



1001 CONNECTICUT AVENUE, NW • SUITE 1010 • WASHINGTON, DC 20036 • T 202-483-5500 • F 202-483-0057

March 18, 1994

U.S. Sentencing Commission
One Columbus Circle, NE
Suite 2-500
Washington, D. C. 20002-8002

Dear Commissioners:

Thank you for taking the time to review the proposed "marijuana amendment." The weight equivalency issue is certainly one that deserves our attention.

Unfortunately, I will be out of town for most of the day on Thursday, March 24, so I probably will not be able to testify before the Commission. Hence, I have summarized NORML's request and arguments below, which I hope you will have an opportunity to review before the hearing.

NORML asks that the U.S. Sentencing Commission promulgate the following provisions as an amendment to the U.S. Sentencing Guidelines:

1. A female marijuana plant should be equated to 100 grams of marijuana, regardless of how many plants are grown.
2. Male plants should not be counted. Consequently, grown male plants should not factor into the equation, and half of a plot of seedlings should be discarded because 50% are assumed to be male.
3. All changes made to the U.S. Sentencing Guidelines should apply retroactively.

The overall logic of NORML's argument is as follows:

1. Weight-based sentencing can never be a perfect way of administering justice, but if we are to use a weight per plant ratio, equating each female marijuana plant and seedling to 100 grams is at least realistic.
2. The 100 grams per plant formula would continue the existing sentencing structure used for 49 or less plants, which more closely reflects the potential yield of a plant than the 1,000 grams per plant ratio. As you know, "the equivalency of 100 grams of marijuana per plant used in offenses involving fewer than fifty plants was developed after a review by the Commission of information relating to the actual yield of marijuana plants under a variety of conditions." [1]
3. The U.S. Sentencing Commission originally adopted the 1,000 grams per plant ratio from the Congressional enactment of a conversion system to be used (and is used) in mandatory minimum sentencing. U.S. Senator Joseph Biden explained at the time of the enactment that the 1,000 grams per plant ratio was designed to curtail "unnecessary debate" between prosecutors and defendants. There is no suggestion

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that the 1,000 grams per plant ratio was based on realistic science, or that it was intended to punish growers more severely than possessors of the finished product.
[2]

4. The timing of the arrest creates a "cliff" in sentencing. A defendant who is arrested before harvesting 60 plants is eligible for a 63-month sentence, but if he or she were arrested the day after harvesting the plants and sentenced on the total weight of smokeable material, he or she would receive a much shorter sentence.

5. Using the 100 grams per plant ratio for 49 or less plants, while using the 1,000 grams per plant ratio for 50 or more plants, creates another cliff. Those arrested with 49 plants or seedlings receive 10-16 months, while those arrested with 50 plants or seedlings receive 33-63 months.

6. In a nutshell, the 1,000 grams per plant ratio:

- was originally implemented in the U.S. Sentencing Guidelines because Congress used the ratio to simplify sentencing procedures and guidelines for mandatory minimums;
- was not originally based on scientific evidence, and in fact is unreasonable based on the actual potential of a plant's yield; and
- is punishing growers ten times as severely as possessors of the finished product.

Hence, the only reason to maintain the present ratio would be to purposefully impose harsher sentences on growers because they are supposedly "more culpable" than others who are caught with already-packaged marijuana.

Growers are not more culpable. A person with 60 plants is not more likely to be a dealer than someone who possesses 60,000 grams (60 x 1,000 grams) of cured, dried marijuana. (This is 125 pounds of marijuana.) In fact, a person with 60 plants isn't more likely to be a dealer than someone with 6,000 grams (60 x 100 grams), or 12.5 pounds of packaged marijuana. Many people grow for personal use, and many others are forced to grow for medicinal use.

7. Changing the U.S. Sentencing Guidelines to reflect the 100 grams per plant formula will allow judges to give probation sentences for cases they deem special, such as medical cases.

[1] U.S. Sentencing Commission, "Proposed Guideline Amendments for Public Comment," December 1993.

[2] *U.S. v. John Marshall*, Appeal from the United States District Court for the District of Nebraska, filed July 19, 1993, docket number 92-3398.

Summary:

The way the U.S. Sentencing Guidelines now read, an individual who is arrested with 120 seedlings--regardless of how puny, and whether or not they were being grown as medicine--will receive a mandatory minimum sentence of 5 years.

If the U.S. Sentencing Guidelines are changed to reflect the fact that half of these seedlings--if they even live--will grow up to be male and therefore not smokeable, the individual would be sentenced for 60 plants. Using the 1,000 grams per plant formula, this would be the equivalent of possessing 125 pounds of packaged, dried, smokeable marijuana. (60 plants x 1,000 grams = 60,000 grams = 2,000 ounces = 125 pounds)

If the U.S. Sentencing Guidelines are further changed to reflect a more accurate portrayal of a marijuana plant's actual yield, the individual would be sentenced instead as if he or she possessed 12.5 pounds of packaged marijuana. (60 plants x 100 grams = 6,000 grams = 200 ounces = 12.5 pounds)

While it is unlikely that a person who is growing 120 plants and seedlings will ever be able to harvest even 12.5 pounds of smokeable marijuana, this is at least more reasonable than if they were sentenced for having the equivalent of a full 125 pounds of marijuana--or, for that matter, sentenced for a mandatory minimum of 5 years in federal prison.

Sincerely,

A handwritten signature in dark ink, appearing to read "Richard Cowan", with a stylized, flowing script.

Richard Cowan
National Director

ELECTRONIC VERSION

BNA OPINIONS
Date Filed 7-19-93

Re'd JUL 19 1993

CA8

No. 92-3398

United States of America,

Appellant,

v.

John Marshall,

Appellee.

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* Appeal from the United
* States District Court for
* the District of Nebraska
*
*
*
*

30719016

Submitted: April 15, 1993

Filed: July 19, 1993

Before McMILLIAN and BEAM, Circuit Judges, and SACHS,* Senior
District Judge.

SACHS, District Judge

The Government appeals from the district court's sua sponte departure downward in the sentencing of this drug case involving a large number of marijuana plants. Under a plea agreement, defendant pled guilty to the manufacture and possession with intent to manufacture in excess of 100 marijuana plants. In return for the guilty plea the United States agreed to make a non-binding recommendation at sentencing that the court impose its sentence at

*The Honorable Howard F. Sachs, Senior United States District Judge for the Western District of Missouri, sitting by designation.

the low end of the applicable Sentencing Guideline range. Under the presentence report the imprisonment range was 97 to 121 months, calculated on a conversion ratio of one plant to one kilogram. On its own motion the court departed downward and imposed a 66 month sentence.

The district court at sentencing observed that "the determination that he should be charged with 416 kilograms of marijuana simply just doesn't make sense to me." In following the Guidelines to determine the Total Offense Level, and thereafter departing downward, the judge added that he viewed the classification as "arbitrary and capricious" when the conversion ratio is one kilogram to a plant, for 50 or more plants, but only 100 grams per plant for 49 or fewer plants.

We are compelled to reverse for resentencing, although we acknowledge skepticism about the rationale used by the Sentencing Commission. Disagreement with the Guidelines does not justify a departure. United States v. Muzika, 986 F.2d 1050, 1054 (7th Cir. 1993); United States v. Jones, 905 F. 2d 867, 870 (5th Cir. 1990) ; United States v. Lopez, 875 F.2d 1124, 1126 (5th Cir. 1989). An impression that an arbitrary and capricious factor has become embedded in the Guidelines may well, however, justify further consideration, on remand, of the constitutional validity of the Guideline provision, irrespective of the widespread (if occasionally grudging) judicial acceptance of the marijuana plant conversion ratio.¹

¹As will be further indicated, we are inclined to believe that there may be an acceptable rationale for "going light" on minor offenders, with 49 or fewer plants. See, e.g., United States v. Webb, 945 F.2d 967 (7th Cir. 1991), cert. denied, 112 S.Ct. 1228 (1992). We do not question and are in no position to question rulings in this circuit and elsewhere that would justify a more severe penalty for growers than for possessors of the finished product. Where we do suggest there may be room for further development of the issues would relate to (1) what rationale, if any, there is for penalizing growers on a ten-to-one ratio, if that

If, on remand and further study, defendant wishes to challenge the marijuana plant conversion ratio as arbitrary and capricious, and violative of substantive due process, an orderly presentation should be made, after adequate notice (unless the matter can be submitted on motions and briefs). Without legal challenge from or adopted by defendant, however, the district court is obligated to follow the Guidelines.

Because our suggestion that further challenge may be fruitful could be baffling, in light of the widespread validation of the conversion ratio, some further indication of what troubles us may be appropriate, as well as some indication of why we believe the issue may remain open in this circuit.

To begin with the final point, it will be acknowledged that shortly before the sentencing below there was a ruling in this circuit that it was not irrational to equate one marijuana plant with one kilogram of marketable marijuana. United States v. Smith, 961 F.2d 1389, 1390 (8th Cir. 1992). The rationale given was that Congress intended "heightened culpability of growers" and "may have equated one plant with one kilogram based on culpability not weight." A member of this panel joined that ruling on the issue, which has been declared "foreclosed" in this circuit. United States v. Johnston, 973 F.2d 611, 613 (8th Cir. 1992). It will be observed, however, that the law in this circuit simply addresses

is occurring, and (2) whether there is reason to believe that Congress and the Sentencing Commission actually intended such disparity in punishment, as between growers and possessors. It seems quite possible, from the limited information we have, that "arbitrary and capricious" punishment is occurring, probably unintended by the original enacting parties. We believe there is some novelty in these points, which are not discussed in what may be the most thorough appellate survey of the conversion ratio controversy. United States v. Lee, 957 F.2d 778, 783-5 (10th Cir. 1992).

the rationality of heightened culpability, not the surprising degree of disparity.²

Turning to the source of the marijuana plant conversion ratio, it appears the Sentencing Commission adopted a ratio derived from congressional enactment of a conversion system usable in establishing minimum sentence qualifications. Derivation from 21 U.S.C. § 841(b)(1)(A), (B) and (D) is noted in the Sentencing Commission's "Background" statement on page 89 of the 1991 Guidelines Manual (applicable in this case). Senator Biden explained that the Congressional action was designed to curtail "unnecessary debate" between prosecutors and defendants, and stated, without explanation, that "[T]he bill uses 1,000 plants as the equivalent of 1,000 kilograms." 134 Cong. Rec. S17368 (daily ed. Nov. 10, 1988).

There is no suggestion evident to us that it was intended to punish growers more severely than possessors of the finished product. As recently as May of 1991, a district judge was given to understand that "one marijuana plant can reasonably be expected to produce a kilogram of a mixture or substance containing marijuana." United States v. Lewis, 762 F. Supp. 1314, 1316 (E.D. Tenn.), aff'd. without opinion, 951 F.2d 350 (6th Cir. 1991).³ On the other hand, we find a Drug Enforcement Administration estimate of an average

²We acknowledge, however, that this circuit's ruling sustaining the even more extraordinary disparity in punishment between possession of cocaine powder and cocaine base, on a cruel and unusual punishment challenge, may tend to discourage further challenge of the marijuana plant conversion ratio. See United States v. Buckner, 894 F.2d 975, 980-1 (8th Cir. 1990). With so much at stake, however, in this and other cases, we are reluctant to say that full exploration of the issues is unwarranted, either in this case or in connection with the crack cocaine punishments, which continue to perplex many sentencing judges. We do not invite mere repetition of prior rejected arguments, without new facts or legal analysis.

³The current published view of the Sentencing Commission is that "the average yield from a mature marihuana plant equals 100 grams of marihuana." 1991 Guidelines Manual, 89.

plant yield of 400 grams, and a "possible" yield of 1000 grams. 54 Fed. Reg. 9121, 9136 (1989) (Sentencing Commission Notice).

On remand it may be developed that Congress did not have the DEA information when it amended the statute in question. But if Congress did in fact have the 400 gram average yield estimate before it, it may be presumed that Congress did intend to punish growers more severely, as the courts have surmised, but only on a ratio of about 2 1/2 to one, not far from the "treble damage" type of punishment that is frequently used. Our limited examination of the issues reveals nothing to suggest that there was a Congressional intent to adopt a harsh ten-to-one punishment ratio, applicable to marijuana plant growers, as the Sentencing Commission seems to have assumed.⁴

If it develops that the only available legislative history to the one-sentence statement of a conclusion by Senator Biden, one might suppose that the Senator meant, and his colleagues understood, that there was, for practical purposes, a rough equivalence between a marijuana plant and a kilogram of finished marijuana. Somewhat less likely would be an understanding by the Senator that the ratio is unfavorable to growers, but within sufficiently conventional bounds so that he and his colleagues would not think the matter controversial enough to mention. Most unlikely, however, is that a ten-to-one ratio, as used by the Sentencing Commission, was being knowledgeably but silently adopted by Congress as an appropriate standard for purposes of punishment.

In offering the above observations we of course do not intend to prejudge any issue, legal or factual, that may be developed before the district court on remand.

⁴Several years of inaction arguably suggests Congressional and Sentencing Commission satisfaction with the current situation, but it does not eliminate the force of inertia in governmental affairs.

The judgment is reversed for reconsideration of the sentencing decision.

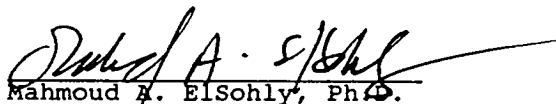
A true copy.

Attest:

CLERK, U.S. COURT OF APPEALS, EIGHTH CIRCUIT

MJ
POTENCY

QUARTERLY REPORT
POTENCY MONITORING PROJECT
REPORT #46
April 1, 1993 - June 30, 1993


Mahmoud A. ElSohly, Ph.D.
Director
NIDA Marijuana Project


Samir A. Ross, Ph.D.
Laboratory Supervisor
NIDA Marijuana Project

Research Institute of Pharmaceutical Sciences
School of Pharmacy
University of Mississippi
University, MS 38677

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INTRODUCTION

As of June 30, 1993, samples from 21076 seizures of marijuana, hashish and hash oil have been analyzed. Of these 19858 were marijuana, 887 were hashish and 331 were hash oil. Composite analytical data on these samples show the following:

% by Dry Weight of Δ^9 -THC in all
Samples analyzed by the Project
as of June 30, 1993

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Marijuana	19858	2.93	29.86	Trace*
Hashish	887	3.43	28.23	Trace
Hashish Oil	331	16.52	43.18**	0.04

For this report period April 1, 1993 through June 30, 1993, samples from 1989 seizures have been analyzed -- 1943 marijuana, 35 hashish, and 11 hash oil.

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

% by Dry Weight of Δ^9 -THC in samples
analyzed between April 1, 1993 to June 30, 1993

	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Marijuana	3.28	26.16	0.10
Hashish	5.34	28.23	0.22
Hashish Oil	15.31	36.36	3.91

*Less than 0.0095%

**Highest hash oil analyzed as confiscated material

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

% by Dry Weight of Δ^9 -THC in all
Samples analyzed by the Project
as of June 30, 1993

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Loose Plant Material	14401	2.51	29.86	Trace*
Kilobricks	2932	2.73	16.85	0.01
Buds	1808	4.69	29.86	0.01
Sinsemilla	679	7.88	20.06	0.19
Thai Sticks	38	3.74	8.92	0.05

% by Dry Weight of Δ^9 -THC in samples
analyzed between April 1, 1993
June 30, 1993

	<u># Of Samples Analyzed</u>	<u>Arithmetic Average</u>	<u>Highest Concentration</u>	<u>Lowest Concentration</u>
Loose Plant Material	1052	2.94	26.16	0.10
Kilobricks	794	3.03	8.40	0.20
Buds	81	9.01	26.16	0.50
Sinsemilla	14	9.66	19.14	2.09
Thai Sticks	0	0.00	0	0

*Less than 0.0095%

Δ^9 -THC concentrations by year confiscated are shown in Table 2.

Table 1. Normalized versus Non-normalized Cannabinoid Averages of
Illicit Cannabis Samples by Year Seized

NORMALIZED

cannabinol

<u>Year</u>	<u>No. Of Seizures</u>	<u>% Δ^9-THC</u>	<u>% CBD</u>	<u>% CBC</u>	<u>% CBN</u>	<u>Kilograms</u>
74	113	0.36	0.00	0.08	0.44	18013.328
75	150	0.48	0.00	0.09	1.17	67159.536
76	210	0.98	0.00	0.12	0.62	101190.992
77	251	1.76	0.00	0.10	0.74	173611.056
78	132	1.72	0.01	0.12	1.27	154532.064
79	221	1.53	0.02	0.12	1.40	71859.168
80	153	1.96	0.01	0.16	0.69	44094.656
81	250	2.11	0.02	0.18	0.98	147438.416
82	482	3.34	0.11	0.17	0.74	299883.264
83	1227	3.44	0.02	0.16	0.54	776255.744
84	1118	3.96	0.07	0.13	0.47	1258949.630
85	1613	2.63	0.14	0.09	0.52	729123.584
86	1554	2.24	0.06	0.11	0.44	669372.672
87	1699	2.23	0.23	0.11	0.33	620931.840
88	1823	3.84	0.18	0.14	0.54	352152.832
89	1270	2.66	0.20	0.16	0.60	179098.240
90	1260	3.83	0.11	0.18	0.37	52982.432
91	2505	3.78	0.17	0.17	0.27	76269.056
92	3409	1.90	1.24	0.09	0.23	682670.592
93	284	4.36	0.07	0.15	0.15	81438.768

NON-NORMALIZED AVERAGES

<u>Year</u>	<u>No. Of Seizures</u>	<u>% Δ^9-THC</u>	<u>% CBD</u>	<u>% CBC</u>	<u>% CBN</u>
74	113	0.89	0.03	0.08	0.49
75	150	0.71	0.03	0.10	0.55
76	210	0.72	0.00	0.09	0.37
77	251	0.91	0.08	0.10	0.43
78	132	1.37	0.01	0.12	0.67
79	221	1.67	0.02	0.12	0.24
80	153	2.06	0.10	0.14	0.47
81	250	2.37	0.36	0.16	0.38
82	482	3.05	0.34	0.19	0.33
83	1227	3.23	0.22	0.17	0.30
84	1118	3.29	0.24	0.17	0.34
85	1613	2.82	0.28	0.14	0.23
86	1554	2.30	0.29	0.15	0.21
87	1699	2.93	0.30	0.17	0.30
88	1823	3.29	0.28	0.15	0.30
89	1270	3.07	0.37	0.14	0.22
90	1260	3.36	0.38	0.18	0.19
91	2505	3.00	0.45	0.19	0.16
92	3409	3.13	0.24	0.20	0.34
93	284	4.73	0.17	0.15	0.20

Table 2. Comparison of Non-normalized Δ^9 -THC Concentrations in Different Forms by Year Confiscated 1974 - 1993*

<u>Year</u>	<u>Loose Material</u>	<u>Kilobrick</u>	<u>Buds</u>	<u>Sinsemilla</u>	<u>Thai Sticks</u>	<u>Hashish</u>	<u>Hash Oil</u>
74	1.30	0.40	---**	---**	0.54	0.86	15.88
75	1.03	0.47	1.34	---**	---**	2.31	13.09
76	1.87	0.54	3.03	---**	---**	3.28	18.82
77	1.27	0.53	1.38	3.20	4.91	1.81	18.89
78	1.47	0.96	2.11	6.28	0.49	2.15	21.31
79	1.57	0.79	3.03	3.66	0.13	2.32	20.91
80	1.02	0.63	3.81	6.40	0.05	2.58	16.56
81	1.48	0.78	3.52	6.38	---**	2.91	17.45
82	2.63	---**	5.14	7.10	4.60	2.69	19.88
83	2.94	---**	4.99	7.47	4.17	5.47	21.36
84	2.91	4.07	4.37	6.67	5.71	5.75	16.75
85	2.44	3.80	4.88	7.28	6.26	6.49	15.08
86	1.96	2.98	5.09	8.43	4.22	2.63	16.51
87	2.59	3.32	4.47	7.93	4.45	2.62	13.36
88	2.77	3.53	5.18	7.62	3.36	3.35	8.52
89	2.49	3.85	3.89	6.95	---**	7.06	11.96
90	2.79	3.76	4.27	10.10	0.12	5.30	16.60
91	2.27	3.11	4.40	10.53	---**	5.21	13.07
92	2.67	3.08	5.80	8.57	---**	6.18	14.36
93	4.13	4.06	10.64	8.91	---**	---**	26.78

* All figures are given as percent by dry weight.

** No samples analyzed which were confiscated in this year.

The above averages are not normalized by weight of seizure, but are simple arithmetic means calculated by dividing the sum of the Δ^9 -THC concentrations of each form by the number of seizures of that form. These figures should be more useful in spotting trends than the normalized averages. The normalized averages (as found in Table 5) should give a better representation of what was on the street in the given years.

Figure 1: Normalized & Non-normalized THC%
versus Year of Confiscation

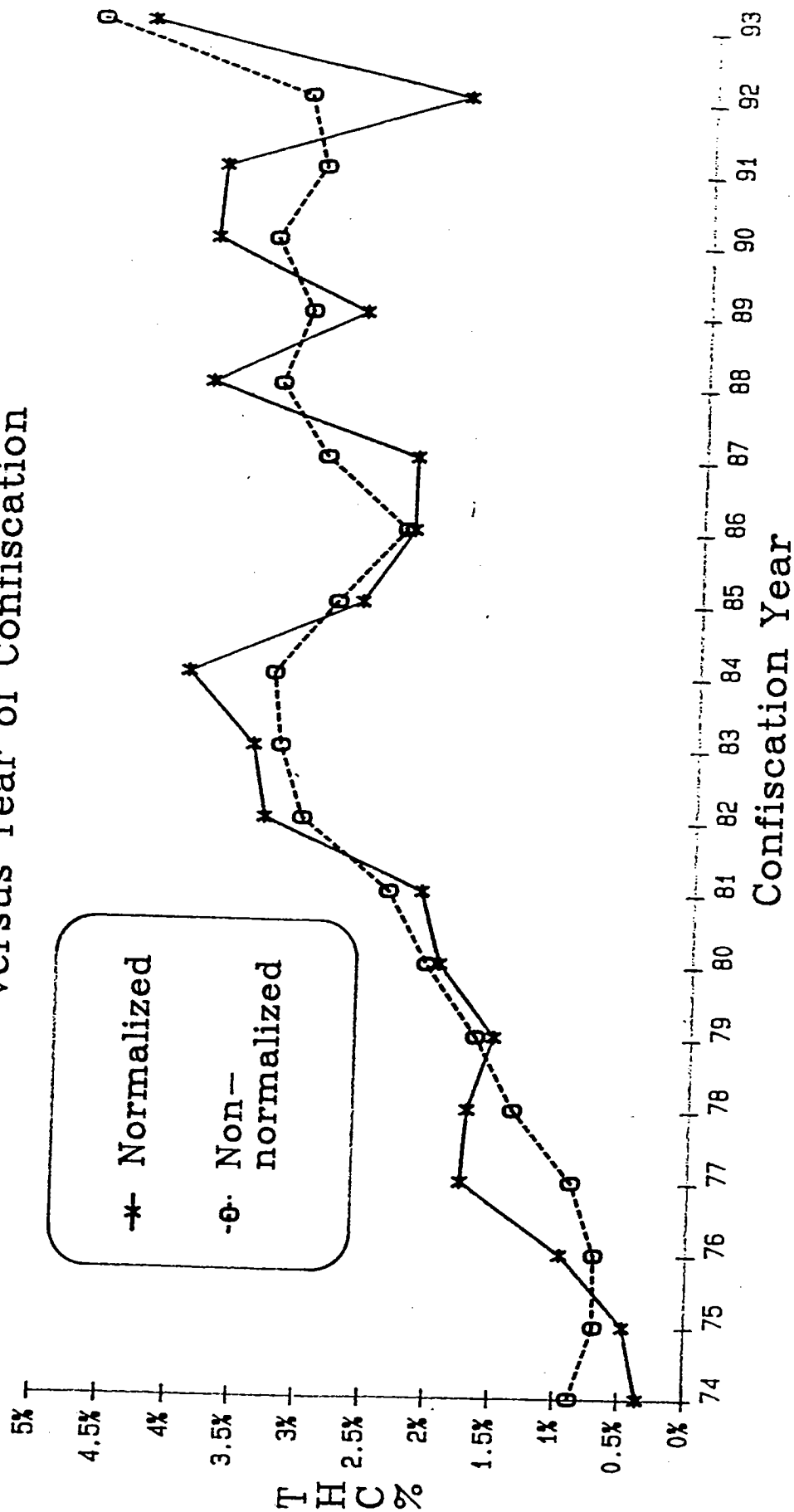


Table 3. Normalized Δ^9 -THC Averages* of Illicit Cannabis Samples Analyzed through June 30, 1993 by Year Seized and Description

YR	BD	KB	MH	SM	TS	YR/TOTAL
76	3.03 (1)	0.85 (182)	1.60 (27)	0.00 (0)	0.00 (0)	0.98 (210)
77	0.53 (7)	0.47 (165)	2.28 (63)	4.25 (15)	4.91 (1)	1.76 (251)
78	2.44 (25)	1.54 (60)	1.52 (43)	6.28 (1)	0.40 (3)	1.72 (132)
79	3.35 (11)	1.26 (18)	0.55 (181)	3.52 (10)	0.13 (1)	1.53 (221)
80	4.26 (6)	0.91 (5)	0.65 (114)	3.60 (27)	0.05 (1)	1.96 (153)
81	4.46 (33)	0.81 (3)	1.64 (182)	4.10 (32)	0.00 (0)	2.11 (250)
82	2.91 (50)	0.00 (0)	3.36 (410)	4.64 (14)	5.33 (8)	3.34 (482)
83	3.90 (126)	0.00 (0)	3.43 (1076)	5.62 (18)	5.19 (7)	3.44 (1227)
84	4.53 (178)	3.84 (22)	3.72 (879)	5.56 (36)	7.63 (3)	3.96 (1118)
85	5.25 (106)	4.43 (73)	2.59 (1381)	6.48 (52)	6.26 (1)	2.63 (1613)
86	3.58 (68)	3.94 (97)	2.21 (1351)	10.62 (32)	3.56 (6)	2.24 (1554)
87	4.37 (109)	2.67 (194)	1.95 (1350)	5.84 (43)	3.62 (3)	2.23 (1699)
88	5.86 (153)	3.96 (139)	3.80 (1431)	6.29 (98)	2.11 (2)	3.84 (1823)
89	4.31 (196)	3.53 (54)	2.52 (934)	5.62 (86)	0.00 (0)	2.66 (1270)
90	4.60 (117)	4.52 (111)	3.69 (969)	7.28 (61)	0.12 (1)	3.83 (1260)
91	5.84 (375)	3.47 (507)	3.43 (1548)	9.21 (75)	0.00 (0)	3.78 (2505)
92	7.77 (216)	2.91 (1039)	1.34 (2074)	5.84 (76)	0.00 (0)	1.90 (3409)
93	9.22 (25)	4.63 (117)	2.18 (139)	2.52 (2)	0.00 (0)	4.36 (284)
**4.57(1808) 2.51 (2932) 2.67(11401) 5.88(679) 5.64(38) 2.84(19858)						

Description Key:

Description; code for the physical description of samples as follows:

MH - Marijuana; marijuana in the form of loose Cannabis plant material with leaves, stems and seeds; includes cigarettes and those samples which cannot be described otherwise.

KB - Kilobrick; marijuana compressed into the form of a kilobrick (classical Mexican packaging); has leaves, stems and seeds.

BD - Buds; marijuana in the form of buds of flowering tops of the Cannabis plant with seeds.

SM - Sinsemilla; marijuana in the form of Sinsemilla; i.e., flowering tops of the female Cannabis plant with no seeds.

TS - Thai Sticks; marijuana in the form of Thai Sticks, leafy material tied around a small stem.

* All figures are given as percent by dry weight.

** Averages include 397 samples analyzed which were seized prior to 1976. The number in parentheses indicated the number of samples analyzed.

Table 4. Normalized Δ^9 -THC Averages* of Illicit Cannabis Samples Analyzed through March 31, 1993 by Year Seized and Source

YR	FG	PD	PM	PS	ST	YR/TOTAL
76	2.96 (5)	0.00 (0)	0.98 (205)	0.00 (0)	0.00 (0)	0.98 (210)
77	0.78 (4)	0.42 (1)	1.76 (241)	2.06 (2)	1.32 (3)	1.76 (251)
78	0.78 (5)	0.74 (1)	1.72 (109)	4.85 (17)	0.00 (0)	1.72 (132)
79	1.76 (162)	3.76 (3)	1.53 (48)	4.27 (6)	0.31 (2)	1.53 (221)
80	5.11 (31)	1.71 (21)	1.96 (77)	2.25 (13)	0.46 (11)	1.96 (153)
81	1.79 (1)	0.46 (6)	2.14 (177)	1.64 (16)	0.52 (50)	2.11 (250)
82	0.00 (0)	2.21 (130)	3.60 (226)	0.00 (0)	1.63 (126)	3.34 (482)
83	0.00 (0)	1.41 (13)	3.46 (824)	0.00 (0)	1.89 (390)	3.44 (1227)
84	0.00 (0)	0.00 (0)	4.07 (787)	0.00 (0)	1.41 (331)	3.96 (1118)
85	0.00 (0)	0.00 (0)	2.80 (770)	0.00 (0)	1.10 (843)	2.63 (1613)
86	0.00 (0)	0.00 (0)	2.38 (752)	0.00 (0)	1.64 (802)	2.24 (1554)
87	0.00 (0)	0.00 (0)	2.34 (1146)	0.00 (0)	1.98 (553)	2.23 (1699)
88	0.00 (0)	0.00 (0)	3.84 (1264)	0.00 (0)	4.50 (559)	3.84 (1823)
89	0.00 (0)	0.00 (0)	2.75 (751)	0.00 (0)	0.01 (519)	2.66 (1270)
90	0.00 (0)	0.00 (0)	3.83 (771)	0.00 (0)	3.96 (489)	3.83 (1260)
91	0.00 (0)	0.00 (0)	3.78 (1562)	0.00 (0)	5.08 (943)	3.78 (2505)
92	0.00 (0)	0.00 (0)	3.73 (2388)	0.00 (0)	0.97 (1021)	1.90 (3409)
93	0.00 (0)	0.00 (0)	4.62 (263)	0.00 (0)	2.07 (20)	4.36 (284)

**1.79 (290) 0.87(207) 3.10 (12604) 3.69 (54) 1.33(6703) 2.84(19858)

Source:

PM - Potency Monitoring; designates those samples received through the DEA under the scope of the Potency Monitoring Program.

PS - Psychiatric; received through a psychiatrist or other MD from a patient having psychiatric or medical problems related to marijuana use.

PD - Police Department; designates those samples received from police department; e.g., samples received from the Gulfport, Miss., police chief would be classified as PD; place seized would be Gulfport, Miss.

ST - State Crime Labs; designates those samples received from state crime labs or other state agencies. In the overall printout, samples received from state agencies will be classified by the state's 2- letter abbreviation as used by the U.S. Postal Service.

FG - Fugitive; designates samples received when no arrests were made.

* All figures are given as percent by dry weight.

** Averages include 397 samples analyzed which were seized prior to 1976. The number in parentheses indicates the number of samples analyzed.

Table 5. Domestic Cultivation*

Cannabis Samples Analyzed through June 30, 1993

0.0%	of 113	samples seized in 1974	was known to be Domestic
6.0%	of 150	samples seized in 1975	was known to be Domestic
0.0%	of 210	samples seized in 1976	was known to be Domestic
6.4%	of 251	samples seized in 1977	was known to be Domestic
9.1%	of 132	samples seized in 1978	was known to be Domestic
6.3%	of 221	samples seized in 1979	was known to be Domestic
22.9%	of 153	samples seized in 1980	was known to be Domestic
51.6%	of 250	samples seized in 1981	was known to be Domestic
29.0%	of 482	samples seized in 1982	was known to be Domestic
31.5%	of 1227	samples seized in 1983	was known to be Domestic
29.6%	of 1118	samples seized in 1984	was known to be Domestic
52.2%	of 1613	samples seized in 1985	was known to be Domestic
51.3%	of 1554	samples seized in 1986	was known to be Domestic
32.2%	of 1699	samples seized in 1987	was known to be Domestic
28.7%	of 1823	samples seized in 1988	was known to be Domestic
40.1%	of 1270	samples seized in 1989	was known to be Domestic
36.6%	of 1260	samples seized in 1990	was known to be Domestic
37.5%	of 2505	samples seized in 1991	was known to be Domestic
30.0%	of 3409	samples seized in 1992	was known to be Domestic
25.0%	of 284	samples seized in 1993	was known to be Domestic

**34.3% of a total of 19858 samples seized was known to be Domestic

* Includes only those samples known to be domestically cultivated. In many cases, this is unknown; therefore, these figures probably represent a low estimate.

**Percentages given are of the number of Cannabis samples analyzed by the Project which were seized in the given year.

Table 6. Arithmetic Cannabinoid Averages of Domestic Cannabis Samples by Year Seized

<u>Year</u>	<u>No. of Seizures</u>	<u>%Δ^9-THC</u>	<u>% CBD</u>	<u>% CBC</u>	<u>% CBN</u>
75	9	1.24	0.00	0.19	0.02
77	16	3.02	1.18	0.25	0.19
78	12	1.85	0.01	0.13	0.16
79	14	3.74	0.22	0.20	0.19
80	35	4.64	0.38	0.18	0.10
81	129	2.92	0.62	0.18	0.07
82	140	2.57	0.80	0.16	0.09
83	387	1.98	0.46	0.14	0.07
84	331	2.55	0.48	0.19	0.17
85	842	2.21	0.44	0.15	0.10
86	797	1.86	0.43	0.16	0.08
87	547	2.46	0.62	0.21	0.12
88	524	2.69	0.45	0.15	0.12
89	509	2.01	0.59	0.12	0.08
90	461	2.63	0.68	0.19	0.03
91	940	2.58	0.87	0.21	0.03
92	1022	2.95	0.45	0.30	0.03
93	71	6.52	0.16	0.17	0.06

Figure 2: Domestic Cannabis THC% versus Year of Confiscation

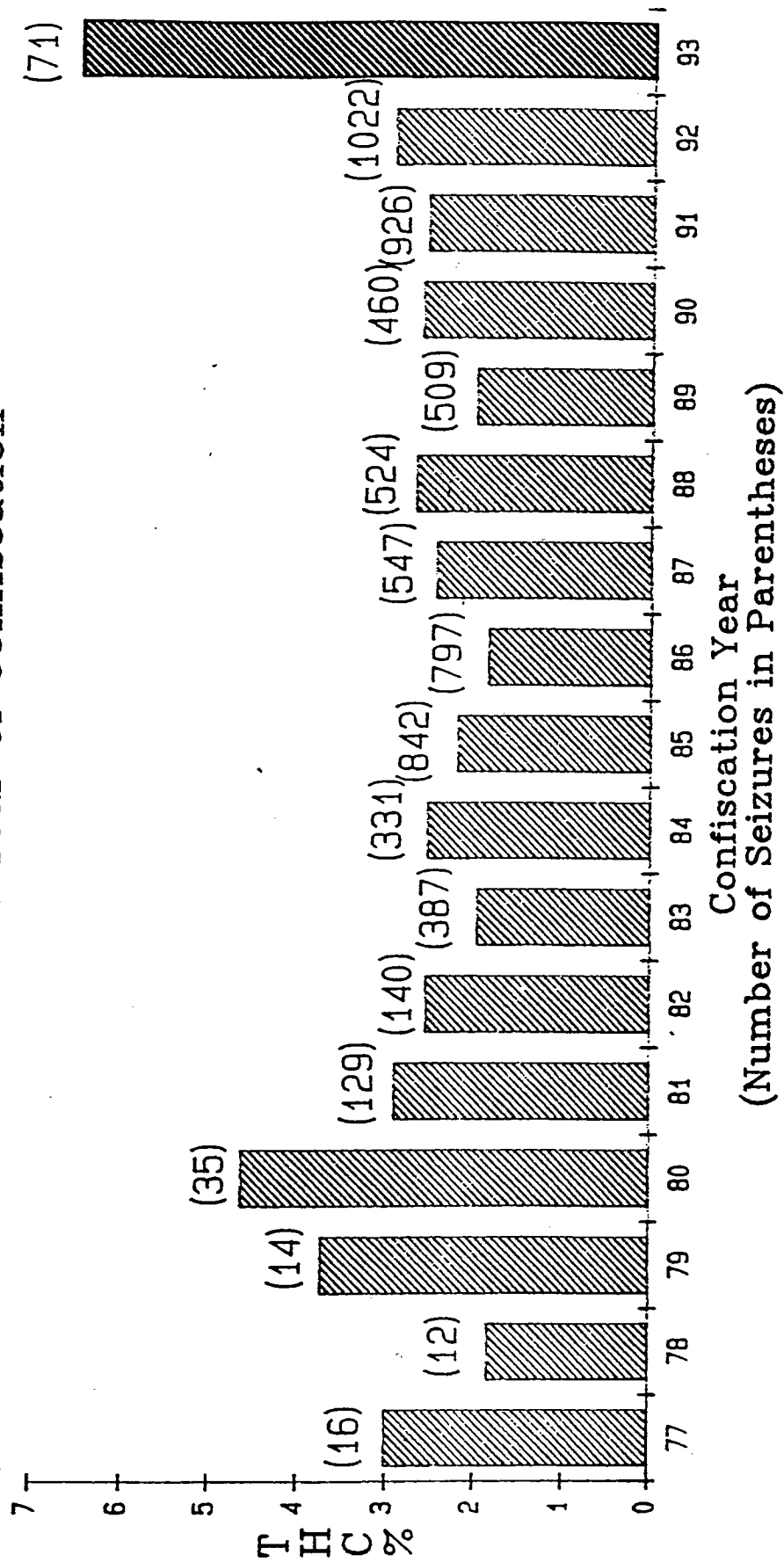


Figure 3: Non-Domestic Cannabis THC%
versus Year of Confiscation

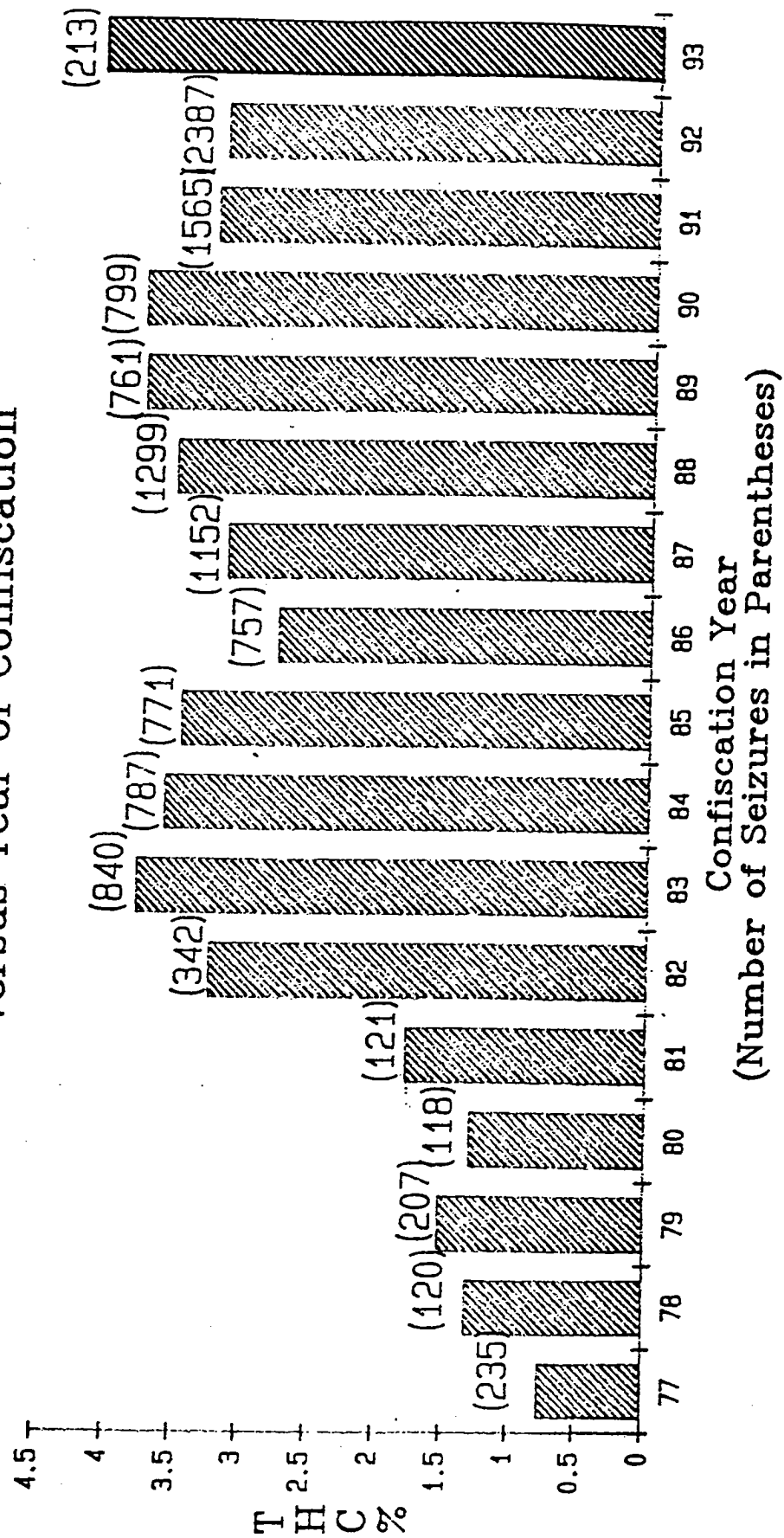


Table 7. Δ^9 -THC Averages (non-normalized*) for Domestically Cultivated Cannabis Samples Analyzed through June 30, 1993 by Year Seized and Description .

YR	BD	KB	MH	SM	TS	YR/TOTAL
75	0.00 (0)	0.00 (0)	1.24 (9)	0.00 (0)	0.00 (0)	1.24 (9)
77	0.00 (0)	0.00 (0)	0.31 (1)	3.20 (15)	0.00 (0)	3.02 (16)
78	1.68 (1)	0.00 (0)	1.42 (10)	6.28 (1)	0.00 (0)	1.85 (12)
79	0.00 (0)	0.00 (0)	3.95 (4)	3.66 (10)	0.00 (0)	3.74 (14)
80	0.00 (0)	0.00 (0)	0.72 (11)	6.44 (24)	0.00 (0)	4.64 (35)
81	2.87 (19)	0.00 (0)	1.62 (80)	6.42 (30)	0.00 (0)	2.92 (129)
82	11.30 (1)	0.00 (0)	2.04 (127)	7.48 (12)	0.00 (0)	2.57 (140)
83	4.14 (11)	0.00 (0)	1.80 (370)	9.23 (6)	0.00 (0)	1.98 (387)
84	3.04 (25)	0.00 (0)	2.05 (276)	6.83 (30)	0.00 (0)	2.55 (331)
85	4.31 (35)	0.00 (0)	1.86 (767)	7.07 (40)	0.00 (0)	2.21 (842)
86	6.64 (16)	0.00 (0)	1.60 (761)	8.38 (19)	0.00 (0)	1.86 (797)
87	4.32 (27)	3.32 (6)	2.07 (489)	7.78 (25)	0.00 (0)	2.46 (547)
88	4.20 (49)	0.00 (0)	1.72 (406)	7.33 (69)	0.00 (0)	2.69 (524)
89	2.03 (69)	0.00 (0)	1.28 (383)	6.86 (57)	0.00 (0)	2.01 (509)
90	3.14 (60)	2.18 (1)	1.58 (355)	10.46 (44)	0.00 (0)	2.63 (461)
91	4.21 (212)	0.00 (0)	1.56 (682)	10.10 (46)	0.00 (0)	2.58 (940)
92	6.66 (91)	5.47 (2)	2.32 (883)	7.72 (43)	0.00 (0)	2.95 (1022)
93	11.28 (22)	0.00 (0)	4.04 (47)	15.30 (1)	0.00 (0)	6.52 (71)
	*4.46 (638)	3.67 (9)	1.83 (5680)	7.60 (473)	0.00 (0)	2.48 (6805)

Description Key:

Description; code for the physical description of samples as follows:

MH - Marijuana; marijuana in the form of loose Cannabis plant material with leaves, stems and seeds; includes cigarettes and those samples which cannot be described otherwise.

BD - Buds; marijuana in the form of buds of flowering tops of the Cannabis plant with seeds.

SM - Sinsemilla; marijuana in the form of sinsemilla; i.e., flowering tops of the female Cannabis plant with no seeds.

* Weight of Seizure not known. Figures are percent by dry weight.

** Averages include 19 samples which were seized prior to 1975. The number in parentheses indicates the number of samples analyzed.

Table 8. Δ^9 -THC averages (non-normalized*) for Non-Domestically Cultivated Cannabis Samples Analyzed through June 30, 1993 by Year Seized and Description

YR	BD	KB	MH	SM	TS	YR/TOTAL
75	1.34 (3)	0.47 (88)	1.00 (50)	0.00 (0)	0.00 (0)	0.68 (141)
76	3.03 (1)	0.54 (182)	1.87 (27)	0.00 (0)	0.00 (0)	0.72 (210)
77	1.38 (7)	0.53 (165)	1.29 (62)	0.00 (0)	4.91 (1)	0.77 (235)
78	2.12 (24)	0.96 (60)	1.49 (33)	0.00 (0)	0.49 (3)	1.32 (120)
79	3.03 (11)	0.79 (18)	1.51 (177)	0.00 (0)	0.13 (1)	1.53 (207)
80	3.81 (6)	0.63 (5)	1.05 (103)	6.11 (3)	0.05 (1)	1.30 (118)
81	4.40 (14)	0.78 (3)	1.37 (102)	5.71 (2)	0.00 (0)	1.78 (121)
82	5.02 (49)	0.00 (0)	2.89 (283)	4.83 (2)	4.60 (8)	3.25 (342)
83	5.07 (115)	0.00 (0)	3.54 (706)	6.59 (12)	4.17 (7)	3.80 (840)
84	4.58 (153)	4.07 (22)	3.50 (603)	5.87 (6)	5.71 (3)	3.60 (787)
85	5.17 (71)	3.80 (73)	3.15 (614)	7.95 (12)	6.26 (1)	3.48 (771)
86	4.61 (52)	2.98 (97)	2.42 (590)	8.50 (13)	4.22 (6)	2.77 (757)
87	4.52 (82)	3.32 (188)	2.88 (861)	8.14 (18)	4.45 (3)	3.15 (1152)
88	5.64 (104)	3.53 (139)	3.19 (1025)	8.30 (29)	3.36 (2)	3.54 (1299)
89	4.90 (127)	3.85 (54)	3.34 (551)	7.13 (29)	0.00 (0)	3.78 (761)
90	5.47 (57)	3.78 (110)	3.49 (614)	9.17 (17)	0.12 (1)	3.78 (799)
91	4.65 (163)	3.11 (507)	2.82 (866)	11.20 (29)	0.00 (0)	3.26 (1565)
92	5.17 (125)	3.07 (1037)	2.94 (1191)	9.67 (33)	0.00 (0)	3.20 (2387)
93	5.93 (3)	4.06 (117)	4.17 (92)	2.52 (1)	0.00 (0)	4.13 (213)
**4.82(1170) 2.72(2923) 2.95 (8715) 8.52 (206) 3.74 (38) 3.15(13053)						

Description Key:

Description; code for the physical description of samples as follows:

MH - Marijuana; marijuana in the form of loose Cannabis plant material with leaves, stems and seeds; includes cigarettes and those samples which cannot be described otherwise.

BD - Buds; marijuana in the form of buds of flowering tops of the Cannabis plant with seeds.

SM - Sinsemilla; marijuana in the form of sinsemilla; i.e., flowering tops of the female Cannabis plant with no seeds.

* Weight of Seizure not known. Figures are percent by dry weight.

** Averages include 19 samples which were seized prior to 1975. The number in parentheses indicates the number of samples analyzed.

Table 9. Δ^9 -THC averages (non-normalized*) for Domestically Cultivated Cannabis Samples Analyzed through March 31, 1993 by Year Seized and Source of Confiscation

YR	FG	PD	PM	PS	ST	YR/TOTAL
75	0.00 (0)	0.00 (0)	1.24 (9)	0.00 (0)	0.00 (0)	1.24 (9)
77	0.00 (0)	0.00 (0)	3.20 (15)	0.31 (1)	0.00 (0)	3.02 (16)
78	0.00 (0)	0.74 (1)	1.68 (1)	1.98 (10)	0.00 (0)	1.85 (12)
79	3.48 (11)	4.71 (3)	0.00 (0)	0.00 (0)	0.00 (0)	3.74 (14)
80	6.48 (20)	1.56 (10)	0.00 (0)	2.67 (1)	3.62 (4)	4.64 (35)
81	1.79 (1)	0.00 (0)	3.33 (88)	0.00 (0)	2.04 (40)	2.92 (129)
82	0.00 (0)	2.04 (7)	5.12 (15)	0.00 (0)	2.28 (118)	2.57 (140)
83	0.00 (0)	1.40 (2)	1.11 (1)	0.00 (0)	1.99 (384)	1.98 (387)
84	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.55 (331)	2.55 (331)
85	0.00 (0)	0.00 (0)	3.21 (2)	0.00 (0)	2.21 (840)	2.21 (842)
86	0.00 (0)	0.00 (0)	5.98 (3)	0.00 (0)	1.85 (794)	1.86 (797)
87	0.00 (0)	0.00 (0)	3.15 (15)	0.00 (0)	2.44 (532)	2.46 (547)
88	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.69 (524)	2.69 (524)
89	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.01 (509)	2.01 (509)
90	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.63 (461)	2.63 (461)
91	0.00 (0)	0.00 (0)	0.00 (0)	0.00 (0)	2.58 (940)	2.58 (940)
92	0.00 (0)	0.00 (0)	0.83 (2)	0.00 (0)	2.95 (1020)	2.95 (1022)
93	0.00 (0)	0.00 (0)	6.85 (51)	0.00 (0)	5.67 (20)	6.52 (71)
**3.89 (48) 2.26 (25) 4.23 (202) 1.90 (12) 2.42 (6518) 2.48 (6805)						

Description Key:

Description; code for the physical description of samples as follows:

- PM - Potency Monitoring; designates those samples received through the DEA under the scope of the Potency Monitoring Program.
- PS - Psychiatric; received through a psychiatrist or other MD from a patient having psychiatric or medical problems related to marijuana use.
- PD - Police Department; designates those samples received from police department; e.g., samples received from the Gulfport, Miss., police chief would be classified as PD; place seized would be Gulfport, Miss.
- ST - State Crime Labs; designates those samples received from state crime labs or other state agencies. In the overall printout, samples received from state agencies will be classified by the state's 2-letter abbreviation as used by the U.S. Postal Service.
- FG - Fugitive; designates samples received when no arrests were made.

* Weight of seizures not known. Figures are percent by dry weight.

** Averages include 19 samples analyzed which were seized prior to 1975. The number in parentheses indicated the number of samples analyzed.

Table 10. Δ^9 -THC averages (non-normalized*) for Non-Domestically Cultivated Cannabis Samples Analyzed through June 30, 1993 by Year Seized and Source of Confiscation

YR	FG	PD	PM	PS	ST	YR/TOTAL
75	0.73 (11)	0.00 (0)	0.49 (115)	0.00 (0)	2.05 (15)	0.68 (141)
76	2.96 (5)	0.00 (0)	0.67 (205)	0.00 (0)	0.00 (0)	0.72 (210)
77	0.78 (4)	0.42 (1)	0.76 (226)	3.82 (1)	1.00 (3)	0.77 (235)
78	0.78 (5)	0.00 (0)	1.24 (108)	3.04 (7)	0.00 (0)	1.32 (120)
79	1.54 (151)	0.00 (0)	1.20 (48)	4.28 (6)	0.29 (2)	1.53 (207)
80	1.45 (11)	0.66 (11)	1.27 (77)	2.29 (12)	0.63 (7)	1.30 (118)
81	0.00 (0)	0.71 (6)	1.72 (89)	1.73 (16)	2.96 (10)	1.78 (121)
82	0.00 (0)	2.40 (123)	3.77 (211)	0.00 (0)	2.53 (8)	3.25 (342)
83	0.00 (0)	3.03 (11)	3.82 (823)	0.00 (0)	1.73 (6)	3.80 (840)
84	0.00 (0)	0.00 (0)	3.60 (787)	0.00 (0)	0.00 (0)	3.60 (787)
85	0.00 (0)	0.00 (0)	3.48 (768)	0.00 (0)	1.88 (3)	3.48 (771)
86	0.00 (0)	0.00 (0)	2.78 (749)	0.00 (0)	1.44 (8)	2.77 (757)
87	0.00 (0)	0.00 (0)	3.20 (1131)	0.00 (0)	0.75 (21)	3.15 (1152)
88	0.00 (0)	0.00 (0)	3.59 (1264)	0.00 (0)	1.62 (35)	3.54 (1299)
89	0.00 (0)	0.00 (0)	3.75 (751)	0.00 (0)	5.69 (10)	3.78 (761)
90	0.00 (0)	0.00 (0)	3.79 (771)	0.00 (0)	3.70 (28)	3.78 (799)
91	0.00 (0)	0.00 (0)	3.26 (1562)	0.00 (0)	0.16 (3)	3.26 (1565)
92	0.00 (0)	0.00 (0)	3.20 (2386)	0.00 (0)	2.26 (1)	3.20 (2387)
93	0.00 (0)	0.00 (0)	4.13 (212)	0.00 (0)	0.00 (0)	4.13 (213)

**1.58 (242) 2.04 (182) 3.22 (12402) 2.52 (42) 2.08 (185) 3.15 (13053)

Description Key:

Description; code for the physical description of samples as follows:

- PM - Potency Monitoring; designates those samples received through the DEA under the scope of the Potency Monitoring Program.
- PS - Psychiatric; received through a psychiatrist or other MD from a patient having psychiatric or medical problems related to marijuana use.
- PD - Police Department; designates those samples received from police department; e.g., samples received from the Gulfport, Miss., police chief would be classified as PD; place seized would be Gulfport, Miss.
- ST - State Crime Labs; designates those samples received from state crime labs or other state agencies. In the overall printout, samples received from state agencies will be classified by the state's 2-letter abbreviation as used by the U.S. Postal Service.
- FG - Fugitive; designates samples received when no arrests were made.

* Weight of seizures not known. Figures are percent by dry weight.

** Averages include 19 samples analyzed which were seized prior to 1975. The number in parentheses indicated the number of samples analyzed.

Table 11. Average Concentrations* of Four Cannabinoids Found in All Hashish Samples Analyzed by the Project through June 30, 1993

<u>Year</u>	<u>Seizures</u>	<u>%Δ^9-THC</u>	<u>%CBD</u>	<u>%CBC</u>	<u>%CBN</u>
74	53	0.86	1.99	0.28	2.28
75	88	2.31	2.60	0.38	1.67
76	52	3.28	3.23	0.37	2.54
77	44	1.81	2.94	0.22	1.72
78	51	2.15	4.03	0.23	2.07
79	43	2.32	5.45	0.16	1.76
80	37	2.58	7.58	0.38	1.88
81	13	2.91	6.51	0.28	1.90
82	32	2.69	6.73	0.10	1.45
83	47	5.47	6.15	0.13	1.62
84	59	5.75	3.25	0.31	1.59
85	41	6.49	2.30	0.34	1.33
86	53	2.63	1.10	0.30	1.27
87	63	2.62	1.63	0.19	1.24
88	43	3.35	2.22	0.21	1.70
89	19	7.06	5.08	0.32	1.56
90	38	5.30	4.90	0.42	1.50
91	31	5.21	3.58	0.50	1.78
92	44	6.18	2.60	0.68	3.72
93***					
TOTAL	**887	3.43	3.50	0.30	1.83

* All figures are given as percent by dry weight.

** Averages include 36 samples analyzed which were confiscated prior to 1974.

*** No 1993 hashish seizures.

The above averages are not normalized.

Table 12. Average Concentrations* of Four Cannabinoids Found in All Hash Oil Samples Analyzed by the Project through June 30, 1993

<u>Year</u>	<u>No. Of Seizures</u>	<u>% Δ^9-THC</u>	<u>% CBD</u>	<u>% CBC</u>	<u>% CBN</u>
74	19	15.88	10.87	1.41	3.91
75	29	13.09	6.71	0.86	4.21
76	18	18.82	10.25	1.16	5.07
77	17	18.89	6.83	0.57	4.98
78	9	21.31	6.06	1.39	5.07
79	9	20.91	0.57	1.54	6.00
80	8	16.56	8.67	1.02	5.30
81	5	17.45	10.16	1.35	3.63
82	8	19.88	8.28	1.58	4.34
83	30	21.36	3.25	1.47	4.57
84	33	16.75	1.36	1.06	4.31
85	25	15.08	0.42	0.96	5.08
86	23	16.51	2.10	1.52	3.18
87	22	13.36	0.29	0.99	3.95
88	16	18.52	1.46	0.65	2.22
89	9	11.96	1.59	0.85	4.85
90	12	16.60	0.86	0.74	1.81
91	10	13.07	3.26	0.95	2.25
92	19	14.36	1.08	1.46	4.25
93	1	26.78	0.00	0.00	2.65
TOTAL	**331	16.52	4.01	1.11	4.18

* All figures are given as percent by dry weight.

** Averages include 9 samples analyzed which were seized prior to 1974.

The above averages are not normalized.

Table 13. Number of Seizures and Normalized Average Delta-9-THC Concentrations of All Samples Received from each DEA Laboratory and Analyzed by the Project through June 30, 1993

LAB	Cannabis			Hashish			Hash Oil			Total
	No. of Of Seizures	% Δ^9 -THC Content	No. of Seizures	% Δ^9 -THC Content	No. of Seizures	% Δ^9 -THC Content	No. of Seizures	% Δ^9 -THC Content	No. of Seizures	
STRL	168	3.56	153	3.62	26	5.33				347
NERL	599	2.64	155	2.78	49	20.10				803
MARL	77	2.82	12	0.48	1	16.15				90
SERL	2253	3.05	157	2.32	161	18.56				2571
NCRL	743	2.68	46	2.96	21	20.70				810
SCRL	3289	3.18	42	1.51	18	16.06				3349
SWRL	4311	2.94	139	3.94	21	11.13				4471
WRL	958	5.93	163	5.56	27	24.32				1148
OTHER	7460	1.34	20	0.94	7	28.09				7487
TOTAL	19858		887		331					21076

KEY: STRL - Special Testing and Research Laboratory
 NERL - Northeast Regional Laboratory
 MARL - Mid-Atlantic Regional Laboratory
 SERL - Southeast Regional Laboratory
 WRL - Western Regional Laboratory
 SCRL - South Central Regional Laboratory
 NCRL - North Central Regional Laboratory
 SWRL - Southwest Regional Laboratory

Table 14. Number of Seizures and Normalized Average Delta-9-THC Concentrations of Samples Received from Each DEA Laboratory and Analyzed by the Project April 1, 1993 through June 30, 1993

LAB	Cannabis		Hashish		Hash Oil		Total
	No. of Of Seizures	% Δ^9 -THC Content	No. of Seizures	% Δ^9 -THC Content	No. of Seizures	% Δ^9 -THC Content	No. of Seizures
STRL	0	0.00	8	5.42	1	3.91	9
NERL	103	2.38	3	1.68	0	0.00	106
SERL	175	4.09	20	4.44	9	32.51	204
NCRL	88	2.62	0	0.00	0	0.00	88
SCRL	404	3.60	1	0.22	0	0.00	405
SWRL	799	4.05	0	0.00	1	15.72	800
WRL	120	3.65	3	5.58	0	0.00	123
OTHER	254	1.70	0	0.00	0	0.00	254
TOTAL	1943		35		11		1989

KEY: STRL - Special Testing and Research Laboratory
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