sharing System (RISS).

** Those who steal from cannabis plots are known by a variety of nicknames, including: patch pirates, rippers and creepy crawlers.

*** The Campaign Against Marijuana Planting (CAMP) is a state organization that works to diminish the cultivation and trafficking of cannabis in California.

incidents known or suspected to be related to cannabis cultivation during 1984.* Four out of five of these incidents occurred between late August and early October.

The protection of some plots is put under contract. Outlaw motorcycle gangs and other organizations in Oregon, California and Texas are known to have diversified into this area.** Most local law enforcement officials believe that the protection is requested rather than imposed as part of a shakedown.

During the last three years, the number of weapons reported seized nationwide from growers has risen steadily: 984 in 1983, 1,424 in 1984 and 1,768 in 1985.*** Despite this trend, interview data and actual reports of violence suggest that the level of violence has peaked and may be declining in some areas, notably Hawaii and California. Interestingly, both law enforcement authorities and growers appear to have a similar explanation for this trend. Vigorous eradication activities in areas of high cultivation have elevated the visibility of the domestic cultivation problem, including the associated violence. The press has become increasingly critical of growers, who have watched their status slowly change from entrepreneurs in a "cottage industry" to criminals. Violence is bad for business and directly conflicts with their political agenda of building popular support for legalizing the cultivation and consumption of cannabis products.

---

* Six homicides, five shootings, four armed assaults, four detonated booby traps and one arson.

** Hells Angels, Aryan Brotherhood and Bandidos.

*** DEA Cannabis Report, op. cit.

Growers employ a variety of tactics to avoid detection. Very large plots are now quite rare.* A 1983 General Accounting Office (GAO) survey revealed that only six percent of the plots contained 1,000 plants or more. The majority (57%) contained fewer than 100 plants. In 1985, the median number of plants per plot was estimated at 100 by DEA. Growers also resort to "spot planting" in heavy, look-alike vegetation. "Guerrilla patches" are another techinque for concealing cannabis. These are tiny plots of three to five plants spread out in an irregular formation of one or two miles. Camouflage nets are among the other innovations used to avoid detection.

A final tactic deserving mention is the use of "give-up patches." In areas where eradication activities are likely, some growers will locate one of their larger plots in plain view, in an area accessible by off-road vehicle or helicopter. They believe that law enforcement authorities will be less likely to search nearby, less accessible areas after expending the effort to cut down and haul away the "give-up patch." The merits of this tactic are unknown. It does suggest, however, that deliberate overplanting is practiced in regions of extensive cultivation.

From the growers' perspective, many problems are solved by moving their operations indoors. In the "Growers' Survey" only 26% stated that the entire crop from seed to harvest was grown outside. However, a large but unknown number grow seedlings indoors and then transplant them after

---

* However, in 1983 a 32 acre field with more than 500,000 plants was discovered in Georgia. In 1985 a six acre field in New Mexico with 35,000 plants was eradicated with an aerial application of Glyphosate.

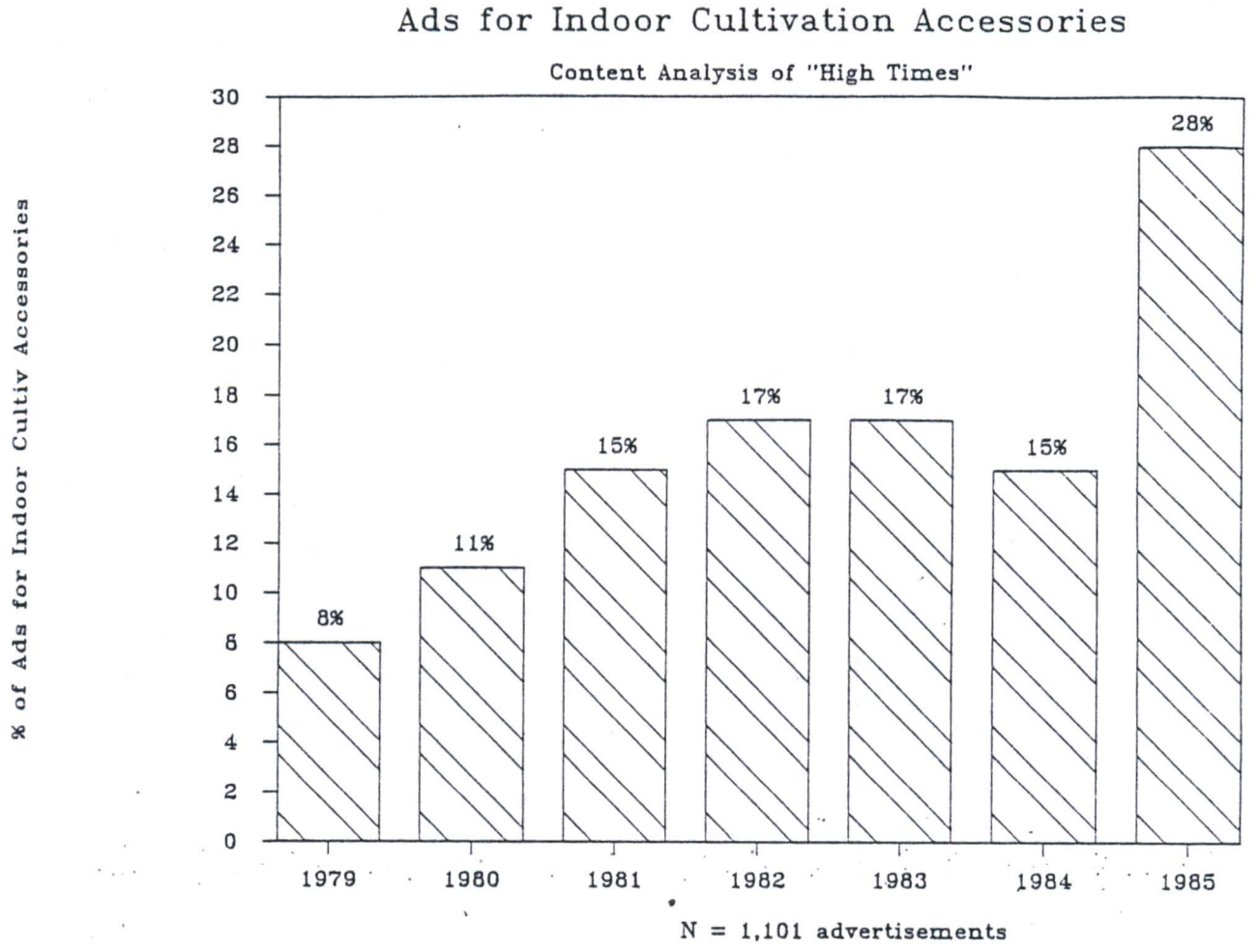
the threat of frost has passed. Full-term indoor operations require less protection, are difficult to detect, provide accelerated growth cycles with positive environmental control, and are free of predatory insects and wildlife. Using fast-growing hybrids, an indoor grower can raise three crops a year. Finally, some combinations of latitude and altitude do not offer enough frost-free days in the summer for full-term outdoor operations.

Indoor startup and production costs, however, are significantly higher than for outdoor plots. An analysis prepared for the IRS showed that each pound of marijuana raised entirely outside costs the grower about $200 in operating expenses. That cost is doubled for indoor operations due to items such as building costs, halide lighting units (at $700 each), timers, fluorescent power twists, exhaust fans and large utility bills.

The extent of indoor cultivation is not known. One grower publication claims that "more marijuana is now being produced in the United States indoors than outdoors."* A pro-marijuana lobby places the indoor estimate at 25% of production. Although both statements are probably exaggerations, the trend toward indoor growing appears to be gathering momentum. Given the potential importance of this development to law enforcement strategy, the NDEPB staff analyzed underground advertising as one indirect measure of this trend. The proportion of ads for indoor cultivation accessories in High Times Magazine for the months of June and December from 1979 through 1985 rose steadily until 1981, and then remained fairly constant through 1984. From 1984 to 1985 the proportion of indoor ads nearly doubled. This analysis is represented graphically on the next page.

---

* Editor's Comment. Sinsemilla Tips. Vol. 4, No. 4, 1984.



Another measure of the change underway is the proliferation of "how to" books published within the last decade for indoor growers.* One of these books has sold more than a million copies, and orders for some of the new offerings are backlogged. A rise in the number of greenhouses seized also supports the conclusion that an important change is occurring. In 1984, law enforcement authorities seized 649 greenhouses. Last year that figure rose to 951 indoor operations.**

---

* These books include: How To Grow Marijuana Indoors Under Lights (1975), How To Grow Marijuana Hydroponically (1976), How To Grow the Finest Marijuana Indoors (1979), Marijuana Botany (1981), Indoor Sinsemilla (1984), Indoor Marijuana Horticulture (1984), and Marijuana Grower's Handbook: Greenhouse And Indoor Edition (1985).

** DEA Cannabis Reports (1984-1985), op. cit.

Indoor cultivation has been well-established in the Pacific Northwest for several years. Two-thirds of the indoor operations seized in 1985 were located in the states of Washington, California and Oregon. Over 80% of the marijuana plants eradicated in Washington were from indoor facilities. Furthermore, for 1985, increased levels of indoor cultivation were reported by 26 states.* The technical advantages, combined with continuing law enforcement pressure on outdoor plots, should accelerate the trend toward indoor cultivation of cannabis.

Grower organizations and marketing

The number of commercial growers in the United States is estimated at between 90,000 and 150,000.** Commercial production ranges from independent 20 plant plots to multi-ton operations spanning several states. Regardless of size, the business needs of commercial growers fall into three categories: technical support, financial assistance, and product marketing.

The best indicators of how these basic needs will be met are the scope and management structure of the illegal operation. Small plots generally need little more than a network of friends for advice and distribution. In many areas, friendship networks have become formalized as cooperatives. Labor, costs, profits and, in some cases, losses are shared. In areas of extensive eradication efforts, losses by individual growers are absorbed partially by these organizations.

---

* DEA Cannabis Report (1985), op. cit.

** Based on a model derived from DEA production figures, IRS estimates and GAO survey data. The number of personal use growers is unknown but probably exceeds one million.

Nearly two-thirds of the growers are "small-time independents" according to 47 state law enforcement agencies surveyed by the GAO in 1983. However, the agencies also reported a substantial increase (44%) in the involvement of "large-scale criminal organizations cultivating domestic marijuana." This trend was expected to increase significantly (73%) by 1985.*

One of the most important manifestations of this trend has been the rise of commercial operations with outside financial backing. These investors provide the growers with money and/or land to cultivate cannabis. Some are entrepreneurs with no relevant cultivation experience; others are former growers with excellent connections to technical assistance and distribution networks. Business executives and other professional people are known to have financed cannabis production as another form of investment. One California financier traveled through five states with a couple so they could select the best possible location to grow his crop. A convicted grower interviewed by NDEPB staff reported that the "biggest change" in the last five years has been the "influx of urban money" into rural cultivation operations.

In 1984 the DEA prepared a Special Intelligence Report on domestic marijuana trafficking. The report concluded that there is no evidence of traditional organized crime (LCN) involvement in domestic cannabis produc-

---

* U.S. General Accounting Office, "Summary of Responses by 47 State Law Enforcement Agencies (Appendix III), "Law Enforcement Efforts to Control Domestically Grown Marijuana. Washington, D.C.: Supt. of Docs., U.S. Government Printing Office, 1984.

tion. At the same time, it cited field and case reports in at least a dozen states* that revealed highly developed regional cultivation and distribution structures, significant outside investment, and routine interstate shipments of marijuana. Some of these organizations included growers, brokers, distributors and financiers. One domestic marijuana conspiracy based in South Dakota and Iowa supplied domestic cannabis by the ton to Miami, Florida importers. Another organization, penetrated by the IRS in 1984, grew crops in Vermont but was financed and controlled by principals in Maryland and Virginia. Money was laundered through the purchase of exotic gold coins. In testimony before the House Committee on Government Operations (1984), an analyst for the Midstates Organized Crime Information Network described a large domestic cannabis production and trafficking organization operating in California, Arkansas and Missouri.

NDEPB staff interviewed federal and state law enforcement officials about the possibility of interlocking domestic production and drug importing organizations. All believed that shared networks were rare, although certain individuals have worked for both types of organizations. DEA and IRS investigators also report that proceeds from some domestic cultivation operations have been transferred to legitimate domestic businesses as well as off-shore havens. Finally, several officials interviewed described the expanding practice by some growers of accepting payment in cocaine as one area of overlap with drug importing operations. One pound of sinsemilla is normally exchanged for one ounce of cocaine.

---

* Arkansas, California, Hawaii, Illinois, Iowa, Kentucky, Missouri, Oklahoma, Oregon, South Dakota, Tennessee, Vermont and Washington. Inclusion of some states was based on other sources of information.

THE FEDERAL RESPONSE

I. CONTEXT FOR LAW ENFORCEMENT AND PROSECUTION POLICIES

A federal cannabis eradication/suppression program must enjoy public support and fit within existing priorities and demands for law enforcement services. This section discusses some of the factors that shaped the scope and development of the federal role.

Public opinion and priorities

Public opinion seems divided on the marijuana problem. While smugglers and cannabis growers are increasingly viewed as "bad guys," very little stigma is attached to the consumers of their products. As one Georgia official explained: "The public will drop a dime on a dope grower, but tolerate the neighbor who smokes pot." Data from The National Survey of Crime Severity also support this type of distinction.* "A person who smokes marijuana" was scored very low (1.42) compared with "smuggles marijuana...for resale" (10.49). Even major violators are occasionally winked at. A Florida state prosecutor complained bitterly about a jury that returned a guilty verdict for less than 20 grams of marijuana because the 35 tons seized would have triggered a mandatory sentence. A Gallup Poll taken in June 1985 showed that 23% of the people favor legalizing marijuana - down slightly from a peak of 28% in 1977.

---

* A total of 60,000 persons scored 204 items. Scores ranged from 0.25 (a person under 16 plays hooky) to 72.1 (bombing a crowded, public building). M. Wolfgang et al., The National Survey of Crime Severity. The Bureau of Justice Statistics, NCJ-96017. Washington, D.C.: Supt. of Docs., U.S. Government Printing Office, 1985.

In high cultivation zones attitudes are increasingly polarized as the costs of illegal cultivation become more apparent. "The days are gone when a lot of people welcomed...marijuana growers as a boon to the area's sagging...economy" reported the Sacramento Bee in June 1985. Several reasons are frequently given for this change: (1) growers pose a real danger to hikers and outdoor workers; (2) most of the money does not remain in the local economy; and (3) cannabis cultivation discourages tourism, corporate relocations and private land sales.

The federal response to domestic cultivation has been shaped by several factors. Cocaine has evolved rapidly into a severe drug problem. All but one respondent interviewed by NDEPB staff identified cocaine as "the most serious problem."* Some voiced concern that upgrading the priority of cannabis cultivation would drain valuable resources from "more serious" drug problems. The GAO noted this issue during its 1983 survey of state law enforcement agencies. Forty-one percent of the respondents believed that domestic marijuana eradication/ suppression efforts should be a "lower" or "much lower priority" in comparison to "other drugs."**

Other organizational and systemic considerations help outline the context of the federal response. Crowded criminal court dockets have

---

* One respondent placed methamphetamine production as more urgent than cocaine.

** Forty-one percent believed it should be "about the same." Only 19% believed it should be a higher priority.

increased case flow pressures on criminal justice personnel.* Charges viewed as more serious than marijuana are less likely to be reduced, dropped or result in some type of diversion.** Prison overcrowding is another obstacle. One prosecutor remarked that it was out of the question to recommend a prison term for cases without a complainant when the prison system was under a court order to reduce its population.

The developing federal role in cannabis eradication: 1979 to present

As the cultivation of domestic cannabis expanded during the late 1970s, state and local law enforcement authorities were unable to respond effectively to a new problem of this magnitude. In 1979, the DEA began providing funding and material support to law enforcement eradication efforts in California and Hawaii. Two years later this support was extended to five additional states, and one year later 16 more began receiving assistance. By 1985, all 50 states participated in the Domestic Cannabis Eradication/Suppression Program.*** Other federal agencies with land management responsibilities also joined the Program during this period. The U.S. Forest Service, National Park Service, Bureau of Land Management, Bureau of Indian Affairs and the Fish and Wildlife Service became actively involved between 1981 and 1983. Together these agencies

---

* In 1984 more than 11 million criminal cases were filed in state courts, and more than 30 thousand criminal cases were filed in U.S. District Courts.

** A common diversion is a pre-trial agreement that charges will be dropped after a period of unofficial probation. These agreements are sometimes called DAGs (deferred acceptance of guilty pleas).

*** Hereinafter referred to as the "Program," the assistance included funds for eradication personnel and equipment, as well as training and technical support.

have jurisdiction over 766 million acres of federal land (about one-third of the United States).* Planning and coordination at the federal level now include the National Guard Bureau, the Bureau of International Narcotics Matters, the National Institute on Drug Abuse, and the White House Drug Abuse Policy Office.

Local control of operations is a cornerstone of the current federal program. As noted in the 1984 National Strategy for Prevention of Drug Abuse and Drug Trafficking: "Domestic cultivation of cannabis requires the attention of all levels of government; however, the nature of domestic production places it primarily within the jurisdiction and capabilities of state and local authorities." Today, federal and state law enforcement and land management agencies have formed a strong partnership in this national effort.

II. CURRENT PROGRAM DESCRIPTION

The goals of the Program are: to suppress cultivation in established areas, to deter cultivation in potential growing areas, and to minimize product availability through crop destruction. Specific Program objectives are to:

(1) encourage state and local agencies in each of the 50 states to recognize the extent of cannabis cultivation in their own areas and assign law enforcement resources accordingly;

(2) provide funding to state and local agencies for an aggressive cannabis detection and eradication program;

---

* Acreage in descending order: BLM 342 million, USFS 191 million, FWS 89 million, NPS 80 million and BIA 64 million acres.

(3) provide training to state and local officers in the various cannabis detection and eradication techniques; and

(4) identify any new or unusual cannabis cultivation trends or techniques.

DEA's role in this cooperative venture is to encourage state and local eradication efforts and to contribute needed resources to participating agencies. In each state, a Special Agent from the appropriate DEA field office serves as a field Program Coordinator. His function is to develop, in conjunction with his state and local counterparts, an Operation Plan for the state eradication program, and to serve as a conduit for DEA support to the state and local governments. The Program Coordinator also compiles Program statistics, develops intelligence within his state, and assists DEA management in monitoring the Program.

The Forest Service assists the DEA, and state and local law enforcement agencies in cannabis eradication efforts in National Forests. Under the Cooperative Law Enforcement Act of 1971, state and local law enforcement agencies may be reimbursed for certain "extraordinary expenses" incurred on National Forests.* In 1984, Congress specifically directed that a portion of these funds be used for cannabis eradication activities. The Forest Service law enforcement capability includes 110 criminal investigators and 1,950 employees trained in federal law enforcement procedures at the Federal Law Enforcement Training Center (FLETC).

---

* The Forest Service has no jurisdiction over violations of federal controlled substance statutes. National Forests are in proprietary jurisdiction, which means that the federal government has acquired rights or title to the land, but the state and local governments retain jurisdiction and authority to enforce state and local laws. The Cooperative Law Enforcement Act is found in 16 U.S.C. 551.

Each bureau within the Department of Interior contributes to the overall Program based on its unique situation. The National Park Service, for example, has 2,700 federal officers and exclusive jurisdiction over its land. In contrast, the Bureau of Land Management (BLM) has only 28 special agents, and relies on cooperative agreements with local law enforcement agencies. Since issuing its first Marijuana Eradication Policy in 1982, BLM has cooperated with other land management and law enforcement agencies to prevent cannabis cultivation on public lands. Through its Tribal Police Departments, the Bureau of Indian Affairs has participated actively in several successful interagency eradication efforts. The Fish and Wildlife Service (FWS) has 191 special agents and 675 "refuge officers" with law enforcement authority, including enforcement of controlled substance violations. In 1985, FWS officers eradicated cannabis in 22 refuges.

Cannabis crops may be eradicated manually, with the assistance of various types of equipment, or by the application of herbicides. The use of herbicides for this purpose within the United States has been quite controversial. In August 1983, DEA used Paraquat to eradicate plots found in the Chattahoochee National Forest and in the Daniel Boone National Forest. The Sierra Club and the National Organization for the Reform of Marijuana Laws (NORML)* promptly sued the DEA, the U.S. Forest Service and the Department of Interior in the U.S. District Court for the District of Columbia, claiming that the use of Paraquat to eradicate cannabis on public lands violated the Federal Insecticide, Fungicide and Rodenticide Act. DEA entered into a consent judgment with the plaintiffs, and agreed "not to use...Paraquat to eradicate marijuana on U.S. federal lands unless and

---

* NORML is a non-profit lobby that supports the legalization of marijuana.

until defendants prepare an environmental impact statement (EIS)...."* In November 1983, DEA began preparation of the Environmental Impact Statement on the Eradication of Cannabis on Federal Lands and Intermingled Forests and Rangelands in the Continental United States. Public sessions were held in four cities in the United States to determine the scope of the EIS. All three eradication methods (manual, mechanical, and herbicidal) were selected for detailed study, along with three herbicides (Paraquat, Glyphosate, and 2,4-D). The draft EIS was published in July 1984 and, after more public hearings, became final on August 26, 1985. Two weeks later, the DEA Administrator signed a Record of Decision with respect to the EIS that authorized the use of herbicides to supplement existing methods of eradicating cannabis on federal lands.

On October 12, 1984, DEA published in the Federal Register a Notice of Intent to prepare a second EIS on the possible environmental and health implications associated with cannabis eradication on non-federal and tribal lands in the United States. That report was completed and distributed in May 1986.

Program funding and training

In FY 1985, $3.15 million, approximately 1% of the DEA budget, was allocated to the Domestic Cannabis Eradication/Suppression Program.** Most of the money helped the states offset direct Program expenses, such as officer overtime and per diem payments, vehicle/aircraft rental and

---

* Sierra Club v. Mullen, C.A. 83-2592, 1983.

** A slight (4.5%) decrease from the previous year occurred because of a large ($800,000) supplemental award to CAMP in 1984 to contract for private sector helicopters, pilots and support services.

operating costs, and the purchase of necessary equipment. Individual states received amounts ranging from $2,600 (Iowa) to $464,000 (California). A Letter of Agreement between each agency receiving funding and the DEA specifies how all funds are spent, and a Financial Status Report is required of each agency participating in the Program.

As part of its cooperative law enforcement program, the U.S. Forest Service committed $2.1 million to cannabis eradication efforts in 1985. Expenditures were concentrated on ten forests that account for 80% of the known cultivation on National Forest lands.

During FY 1985, the Department of Interior did not allocate any funds specifically for cannabis eradication. However, several bureaus did reprogram money for this purpose. For FY 1986, the Bureau of Land Management budget includes one million dollars to begin "a concentrated effort on marijuana detection, control and eradication."

Interviews conducted by NDEPB staff revealed a strong consensus that federal support for eradication efforts is necessary. Most respondents believed that if the federal government withdrew its support, state and local operations would shrink to token levels. Improved federal/state/local cooperation on a wide range of drug and law enforcement issues was reported as an important, indirect benefit of federal assistance. The Program puts law enforcement personnel from different agencies, who otherwise might not meet, into routine contact with each other, thus broadening the basis for coordinated law enforcement action. As one DEA field agent remarked, "Considering the benefits, this (Program support) is a good, cheap deal."

Training was also an important component of the Program in 1985. The DEA Office of Training sponsored 21 one-week courses entitled the "Cannabis Detection/Eradication School." A series of shorter seminars was held in 22 states for federal, state and local officers. More than 900 law enforcement personnel representing 39 states attended these classes. DEA field agents report that a number of state and local police trained by DEA have in turn trained other police officers, expanding further the pool of personnel with specialized skills.

National Guard/DoD assistance

Following the Civil War, southern congressmen were determined to end the practice of U.S. Marshals using federal troops to enforce local laws. In 1878, they successfully amended an army appropriations bill to include the posse comitatus restriction, now codified as 18 U.S.C. 1385. More than one hundred years later, concern over illegal immigration and massive drug smuggling prompted a fresh look at the untapped potential of DoD resources. In December 1981, Congress enacted legislation that provides important exceptions to the posse comitatus restriction.* Senator William V. Roth, Jr. summarized the sentiment behind the change by noting that "(I)n these times of fiscal restraint, it is imperative that all possible resources be utilized to combat narcotics trafficking and all relevant agencies cooperate."** On March 22, 1982 DoD published guidelines for providing assistance to civilian law enforcement authorities.

---

* P.L. 97-86, 10 U.S.C. 371-378.

** The Congressional Record, December 16, 1981.

After publication of the guidelines, two factors continued to impede the timely use of military resources: (1) many state agencies were either unaware that assistance was available or uncertain about how to obtain it; and (2) considerable ambiguity among potential recipients existed about what was available and what remained restricted. To a large degree both of these problems have been overcome, beginning with the publication of National Guard Bureau (NGB) guidance in June 1983. Also in 1983, DEA updated its Domestic Marijuana Coordinator's Handbook to specify what assistance from the National Guard/DoD was available for cannabis eradication.* In April 1984, the Chief of the National Guard Bureau issued updated guidance to all Adjutants General; this guidance further expanded the authorized role of National Guard units in drug law enforcement. Finally, Section 1423 of the 1986 DoD Authorization Act requires the Attorney General to inform state and local law enforcement officials about which DoD resources are available to civilian law enforcement agencies.

Despite all of these measures, National Guard/DoD resources still are not fully utilized in most cultivation areas, according to officials in the states interviewed by NDEPB staff.** The potential benefits of military assistance are considerable; a summary of these benefits and the problems in realizing them concludes this section.

---

* The Handbook is updated each year and distributed to all state Program Coordinators.

** National Guard units and personnel in 20 states participated in drug enforcement operations by providing observation and reporting of suspected cannabis plots. In nine states, units actually participated in eradication efforts.

Advantages:

1) Military personnel who are trained in aerial cannabis detection can report the locations of illegal plots observed during training flights, thus providing an important supplement to law enforcement mapping efforts without significant additional cost to the military.*

2) Military helicopters are used to insert and extract cannabis eradication teams in remote areas, and to haul cannabis and other contraband to locations accessible by conventional vehicles.

3) Civilian authorities are loaned DoD equipment and trained in its use. DoD communication and optical equipment have been used effectively in a number of regions.

Disadvantages:

1) Liability for damage to equipment and routine maintenance costs effectively prohibit most state governments from using aircraft and other expensive equipment on a reimbursable basis.

2) Scheduling of individual missions is difficult. Military training schedules for aircraft rarely coincide with civilian law enforcement operations.** Flexibility to adjust to civilian needs is often compromised by restricted pilot availability and maintenance requirements.

---

* Support for civil authorities must be in Title 32 status and must be considered incidental to and compatible with scheduled training. National Guard aviators in all states have received, or are receiving, training in aerial cannabis identification and reporting procedures.

** Hawaii vice officers complain that the growers know the National Guard training schedule and are able to complete most of the harvesting that would be affected by their assistance.

3) The National Guard Bureau has not been allocated additional flight hours for drug enforcement operations or any other emergency. Many aviation training tasks can be accomplished in the course of providing support for civil authorities; however, National Guard commanders must deny any requests that would compromise unit proficiency training.

4) Since the posse comitatus amendment in 1982, a mismatch of expectations has created bad will among some law enforcement officials.* Procedural barriers and poor communication between civil and military authorities have handicapped law enforcement operations in some areas and created resentment on both sides.

Regional and special operations

The resources to detect, investigate and eradicate illegally cultivated cannabis are normally spread among several agencies, as illustrated in this hypothetical example: a Forest Service employee discovers a booby trapped cannabis plot and reports it to the sheriff. The sheriff requests a DEA overflight that reveals a network of plots in the area. Realizing that the job is too large for his office, the sheriff requests state

---

* Some state law enforcement authorities appeared not to understand the restrictions that remain on military assistance to civilian operations. Also, the level of assistance actually available varies from state to state. For example, a Georgia official was told that the cost for using an Army Skycrane to remove a downed police helicopter from the Altamaha river would be eight thousand dollars. In contrast, the Alabama National Guard agreed to come into Georgia and remove it without charge. Several people expressed anger that National Guard/DoD officials promise "full support" but subsequently allow requests to become entangled in "red tape."

assistance in eradicating the plots. Arrests are made during the raid and ATF investigators are asked to examine a cache of weapons and explosive devices.

This scenario illustrates the need for planning and coordination among agencies in zones of heavy cultivation. Federal, state and local governments have formed a variety of specialized cannabis eradication/suppression operations during the past eight years. From Operation Green Harvest (Hawaii, 1977-1985) to Operation Delta-9 (nationwide, 1985), these programs have confronted many of the operational and policy issues in domestic cannabis eradication. Two of these programs will be discussed briefly.

Campaign Against Marijuana Planting (CAMP)

By late 1982, the California Bureau of Narcotics Enforcement (BNE) had concluded that its current eradication program was ineffective. The key shortcomings were: (1) lack of coordination of specialized resources, viz., aircraft, observers, equipment and facilities; and (2) inadequate concentration of manpower in high density cultivation areas. With a grant from DEA to develop a multi-agency approach based on the concept of mutual aid, CAMP operations began in the spring of 1983. By the end of their second full year of operation, CAMP authorities had destroyed more than 1.3 million pounds of cultivated cannabis. Today, 91 local, state and federal law enforcement and resource agencies, work cooperatively to eradicate cannabis in California.* CAMP is a strong program that reveals a set of advantages and disadvantages when considered as a model.

---

* The eight federal agencies are: DEA, ATF, IRS, NGB, NPS, USFS, BIA and BLM.

Advantages:

1) CAMP eradicates a significant proportion of the illegal crop each year. At the end of the 1984 season, an unofficial survey of growers reported that "the CAMP estimate of having eradicated from 25-40% of the crop is painfully accurate."*

2) CAMP's complex command and control system effectively coordinates the resources of more than 90 independent agencies/jurisdictions, while insuring some measure of local control.

3) CAMP concentrates manpower in rural areas where the cultivation is intensive and local resources are lacking.

4) CAMP appears to have reduced the level of violence and improved safe access to public lands.

5) CAMP operations have focused regional and national attention on the problem of domestic cannabis cultivation.

Disadvantages:

1) CAMP is expensive. In 1984, the DEA and the USFS spent $1.5 million to help California eradicate 158,495 cultivated plants. The $9.20 per plant federal eradication cost is seven times the national average of $1.33.**

---

* "CAMP Attack". Sinsemilla Tips. Vol. 5, No. 2, 1985.

** Both the national and California costs are understated by the amount of expenditures absorbed within other federal agency program categories.

2) CAMP focuses on eradication rather than a combination of strategies. There is little investigation, and fewer than 200 people were arrested during the 1984 season. About 15% of these defendants were prosecuted in U.S. District Courts.

3) CAMP has displaced some of the problem to Oregon. The remaining commercial growers tend to view CAMP as a cost of doing business and take a variety of measures to minimize associated costs.* Production has increased and product availability appears to have remained unchanged.

4) CAMP is viewed by many residents as an annual trauma.** On February 20, 1985, the U.S. District Court in San Jose issued a 34-page injunction against CAMP covering a broad range of activities.*** Although the Ninth Circuit subsequently modified some of the more objectionable constraints, the case (NORML v. Mullen) was certified as a class action in November 1985.

---

* Review pp. 19-21 of this report for additional discussion of this point.

** CAMP operations have divided several communities, at times along unpredictable lines. Some small growers have praised CAMP for ridding the area of violent commercial growers. Some residents have criticized CAMP for using paramilitary tactics and disturbing the rural solitude. In a bizarre case in Hawaii, the National Guard and Hawaii county were sued when a UH-1H (Huey) helicopter flew so close to a rabbit farm that the noise caused a panic and fighting among its inhabitants. More than 7,000 bunnies died in this incident.

*** The effects of litigation have been felt in other states, including Oregon, Washington, Virginia and West Virginia. Most of these actions have contested aerial search and surveillance tactics. On May 19, 1986, in the case of California v. Ciraolo, the U.S. Supreme Court overturned the so-called "curtilage" ruling that a warrantless flight by police over a fenced residential yard violated the defendants' Fourth Amendment rights. The Court held that the "expectation that his garden was constitutionally protected from such observation is unreasonable and is not an expectation that society is prepared to honor."

5) CAMP has unintentionally increased the visibility of pro-legalization arguments and their sponsors because of the extended debate over costs and tactics.

Pele

Operation Pele is an innovative response by the U.S. Postal Inspection Service to the extensive use of the mail for shipping marijuana from Hawaii to the mainland. Operating between August 1983 and November 1984, Pele used dogs to check packages that fit a nine point profile. Approximately three-fourths of the packages seized because of "dog alerts" contained marijuana. More than 1,100 pounds of the drug were confiscated and 75 persons were arrested during the program. DEA agents reported that airport cannabis seizures tripled after Pele was initiated.

Advantages:

1) Operation Pele is a creative response to the unique geography of a major production area.

2) The operation succeeded in disrupting the regular use of the U.S. mail as a drug distribution system; it also has potential as an investigative tool.

Disadvantages:

1) Program costs averaged $5,000 per day, which was considered too high for continuous operation. A small team now rotates on a weekly basis among different post offices.

2) Since this tactic focuses on individual distributors, its utility for disrupting major drug trafficking organizations depends on broad interagency coordination.

Both of these initiatives focus on a separate aspect of the problem. CAMP coordinates its resources against crops in the field, while Pele interdicts the final product enroute from the production area. Both are relatively successful in achieving their objectives, yet neither offers a comprehensive law enforcement approach to curtailing domestic cannabis production. The next section discusses some of the issues that have confounded law enforcement attempts to coordinate efforts against this problem.

III. LAW ENFORCEMENT AND PROSECUTION ISSUES

In the short history of the Program, diverse expectations have arisen about the optimum allocation of resources and the control of operations and tactics. On occasion, when federal assistance was equated with federal control, state and local officials were quick to point to federal assurances of a program "primarily within the jurisdiction and capabilities of state and local authorities."* The federal role must balance these competing pressures, especially in two areas: the division of functions among federal, state and local governments; and the division of law enforcement resources between eradication and investigation activities.

---

* Quoted from the 1984 National Strategy for Prevention of Drug Abuse and Drug Trafficking. In the Annual Report for the Year 1984, the Select Committee on Narcotics Abuse and Control criticized the overall level of cooperation on drug law enforcement matters: "Local and state law enforcement officials have informed the Select Committee that coordination and cooperation between the Federal narcotics agencies and local law enforcement organizations is not satisfactory."

Operational concerns

At times, feuding erupts among participating agencies. An exasperated U.S. Attorney fumed at the U.S. Forest Service for "deliberately fouling up big (cultivation) cases." Despite repeated requests by the U.S. Attorney, Forest Service officials routinely reported large plots to the sheriff, rather than to the DEA. The Forest Service view emphasized local realities. In isolated areas the sheriff and the Forest Service worker are the only law enforcement presence; they rely on each other. In this setting DEA agents are viewed as "outsiders."

Sensitivity about tactics and local conditions is a frequent concern. The Director of the California BNE noted that there is "a diminishing enthusiasm from the police agencies to volunteer their people to CAMP for two weeks." The temporary details are expensive, and police commanders are weary of criticism about "CAMP cowboys" descending on local residents. Decisions about seizures of real property are also sensitive. A vice officer in Hawaii offered an illustration: "Of the ten houses on this block, probably eight of them are growing dope in their backyard. We can't seize those houses; we need to be well-regarded in the community."

In contrast to the drug importing situation, official corruption is rarely mentioned as a problem associated with domestic cannabis cultivation. The diffuse nature of cultivation, the lack of concentrated revenues, and the relatively low level of risk do not favor the development of widespread corruption. Most of the corruption that does occur seems to involve "protected patches" at the county level. Of course, there have been noteworthy exceptions to this pattern. In July 1983, the former

sheriff of Hart County, Kentucky, was arrested with ten other persons in connection with an operation involving five farms and 31,000 cannabis plants worth more than $25 million.

Investigation, prosecution and intelligence

The 1985 DEA Coordinator's Handbook for the Domestic Cannabis Eradication/Suppression Program emphasizes that "although the Program is frequently referred to...as the 'Eradication' Program, the word 'Suppression' in the title is of equal importance. The goal of the Program is to deter the cultivation of cannabis in the United States." This goal may be achieved through law enforcement activities including investigation, prosecution and seizure of assets.

Actually, the federal effort is largely confined to assisting the states in eradication activities. For the 27 months ending September 30, 1985, U.S. District Courts sentenced fewer than 80 persons for violations of 21 U.S.C. 841 (manufacture) or 21 U.S.C. 846 (conspiracy/attempt).* Almost all prosecutions are at the state and local level. One federal prosecutor summarized the situation by noting that "(s)tate prosecutors are hamstrung by a tradition of lenience and bad law." When a Hawaii county judge sentenced a grower to 30 days last year (instead of the usual $25.00 fine), local police were delighted.

---

* Based on data requested from the Administrative Office of the United States Courts.

Policy Board staff interviews on this topic elicited four basic reasons for the lack of federal prosecutions:

(1) Most investigations and arrests are made by state and local police because of DEA's written policy of "supporting the state/local efforts with resources other than manpower...."* Federal resources for investigation and surveillance are rarely available. One U.S. Attorney stated that this is unlikely to change since the current emphasis is on eradication.

(2) According to some respondents, efficient crop destruction is the de facto goal of the Program; as such, it is too labor-intensive to be compatible with case investigative work. Moreover, surveillance creates a more confrontational and, therefore, dangerous environment for the eradication teams.

(3) Eradication teams often opt for possession cases, which are far less complex than cultivation cases. As one prosecutor explained, "It's not illegal to hike through a marijuana patch. Proving intent can be difficult."

(4) Anti-federal sentiment is often high in rural southern and western states. Since many communities consider growers an economic benefit to the area, there is little enthusiasm for prosecution.

---

* Quoted from the 1985 DEA Coordinator's Handbook.

Despite these obstacles, federal investigators and prosecutors have developed a number of significant cases against growers. Hawaii Volcanoes National Park offers a good example of the lasting benefits of combining federal prosecution with eradication. By 1981, the situation in the vast park (220,000 acres) was out of hand. An estimated 40 growers were setting booby traps, threatening visitors, and raising more than 10,000 cannabis plants. At one point the Superintendent was forced to close a portion of the park as unsafe. The following year, teams of National Park Service rangers rappelled into the dense rain forest for stake-outs lasting up to a week. During one three-month period, rangers arrested 21 growers, all of whom were subsequently convicted of felony charges in U.S. District Court. That episode has virtually eliminated cultivation in the park since 1982.*

A by-product of the eradication-oriented federal policy is that less attention is given to intelligence collection. The pattern of token punishment at the state level makes intelligence gathering more difficult. Defendants have few incentives to discuss their criminal careers with police and prosecutors when the potential risk to them is minimal.

Without a more robust intelligence component, the Program cannot benefit from an overall policy based on sound information about the domestic cannabis situation. This is especially true now, during a period

---

* Since state penalties are minimal, intensive cultivation still continues on state and private lands surrounding the park. From a helicopter, NDEPB staff could see the park boundary by noting the limits of cannabis cultivation. Four persons were arrested for cultivating inside the park during 1985; however, as one official pointed out, they had recently come from Alaska and didn't know better.

of rapid change resulting from law enforcement pressure, economic forces and technical innovations. Policy-relevant information would be helpful on such matters as: changes in cultivation patterns and marketing tactics, characteristics and vulnerabilities of large-scale criminal organizations, and effects of the current Program on drug availability. Furthermore, planning a comprehensive law enforcement initiative requires specific information about organizations or commercial operations.

Although intelligence is essential to investigation and prosecution, it is not especially relevant to the outdoor eradication component of a national program. The systematic destruction of illegal plots requires an extensive commitment of manpower, which cannot be siphoned off by futile attempts to determine the ownership of each plot.*

Law enforcement strategies

Commercial cultivation within the United States is remarkably diverse in terms of the scope of the operations, the tactics of the growers and the density of cultivation in different regions. Similarly, the law enforcement response must recognize the constraints imposed by highly variable levels of local resources and experience, as well as other legitimate demands for police services. A good strategy should devise a solution that creatively matches the capabilities of law enforcement with the dimensions of the problem. Commercial growers are well motivated to adapt to changes in tactics. Law enforcement cannot afford to be less flexible.

---

* In 1985, almost 40,000 plots were eradicated.

Three strategies are outlined below. Each represents an approach that has been effective in different parts of the country under different conditions. The typology is intended to be illustrative rather than prescriptive.

Strategy #1

"Maximum Eradication/Incidental Prosecution" This strategy is built on the short-term imperative that elimination of as much cannabis as possible from the market is the most important law enforcement contribution. Advantages include: maximum feasible destruction of plants each season; reduced system costs and pressures (judicial and correctional); increased costs to growers in the form of losses; decreased risks to law enforcement personnel because of fewer confrontations; and increased flexibility to operate statewide, including areas where the growers' political base has compromised local enforcement and made prosecution difficult.

Strategy #2

"Prosecution Oriented Eradication" This strategy is built on the long-term view that deterrence is best served by a division of resources between eradication and local prosecution of growers. Advantages include: higher risks to growers facing loss of crops, property and liberty; an integrated response at the local level; decreased level of cultivation; and improved prospects for offender rehabilitation.

Strategy #3

"Penetration of Cultivation Organizations" This strategy recognizes that in some regions the partial destruction of crops and local prosecution of growers is an acceptable cost of doing business for large and well-financed organizations. In this strategy, the organization is specifically targeted for federal Grand Jury investigation. Advantages include: disruption of the financial and technical base for large, commercial operations by forfeiture and other means; deterrence through highly visible prosecutions; and expanded public support by dispelling myths about marijuana as the new "cottage industry."

The role and limits of federal law enforcement

An effective domestic eradication/suppression program must feature a strong leadership role from the federal government. The scope of the problem demands a coordinated effort backed by an expression of national resolve. In particular, several aspects of the problem are resistant to purely state and local initiatives. The emergence of multi-state criminal organizations that finance and distribute domestic cannabis in some parts of the country requires federal participation and leadership. The increase in indoor commercial operations requires an adjustment in law enforcement tactics. Finally, federal assistance is needed to allow state and local governments to conduct effective operations in rural growing areas where the tax base is low and cultivation is high.

The benefits of a strong federal role are also symbolic. Selected, highly visible prosecutions of commercial growers can be an important tool in moving public opinion from apathy to active support. The national effort to reduce the demand for cannabis products is another beneficiary of broadly-based public support. Finally, a strong program materially improves the position of the United States when negotiating with other source countries on drug law enforcement issues, particularly source-country crop eradication.

The limits of law enforcement are set by practical realities and public support. It is simply not feasible to investigate and establish ownership of the 40,000 plots eradicated last year. Seizing eight houses on a block of ten for growing a few plants in the backyard is feasible but imprudent. Federal drug efforts must remain sensitive to public opinion. Pro-drug organizations have demonstrated their ability to use the media and would certainly exploit efforts that might appear disproportionate to the situation. Effective law enforcement in any area requires the good will of the people.

RECOMMENDATIONS

The policy issue before the National Drug Enforcement Policy Board is the control of domestically cultivated cannabis. Before considering specific recommendations, the Board should examine the range of crop control options. One frequently debated but unacceptable alternative is to support legislation to regulate the legal cultivation and use of cannabis. This would require a drastic reversal of existing policy, a renunciation of

of our treaty obligations, and a repudiation of public opinion and legislative consensus. Furthermore, the social costs of such a change appear prohibitive (e.g., higher accident rates, productivity losses and health care costs). This alternative is neither desirable nor feasible.

The two viable options are:

Option #1: Maintain the criminal sanction, but encourage state and local governments to assume the primary law enforcement role by restricting the scope of federal assistance. This does encourage local initiatives, but does not provide a solution for the developing problem of multi-state criminal organizations. It also fails to provide a dependable means of concentrating law enforcement efforts in rural areas handicapped by limited resources. This is a weak option because public assurances about controlling the problem may contrast with a steadily expanding market share for domestic cannabis. Moreover, the combination of high profits and ineffective law enforcement invites the participation of organized criminal groups.

Option #2: Strengthen a national program that directs coordinated federal, state and local law enforcement resources against the major financiers, cultivators and distributors of domestic cannabis. This is a flexible approach that emphasizes local law enforcement, yet adds significant capabilities from federal assistance in such crucial areas as training, logistics, intelligence and investigation. It also demonstrates an effective level of commitment and allows the nature of

the regional problem to dictate whether the emphasis is placed on eradication or investigation. Option #2 balances local interests and national priorities and is, therefore, recommended.

The scope of domestic cannabis production presents a problem that will not yield easily; it requires a broad law enforcement initiative guided by clear goals and sustained by broad public support. The goals of a national program should be: to suppress cannabis cultivation in established areas, to deter cultivation in potential growing areas, and to minimize product availability through crop destruction. The recommendations that follow are designed to implement a national program based on Option #2.

Targeting Law Enforcement Resources

(1) The DEA and IRS should continue to work closely with state and local authorities to identify and neutralize organizations that underwrite and/or manage large domestic cannabis operations in regions of extensive cultivation.

Discussion: Commercial cannabis cultivation is in a period of rapid change. In some areas of the United States multi-state criminal organizations finance and distribute domestic cannabis. The perception of organized domestic cannabis cultivation may undermine U.S. crop control efforts in source countries. The domestic cultivation problem requires a comprehensive federal response that includes financial investigative capability.

(2) Recommendation: The DEA should direct the bulk of federal assistance to those states with significant cultivation problems and adequate DEA Operations Plans. Criteria for funding should be clearly articulated.

Discussion: The DEA should carefully target federal resources to minimize the dilution of money obligated for cannabis eradication. For example, 18 states received a total of almost one-quarter million dollars ($224,700) in 1985 for the eradication of 400 to 8,800 cultivated plants per state. One state received $6,700 to destroy 572 plants, or $11.71 per plant. The national per plant average is $1.33. Other factors to be considered in funding decisions include the size of the problem and the availability of state and local resources.

(3) Recommendation: The DEA should retain the marijuana Program Coordinator positions in all 50 states to ensure continuing interagency cooperation.

Discussion: All states should be encouraged to develop and implement effective eradication/suppression programs. The Program Coordinators would also assist in planning and coordinating efforts in those states not receiving financial assistance because of a limited cultivation problem or a limited ability to address the problem.

(4) Recommendation: The DEA should specify in its Letters of Agreement with state and local agencies that eradication of (wild) ditchweed must be done by local law enforcement at local expense.

Discussion: The abuse potential of ditchweed is extremely low; THC levels average less than 0.2% (as compared with 3.5% for commercial grade cannabis and 6.5% for sinsemilla). The federal government should concentrate its resources on the destruction of cultivated cannabis, especially sinsemilla. During the last two years, approximately 85% of the plants eradicated were uncultivated ditchweed.

(5) Recommendation: The DEA should take steps to upgrade the collection and utilization of intelligence about domestic cannabis operations. The present eradication-oriented policy deemphasizes the role of intelligence and inhibits the development of creative long-term solutions.

o Require a regional operation plan, in addition to or in lieu of the state plan, when two or more state Program Coordinators document a regional problem based on intelligence reports.

Discussion: In areas of unorganized cultivation, a state operation plan based on eradication and local prosecution is satisfactory. Where multi-state organizations have emerged, a regional plan is necessary.

o Develop a profile of large indoor operations and strategies for their disruption.

Discussion: The present law enforcement response to this problem is uneven. A validated profile of indoor operations would be a useful adjunct to information provided by confidential informants. The profile would take into account applications for building permits, the purchase of specialized equipment and supplies, water and electric bills, and other pertinent descriptors.

Adding Operational Enhancements

(6) Recommendation: The Attorney General should seek from the Secretary of Defense a commitment to increase the number of flying hours in support of drug law enforcement.

Discussion: Although 20 states reported National Guard assistance in 1985, only nine actively used aviation resources in eradication operations. The additional capability provided by large capacity, military helicopters may be the most important contribution made by the National Guard to the domestic cannabis program. However, aviation support has been limited by high operating costs, flight time constraints, scheduling problems and restrictions on deployment in "hostile" zones.

Note: OMB opposes this recommendation. "The NGB has a history of strongly supporting eradication programs.... Increasing this already high level of support might interfere with military

training." NNBIS also notes the "increasingly outstanding" contributions of the National Guard and believes this recommendation may compromise military readiness.

(7) Recommendation: The DEA should help states use existing procedures to acquire "surplus" DoD equipment from the General Services Administration (GSA) and the Defense Property Disposal Office (DPDO).

Discussion: Much of the equipment purchased by the states with federal funds could be acquired less expensively from the GSA and DPDO. Examples of equipment used in eradication activities include: small arms, ammunition, radios, repeaters, spare parts, uniforms, and machetes. DEA assistance should be coordinated with the ongoing efforts by the FBI, DoD and GSA to implement section 1423 of the 1986 DoD Authorization Act.

(8) Recommendation: The DEA should encourage states receiving federal funds to make greater use of small, high-wing aircraft for spotting cannabis fields. Helicopters should be used only when less expensive aircraft are not readily available or not appropriate for the mission.

Discussion: Small, high-wing aircraft (e.g., Cessna 152s) can be operated for substantially less than the cost of helicopters; they are relatively quiet, maneuverable at slow speeds, and suitable for many detection and surveillance tasks. These aircraft are not suitable for certain tasks, including observation in mountainous terrain, deployment of eradication teams or off-airport landings.

(9) Recommendation: DEA state Program Coordinators, working with state/local police, should encourage more growers to inform on violent "patch pirates" and violent growers. Violent offenders should be prosecuted vigorously.

Discussion: This tactic does not appear to be used extensively, but offers the potential to improve the intelligence base, decrease overall violence, and take advantage of the rift between large, commercial growers and all other growers. Law enforcement officers could use a variety of methods to encourage growers to act as informants. Furthermore, growers and law-abiding citizens can use the toll-free hot lines already available in most states.

(10) Recommendation: U.S. Attorneys in high cultivation areas should cross-designate assistant district attorneys to prosecute significant cultivation cases in U.S. District courts.

Discussion: The higher penalties normally associated with federal prosecution are important to a credible deterrence. It is unrealistic to expect a substantial increase in the number of cases prepared by U.S. Attorneys. Most of the law enforcement resources necessary for effective prosecution will continue to come from state and local agencies.

Improving Enforcement Capability

(11) Recommendation: The Policy Board should seek legislation to amend 21 U.S.C. 841(b) to specify minimum penalties for the cultivation of 100 or more cannabis plants - regardless of total weight.

Discussion: Currently, 21 U.S.C. 841(b)(1)(c) imposes smaller penalties for "less than 50 kilograms of marijuana." The existing law does not explain, however, on what basis this weight is to be calculated. Furthermore, the Act specifically excludes "the mature stalks of such plant." Calculating net weight can be elusive and time-consuming. Since each plant produces approximately one pound of psychoactive plant material, the cultivation of 100 or more plants, regardless of maturity, size, or distribution of plots, should demonstrate that the grower is guilty of attempting or conspiring to possess the larger (50 kg.) amount of marijuana. This line of reasoning has been accepted by one circuit in U.S. v. Wright, 742 F.2d 1215 (9th Cir. 1984). However, the issue is unsettled elsewhere. The penalty imposed on a grower should not depend on the point in the growing season when his field is seized.

(12) Recommendation: The Policy Board should seek a commitment from the DoD that it will not hold drug law enforcement agencies liable for damage to loaned DoD equipment, unless caused by negligent behavior.

Discussion: The present policy requires each civilian agency to accept responsibility for damage to equipment that exceeds "fair wear and tear." This forces state and local agencies to choose either to decline aviation support (other than support incidental to training) or accept a financial risk they cannot afford. Requiring the DoD to absorb normal replacement and repair costs would eliminate this risk, as well as any disincentives to National Guard units to cooperate with law enforcement agencies.

Note: OMB and DoD oppose this recommendation. OMB believes that the law enforcement "agencies should be financially responsible for their mission areas, including the costs of equipment damaged while on loan from DoD. In fact, it is unclear to us whether DoD would have the legal authority to pay for equipment damaged or lost while on domestic law enforcement missions." The Army recorded "strong opposition to such a waiver."

(13) Recommendation: The Administrator of DEA should identify and eliminate institutional disincentives for DEA personnel assigned to domestic cannabis eradication.

Discussion: The present G-DEP classification system discourages time spent on domestic cannabis cases because so few violators fall within Class 1 or 2. Perhaps a special exception or "equivalency" could be created that would not penalize agents in very high cultivation areas. An effective drive against domestic cannabis will be difficult to sustain if agency support for its own staff work appears lacking.

(14) Recommendation: To enhance deterrence, the Attorney urge prosecutors to seek cultivation case dispositio some period of incarceration.

Discussion: During field interviews for this project, NDEPB staff received the impression that for most growers the deterrence threshold is any period of incarceration. To improve the deterrent effect, the certainty of punishment should be emphasized. Existing federal statues contain sufficiently punitive provisions. While enhanced penalties may seem attractive, they could increase prosecutor and jury reluctance, thus reducing further the certainty of punishment.

(15) Recommendation: The Policy Board should take steps to reduce the interagency feuding among drug law enforcement agencies.

Discussion: This problem was widely reported, but defies quick fixes. The Policy Board and the Coordinating Group should be models for the open sharing of information and the frank exchange of viewpoints. LECC drug subcommittees should be encouraged as an appropriate forum for resolving differences on local matters.

(16) Recommendation: The DEA should expand the training programs for prosecutors and local law enforcement personnel.

Discussion: These activities were praised during NDEPB staff interviews as an inexpensive and effective means of improving the

current program. One county judge in northern California singled out training as one of the most important ingredients in the day-to-day effort against domestic cannabis.

(17) Recommendation: Agencies planning a major law enforcement operation against domestic cultivation should take all necessary measures to protect its security.

Discussion: The "Delta-9" news leak in August 1985 produced a groundswell of anger among state law enforcement officials. Several complained to NDEPB staff that the leak caused a flurry of harvesting and needlessly endangered their officers.

Building Public Support

(18) Recommendation: The appropriate Policy Board agencies should craft a joint public relations initiative that articulates the Administration's position, stressing the known economic and social costs of cannabis use.

Discussion: A national eradication/suppression program raises the visibility of the marijuana issue. One beneficial effect of this is increased public awareness and support. However, the increased visibility is also being exploited by pro-drug lobbies who repeatedly use the media to argue that the Program is costly and ineffective and that the ill effects of marijuana, like alcohol and tobacco, could be minimized through regulation. This

recommendation stresses that economic and social costs are the primary basis for social policy. These costs, including adverse health consequences (Appendix B), need to be articulated and integrated into a public relations initiative.

(19) Recommendation: The Attorney General, in cooperation with the U.S. Information Agency and the Bureau of International Narcotics Matters, should invite foreign media coverage of significant domestic eradication efforts.

Discussion: First-hand news accounts by reporters from producer nations will have more impact and credibility abroad than American press reports, thus enhancing the perception of United States' resolve in this matter.

(20) Recommendation: The DEA should continue selective use of herbicides on large remote plots.

Discussion: Public support is an essential ingredient of an effective eradication/suppression program. During fact-finding interviews, NDEPB staff were warned on numerous occasions that public support for eradication does not embrace herbicide use. Even the most carefully prepared environmental impact statement may not assuage public fear and aversion. In Hawaii, for example, many people associate Paraquat with its illegal use as a poison for stray dogs.

APPENDIX A

METHODOLOGY

On August 7, 1985, the National Drug Enforcement Policy Board formally requested a staff report to describe the cannabis cultivation problem, to evaluate federal measures taken to control the problem, and to make appropriate recommendations. The Staff Director and a Senior Policy Analyst were asked to prepare this report. On August 27, 1985, the Staff Director made a presentation to the Coordinating Group based on a preliminary project outline and workplan. The workplan emphasized three principal data sources: special agency reports, published matter and field interviews.

During late August, NDEPB staff conducted local interviews of federal officials who have relevant responsibilities ranging from drug intelligence to land management. The specific offices were: Drug Enforcement Administration (Cannabis and Intelligence), U.S. Forest Service (Law Enforcement), National Institute on Drug Abuse, Bureau of International Narcotics Matters, Bureau of Land Management, Fish and Wildlife Service and National Park Service.

Based in part on these interviews, NDEPB staff prepared a set of tasks for all bureau-level agencies with relevant operational or policy responsibilities. Each agency was asked to respond to specific questions about certain aspects of the domestic cannabis problem. Drafts of proposed

questions were mailed on August 25, 1985, to provide the agencies with an informal opportunity to comment on the request and note any constraints. On October 2, the Deputy Attorney General formally asked the agencies to assist by completing the revised set of tasks. All agencies, except the National Park Service, replied with the necessary information.

Existing published matter provided the second major source of information for the project. During August and September, NDEPB staff conducted an exhaustive search of private and government databases for relevant books, public opinion polls, Congressional and agency reports, and articles in professional journals, news magazines, newspapers and underground publications. Among the databases searched were: The National Criminal Justice Reference Service, Criminal Justice Periodical Index, American Statistical Index, Drug Information, Magazine Index, Congressional Information Service, Legal Resource Index, Life Sciences Collection, Public Affairs Information Service, Mental Health Abstracts, Sociological Abstracts and National Technical Information Service.

Finally, NDEPB staff conducted interviews at agency headquarters and field offices. Those interviewed included: federal and state prosecutors; federal, state and local law enforcement officials; federal and local judges; managers of public lands; private citizens; convicted cannabis cultivators; and a public defender. While in Georgia, NDEPB staff led a discussion on domestic cannabis with 25 U.S. Forest Service managers who were attending classes at the Federal Law Enforcement Training Center. NDEPB staff interviewed approximately 75 additional persons individually or in small groups during site visits in California, Hawaii, Georgia, Florida and the District of Columbia.

Interviews were partially structured to assure that important topics were not omitted and to allow comparison of responses. About 50 questions were prepared for each category of respondent: prosecutors, law enforcement officers and managers, land management officials, and judges. Interviews with convicted growers, private citizens and defense attorneys were unstructured.

NDEPB staff also examined cannabis products held as evidence by various law enforcement agencies and viewed cannabis production areas from the air. In California, the staff spent several hours in a DEA aircraft over the "Emerald Triangle," and saw extensive cultivation in Hawaii from a National Guard helicopter.

After completing the site visits, the senior analyst assigned to this project prepared a lengthy, annotated outline of the proposed report. This outline was reviewed by the entire NDEPB staff and revised based on their criticisms and comments.

During report preparation, NDEPB staff recontacted several agencies to verify aspects of their submission or to follow up issues that developed while reviewing new information.

Report drafts were critiqued by staff from the Office of Policy and Management Analysis, in the Criminal Division, by other NDEPB staff, and by members of the NDEPB Coordinating Group.

APPENDIX B

MARIJUANA AND HEALTH: A SUMMARY*

An Overview of Physical and Psychological Effects

- A low to moderate dose of cannabis produces a subjective sense of well-being, with relaxation, drowsiness, mild perceptual alterations, altered sense of time and distance, impaired recent memory, and impaired coordination, particularly during complex perceptual motor tasks. These effects vary among individuals. The intoxication peaks shortly after inhaling the smoke and lasts, at least in an objectively measurable way, for 3-4 hours after a single cigarette.

- The two most regularly observed physiologic effects are a substantial increase in heart rate and a dilation of the conjunctival vessels (red eye). Other physiological changes sometimes encountered include postural hypotension, increased appetite, and drowsiness.

- The results of experimental studies in animals have consistently demonstrated toxicity at doses of THC comparable to daily, heavy marijuana use by humans. Respiratory toxicity, central nervous system dysfunction, endocrine disturbances, reproductive difficulties and immunosuppression have all been observed.

---

* Adapted from: The Health Implications of Marijuana Use. The Drug Enforcement Administration, July 1985. Reviewed and edited by the National Institute on Drug Abuse, 1986.

- Many clinicians are concerned that cannabis use among our youth may produce adverse effects on psychological, as well as physical, maturation. Some individuals may be particularly susceptible to the effects of cannabis for a variety of reasons, especially in cases of pre-existing medical conditions. The symptoms of patients with mental illness, diabetes, cardiovascular disease or epilepsy may be exacerbated by cannabis use.

- There is now substantial evidence that at least mild degrees of dependence, both psychological and physical, can occur from chronic use of cannabis. A mild withdrawal syndrome has been documented.

General Psychological Effects

- Anxiety, confusion, panic, and paranoid states are the most commonly reported short-term, adverse psychological effects. They are sometimes caused by user inexperience, an unexpectedly high dose, or use in an unpleasant social setting.

- Cannabis has been clinically shown to exacerbate psychiatric symptoms among persons with a history of schizophrenia and certain other major mental disorders, and may mask affective, adjustment and other behavioral problems.

- Cannabis use appears to cause a temporary shift in cerebral hemispheric dominance from predominantly left to right hemispheric processing of cognitive activities. Research suggests the shift is due to impaired left hemispheric functioning, with no change in right hemispheric performance.

- There is increasing concern about the long-term developmental effects of marijuana use by children and adolescents. Clinicians use the term "amotivational syndrome" to describe the changes which include: pattern of energy loss, apathy, emotional blunting, loss of motivation and ambition, loss of effectiveness, hostility toward authority and discipline, poor parental relationships, diminished ability to carry out long-term plans, difficulty in concentrating, and a decline in school or work performance. Recent (1983) national surveys report that 40% of heavy users experience at least some of those symptoms. Also called the "chronic cannabis syndrome," it is generally reversible after several months of abstinence. Long-term or irreversible effects on adult intellectual and social functioning have not been demonstrated.

- In a five-year follow-up survey of regular marijuana users, the continued use of the drug was found to be associated with a decrease in certain pleasurable effects. This phenomenon has also been reported in the underground press. However, the reduced pleasure does not necessarily lead to discontinuing cannabis use.

Behavioral and Cognitive Effects

- The National Academy of Sciences/Institute of Medicine reports that "marijuana produces acute effects on the brain, including chemical and electro-physiological changes. Its most clearly established acute effects are on mental functions and behavior."

- Acute intoxication interferes with mental functioning. Learning ability during marijuana intoxication is diminished because of perceptual and memory difficulties. In addition, motivation and cognition may be altered, making the acquisition of new information difficult. Short-term memory impairment and slow learning are severe impediments to classroom performance.

- In young users the impairment of adequate psycho-social development and reality testing may not be readily reversible, even with intensive psychiatric intervention.

- With an effect directly related to dose, marijuana impairs motor coordination and affects tracking ability and sensory and perceptual functions important for safe driving and the operation of complex machinery. Driving skills may deteriorate because of impaired memory, tracking performance, motor coordination, depth perception, sense of timing, peripheral vision, complex reaction time, and signal detection. Marijuana usually impairs driving skills for at least four hours after smoking a single cigarette. However, skill impairment can persist for up to ten hours after smoking, followed by a gradual return to baseline performance. The common practice of using marijuana and alcohol together is a matter of grave concern in the area of highway safety, because driver impairment is worse when the two drugs are taken in combination.

- Recent research has demonstrated that the performance of pilots remained impaired for 24 hours after smoking marijuana. Yet when retested, the pilots in the study reported feeling no after-effects and did not appear intoxicated.

Respiratory Effects

- Marijuana smoke is a complex mixture that has many chemical components and biological effects similar to those of tobacco smoke. This suggests the strong possibility that prolonged smoking of marijuana, like tobacco, may lead to cancer of the respiratory tract and lungs as well as other respiratory disorders. The greatest risk is to users who smoke both cannabis and tobacco.

- Pre-cancerous changes not normally seen in heavy tobacco smokers under the age of 40 have been found in small samples of bronchial tissue from 20 year old heavy smokers of hashish and tobacco. Cannabis tar, when painted on the skin of mice, causes precancerous changes similar to those produced by tobacco tar. Also, the concentration of tar in marijuana is 50-70 percent higher than in the same amount of tobacco.

- Cigarette for cigarette, the difference between tobacco and marijuana may be even more significant because of the way marijuana smoke is typically retained in the lungs for a longer period than tobacco smoke. Thus, two to three marijuana cigarettes a day may well carry the same risk of lung damage as a pack of tobacco cigarettes smoked in

the usual manner. It is important to note, however, that no direct confirmation of the likelihood of cancer has yet been provided, possibly because marijuana has been widely smoked in this country for less than 20 years, and data have not been collected systematically in countries with a longer history of heavy marijuana use.

- Long-term, heavy smoking of cannabis is associated with chronic respiratory symptoms such as runny nose (rhinitis), sore throat, and bronchitis. Chronic heavy use produces changes indicative of early bronchitis and mild obstruction of the air passages.

Cardiovascular Effects

- Smoking marijuana immediately accelerates the heart rate and, in some persons, increases blood pressure. These changes pose a threat for people with abnormal heart and circulatory conditions, such as high blood pressure, arrhythmia, and hardening of the arteries. The magnitude and incidence of risk is unknown since most cannabis smokers are young adults who are relatively free of cardiovascular disease.

- The magnitude of cardiovascular effects is as great as those produced by nicotine and tobacco smoking; these effects are expected to manifest themselves as the user group ages.

Reproductive Effects

- The effects of marijuana on reproduction include decreased sperm count and sperm motility in rodents, and interference with ovulation in female monkeys.

- THC exposure appears to cause some inhibition of male and female hormones that control sexual development, fertility, and sexual functioning. With no further exposure to the drug, these effects are reversible in sexually mature primates.

- When female Rhesus monkeys were treated with THC over a period of 3-5 years at levels comparable with daily human consumption of two marijuana cigarettes, the birth weight of male infants was significantly less than normal.

- A Boston study found that human maternal marijuana use during pregnancy was associated with significantly decreased fetal growth. Exposed infants were five times more likely to have symptoms comparable to those found in fetal alcohol syndrome than those born to nonusers. The decreased fetal weight was directly related to the total consumption of marijuana smoked, and was greater than the weight decrease found in infants from alcohol-using mothers. In fact, the symptoms associated with the fetal alcohol syndrome were more closely related to the amount of marijuana used than to the amount of alcohol consumed.

- Lasting behavioral effects in the offspring have also been noted, both in animals and in humans, when the mother is exposed to cannabis during pregnancy. The cannabinoids in marijuana, including THC, readily cross the placenta. Nursing mothers who continue to use marijuana secrete THC in their breast milk.

Immune System Effects

- Animal and in vitro studies suggest that cannabinoids have a mild, transient immunosuppressant effect. Preliminary evidence suggests that marijuana in large doses may interfere with the body's immune response to various infections and diseases. This complex area of research may require many years to establish conclusive findings. If marijuana decreases the body's immune response, which has been suggested by animal studies, the public health implications are significant.

Marijuana Use With Other Drugs and Therapeutic Potential

- Cannabis is often consumed with other drugs. Drug interactions can be additive, leading to enhanced or prolonged behavioral and psychological effects from CNS depressant drugs such as alcohol or barbiturates.

- In 1984, over 80 percent of the marijuana-related hospital emergency room episodes also involved other drugs, viz., alcohol, PCP, cocaine, and diazepam.

- Since THC from cannabis often produces troublesome psychotropic and cardiovascular side-effects that limit therapeutic usefulness (particularly in older patients), the greatest therapeutic potential lies in the synthetic analogues of cannabis. These analogues (e.g., Dronabinol) have a lower incidence of undesirable side effects, as well as other advantages over crude cannabis compounds.

- "The fact that marijuana (THC) may prove to have therapeutic value in medical practice does not indicate that it is a safe drug for recreational use," concludes the Council on Scientific Affairs in the Journal of the American Medical Association (1981).

Closing Quotes

- "Our major conclusion is that what little we know for certain about the effect of marijuana on human health--and all that we have reason to suspect--justifies serious national concern."

  The Institute of Medicine, National Academy of Sciences, 1982

- "The Public Health Service concludes that marijuana has a broad range of psychological and biological effects, many of which are dangerous and harmful to health. The Public Health Service supports the major conclusion from the National Academy of Sciences."

  Surgeon General C. Everett Koop, M.D., 1984

o "It should also be emphasized that almost all of the available experimental data arise from studies of young healthy adult males. While some of the changes noted may be relatively unimportant in a healthy young adult, they may be very significant in an individual at risk because of immaturity, old age, or pre-existing disease."

"We feel that people especially at risk with even moderate doses include anxious, depressed or unrecognized psychotic individuals; heavy users of other drugs; pregnant women; some epileptics; diabetics; individuals with marginal fertility; and patients with chronic diseases of the heart, lungs, or liver."

"Adolescents who are undergoing rapid physiological and psychological development may be particularly susceptible to the development of a life-long pattern of use and to the effects of long periods of cannabis intoxication. They may also be more prone to cannabis-related traffic accidents because of their lack of driving experience and may be affected more by possible disruptions of hormone balance."

Addiction Research Foundation of Ontario, 1981

o "The most frightening aspect of the widespread use of the drug is that the overwhelming majority of smokers have no knowledge of the demonstrated (adverse health) effects of marijuana."

Stuart M. Butler, Ph.D, The Heritage Foundation, 1981