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Further to the social rediscovery of cannabis and the identification of its molecular composition and chemical elements in the 1960s, renewed interest in the therapeutic applications of cannabis grew in the early 1970s. More people began using the plant for its therapeutic benefits and many demanded a relaxation of the prohibitionist rules governing cannabis.

Partly because its safety and effectiveness have yet to be reviewed in clinical trials, cannabis has not been approved for sale in Canada as a medical product. Despite this lack of approval, many use cannabis for its therapeutic purposes without legal authorization. In addition, because of the many claims regarding its therapeutic benefit, a growing number of people have called for a less restrictive approach and are demanding access to cannabis for people who could benefit from its use.

This chapter reviews the events that prompted the recent enactment of the *Marihuana Medical Access Regulations*. One of the objectives of the regulations is to provide a compassionate framework of access to marijuana for seriously ill Canadians while research regarding its therapeutic application continues. Also discussed is the implementation of these regulations, which came into force on 30 July 2001.

We have observed the following:

- The MMAR are not providing a compassionate framework for access to marijuana for therapeutic purposes and are unduly restricting the availability of marijuana to patients who may receive health benefits from its use;
- The refusal of the medical community to act as gatekeepers and the lack of access to legal sources of cannabis appear to make the current regulatory scheme an "illusory" legislative exemption and raises serious Charter implications;
- In almost one year, only 255 people have been authorized to possess marijuana for therapeutic purposes under the MMAR and only 498 applications have been received – this low participation rate is of concern;
- Changes are urgently needed with regard to who is eligible to use cannabis for therapeutic purposes and how such people gain access to cannabis;
- Research on the safety and efficacy of cannabis has not commenced in Canada because researchers are unable to obtain the product needed to conduct their trials;
- No attempt has been made in Health Canada's current research plan to acknowledge the considerable expertise currently residing in the compassion clubs;
- The development of a Canadian source of research-grade marijuana has been a failure.

CHAPTER 14 - POLICE PRACTICES

Views on police priorities regarding enforcement of laws on illicit drugs are, at the very least, inconsistent, if not contradictory. Some believe that too much police time, effort and resources are spent in investigating illicit drug offences and, more specifically, possession offences, even more specifically, cannabis possession offences. Others, including the police themselves, claim that police priorities are already focused

on traffickers and producers, and that possession charges are laid as a result of police presence to deal with other criminal activity. Thus, they maintain that the vast majority of cannabis possession charges are incidental to other police responsibilities.

This chapter reviews the key organizations that are responsible for enforcing Canada's current illicit drugs legislation, the *Controlled Drugs and Substances Act* (CDSA). It includes a discussion of the powers they have been granted, and the investigative techniques used, in relation to illicit drug investigations. Finally, key police-related statistics are explored. This information should help clarify some of the misconceptions related to enforcement of laws on illicit drugs.

The Committee found that:

- The annual cost of drug enforcement in Canada is estimated to be between $700 million and $1 billion;
- Reduced law enforcement activities resulting from amendments to the drug legislation on cannabis could produce substantial savings or a significant reallocation of funds by police forces to other priorities;
- Due to the consensual nature of drug offences, police have been granted substantial enforcement powers and have adopted highly intrusive investigative techniques; these powers are not unlimited, however, and are subject to review by Canadian courts;
- Over 90,000 drug-related incidents are reported annually by police; more than three-quarters of these incidents relate to cannabis and over 50% of all drug-related incidents involve possession of cannabis;
- From 1991 to 2001, the percentage change in rate per 100,000 people for cannabis-related offences is +91.5 – thus, the rate of reported cannabis-related offences has almost doubled in the past decade;
- The number of reported incidents related to the cultivation of cannabis increased dramatically in the past decade;
- Reported incident rates vary widely from province to province;
- Cannabis was involved in 70% of the approximately 50,000 drug-related charges in 1999. In 43% of cases (21,381), the charge was for possession of cannabis.;
- The rate of charges laid for drug offences vary significantly from province to province;
- The uneven application of the law is of great concern and may lead to discriminatory enforcement, alienation of certain groups within society, and creation of an atmosphere of disrespect for the law; in general, it raises the issue of fairness and justice; and
- Statistics on seizure seem to confirm an increase in cannabis cultivation in Canada and also a shift in police priorities regarding this offence.

CHAPTER 15 - THE CRIMINAL JUSTICE SYSTEM

The previous chapter examined how people first come into contact with the criminal justice system through the enforcement of criminal legislation. Several questions remain, however. What happens once a person has been charged with a drug offence? Who is responsible for prosecuting drug cases? What type of punishment do people receive? Who ends up with a criminal record? Have there been any challenges to the constitutional validity of drug legislation? These issues and others related to the criminal justice system are reviewed in this chapter

We have observed the following:

- The cost of prosecuting drug offences in 2000-2001 was $57 million with approximately $5 million or roughly 10% of the total budget relating to prosecuting cannabis possession offences;
- In 1999, it was estimated that Canadian criminal courts heard 34,000 drug cases, which involved more than 400,000 court appearances;
- The Drug Treatment Court initiatives seem very encouraging, although comprehensive evaluations are needed to ensure such programs are effective;
- Disposition and sentencing data with respect to drug-related offences are incomplete and there is an urgent need to correct this situation;
- Correctional Service Canada spends an estimated $169 million annually to address illicit drugs through incarceration, substance abuse programs, treatment programs and security measures; expenditures on substance abuse programs are unreasonably low, given the number of inmates who have substance-abuse dependence problems;
- A criminal conviction can negatively affect a person's financial situation, career opportunities and restrict travel. In addition, it can be an important factor in future dealings with the criminal justice system; and
- Provincial courts of appeal have so far maintained the constitutionality of cannabis prohibition. They have found that because there is some evidence of harm caused by marijuana use that is neither trivial nor insignificant, Parliament has a rational basis to act as it has done, and the marijuana prohibition is therefore consistent with the principles of fundamental justice in section 7 of the Charter. These decisions have been appealed, and the Supreme Court of Canada will soon decide whether cannabis prohibition is constitutionally sound.

CHAPTER 16 - PREVENTION

Viewed in theory, at least, as a public health issue, a policy on illegal drugs should call for a strong prevention strategy. Nothing, however, is more fluid, vague, or even controversial, than prevention. When it comes to illegal drugs, the legal and political context makes the issue of prevention even harder to clarify and actions even harder to define. The national legal context surrounding illegal drugs and the interpretation of international drug policies are such that because they are defined *a priori* as harmful

substances, illegal drugs must not be used. Another way of putting it is that any use is abuse. If use is abuse, if individuals or organizations involved in prevention are unable to make distinctions that are essential in setting objectives and devising preventive measures, what hope is there of establishing successful prevention programs? There are, as this chapter will show, many prevention programs that are not aimed solely or even particularly at the prevention of use, but rather the prevention of at-risk behaviour. Harm reduction, for example, is not only a general strategy for dealing with psychoactive substances, but is also a preventive approach that seeks to lower the risks associated with drugs and drug control without requiring abstinence. However, harm reduction is the subject of much controversy and criticism because it is based on the premise that use of drugs is a social reality. Addressing the issue of prevention means considering at the same time government policies on illegal drugs. Any discussion of prevention entails discussion of the limits of government intervention and of how one conceives of human action. How far should government interventions go in identifying groups at risk without further stigmatizing groups already at risk? To what extent are humans rational beings who act in their best interest provided they are given the right information?

This chapter on prevention begins with a statement that will come as no surprise to health or justice experts: when it comes to prevention, there is lots of talk, but the resources allocated are small and the initiatives weak. The second section asks the question: what prevention? We look at current knowledge of the factors underlying prevention initiatives and the effectiveness of some preventive measures, with special emphasis on one of the most important weapons in the war on drugs, the DARE program. The third section looks at the harm reduction approach to prevention. As in the other chapters, our conclusions are in the form of observations that may serve to guide future actions.

The Committee found that:

- Prevention is not designed to control but rather to empower individuals to make informed decisions and acquire tools to avoid at-risk behaviour;
- A national drug strategy should include a strong prevention component;
- Prevention strategies must be able to take into account contemporary knowledge about drugs;
- Prevention messages must be credible, verifiable and neutral;
- Prevention strategies must be comprehensive, cover many different factors and involve the community;
- Prevention strategies in schools should not be led by police services or delivered by police officers;
- The RCMP should reconsider its choice of the DARE program that many evaluation studies have shown to be ineffective;
- Prevention strategies must include comprehensive evaluation of a number of key elements;

- A national drug strategy should include mechanisms for widely disseminating the results of research and evaluations;
- Evaluations must avoid reductionism, involve stakeholders in prevention be part of the program, and include longitudinal impact assessment;
- Harm reduction strategies related to cannabis should be developed in coordination with educators and the social services sector; and
- Harm reduction strategies related to cannabis should include information on the risks associated with heavy chronic use, tools for detecting at-risk and heavy users and measures to discourage people from driving under the influence of marijuana.

CHAPTER 17 - TREATMENT PRACTICES

With the exception of the treatment given to offenders imprisoned in federal institutions and Aboriginals, the care available to individuals who are substance-dependent is essentially the responsibility of the provinces and territories. This chapter is therefore brief since we received only a few submissions and heard few witnesses on this question.

In Chapter 7 we determined that physical dependency on cannabis was rare and insignificant. Some symptoms of addiction and tolerance can be identified in habitual users but most of them have no problem in quitting and do not generally require a period of withdrawal. As far as forms of psychological dependency are concerned, the studies are still incomplete but the international data tend to suggest that between 5% and 10% of regular users (using at least in the past month) are at risk of becoming dependent on cannabis. We estimated that approximately 3% or 600,000 adult Canadians have consumed cannabis in the past month and that approximately 0.5% or 100,000 use it on a daily basis. This indicates that somewhere between 30,000 and 40,000 people might be at-risk and 5,000 to 10,000 might make excessive use. For those aged 16 and 17, the numbers were between 50,000 and 70,000 at-risk and 8,000 to 17,000 potentially excessive users. The data also indicated that the peak period for intensive use is between the ages of 17 and 25 years. These broad parameters indicate where to look to prevent dependency and offer treatment services for those in need.

What form does cannabis dependency take? Most authors agree that psychological dependency on cannabis is relatively minor. In fact, it cannot be compared in any way with tobacco or alcohol dependency and is even less common than dependency on certain psychotropic medications.

We have observed that:

- The expression 'drug addiction' should no longer be used and we should talk instead of substance abuse and dependency;
- Between 5% and 10% of regular cannabis users are at risk of developing a dependency;
- Physical dependency on cannabis is virtually non-existent;

- Psychological dependency is moderate and is certainly lower than for nicotine or alcohol;
- Most regular users of cannabis are able to diverge from a trajectory of dependency without requiring treatment;
- There are many forms of treatment but nothing is known about the effectiveness of the different forms of treatment for cannabis dependency specifically;
- As a rule, treatment is more effective and less costly than incarceration;
- Studies of the treatment programs should be conducted, including treatments programs for people with cannabis dependency; and
- Studies should be conducted on the interaction of the cannabinoid and the opioid systems.

CHAPTER 18 - OBSERVATIONS ON PRACTICES

Previous chapters have described public action by dividing it into the major sectors of involvement. Before closing the third part of this report, we make some general observations that cut across the individual areas we have examined. The first concerns difficulties in harmonizing the various levels and sectors of involvement; the second, the difficulty in co-ordinating their various approaches; and the third, the costs of drugs and public policy.

A study published by CCSA in 1996 but based on 1992 data had identified the following costs of substance abuse:

- The costs associated with all illegal drugs were $1.4 billion, compared with $7.5 billion in the case of alcohol and $9.6 billion in the case of tobacco.
- Expressed as a percentage of the gross domestic product, the total costs for all substances was 2.67%. Of this, 0.2% was for illegal drugs, 1.09% for alcohol and 1.39% for tobacco.
- The principal costs of illegal drugs are externalities, that is, loss of productivity - $823 million, health care - $88 million, and losses in the workplace - $5.5 million, for a total of about 67% of all costs related to illegal drugs.
- The cost of public policies, or opportunity costs, represent about 33%.
- The cost of enforcing the law represents about 29.2% of all costs, or about 88% of all policy costs. The balance goes to prevention, research and administration.

Previous studies conducted in British Columbia in 1991, in Ontario in 1988 and in Quebec in 1988, using different methodologies, established costs of $388 million, $1.2 billion and $2 billion respectively, for a total cost of $3.5 billion in these three provinces alone. These figures demonstrate the extent to which such estimates can vary, according to the methodology selected and the availability of data.

Nevertheless, with the CCSA study taken as the standard, two comments must be made. First, loss of productivity – the major cost – is measured in mortality - $547 million and morbidity - $275 million. Except in the case of traffic fatalities, cannabis is not a cause of death and involves none of this type of social cost. Morbidity corresponds to losses attributed to problems caused by drug use as measured by the difference between the average annual income of users and of the population in general. Here, two further observations about cannabis should be noted. A large proportion of cannabis users are young people who are not yet part of the workforce and cannabis use involves none of the addiction and attendant problems that follow from heroin or cocaine use. Therefore, the costs that can be attributed to cannabis in this regard are likely minimal. If one accepts the methodology of the authors, **cannabis in itself entails few externalities**, which are the main measures of the social cost of illegal drugs.

However, it should also be noted that the study did not calculate the costs of substance-related crime. Alcohol is well known for its frequent association with crimes of violence (at least 30% of all cases), as well as with impaired driving, which results in major social and economic losses. Crime related to illegal drugs is of several types: organized crime, crimes against property committed in order to pay for drugs, true mainly in the case of heroin and cocaine, and crimes of violence committed under the influence of drugs. With the exception of organized crime and driving under the influence, cannabis involves few of the factors that generate criminal behaviour.

Secondly, according to the CCSA's study, the main cost of illegal drugs, after loss of productivity, is the cost of law enforcement, which the study estimates at approximately $400 million. In Chapters 14 and 15, we note that police and court costs are certainly much higher than this figure, and probably total between $1 and $1.5 billion. The proportion of these costs attributable to cannabis is impossible to determine for certain. But, insofar as 77% of all drug-related offences involve cannabis, and of these 50% simple possession, and given that about 60% of incidents result in a charge, of which some 10% to 15% of cases the accused receives a prison sentence, it is clear that a considerable proportion of the drug-related activity addressed by the penal justice system is concerned with cannabis. While admitting this to be a very rough estimate, we suggest that about 30% of the activity of the justice system is tied up with cannabis. On the basis of our estimates and the lowest cost of law enforcement, or $1 billion, it costs about $300 million annually to enforce the cannabis laws.

In effect, the main social costs of cannabis are a result of public policy choices, primarily its continued criminalization, while the consequences of its use represent a small fraction of the social costs attributable to the use of illegal drugs.

Overall, we observed the following:

- The lack of any real national platform for discussion and debate on illegal drugs prevents the development of clear objectives and measurement indicators;
- The absence of a national platform makes exchange of information and best practices impossible;
- Practices and approaches vary considerably between and within provinces and territories;
- The conflicting approaches of the various players in the field are a source of confusion;
- The resources and powers of enforcement are greatly out of balance compared with those of the health and education fields and the civil society;
- The costs of all illegal drugs had risen to close to $1.4 billion in 1992;
- Of the total costs of illegal drugs in 1992, externalities (social costs) represented 67% and public policy costs 33%;
- The social costs of illegal drugs and the public policy costs are underestimated ;
- The cost of enforcing the drug laws is more likely to be closer to $1 billion to $1.5 billion per annum;
- The principal public policy cost relative to cannabis is that of law enforcement and the justice system; which may be estimated to represent a total of $300 to $500 million per annum;
- The costs of externalities attributable to cannabis are probably minimal - no deaths, few hospitalizations, and little loss of productivity;
- The costs of public policy on cannabis are disproportionately high given the drug's social and health consequences; and
- The Canadian Centre on Substance Abuse is seriously under-funded; its annual budget amounts to barely 0.1% of the social costs of illegal drugs alone (alcohol not included). Its budget should be increased to at least 1%; that is, approximately $15 million per annum.

PART IV-PUBLIC POLICY OPTIONS

CHAPTER 19 - THE INTERNATIONAL LEGAL ENVIRONMENT

This chapter could begin and end with the same words: The international drug control conventions are, at least with respect to cannabis, an utterly irrational restraint that has nothing to do with scientific or public health considerations.

Three points bear making concerning the substance of the current conventions.

The first has to do with the absence of definitions. The terms drugs, narcotics and psychotropics are not defined in any way except as lists of products included in schedules. It follows that any natural or synthetic substance on the list of narcotics is, for the purposes of international law, a narcotic, and that a psychotropic is defined in

international law by its inclusion in the list of psychotropics. The only thing that the 1961 Convention tells us about the substances to which it applies is that they can be abused. The 1971 Psychotropics Convention, which reversed the roles in that the synthetic drug producing countries wanted narrower criteria, indicates that the substances concerned may cause dependence or central nervous system stimulation or depression and may give rise to such abuse as to "constitute a public health problem or a social problem that warrants international control."

The second point, following from the first, relates to the arbitrary nature of the classifications. While cannabis is included, along with heroin and cocaine, in Schedules I and IV of the 1961 Convention, which carry the most stringent controls, it is not even mentioned by name in the 1971 Convention, though THC is listed as a Schedule I psychotropic along with mescaline, LSD and so on. The only apparent criterion is medical and scientific use, which explains why barbiturates are in Schedule III of the 1971 Convention and therefore subject to less stringent controls than natural hallucinogens. These classifications are not just arbitrary, but inconsistent with the substances' pharmacological classifications and their danger to society.

Third, if there was so much concern about public health based on how dangerous "drugs" are, one has to wonder why tobacco and alcohol are not on the list of controlled substances.

We conclude from these observations that the international regime for the control of psychoactive substances, beyond any moral or even racist roots it may initially have had, **is first and foremost a system that reflects the geopolitics of North-South relations in the 20th century**. Indeed, the strictest controls were placed on organic substances – the coca bush, the poppy and the cannabis plant – which are often part of the ancestral traditions of the countries where these plants originate, whereas the North's cultural products, tobacco and alcohol, were ignored and the synthetic substances produced by the North's pharmaceutical industry were subject to regulation rather than prohibition. It is in this context that the demand made by Mexico on behalf of a group of Latin American countries during the negotiations leading up to the 1988 Convention, that their use be banned, must be understood. It was a demand that restored the balance to a degree, as the countries of the South had been forced to bear the full brunt of the controls and their effects on **their own people** since the inception of drug prohibition. The result may be unfortunate, since it reinforces a prohibitionist regime that history has been shown to be a failure, but it may have been the only way, given the mood of the major Western powers, to demonstrate the irrationality of the entire system in the longer term. In any case, it is a short step from there to question the legitimacy of instruments that help to maintain the North-South disparity yet fail miserably to reduce drug supply and demand.

We make the following observations:

- The series of international agreements concluded since 1912 have failed to achieve their ostensible aim of reducing the supply of drugs;
- The international conventions constitute a two-tier system that regulates the synthetic substances produced by the North and prohibits the organic substances produced by the South, while ignoring the real danger the substances represent for public health;
- When cannabis was included in the international conventions in 1925, there was no knowledge of its effects;
- The international classifications of drugs are arbitrary and do not reflect the level of danger they represent to health or to society;
- Canada should inform the international community of the conclusions of our report and officially request the declassification of cannabis and its derivatives.

CHAPTER 20 - PUBLIC POLICIES IN OTHER COUNTRIES

The vast majority of Canadians have heard about the "war on drugs" which the USA is conducting and about its prohibitionist approach, but many would be surprised to see the major variations between states, indeed between cities, within that country. Even fewer know that Sweden enforces a prohibitionist policy at least as strict as that of the US, but through other means. Many of us have, in one way or another, heard about the "liberal" approach introduced in the Netherlands in 1976. Fewer people know of the Spanish, Italian, Luxembourg or Swiss approaches, which are even more liberal in certain respects. More recently, Canadians learned of the decision by the UK's Minister of the Interior to reclassify cannabis as a Class C drugs, but it is not clear that we know precisely what that means. In view of the preconceptions that many may have in relation to France with regard to wine, many may be surprised to learn that its policy on cannabis appears more "conservative" than that of neighbouring Belgium, for example. As may be seen, after the overall framework of the puzzle has been established by the international community, the ways the pieces are put together vary widely among states, and at times among the regions of a single state.

That is why, in order to learn about the experience and approaches of other countries, the Committee commissioned a number of research reports on the situations in other countries and heard representatives of some of those countries in person. We of course had to make some choices, such as limiting ourselves to the western countries of the northern hemisphere. This is a weak point in our Report, we agree, but our resources were limited. In addition, as we wanted to compare public policies with data on use trends and judicial practices, we were forced to choose countries with an information base. In our hearings with representatives of those countries, we were mainly limited by time and cost.

In this chapter, we describe the situations in five European countries — France, the Netherlands, the United Kingdom, Sweden and Switzerland — and in Australia and the United States.

CHAPTER 21 - PUBLIC POLICY OPTIONS

Public policy is not just a matter of enabling legislation, in this case criminal legislation. Nonetheless, when it comes to illegal drugs, criminal legislation occupies a symbolic and determinative place. It is as if this legislation is the backbone of our public policy. Public discussions of cannabis do not deal so much with such matters as public health, user health, prevention of at-risk or excessive use, but with such questions as the pros and cons of decriminalization, establishing a civil offence or maintaining a criminal offence, or possible legalization and the extent thereof.

In respect of illegal drugs, where the key issues are, first and foremost, matters of public health and culture (including education and research), and where criminal law should be used only as a last resort, public policy must be based primarily on clear principles and objectives. For this to come about, public policy must be equipped with a set of tools designed to deal with the various issues that drugs represent to societies. Legislation is only one such tool. The social and economic costs of illegal drugs affect many aspects of society through lower productivity and business loss, hours of hospitalization and medical treatment of all kinds, police time and prison time, and broken or lost lives. Even if no one can pinpoint the exact figures, a portion of these costs arise, not from the substances themselves, but from the fact that they are criminalized. In fact, more than for any other illegal drug, its criminalization is the principal source of social and economic costs. However, in spite of the fact that the principal social costs of drugs affect business, health and family, the emphasis on the legal debate tips the scales of public action in favour of law enforcement agencies. No one can deny that their work is necessary to ensure public order and peace and fight organized crime. At the same time, over 90% of resources are spent on enforcing the law, the most visible actions with respect to drugs in the public sphere are police operations and court decisions and, at least with respect to cannabis, the law lags behind individual attitudes and opinions, thus creating a huge gap between needs and practice.

Most national strategies display a similar imbalance. The national strategies that appear to have the greatest chance of success, however, are those that strive to correct the imbalance. These strategies have introduced knowledge and observation tools, identified indicators of success with respect to their objectives, and established a veritable nerve centre for implementing and monitoring public policy. The law, criminal law especially, is put in its proper place as one method among many of reaching the defined objectives, not an aim in itself.

This chapter is divided into three sections. The first examines the effectiveness of legal measures for fighting drugs, and shows that legal systems have little effect on consumption or supply. The second section describes the various components of a public policy. The third considers the direction of criminal policy, and defines the main terms used: decriminalization, depenalization, diversion, legalization, and regulation.

In our view, it is clear that if the aim of public policy is to diminish consumption and supply of drugs, specifically cannabis, all signs indicate

complete failure. One might think the situation would be worse if not for current anti-drug action. This may be so. Conversely, one might also think that the negative impact of anti-drug programs that are currently centre stage are greater than the positive effect, specifically non-compliance with laws that are inconsistent with majority attitudes and behaviour. One of the reasons for this failure is the excessive emphasis placed on criminal law in a context where prohibition of use and a drug-free society appear to remain the omnipresent and determining direction of current public policies.

We think that a public policy **on psychoactive substances must be both integrated and adaptable, target at-risk uses and behaviours and abuses based on a public health approach that neither trivializes nor marginalizes users**. Implementation of such a policy must be multifaceted.

Some say that decriminalization is a step in the right direction, one that gives society time to become accustomed to cannabis, to convince opponents that chaos will not result, to adopt effective preventive measures. We believe however that **this approach is in fact the worst case scenario, depriving the State of a necessary regulatory tool for dealing with the entire production, distribution, and consumption network, and delivering hypocritical messages at the same time.**

In our opinion, the data we have collected on cannabis and its derivatives provide sufficient grounds for our general conclusion that the **regulation of the production, distribution and consumption of cannabis, inasmuch as it is part of an integrated and adaptable public policy, is best able to respond to the principles of autonomy, governance that fosters human responsibility and limitation of penal law to situations where there is demonstrable harm to others. A regulatory system for cannabis should permit, specifically:**

- *more effective targeting of illegal traffic and a reduction in the role played by organized crime;*
- *prevention programs better adapted to the real world and better able to prevent and detect at-risk behaviour;*
- *enhanced monitoring of products, quality and properties;*
- *better user information and education; and*
- *respect for individual and collective freedoms, and legislation more in tune with the behaviour of Canadians.*

In our opinion, Canadian society is ready for a responsible policy of cannabis regulation that complies with these basic principles.

CONCLUSIONS AND RECOMMENDATIONS

The Senate Special Committee on Illegal Drugs' mandate was to examine Canada's public policy approach in relation to cannabis and assess its effectiveness and impact in light of the knowledge of the social and health-related effects of cannabis and the international context. Over the past two years, the Committee has heard from Canadian and foreign experts and reviewed an enormous amount of scientific research. The Committee has endeavoured to take the pulse of Canadian public opinion and attitudes and to consider the guiding principles that are likely to shape public policy on illegal drugs, particularly cannabis. Our report has attempted to provide an update on the state of knowledge and the key issues, and sets out a number of conclusions in each chapter.

This final section sets out the main conclusions drawn from all this information and presents the resulting recommendations derived from the thesis we have developed namely: *in a free and democratic society, which recognizes fundamentally but not exclusively the rule of law as the source of normative rules and in which government must promote autonomy as far as possible and therefore make only sparing use of the instruments of constraint, public policy on psychoactive substances must be structured around guiding principles respecting the life, health, security and rights and freedoms of individuals, who, naturally and legitimately, seek their own well-being and development and can recognize the presence, difference and equality of others.*

LE DAIN – THIRTY YEARS AGO ALREADY

Thirty years ago, the Le Dain Commission released its report on cannabis. This Commission had far greater resources than we did. However, we had the benefit of Le Dain's work, a much more highly developed knowledge base since then and of thirty years' historical perspective.

The Commission concluded that the criminalization of cannabis had no scientific basis. Thirty years later, we confirm this conclusion and add that continued criminalization of cannabis remains unjustified based on scientific data on the danger it poses.

The Commission heard and considered the same arguments on the dangers of using cannabis: apathy, loss of interest and concentration, learning difficulties. A majority of the Commissioners concluded that these concerns, while unsubstantiated, warranted a restrictive policy. Thirty years later, we assert that the studies done in the meantime have not confirmed the existence of the so-called amotivational syndrome

and add that most studies rule out this syndrome as a consequence of the use of cannabis.

The Commission concluded that not enough was known about the long-term and excessive use of cannabis. We assert that these types of use exist and may present some health risks; excessive use, however, is limited to a minority of users. Public policy, we would add, must provide ways to prevent and screen for at-risk behaviour, something our policies have yet to do.

The Commission concluded that the effects of long-term use of cannabis on brain function, while largely exaggerated, could affect adolescent development. We concur, but point out that the long-term effects of cannabis use appear reversible in most cases. We note also that adolescents who are excessive users or become long-term users are a tiny minority of all users of cannabis. Once again, we would add that a public policy must prevent use at an early age and at-risk behaviour.

The Commission was concerned that the use of cannabis would lead to the use of other drugs. Thirty years' experience in the Netherlands disproves this clearly, as do the liberal policies of Spain, Italy and Portugal. And here in Canada, despite the growing increase in cannabis users, we have not had a proportionate increase in users of hard drugs.

The Commission was also concerned that legalization would mean increased use, among the young in particular. We have not legalized cannabis, and we have one of the highest rates in the world. Countries adopting a more liberal policy have, for the most part, rates of usage lower than ours, which stabilized after a short period of growth.

Thirty years later, we note that:

- Billions of dollars have been sunk into enforcement without any greater effect. There are more consumers, more regular users and more regular adolescent users;
- Billions of dollars have been poured into enforcement in an effort to reduce supply, without any greater effect. Cannabis is more available than ever, it is cultivated on a large scale, even exported, swelling coffers and making organized crime more powerful; and
- There have been tens of thousands of arrests and convictions for the possession of cannabis and thousands of people have been incarcerated. However, use trends remain totally unaffected and the gap the Commission noted between the law and public compliance continues to widen.

It is time to recognize what is patently obvious: our policies have been ineffective, because they are poor policies.

INEFFECTIVENESS OF THE CURRENT APPROACH

No clearly defined federal or national strategy exists. Some provinces have developed strategies while others have not. There has been a lot of talk but little significant action. In the absence of clear indicators accepted by all stakeholders to assess Canadian public policy, it is difficult to determine whether action that has been taken is effective.

Given that policy is geared to reducing demand (i.e. drug-use rates) and supply (by reducing the availability of drugs and pushing up drug prices), both these indicators may be used. A look at trends in cannabis use, both among adults and young people, **forces us to admit that current policies are ineffective**. In Chapter 6, we saw that trends in drug-use are on the increase. If our estimates do indeed reflect reality, no fewer that 2million Canadians aged between 18 and 65 have used cannabis at least once over the past 12 months, while at least 750,000 young people between the ages of 14 and 17 use cannabis at least once per month, one third of them on a daily basis. This proportion appears, at least in the four most highly-populated provinces, to be increasing. Statistics suggest that both use and at-risk use is increasing.

Of course, we must clearly establish whether the ultimate objective is a drug-free society, at least one free of cannabis, or whether the goal is to reduce at-risk behaviour and abuse. This is an area of great confusion, since Canadian public policy continues to use vague terminology and has failed to establish whether it focuses on substance abuse as the English language terminology used in several documents seems to suggest or on drug-addiction as indicated by the French language terminology.

It is all very well to criticize the "trivialization" of cannabis in Canada, to "explain" increases in use, but it must also be established why, if this is indeed the case, this trivialization has occurred. It is also important to identify the root cause of this trivialization against a backdrop of mainly anti-drug statements. The courts and their lenient attitude might be blamed for this. Perhaps the judiciary is at the forefront of those responsible for cannabis policies and the enforcement of the law. It must also be determined whether sentences are really as lenient as some maintain. A major issue to be addressed is whether harsher sentences would indeed be an effective deterrent given that the possibility of being caught by the police is known to be a much greater deterrent. Every year, over 20,000 Canadians are arrested for cannabis possession. This figure might be as high as 50,000 depending on how the statistics are interpreted. No matter what the numbers, they are too high for this type of conduct. However, even those numbers are laughable number when compared to the three million people who have used cannabis over the past 12 months. We should not think that the number of arrests could be significantly increased even if billions more dollars were allocated to police enforcement. Indeed, such a move should not even be considered.

A look at the availability and price of drugs, **forces us to admit that supply-reduction policies are ineffective**. Throughout Canada, above all in British Columbia

and Quebec, the cannabis industry is growing, flooding local markets, irritating the United States and lining the pockets of criminal society. Drug prices have not fallen but quality has improved, especially in terms of THC content – even if we are sceptical of the reported scale of this improvement. Yet, police organizations already have greater powers and latitude – especially since the September 11, 2001 tragedy – in relation to drugs than in any other criminal matter. In addition, enforcement now accounts for over 90 % of all spending related to illegal drugs. To what extent do we want to go further down this road?

Clearly, current approaches are ineffective and inefficient. Ultimately, their effect amounts to throwing taxpayers' money down the drain in a crusade that is not warranted by the danger posed by the substance. It has been maintained that drugs, including cannabis, are not dangerous because they are illegal but rather are illegal because they are dangerous. This is perhaps true of other types of drugs, but not of cannabis. We should state this clearly once and for all, for public good: it is time to stop this crusade.

PUBLIC POLICY BASED ON GUIDING PRINCIPLES

However much we might wish good health and happiness for everyone, we all know how fragile they are. Above all, we realize that health and happiness cannot be forced on a person, especially not by criminal law based on a specific concept of what is morally 'right'. No matter how attractive calls for a drug-free society might be, and even if some people might want others to stop smoking, drinking alcohol, or smoking joints, we all realize that these activities are part of our social reality and the history of humankind.

Consequently, what role should the State play? It should neither abdicate responsibility and allow drug markets to run rife, nor should it impose a particular way of life on people. We have opted, instead, for a concept whereby public policy **promotes and supports freedom for individuals and society as a whole**. For some, this would undoubtedly mean avoiding drug use. However, for others, the road to freedom might be via drug use. For society as a whole, in practice, this concept means a State that does not dictate what should be consumed and under what form. Support for freedom necessarily means flexibility and adaptability. It is for this reason that public policy on cannabis has to be clear while at the same time tolerant, to serve as a guide while at the same time avoiding imposing a single standard. This concept of the role of the State is based on the **principle of autonomy and individual and societal responsibility.** Indeed, it is much more difficult to allow people to make their own decisions because there is less of an illusion of control. It is just that: an illusion. We are all aware of that. It is perhaps sometimes comforting, but is likely to lead to abuse and unnecessary suffering. An ethic of responsibility teaches social expectations, expectations not to use drugs in public or sell them to children and responsible

behaviour, recognizing at-risk behaviour and being able to use moderately, and supports people facing hardship by providing a range of treatment.

From this concept of government action ensues a limited role for criminal law. As far as cannabis is concerned, **only behaviour causing demonstrable harm to others should be prohibited**: illegal trafficking, selling to minors and impaired driving.

Public policy shall also draw on available knowledge and scientific research but without expecting science to provide the answers to political issues. Indeed, scientific knowledge does have a major role to play **in supporting decision-making,** at both the individual and government levels. But science should play no greater role. It is for this reason that the Committee considers that a drug and dependency monitoring agency and a research program should be set up to help future decision-makers.

A CLEAR AND COHERENT FEDERAL STRATEGY

Although the Committee has focused on cannabis, we have nevertheless observed inherent shortcomings in the federal drug strategy. Quite obviously, there is no real strategy or focused action. Behind the assumed leadership provided by Health Canada there emerges a lack of necessary tools for action, a patchwork of ad hoc approaches varying from one substance to another and piecemeal action by various departments. Of course, co-ordinating bodies do exist, but lack real tools and clear objectives, each focusing its action according to its own particular priorities. This state of affairs has resulted in a whole series of funded programs being developed without any tangible cohesion.

Many stakeholders have expressed their frustration to the Committee at the apparently vanishing pieces of the puzzle and at the whole gamut of incoherent decisions, that cause major friction on the front lines. Various foreign observers also expressed their surprise that a country as rich as Canada, which is not immune to psychoactive substance-related problems, did not have a "champion", a spokesperson or a figure of authority able to fully grasp the real issues and obtain genuine cooperation from all of the stakeholders.

It is for this reason that we are recommending the creation of the position of National Advisor on Psychoactive Substances and Dependency to be attached to the Privy Council. We do not envisage this as a superstructure responsible for managing budgets and action related to psychoactive substances. We favour an approach similar to that of the *Mission interministérielle à la drogue et à la toxicomanie* in France over one modelled on that of the United States' Office of National Drug Control Policy. The Advisor would have a small dedicated staff, the majority of whom would be on assignment from various federal departments and bodies involved in drug issues.

The Advisor would be responsible: for advising the Cabinet and the Prime Minister on national and international psychoactive substance-related issues; for ensuring coordination between federal departments and agencies; for overseeing the

development of federal government psychoactive substance-related objectives and ensuring these objectives are satisfied; and to serve as a Canadian government spokesperson on issues related to psychoactive substances at an international level.

Recommendation 1

The Committee recommends that the position of National Advisor on Psychoactive Substances and Dependency be created within the Privy Council Office; that the Advisor be supported by a small secretariat and that the necessary staff be assigned by federal departments and agencies involved with psychoactive substances on request.

NATIONAL STRATEGY SUSTAINED BY ADEQUATE RESSOURCES AND TOOLS

A federal policy and strategy do not in themselves make a national strategy. Provinces, territories, municipalities, community organizations and even the private sector all have a role to play in accordance with their jurisdiction and priorities. This is necessary and this diversity is worth encouraging. However some harmonization and meaningful discussion on practices and pitfalls, on progress and setbacks, and on knowledge are to be encouraged. Apart from those provided by the resource-starved piecemeal actions of the Canadian Centre on Substance Abuse, there are all too few opportunities and schemes to promote exchanges of this type. **The current and future scale of drug and dependency-related issues warrants that the Canadian government earmark the resources and establish the tools with which to develop fair, equitable and considered policies**.

Like the majority of Canadian and foreign observers of the drug situation, we were struck by the relative lack of tools and measures for determining and following up on the objectives of public psychoactive substance policy. One might not agree with the numbers-focused goals set out by the Office of National Drug Control Policy for the reduction of drug use or for the number of drug treatment programs set up and evaluated. However, we have to admit that at least these figures serve as guidelines for all stakeholders and as benchmarks against which to measure success.

Similarly, one might not feel totally comfortable with the complex Australian goal-definition process, whereby the whole range of partners from the various levels of government, organizations and associations meet at a conference every five years to review goals. However, at least those goals agreed upon by the various stakeholders constitute a clear reference framework and enable better harmonization of action.

The European monitoring system with its focal points in each country of the European Union under the European Monitoring Centre for Drugs and Drug Addiction umbrella might seem cumbersome; and the American system of conducting various annual epidemiological studies might appear expensive. We might even

acknowledge that there are problems with epidemiological studies, which are far from providing a perfect picture of the psychoactive substance use phenomena. However, at least these tools, referred to and used throughout the western world, permit the development of a solid information base with which to analyse historical trends, identify new drug-use phenomena and react rapidly. In addition, it allows for an assessment of the relevance and effectiveness of action taken. No system of this type exists in Canada, which is the only industrialized western country not to have such a knowledge structure.

It is for these reasons that the Committee recommends that the Government of Canada support various initiatives to develop a genuine national strategy. Firstly, the Government should call a national conference of the whole range of partners with a view to setting out goals and priorities for action over a five-year period. This conference should also identify indicators to be used in measuring progress at the end of the five-year period. Secondly, the Canadian Centre on Substance Abuse needs to be renewed. Not only does this body lack resources but it is also subject to the vagaries of political will of one Minister, the Minister of Health. The Centre should have a budget in proportion with the scale of the psychoactive substance problem and should have the independence required to address this issue. Lastly, a Canadian Monitoring Agency on Drugs and Dependency should be created within the Centre.

Recommendation 2

The Committee recommends that the Government of Canada mandate the National Advisor on Psychoactive Substances and Dependency to call a high-level conference of key stakeholders from the provinces, territories, municipalities and associations in 2003, to set goals and priorities for action on psychoactive substances over a five-year period.

Recommendation 3

The Committee recommends that the Government of Canada amend the enabling legislation of the Canadian Centre on Substance Abuse to change the Centre's name to the *Canadian Centre on Psychoactive Substances and Dependency*; make the Centre accountable to Parliament; provide the Centre with an annual basic operating budget of $15 million to be increased annually; require the Centre to table an annual report on actions taken, key issues, research and trends in Parliament and in the provincial and territorial legislatures; mandate the Centre to ensure national coordination of research on psychoactive substances and dependency and to conduct studies into

specific issues; and mandate the Centre to undertake an assessment of the national strategy on psychoactive substance and dependency every five years.

Recommendation 4
The Committee recommends that, in the legislation creating the Canadian Centre on Psychoactive Substances and Dependency, the Government of Canada specifically include provision for the setting up of a Monitoring Agency on Psychoactive Substances and Dependency within the Centre; provide that the Monitoring Agency be mandated to conduct studies every two years, in cooperation with relevant bodies, on drug-use trends and dependency problems in the adult population; work with the provinces and territories towards increased harmonization of studies of the student population and to ensure they are carried out every two years; conduct ad hoc studies on specific issues; and table a bi-annual report on drug-use trends and emerging problems.

A PUBLIC HEALTH POLICY

When cannabis was listed as a prohibited substance in 1923, no public debate or discussion was held on the known effects of the drug. In fact, opinions expressed were disproportionate to the dangers of the substance. Half a century later, the Le Dain Royal Commission of Inquiry on the Non-Medical Use of Drugs held a more rational debate on cannabis and took stock of what was known about the drug. Commissioners were divided not so much over the nature and effects of the drug but rather over the role to be played by the State and criminal law in addressing public health-related goals. Thirty years after the Le Dain Commission report, we are able to categorically state that, **used in moderation, cannabis in itself poses very little danger to users and to society as a whole, but specific types of use represent risks for users**.

In addition to being ineffective and costly, criminalization leads to a series of harmful consequences: users are marginalized and exposed to discrimination by the police and the criminal justice system; society sees the power and wealth of organized crime enhanced as criminals benefit from prohibition; and governments see their ability to prevent at-risk use diminished.

We would add that, **even if cannabis were to have serious harmful effects, one would have to question the relevance of using the criminal law to limit these effects**. We have demonstrated that criminal law is not an appropriate governance tool for matters relating to personal choice and that prohibition is known to result in harm

which often outweighs the desired positive effects. However, current scientific knowledge on cannabis, its effects and consequences are such that this issue is not relevant to our discussion.

Indeed available data indicate that the scale of the cannabis use phenomenon can no longer be ignored. Chapter 6 indicated that no fewer than 30% of Canadians (12 to 64 years old) have experimented with cannabis at least once in their lifetime. In all probability, this is an underestimation. We have seen that approximately 50% of high school students have used cannabis within the past year. Nevertheless, a high percentage of them stop using, and the vast majority of those who experiment do not go on to become regular users. Even among regular users, only a small proportion develop problems related to excessive use, which may include some level of psychological dependency. Consumption patterns among cannabis users do not inevitably follow an upward curve but rather a series of peaks and valleys. Regular users also tend to have a high rate of consumption in their early twenties, which then either drops off or stabilizes, and in the vast majority of cases, most often ceasing altogether in their thirties.

All of this does not in any way mean, however, that cannabis use should be encouraged or left unregulated. Clearly, it is a psychoactive substance with some effects on cognitive and motor functions. When smoked, cannabis can have harmful effects on the respiratory airways and is potentially cancerous. Some vulnerable people should be prevented, as much as possible, from using cannabis. This is the case for young people under [illegible] years of age and those people with particular conditions that might make them vulnerable, for example those with psychotic predispositions. As with alcohol, adult users should be encouraged to use cannabis in moderation. Given that, as for any substance, at-risk use does exist, preventive measures and detection tools should be established and treatment initiatives must be developed for those who use the drug excessively. Lastly, it goes without saying that education initiatives and severe criminal penalties must be used to deter people from operating vehicles under the influence of cannabis.

As for any other substance, there is at-risk use and excessive use. There is no universally accepted criterion for determining the line between regular use, at-risk use and excessive use. The context in which use occurs, the age at which users were introduced to cannabis, substance quality and quantity are all factors that play a role in the passage from one type of use to another. Chapters 6 and 7 identified various criteria, which we have collated in table form below.

Proposed Criteria for Differentiating Use Types

	Environment	Quantity	Frequency	Period of use and intensity
	Curiosity	Variable	A few times over lifetime	None
	Recreational, social Mainly in evening Mainly in a group	A few joints Less than one gram per month	A few times per month	Spread over several years but rarely intensive
	Recreational and occupational (to go to school, to go to work, for sport...) Alone, in the morning Under 16 years of age	Between 0.1 and 1 gram per day	A few times per week, evenings, especially weekends	Spread over several years with high intensity periods
	Occupational and personal problems No self regulation of use	Over one gram per day	More than once per day	Spread over several years with several months at a time of high intensity use

Even if **cannabis itself poses very little danger to the user and to society as a whole, some types of use involve risks**. It is time for our public policy to recognize this and to **focus on preventing at-risk use and on providing treatment for excessive cannabis users**.

Recommendation 5

The Committee recommends that the Government of Canada adopt an integrated *policy on the risks and harmful effects of psychoactive substances* covering the whole range of substances (medication, alcohol, tobacco and illegal drugs). With respect to cannabis, this policy should focus on educating users, detecting and preventing at-risk use and treating excessive use.

A REGULATORY APPROACH TO CANNABIS

The **prohibition of cannabis does not bring about the desired reduction in cannabis consumption or problematic use**. However, this approach does have a whole series of harmful consequences. Users are marginalized, and over 20,000 Canadians are arrested each year for cannabis possession. Young people in

schools no longer enjoy the same constitutional and civil protection of their rights as others. Organized crime benefits from prohibition and the criminalization of cannabis enhances their power and wealth. Society will never be able to stamp out drug use – particularly cannabis use.

Some might believe that an alternative policy signifies abandoning ship and giving up on promoting well-being for Canadians. Others might maintain that a regulatory approach would fly in the face of the fundamental values of our society. We believe, however, that the continued prohibition of cannabis jeopardizes the health and well-being of Canadians much more than does the substance itself or the regulated marketing of the substance. In addition, we believe that the continued criminalization of cannabis undermines the fundamental values set out in the *Canadian Charter of Rights and Freedoms* and confirmed in the history of a country based on diversity and tolerance.

We do not want to see cannabis use increase, especially among young people. Of note, the data from other countries that we compared in Chapters 6 and 20 indicate that countries such as the Netherlands, Australia and Switzerland, which have put in place a more liberal approach, have not seen their long-term levels of cannabis use rise. The same data also clearly indicate that countries with a very restrictive approach, such as Sweden and the United States, are poles apart in terms of cannabis use levels and that countries with similar liberal approaches, such as the Netherlands and Portugal, are also at opposite ends of the spectrum, falling somewhere between Sweden and the United States. We have concluded that public policy itself has little effect on cannabis use trends and that other more complex and poorly understood factors play a greater role in explaining the variations.

An exemption regime making cannabis available to those over the age of 16 could probably lead to an increase in cannabis use for a certain period. Use rates would then level off as interest wanes and as effective prevention programs are set up. A roller coaster pattern of highs and lows would then follow, as has been the case in most other countries.

This approach is neither one of total abdication nor an indication of abandonment but rather a vision of the role of the State and criminal law as **developing and promoting but not controlling human action** and as **stipulating only necessary prohibitions** relating to the fundamental principle of respect for life, other persons and a harmonious community, and as **supporting and assisting others, not judging and condemning difference**.

We might wish for a drug-free world, fewer smokers or alcoholics or less prescription drug dependency, but we all know that we shall never be able to eliminate these problems. More importantly, we should not opt to criminalize them. The Committee believes that the same healthy and respectful approach and attitude should be applied to cannabis.

It is for this reason that the Committee recommends that the Government of Canada amend the *Controlled Drugs and Substances Act* to create a criminal exemption scheme, under which the production and sale of cannabis would be licensed. Licensing

and the production and sale of cannabis would be subject to specific conditions, which the Committee has endeavoured to specify. For clarity's sake, these conditions have been compiled at the end of this section. It should be noted at the outset that the Committee suggests cigarette manufacturers should be prohibited from producing and selling cannabis.

Recommendation 6

The Committee recommends that the Government of Canada amend the *Controlled Drugs and Substances Act* to create a criminal exemption scheme. This legislation should stipulate the conditions for obtaining licences as well as for producing and selling cannabis; criminal penalties for illegal trafficking and export; and the preservation of criminal penalties for all activities falling outside the scope of the exemption scheme.

Recommendation 7

The Committee recommends that the Government of Canada declare an amnesty for any person convicted of possession of cannabis under current or past legislation.

A COMPASSION-BASED APPROACH FOR THERAPEUTIC USE

In Chapter 9, we noted that cannabis has not been approved as a medicinal drug in the pharmacological sense of the word. In addition to the inherent difficulties in conducting studies on the therapeutic applications of cannabis, there are issues arising from the current legal environment and the undoubtedly high cost to governments of conducting such clinical studies.

Nevertheless, we do not doubt that for some medical conditions and for certain people cannabis is indeed an effective and useful therapy. Is it more effective than other types of medication? Perhaps not. Can physicians currently prescribe cannabis at a known dosage? Undoubtedly not. Should persons suffering from certain physical conditions diagnosed by qualified practitioners be permitted to use cannabis if they wish to do so? Of this, we are convinced.

The regulations made in 2001 by Health Canada, even though they are a step in the right direction, are fundamentally unsatisfactory. They do not facilitate access to therapeutic cannabis. They do not consider the experience and expertise available in compassion clubs. These regulations only govern marijuana and do not include cannabis derivatives such as hashish and cannabis oils.

It is for these reasons that the Committee recommends that Health Canada amend the *Marihuana Medical Access Regulations* in order to allow compassionate access to cannabis and its derivatives. As in the previous chapter, proposed rules have been compiled at the end of this chapter.

Recommendation 8

The Committee recommends that the *Marijuana Medical Access Regulations* be amended to provide new rules regarding eligibility, production and distribution with respect to cannabis for therapeutic purposes. In addition, research on cannabis for therapeutic purposes is essential.

PROVISIONS FOR OPERATING A VEHICLE UNDER THE INFLUENCE OF CANNABIS

In Chapter 8, we discussed the fact that research has not clearly established the effects of cannabis when taken alone on a person's ability to operate a vehicle. Nevertheless, there is enough evidence to suggest that operating a vehicle while under the influence of cannabis alters motor functions and affects a person's ability to remain in his or her lane. We have also established that the combined effects of cannabis and alcohol impair faculties even more than does alcohol taken alone. Epidemiological studies have shown that a certain number of cannabis users do drive under the influence of the substance and that a large proportion of these people, mainly the young, appear to believe that cannabis does not impair their ability to drive.

This chapter also indicated that no reliable and non-intrusive roadside detection tools exist. Saliva-based equipment is a promising development but for the time being, provide random results. We have also established that a visual recognition system, which has mainly been developed and assessed in the United States, is a reliable way of detecting drug-induced impaired driving faculties.

Recommendation 9

The Committee recommends that the Criminal Code be amended to lower permitted alcohol levels to 40 milligrams of alcohol per 100 millilitres of blood, in the presence of other drugs, especially, but not exclusively cannabis; and to admit evidence from expert police officers trained in detecting persons operating vehicles under the influence of drugs.

RESEARCH

Research on psychoactive substances, and particularly on cannabis, has undergone a boom over the past 20 years. The Committee was able to fully grasp the actual extent of this increase since we faced the challenge of summarizing it. Not all research is of the same quality and the current political and legal climate governing cannabis hampers thorough and objective studies. Nevertheless, a solid fact base was available to the Committee, on which to establish its conclusions and recommendations.

However, more research needs to be done in a certain number of specific areas. In Chapter 6, we established that a lack of practical research on cannabis users has resulted in only a limited amount of information on contexts of use being available. It is also currently difficult to establish criteria on the various types of cannabis use in order to guide those responsible for prevention. The Committee suggests that cannabis use of over one gram per day constitutes excessive use and that between 0.1 and one gram per day equates to at-risk use. We also suggest that any use below 16 years of age is at-risk use. This is of course enlightened speculation, but speculation nevertheless, which remains to be explored.

In Chapters 16 and 17, we referred to the fact that we know very little about the most effective prevention practices and treatment. Here also, the current context hindered. As far as prevention is concerned, the more or less implicit "*just say no*" message and the focus on cannabis use prevention are strategies that have been dictated by the prohibition-based environment. In terms of treatment for problem users, abstinence-based models have long been the dominant approach and continue to sit very poorly with harm-reduction-based models. Thorough assessment studies are required.

The Canadian Centre on Psychoactive Substances and Dependency must play a key role in co-ordinating and publishing the results of studies. The Centre does not have to conduct research itself. This can and indeed must sometimes be carried out by academics. The Health Research Institutes are also natural players. However, it is important to clearly identify a single central body to collect research information. This will enable the information to be distributed as widely possible and, we hope, used.

Recommendation 10

The Committee recommends that the Government of Canada create a national fund for research on psychoactive substances and dependency to fund research on key issues, more particularly on various types of use, on the therapeutic applications of cannabis, on tools for detecting persons operating vehicles under the influence of drugs and on effective prevention and treatment programs; that the Government of Canada mandate the Canadian Centre on

Psychoactive Substances and Dependency to co-ordinate national research and serve as a resource centre.

CANADA'S INTERNATIONAL POSITION

The Committee is well aware that were Canada to choose the rational approach to regulating cannabis we have recommended, it would be in contravention of the provisions of the various international conventions and treaties governing drugs. We are also fully aware of the diplomatic implications of this approach, in particular in relation to the United States.

We are keen to avoid replicating, at the Canada - US border, the problems that marked relations between the Netherlands, France, Belgium and Germany over the issue of drug tourism between 1985 and 1995. This is one of the reasons that justifies restricting the distribution of cannabis for recreational purposes to Canadian residents.

We are aware of the fact that a proportion of the cannabis produced in Canada is exported, mainly to the United States. We are also aware that a considerable proportion of heroin and cocaine comes into Canada via the United States. We are particularly cognisant of the fact that Canadian cannabis does not explain the increase in cannabis use in the United States. It is up to each country to get its own house in order before criticizing its neighbour.

Internationally, Canada will either have to temporarily withdraw from the conventions and treaties or accept that it will be in temporary contravention until the international community accedes to its request to amend them. The Committee opts for the second approach, which seems to us to be more consistent with the tradition and spirit of Canadian foreign policy. In addition, we have seen that international treaties foster the imbalanced relationship between the northern and southern hemispheres by prohibiting access to plants, including cannabis, produced in the southern hemisphere, while at the same time developing a regulatory system for medication manufactured by the pharmaceutical industry in the northern hemisphere. Canada could use this imbalanced situation to urge the international community to review existing treaties and conventions on psychoactive substances.

Canada can and indeed should provide leadership on drug policy. Developing a national information and action infrastructure would undoubtedly be key to this. **Canada must also play a leading role in the Americas.** We believe that Canada enjoys a favourable international reputation and that it can promote the development of fairer and more rational drug, in particular cannabis policies. We also contend that Canada should strive for the creation of a European observatory style Drug and Dependency Monitoring Agency for the Americas within the Organization of American States.

Recommendation 11

The Committee recommends that the Government of Canada instruct the Minister of Foreign Affairs and International Trade to inform the appropriate United Nations authorities that Canada is requesting an amendment to the conventions and treaties governing illegal drugs; and that the development of a Drugs and Dependency Monitoring Agency for the Americas be supported by the Government of Canada.

PROPOSALS FOR IMPLEMENTING THE REGULATION OF CANNABIS FOR THERAPEUTIC AND RECREATIONAL PURPOSES

Amendments to the
Marijuana Medical Access Regulations
(Production and sale of cannabis for therapeutic purposes)

A. Eligible person

A person affected by one of the following: wasting syndrome; chemotherapy treatment; fibromyalgia; epilepsy; multiple sclerosis; accident-induced chronic pain; and some physical condition including migraines and chronic headaches, whose physical state has been certified by a physician or an individual duly authorized by the competent medical association of the province or territory in question, may choose to buy cannabis and its derivatives for therapeutic purposes. The person shall be registered with an accredited distribution centre or with Health Canada.

B. Licence to distribute

A Canadian resident may obtain a licence to distribute cannabis and its derivatives for therapeutic purposes. The resident must undertake to only sell cannabis and its derivatives to eligible persons; to only sell cannabis and its derivatives purchased from producers duly licensed for this purpose; to keep detailed records on the medical conditions and their development, consumption and the noted effects on patients; to take all measures needed to ensure the safety of the cannabis products and to submit to departmental inspections.

C. Licence to produce

A Canadian resident may obtain a licence to produce cannabis and its derivatives for therapeutic purposes. The resident must undertake: to not hold a licence to produce cannabis for non therapeutic purposes; to take the measures necessary to ensure the consistency, regularity and quality of crops; to take the measures necessary to ensure the security of production sites; to know and document the properties and concentrations of each harvest with respect to Delta 9 THC; to sell only to accredited distribution centres and to submit to departmental inspections.

D. Other proposals

- Ensure that expenses relating to the use of cannabis for therapeutic purposes will be eligible for a medical expenses tax credit;
- Establish a program of research into the therapeutic applications of cannabis, by providing sufficient funding; by mandating the Canadian Centre on Psychoactive Substances and Dependency to co-ordinate the research program; and by providing for the systematic study of clinical cases based on the documentation available in organizations currently distributing cannabis for therapeutic purposes and in future distribution centres; and
- Ensure that the advisory committee on the therapeutic use of cannabis represents all players, including distribution centres and users.

Amendment to the *Controlled Drugs and Substances Act* (CDSA) (Production and sale of cannabis for non therapeutic purposes)

A. General aims of the bill

- To reduce the injurious effects of the criminalization of the use and possession of cannabis and its derivatives;
- To permit persons over the age of 16 to procure cannabis and its derivatives at duly licensed distribution centres; and
- To recognize that cannabis and its derivatives are psychoactive substances that may present risks to physical and mental health and, to this end, to regulate the use and trade of these substances in order to prevent at-risk use and excessive use.

B. Licence to distribute

Amend the Act to create a scheme providing for exemption to the criminal offences provided in the CDSA with respect to the distribution of cannabis. A Canadian resident may obtain a licence to distribute cannabis. The resident must undertake **not to distribute to persons under the age of 16; must never have been sentenced for a criminal offence, with the exception of offences related to the possession of cannabis, for which an amnesty will be declared**; and must agree to procure cannabis only from duly licensed producers. In addition, in accordance with potential restrictions under the *Canadian Charter of Rights and Freedoms*, licensed distributors shall not display products explicitly and shall not advertise in any manner.

C. Licence to produce

Amend the Act to create an exemption to the criminal offences provided in the CDSA with respect to the production of cannabis. A Canadian resident may obtain a licence to produce cannabis. The resident must undertake to only sell to duly licensed distributors; to sell only marijuana and hashish with a THC content of 13% or less; to limit production to the quantity specified in the licence; to take the measures needed to ensure the security of production sites; to keep detailed records of quantities produced, crops, levels of THC concentration and production conditions; and to submit to departmental inspections. No person charged with and sentenced for criminal offences, with the exception of the possession of cannabis, for which an amnesty will be declared, shall be granted a licence. No person or legal entity, directly or indirectly associated with the production, manufacture, promotion, marketing or other activity connected with tobacco products and derivatives shall be granted a licence. In accordance with potential restrictions under the *Canadian Charter of Rights and Freedoms*, cannabis products and their derivatives shall not be advertised in any manner.

D. Production for personal use

Amend the Act to create an exemption to the criminal offences provided in the CDSA in order to permit the personal production of cannabis so long as it is not sold for consideration or exchange in kind or other and not advertised or promoted in any other way. In addition, quantities shall be limited to ensure production is truly for personal consumption.

E. Consumption in public

Consumption in public places frequented by young people under 16 years of age shall be prohibited.

F. International trade

All forms of international trade, except those explicitly permitted under the Act shall be subject to the penalties provided in the CDSA for illegal trafficking.

G. Other proposals

- Ensure the establishment of a National Cannabis Board with duly mandated representatives of the federal government and the governments of the provinces and territories. The Board would keep a national register on the production and sale of cannabis and its derivatives, set the amount and distribution of taxes taken on the sale of cannabis products and ensure the taxes collected on the production and sale of cannabis and derivatives are

directed solely to prevention of at-risk use, treatment of excessive users, research and observation of trends and the fight against illegal trafficking.

- The provinces and territories would continue to develop prevention measures that should be directed at at-risk use, as a priority. The Canadian Centre on Psychoactive Substances and Dependency should be mandated to collect best treatment practices and ensure an exchange of information on effective practices and their evaluation.
- The provinces and territories would continue to develop support and treatment measures that should be directed at excessive use, as a priority. The Canadian Centre on Psychoactive Substances and Dependency should be mandated to collect best prevention practices and ensure an exchange of information on effective practices and their evaluation.
- Resources available to police and customs to fight smuggling, export in all its forms and cross-border trafficking should be increased.

CHAPTER 5

CANNABIS: FROM PLANT TO JOINT

Cannabis, marijuana, pot, grass, kif, grifa, ganja–from so many cultures, so many names for the drug made from *cannabis sativa indica*, one of the two main varieties of hemp. Beyond these various names are also different ways in which the drug is used and the context of those various usages: here marijuana is rolled with cigarette tobacco in a cigarette paper (joint), there kif is smoked in a pipe and elsewhere *ganja* is smoked in a water pipe. Sometimes it is baked into cookies or cakes. The French *pétard*, the English joint or the Indian *bangh* are all names for the product consumed and, at the same time designate different usages: marijuana is most often composed of the plant's flowering tops and dried, powdered leaves; *sinsemilla* is a preparation consisting of female tops of a private variety of seeds, whereas Indian ganja consists solely of fertilized flowering tops.[1]

These names are not mere accidents of folklore: like other substances, cannabis has codified uses that vary across cultures. The words used to name the same drug refer to a set of relations that populations of various cultures maintain with it, a kind of code of manners, but also of reasons to use the drug. In North America (United States and Canada), marijuana has long been identified with youth and the sexual liberation of the 1960s; in India and Jamaica, *ganja* has religious aspects which it does not necessarily possess in the West; and this same drug has still other cultural meanings in the Maghreb. We return to this question in Chapter 6.

This chapter first describes the cannabis plant and the various forms in which it becomes a consumer drug. We then take a brief look at the geographical origin of the cannabis plant and the routes along which it circulates in the modern world, noting at the same time its current modes of production (soil-based and hydroponic) which have developed in certain regions of Canada. We then describe the pharmacokinetics of the cannabis plant, in particular its main active ingredients and their metabolism in the body.

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[1] See in particular INSERM (2001) *Cannabis. Quels effets sur le comportement et la santé ?* Paris: Les Éditions Inserm, page 143 passim; Ben Amar (in preparation); Wheelock, B.B. (2002) *Physiological and Psychological Effects of Cannabis: Review of the Findings.* Report prepared for the Senate Special Committee on Illegal Drugs, Ottawa: Senate of Canada.

ONE PLANT, VARIOUS DRUGS[2]

There are a number of varieties of cannabis. The best known are *Cannabis sativa, Cannabis indica* and *Cannabis ruderalis. Cannabis sativa* is the main variety which grows in virtually any climate. In dry, sandy and slightly alkaline soils, it yields plants that can reach up to seven meters in height. In Canada, the preferred variety for soil-based cultivation is *Cannabis indica*, which is a shorter plant, but with higher concentrations of Δ^9-THC (the main active ingredient of cannabis, discussed more fully below). There are male and female plants. In general, female plants are richer in Δ^9-THC than the males, which are often smaller and bare of leaves. Δ^9-THC is mainly found in the resin secreted by the flowering tops.

Flowering tops and leaves of cannabis

It appears that cannabis was first known in China some 6,000 years ago, then subsequently in India, then the Middle East, Africa, Mexico and South America. Cannabis can be cultivated in a number of ways, in greenhouses or hydroponically, which makes it possible to increase plant productivity and achieve high Δ^9-THC levels. Methods for genetically selecting the best greenhouse varieties and crops have also made it possible to increase the active ingredient content.

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[2] This section draws freely on various papers, in particular those by Ben Amar (in preparation), of INSERM, *op. cit*, and Pelc, I., (2002) (ed.) *International Scientific Conference on Cannabis*, Brussels. In particular, we wish to thank Professor Ben Amar for his permission to reproduce the plates.

Male and female cannabis plants

Marijuana, which is a Mexican term initially used in reference to cheap tobacco, but which subsequently designated certain parts of the cannabis plant, is generally green or brown in colour and produces a characteristic odour when burned. It resembles oregano or coarse tea.[3] Marijuana comes from all the parts of the plant once dried. In this form, its THC content is lower; THC content is increased by selecting the flowering tops of the female plant. Dried and coarsely powdered, marijuana is most often rolled into thin cigarettes together with cigarette tobacco (joint), and sometimes smoked in a pipe or, less frequently, in cigar form. A typical joint contains between 0.5 and 1 g of cannabis. Like hash, it can also be baked into cookies and cakes, and be drunk as an herbal tea as well. A number of specialists told us that domestic cannabis made through controlled greenhouse production costs approximately $100 an ounce, and is then sold on the street at average prices ranging between $200 and $250. While we consider this estimated production cost high, the only other available studies concern production costs in developing countries such as Morocco.

Marijuana and joints

[3] On these questions, see in particular: McKim W.A. (2000) "Cannabis" in McKim, W.A. (ed.) *Drugs and Behaviour. An Introduction to Behavioral Pharmacology.* Upper Saddle River: Prentice Hall; Health Canada (1990) *Straight Facts About Drugs and Drug Abuse.* Ottawa: Department of Supply and Services; and Comité permanent de lutte à la toxicomanie (2001) *Drogues. Savoir plus. Risquer Moins.* (Édition québécoise) Montréal: Stanké.

Hashish, also known as hash, shit, kif (in North Africa) and *charas* (in India), is the viscous resin produced by the marijuana plant and obtained by pounding then compressing the dried leaves and flowering tops to obtain what, in France, is called a "barrette" or here a cube or block. It takes approximately 45 to 75 kg of cannabis to produce 1 kg of hash, which is sold in light brown to black pieces of hard or soft consistency. It is frequently smoked, alone or mixed with tobacco or marijuana, in a cigarette (joint), pipe or, more rarely, cigar. It may also be baked into cookies or cakes. The Δ^9-THC content of hash is generally between 3% and 6% in normal production. As is the case for cannabis, Δ^9-THC content can be increased through growing methods and resin concentrations to achieve levels of more than 10% on average. Slightly more expensive than marijuana, hashish sells for approximately $300 to $350 an ounce on the street.

Haschich

There are two other cannabis-based products, marijuana and hashish oils, which are extracted from resin using 90-proof alcohol, which is subsequently evaporated through exposure to the sun. These oils are viscous, greenish brown to blackish, foul-smelling liquids, with generally higher cannabinoid concentrations of up to 30% to 60% Δ^9-THC. Oils are generally dripped onto cigarette paper or tobacco then smoked. They are scarce and more expensive than other products.

Cannabis oils

The following passage from a report prepared by Labrousse and Romero for the *Observatoire français des drogues et des toxicomanies* (OFDT; French Monitoring Centre for Drugs and Drug Addictions) in 2001 on cannabis production in Morocco describes the various stages of production very clearly.

From Cannabis to Oil – The Production Process in Morocco

Kif is the name given to the cannabis plant as a whole. (...) Cut and dried in the sun (generally on rooftops) for at least a month and a half, it is preserved in houses for several months under plastic tarpaulins. Chopped by hand with a special knife on a board, it is then mixed with tobacco for smoking. The traditional mixture consists of one-third kif, two-thirds tobacco and is smoked in a *sebsi*, a long wooden pipe with a terracotta or stone pipe bowl.

Chira is the powder resulting from solidification of the small resin drops exuded by the flowering tops of the female plants. To separate the resin from the dried plants, processors pound or shake the plants over a stretched thin nylon veil that serves as a screen. The first powder to fall, golden beige in colour, is called *zgirma*. This is the top quality, so-called double-zero powder which is said to contain as much as 20% THC. The next powder to fall is called *hamda*, which is mixed with plant waste giving it a greenish colour. *Hamda* is lightly screened to yield various product qualities: zero, no. 1, no. 2, no. 3 and no. 4 (the lowest quality), containing respectively from 10% to 2% THC. (...) It takes approximately 100 kg of kif to obtain 1 kg of top-quality hashish.

Peasants (...) told us that the rest of the operation, when carried out by traffickers, took place in ostensibly secret buildings isolated in the mountains. (...) There the powder is placed in cellophane bags, then heated and compressed to yield resin or hashish, readied for the market in the form of small bars (generally 250 grams) called *tbiba* or "little plate". (...) The "double zero" quality, which derives its name from the two holes made in the bar with the end of a lit cigarette, is reserved for domestic consumption and preferred customers. Misinformed foreign customers often receive hash that has been cut with black polish, glue, henna, fig, earth or even medication.

(...) Cannabis oil is derived from no. 3 and no. 4 quality resins and produced by diluting hashish in a container with pharmaceutical alcohol. After six to eight hours of distillation, the liquid is filtered and stirred until all the alcohol has evaporated. Local production of this high value-added liquid (it takes 10 kg of hashish to produce one liter of oil) is less marginal than is generally thought.

Labrousse, A. and L. Romero (2001). *Rapport sur la situation du cannabis dans le Rif marocain*. Paris: OFDT.

CANNABIS ROADS

Where does the cannabis and hashish available in Canada come from? What quantities are imported and how much is produced locally? What routes are used to transport the drugs between provinces? What quantities are exported to other countries? What is the monetary value of this market? These are constantly recurring questions. They serve various purposes: to underline the scope of the drug "problem" generally, to explain the power of organized crime which makes money from drugs, as well as to substantiate the discrepancy between the size of the problem and the limited resources governments allocated to reducing supply. But this information can also assist in better understanding the extent of the problem experienced by peasants in the

various producer countries, the ecological issues raised by the cultivation of drugs, as well as the strategic position of drugs in geopolitics.

The cultivation of cannabis is the most widespread of all illegal drugs, which is not surprising since, not only does the plant grow readily in a number of climates, but it also requires little processing before becoming marijuana. According to the 2000 report of the *United Nations Drug Control Program* (UNDCP):

> *Over the last decade, 120 countries reported illicit cultivation of cannabis in their territory. Interpol identifies 67 source countries for cannabis through seizures made in 1998. (...) Estimating the extent of illicit cannabis cultivation, production and trafficking is much more difficult than for other plant-based drugs because of the significant amount of wild cannabis growth, the diverse nature of cultivation and the sheer magnitude of trafficking. In contrast to other plant-based narcotic drugs, illicit cannabis products can originate from three qualitatively distinct sources of supply: outdoor illicit cultivation; naturalized cannabis plant populations (wild growing cannabis); and plants cultivated indoors by means of sophisticated growing technology. (...) The large number of countries reporting an increase in cannabis consumption (two-thirds of all countries reporting drug abuse trends in 1996) would suggest that overall production must have increased; but this is only partly confirmed by seizure data. (...) Cultivation estimated (including wild growth), based on reports from Member States in the 1990s, ranges from 670,000 hectares to 1,850,000 hectares. Production estimates vary by a factor of 30, from 10,000 tonnes to 300,000 tonnes. Linking production and consumption estimates, UNDCP estimates world wide cannabis production to be at about 30,000 tonnes.*[4]

As may be seen, estimates vary greatly and are enormously difficult to validate. How can anyone estimate the number of cannabis plants that are transformed into marijuana? The data provided by the governments of various countries on cultivated areas are themselves only approximations. As to the number of greenhouses and other forms of production, there is quite literally no way of knowing.

The work of the team at France's *Observatoire géopolitique des drogues*, under the direction of Alain Labrousse, is exemplary in the field. The box from the same report produced for the OFDT in 2001, describes a three-month field project in which the authors cross-checked data from various sources.

Variable Estimates – The Case of Morocco

In their study, Labrousse and Romero state that, according to the Department of Agriculture, cannabis was produced on 75,000 hectares in 2000. (By comparison, in its 2000 report, the ODCCP cites the figure of 50,000 hectares in cannabis production in Morocco, an official figure provided by the Department of the Interior.)

Based on their own work in the field, they estimate that 90,000 hectares were in production in 1999 and between 110,000 and 120,000 in 2001. That production involved approximately 200 000 families, between one and one and a half million persons. Based on those areas, production would be between 1,600 and 3,000 tonnes, after deducting the quantities of kif set aside for national consumption.

Labrousse and Romero, *op. cit.*

[4] United Nations Office for Drug Control and Crime Prevention (2001) *World Drug Report 2001.* Oxford: Oxford University Press, pages 30-32. Available on line at http://www.undcp.org/adhoc/world_drug_report_2000/report_2001-01-22_1.pdf.

In particular, it has been observed that, when linked to the population of potential cannabis users (which the Centre estimates at some 120 million persons), the estimated global production of 30,000 tonnes is much nearer the 10,000 tonne floor than the 300,000 tonne ceiling.

According to the UNDCP, the main producers are Colombia and Mexico (marijuana) and Morocco (hashish). According to the International Criminal Police Organization (Interpol), Morocco, Afghanistan and Pakistan are the main sources of hashish and Colombia, Niger and South Africa of cannabis. Lastly, according to Labrousse, marijuana production is exploding, with Colombia becoming again the major producer it was in the 1970s, and production rapidly increasing in West Africa (Nigeria, Ghana, Congo, Ivory Coat, Senegal), although the great steppes of the Commonwealth of Independent States (Kazakhstan, Kirghizistan, Ukraine, Belarus and Azerbaijan) have virtually unlimited export potential, while Afghanistan and Pakistan likely produce 2,000 tonnes of hashish, the equivalent of Morocco's production.[5] In addition, Canada has been a cannabis exporting country for a number of years now.[6]

Traditionally, the cannabis available in Canada comes mainly from Mexico, Jamaica and the countries of the horn of Africa, while hashish originates mainly in Asia and the Middle East:

> *The hashish market in Central Eastern Canada is known world-wide. U.S. criminals are among the international traffickers who orchestrate multi-tonne shipments of this drug from Pakistan directly to Montreal by mothership or container. In 2001, some shipments transited the United Arab Emirates, Africa and Europe before reaching Canada. Multi-kilo quantities are also imported from Jamaica by couriers travelling on board commercial airlines.*[7]

While a large portion of cannabis sold in the Canadian market was of foreign origin until the 1980s, the situation has radically changed since that time. It is estimated that national production has now supplanted imports. In its 1999 report, the Royal Canadian Mounted Police writes:

> *It is estimated that more than 50% of the marihuana available in Canada is produced domestically. Of the foreign marihuana seized in or en route to Canada in 1999, at least 5,535 kilograms originated from Jamaica, 825 kilograms from South Africa and 860 kilograms from Mexico. Foreign shipments arrive directly into Canadian ports of entry or transit through the United States before reaching Canada. On June 11, 1999, U.S. Customs intercepted 2,464 kg of Jamaican marihuana and 141 kg of hash oil at Newark, New Jersey in a marine container bound for Montreal. Furthermore in Project JOULE*

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[5] Labrousse, A. (2000) *Drogues. Un marché de dupes.* Paris: éditions alternatives; see also "L'approvisionnement des marchés des drogues dans l'espace Schengen." *Les Cahiers de la Sécurité Intérieure*, 32, 2e trimestre 1998.

[6] See, for example, in OGD (1996) *Atlas mondial des drogues.* Paris: PUF.

[7] Royal Canadian Mounted Police (2002) *Drug Situation in Canada (2001).* Ottawa: author.

on June 20, 1999, 2,617 kg of Jamaican marihuana destined for Canada were seized in Stuart, Florida.[8]

How much cannabis and hashish are available in Canada? What is the monetary value of those drugs? It is in fact impossible to answer these questions, for obvious reasons, since the drugs are illegal. While we know the amount of tobacco produced and sold in cigarette form, and the volume of alcohol produced or imported and consumed, and sales turnover can be calculated in both cases on the basis of those volumes, it is impossible to do this for illegal drugs.

For a time, the United Nations International Drug Control Program suggested that the total value of the illegal drug "industry" was approximately US $400 billion, greater than the oil industry.[9] The total value of cannabis obviously cannot be separated from that amount, even though we know that the largest number of persons who use drugs use cannabis. No one really knows how or on what basis these figures are advanced, whether they were produced using a rigorous calculation method or merely noted down on a napkin over a meal.[10] And yet they often serve as a reference. In a series of articles published on the illicit drug issue in 2001, *The Economist* cited the $400 billion amount before suggesting a more conservative estimate of US $150 billion.[11] By comparison, the value of the pharmaceutical industry is near US $300 billion, that of the tobacco industry $204 billion and that of the alcoholic beverages industry $250 billion.

Since the authors provide itemized accounts of their calculation methods, we will now continue our analysis of the Moroccan example.

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[8] Royal Canadian Mounted Police (2000) *Drug Situation in Canada (1999).* Ottawa: author.

[9] UNDCP (2000) *op. cit.*

[10] The Committee invited the Executive Director of UNDCP or a delegate to testify before it, but the invitation was turned down.

[11] "Stumbling in the Dark", *The Economist*, July 28 - August 3, 2001.

Yields and Returns from Cannabis – The Case of Morocco

Cannabis is a not very demanding plant that grows in poor soils, which it quite quickly renders unfit for any other form of agriculture. As a result of the illegal nature of this crop, the income it generates is disproportionately high compared to that from legal food and cash crops. It is also a non-perishable product that can be sold from the home, into an ever certain market and on credit. In particular, it enables local populations to improve their living conditions and opens the way to initiatives by the peasants themselves.

Estimates of per-hectare cannabis income vary with soil type, rainfall, degree of irrigation, whether the cannabis is processed into chira (powder), period of sale and other factors. In addition, researchers give various estimates based on the same criteria. This is due to the fact that it is difficult to obtain reliable data from mistrustful peasant farmers. Income from the production of unprocessed kif varies, depending on sources, from 12,450 to 210,000 French francs per hectare.

(...) while cannabis is highly profitable on irrigated perimeters, it is much less so on pluvial lands, particularly in poor years (...) Many peasant farmers who likely cultivate only 1.5 ha to 3 ha (non irrigated) of cannabis, earn, in poor years, only 20,000 F to 40,000 F from that crop to support families of, in many cases, more than 10 persons.

(But) cannabis is 12 to 46 times more profitable than grain crops.

In 1997, based on production of 1,397 tonnes of hashish for the Rif as a whole, Pascual Moreno estimated the return for Moroccan producers (from the peasant farmer to the major traffickers) at $1.816 billion. Since a certain number of Moroccan traffickers operate outside the country, Moreno estimated the return to the Moroccan economy from cannabis profits at $2 billion, compared to $750 million for textile exports, $460 million from foreign investments and $1.26 billion for tourism. He also estimated the profits of European traffickers at $3 billion (apparently not including street sales).

However, since cannabis is more profitable than any other crop, peasant farmers tend to abandon food crops and to supply themselves from the market. As a result, there is a growing food shortage in the region.

Labrousse and Romero (2001) *op. cit.*: 12-15.

We know of no similar field work for Canada or Mexico. In addition, in Canada, climatic conditions have stimulated development of greenhouse and hydroponic crops, and the ratio of these cultivation methods to soil cultivation methods is not known.

We therefore use the following figures and data on cannabis production, cannabis and hashish imports and the monetary value of those drugs in the Canadian market, with considerable reservation and prudence.

According to the RCMP, "*the annual production of marijuana in Canada [is] at least in the 800 tonne range. This estimate appears overwhelming, however investigators believe it is quite conservative, and it is supported by intelligence and seizures of marijuana in plant and bulk forms.*"[12] The same figures are stated in the 1998 and 2002 reports. Note as well that, at 800 tonnes, Canadian production represents approximately 2.5% of global production, as stated by the UNDCP.

In its 1998-1999 annual report, the Observatoire géopolitique des drogues stated that, based on police sources, the value of the illegal drug market in Canada was $7 billion to $10 billion a year.[13] For 2001, the RCMP estimated that the market value

[12] Royal Canadian Mounted Police (2000), *op.cit.*

[13] World Geopolitics of Drugs (1999) *Annual Report 1998/1999.* Paris: WGD, page 178.

of all illegal drugs was $18 billion.[14] It is impossible to estimate the share of cannabis and hashish in that total. As we most often do not know the calculation basis for these estimates, they must also be prudently considered. As the Assistant Deputy Solicitor General stated in his appearance before the Committee, the calculation methods, based on the assumption that police and customs organizations seize 10% of all drugs, are unscientific and unreliable.[15] We nevertheless note an apparent inconsistency: the seeming stagnation of cannabis production at 800 tonnes and of hashish imports at 100 tonnes since 1998, as well as the declining prices of heroin and cocaine in a stable, even declining market (RCMP reports) are not consistent with the presumed doubling in total value of the drug market. As a result, in dealing with these various estimates of the quantity of drugs produced and monetary value of the drug market, the Committee often had the impression that, ultimately, no one really knew how big it was.

With regard to hashish, the RCMP believes that it

> *is easier to estimate the quantity of hashish entering the Canadian market annually than the quantity of any other illegal drug. Unlike what is observed for other drugs, such as cocaine and marijuana, that can be found across Canada and the United States, hashish use in North America is a localized phenomenon. The drug is very popular in Quebec, Ontario and the Atlantic Provinces, whereas demand is limited elsewhere in Canada and supply is sporadic at best in the northeastern United States. Consequently, Montreal organized criminal groups are specialized in the massive importing of hashish and have a monopoly on its distribution in bulk. In view of these facts and of information on multi-tonne hashish shipments seized in Canada and abroad and on those we know have entered the Canadian market, RCMP analysts estimate that at least 100 tonnes of the drug are imported into Canada each year.*[16]

Canada is also an in-transit country for drugs to the United States, and a significant portion of Canadian cannabis is intended for export, in particular to that country.

> *Smuggling of Canadian marihuana to the United States remains a source of concern for enforcement officials on both sides of the border. Though this activity is particularly noticeable on the British Columbia–U.S. border, it is not limited to that province. There is intelligence that the Hell's Angels in Quebec are supplying marihuana to their U.S. counterparts. Intelligence also indicates that there is marihuana smuggling activity across the Great Lakes. Despite the foregoing, few U.S. marihuana seizures can be traced back to Canada.*[17]

In 1999, Washington officials suggested that Canada could be placed on the list of countries suspected of a soft stance in the fight against drug production and trafficking.

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[14] Greater Toronto Area Combined Forces Special Unit (2002) *Fact Sheet - Heroin.* Available on line at: http://www.cfseu.org/heroin.html

[15] Mr. Paul Kennedy, Testimony before the Senate Special Committee on Illegal Drugs, June 10, 2002.

[16] *Ibid.*

[17] Royal Canadian Mounted Police (2000) *op. cit.*

More recently, officials of the Drug Enforcement Administration repeated that Canada's trafficking in cannabis toward the United States was a significant problem. One RCMP officer told a national newspaper that approximately 70% of marijuana grown in Canada wound up in the United States,[18] whereas, according to the 2002 report of the International Drug Control Agency, the figure was approximately 60%.[19] We have heard, and RCMP officers confirmed it, that cannabis from British Columbia has such a high value that it was traded on par with cocaine. According to those police officers specialized in the war on drugs, British Columbia's triple A quality cannabis is worth approximately $4,000 a pound in Canada and one kilogram of cocaine is currently worth US $11,000. However, while reference is made to this supposition in the annual report for 1999, it is not confirmed:

> *Canadian marihuana is sometimes used as a currency to purchase cocaine that is warehoused in the U.S.A. The exchange ratio is about three to one. Exchanges of one to one have been rumoured but never substantiated. Furthermore, such a rate of exchange does not make sound commercial sense considering that a kilo of cocaine sells for $13,000 U.S. (in lots of 50 kilos or more) while the wholesale price of a kilo of marihuana ranges around $6,000 or $8,000 U.S.*[20]

In its 2002 report, the RCMP merely mentions the fact that Canadian cannabis is exchanged for cocaine, without saying whether it is on an equal weights basis. We also note a certain inconsistency here as the price of a kilogram of cocaine is expressed in US dollars, whereas that of a kilogram of marijuana is expressed sometimes in Canadian dollars, at other times in US dollars.

British Columbia, Ontario and Quebec are the main producers in Canada. British Columbia's large production can be attributed in particular to suitable climatic conditions, but there are probably also sociocultural explanations, as the Pacific Coast mentality explains in part why cannabis appears to have taken root there to a greater extent.

Cannabis production in British Columbia appears to have increased significantly over the past 10 years, becoming, according to some analysts, one of the province's biggest industries in terms of monetary value, which some analysts set at $6 billion, whereas, according to some police officers, a conservative estimate would be $4 billion.[21] If marijuana sells for $225 an ounce, at 16 ounces a pound, British Columbia would appear to produce the equivalent of 550 tonnes of cannabis a year, more than two-thirds of the total amount of cannabis circulating in Canada.

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[18] National Post, May 17, 2002. The Committee is interested, and somewhat amused, to note that this article and a previous report on the Global television network on May 13, 2002, outlining the concerns of American representatives, followed the Committee's publication of its Discussion Paper.

[19] International Narcotics Control Board (2001) *Report of the International Narcotics Control Board for 2000.* Available on line at: http://www.incb.org.

[20] Royal Canadian Mounted Police (2000) *op. cit.*

[21] RCMP, private meeting.

Testifying in Richmond, B.C., on 14 May 2002, RCMP Superintendent Clapham said there were between 15,000 and 20,000 illegal cannabis production sites in British Columbia (figures from the Drug Enforcement Administration), while RCMP narcotics specialists, the next day, put the figure at 7,000. Regardless of the true number, the figures, as may be seen, must necessarily be considered very carefully.

As to growing methods, soil-based production is still the most popular, but the more sophisticated, hydroponic and aeroponic,[22] methods are expanding, particularly among criminal gangs that have the necessary infrastructure.

> *It is not uncommon to find indoor grow operations involving over 3,000 plants. Those figures vary considerably from one province to another, overall less than 10 percent of all marihuana seized in Canada was grown using hydroponics (a method of growing plants with the roots in nutrient mineral solutions rather than in soil). Indoor grow operations still rely mostly on soil-based organic cultivation but hydroponics is gaining in popularity. Despite the availability of highly sophisticated technologies designed to increase the yield even more, most growers do not bother to go to such lengths, preferring simpler and proven methods. Marihuana remains the most popular illicit drug, both in terms of consumption and trafficking. The annual marihuana production has been estimated to be around five million plants. Given the relatively low cost of setting up a grow operation and the considerable profits it generates, this activity has become increasingly attractive, even to otherwise law-abiding citizens. In the majority of regions, large operations are invariably run by outlaw motorcycle gangs, although Asian-based organizations have been making inroads in British Columbia and Alberta. More and more groups are using "crop sitters" and other go-betweens to tend their plantations. This hands-off approach makes it difficult for police to link the operation to the people who are actually behind it. Outdoor crops are often grown on Crown lands located in remote areas in order to reduce the risk of detection.*[23]

In all, with considerable reservations as to the validity of the data, the Committee submits the following:

	Marijuana	Hashish
	800 tonnes	100 tonnes
	approximately 50%	?
	National production (British Columbia, Ontario, Quebec) Imports: Mexico, Jamaica	Imports: Pakistan, Afghanistan, Morocco
	$2,000 to $4,000/pound	?
Retail value (ounce)	$225 to $250	$325 to $350

[22] Technique whereby the roots are suspended and sprayed regularly with water enriched with nutrient material, still very rare and the effectiveness of which remains to be proven. (Source: RCMP (2002)).

[23] RCMP, Drug Situation in Canada (1999) *op. cit.*

PROPERTIES OF CANNABIS

Classified in the pharmacopoeia as a hallucinogenic, psychodysleptic or psychotomimetic, cannabis is a disrupter or modulator, that is to say that it alters perceptions and emotions. Classified in the international conventions and national legislation as a narcotic, cannabis belongs to the class of psychotropics which comprises five major groups: depressants (alcohol, Valium), stimulants, minor (coffee, nicotine) and major (cocaine, amphetamines), disrupters (cannabis, LSD), antipsychotics and medication for mood disorders (lithium).

More than 460 known chemical constituents are present in cannabis.[24] Of that number, more than 60 are identified as cannabinoids. The main active ingredient in cannabis, which was identified by the team of Dr. Mechoulam in 1964,[25] is Δ^9-tetrahydrocannabinol, common called THC. Other cannabinoids present in Indian hemp include delta-8-tetrahydrocannabinol, cannabinol and cannabidiol, but they are present in small quantities and have no significant effect on behaviour, compared to Δ^9-THC,[26] although they can modulate the product's overall effect.[27] Cannabinol also has anti-inflammatory effects.

For a better understanding of the effects of cannabis discussed in the following chapters, we will first consider its pharmacological properties. Consequently, readers may skip this technical section without risk of not properly understanding the rest of the report. In the following paragraphs, we first discuss Δ^9THC levels and, second, specifically examine the pharmacological properties of that substance.

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[24] See in particular Grinspoon, L. and J.B. Bakalar (1997) *Marijuana. The Forbidden Medicine.* New Haven and London: Yale University Press; Clark P.A. (2000) "The ethics of medical marijuana: government restrictions vs. medical necessity", *Journal of Public Health Policy*, 21: 40-60; as well as Wheelock (2002) for the Senate Committee.

[25] Gaoni, Y. and R. Mechoulam (1964) "Isolation, structure and partial synthesis of an active constituent of hashish", *Journal of the American Chemistry Society*, 86: 1646-1647; and Mechoulam, R. and Y. Gaoni (1965) "A total synthesis of delta-9-tetrahydrocannabinol, the active constituent of hashish", *Journal of the American Chemistry Society*, 87: 3273-3275.

[26] Smith, D.E. (1998) "Review of the American Medical Association Council on Scientific Affairs Report on Medical Marijuana", *Journal of Psychoactive Drugs.* 30: 127-136; McKim W.A. (2000) "Cannabis", in McKim, W.A. (ed.) *Drugs and Behavior. An introduction to behavioral pharmacology.* Upper Saddle River: Prentice Hall.

[27] Ashton, C.H. (2001) "Pharmacology and effects of cannabis: a brief review", *British Journal of Psychiatry.* 178: 101-106.

Δ^9THC Concentrations

The Δ^9THC content of marijuana generally varies in natural growing conditions from 0.5 to 4%.[28] Δ^9THC content serves first as a basis for distinguishing the drug type of plant from the fibre type: permitted concentrations vary by country - in Canada, as in France, it is 0.3% for the fibre type. For more than a decade now, techniques for selecting powerful strains and cultivation (in greenhouses and hydroponically) have made it possible to achieve Δ^9THC concentrations of 15% or more. Δ^9THC content is also used to distinguish between various cannabis products and thus to determine their price: the content of sinsemilla, for example, generally varies between 7% and 14% and is more expensive than "regular" cannabis.

The question of Δ^9THC content, its variability, how it is determined and its effects has raised numerous issues. While all specialists agree that maximum active ingredient concentrations have increased over the past 20 years, opinion is divided on average concentrations in cannabis available on the market. Estimates vary as to the preponderance and consequences of Δ^9THC concentrations.

First, it should be emphasized that studies show that concentrations are subject to extreme variability, for a number of reasons. First, failing a control system at source, the Δ^9THC content of marijuana is estimated on the basis of police seizures. However, only a portion of the drug seized is analyzed for THC content,[29] and analyses are not all equally reliable, depending on how police or customs officials conducted the seizures and how the products were preserved and transported to the lab. In addition, between a seized product in clandestine lab or at a customs post and the product sold on the street, a number of changes can be made: tobacco, herbs and other products can be added to the gram of "pot" sold at a school which alter the nature of the drug and thus the quantity of active ingredient. This is even truer for hashish, as seen above in the example on processing in Morocco.

Second, since cannabis is a widespread illegal product, it is impossible to take a representative sample of the drug available on the market at a given time for analysis. Thus it is impossible to measure the difference between the Δ^9THC content of cannabis seized at the production or delivery site and that of cannabis used by individuals. And third, the active ingredient concentration varies with the geographical area of origin, climatic conditions and production conditions. Likely circulating in the

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[28] Huestis, M.A *et al.* (1992) "Characterization of the absorption phase of marijuana smoking", *Clinical Pharmacology and Therapeutics*, 52: 31-41.

[29] Note, for example, that, in the United States, there is no systematic method for measuring THC. As emphasized in a comparative analysis of changes in price of heroin, cocaine and marijuana, "Another problem is that the DEA does not test marijuana for THC content, so there is no marijuana counterpart to the pure grams reported for cocaine and heroin. The difficulty this causes is the STRIDE data provide no basis for adjusting price changes for marijuana's quality." Abt Associates (2001) *The Price of Illicit Drugs: 1981 through the Second Quarter of 2000.* Washington, DC. Report prepared for the Office on National Drug Control Policy.

market at any given time is a significant variety of cannabis products reflecting the diverse conditions in which they were produced. It follows that two samples seized in Vancouver in the same week could have very different concentrations, as would be the case for samples seized the same week in Vancouver, Montreal and St. John's.

Experts told the Committee that cannabis in the Canadian market was 700% more powerful than the same drug in the 1970s. Some suggested that the average Δ^9THC content of cannabis on the market is approximately 30%, compared to 3% to 4% in the 1970s.

> *The cannabis used today is up to 500 percent higher in THC - that is a range between five percent to 31 percent - than the cannabis most adults remember from the 1960s and 1970s.*[30]

In its 1999 annual report, the Royal Canadian Mounted Police estimated the average content of seizures at 6%.[31] In Quebec, the Montreal Police Department asserted that the THC content of cannabis is now 25%. In a private meeting with Committee members, RCMP narcotics experts in British Columbia emphasized that it is *impossible in the current state of affairs to determine the average content of cannabis in the country* or in a given province, in particular as a result of the extreme variability of seizures and methods of analysis. The officers who conduct the seizures do not always pay attention to the manner in which they preserve the product, such that it may lose its Δ^9THC content: heat, light and humidity affect the stability of cannabis. Lastly, the experts providing cannabis for therapeutic purposes whom we met said they kept various grades of cannabis, based in particular on Δ^9THC concentrations, and that, in certain cases, the products offered to patients reached concentrations of 27%.

The most exhaustive studies on changes in Δ^9THC levels in cannabis have been conducted in Australia, the Netherlands, France and the United States. They show, first, that more powerful products have appeared in the market beside the traditional forms of cannabis: "skunk" (a variety originating in the United States and the Netherlands), "super-skunk" and "pollen" (stamens of male plants). Canada has not lagged behind, with *BC Bud* and *Quebec Gold* in particular.

More specifically, the studies on Δ^9THC concentrations show similar trends:

- In Australia, a study by Wayne and Wendy on 31,000 seizures conducted between 1980 and 1997 shows that average content varied little over the period and was between 0,6 % and 13 %. Among other things, it appears that the main development has been a more significant selection than

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[30] Testimony of Mchael J. Boyd, Chair of the Drug Abuse Committee and Deputy Chief of the Toronto Police Service, for the Canadian Association of Chiefs of Police, Senate Special Committee on Illegal Drugs, Issue No. 14, page 74.

[31] Royal Canadian Mounted Police (1999), *Annual Report*.

previously of the parts of the plant with the highest concentrations.[32] The authors of this study make the following observation which applies equally to Canada:

A number of factors probably explain the persistence of the belief that the THC content of cannabis plants in Australia has increased 30 fold in the absence of any supporting data. First, defenders of the claim often point to reports of single samples with unusually high THC content tested by the police. At best, such samples indicate the maximum THC content that has been achieved (assuming that there were no errors in the test results) but they do not tell us what the THC content is in the cannabis that is typically used by consumers. Second, biases in the sampling of tested cannabis are amplified by the attention that the print and electronic media give to unusually potent samples, creating the false impression that cannabis with exceptionally high THC is the norm. Third, uncontested repetition of these assertions in the media has established them as "facts"; those who contest these claims are asked to prove that they are false rather than the (usually nameless) proponents being asked to provide evidence that they are true. Fourth, an increase in average THC content seems to explain an apparent increase in the number of cannabis users who experience problems as a consequence of their use.[33]

- In the Netherlands, the *Drug Information Monitoring System* of the Trimbos Institute has conducted various studies since 2000 on average Δ^9THC content. The local variety, *Nether-Weed*, contained an average of 8.6% THC in 2000 and 11.3% in 2001, whereas imported varieties were stable at approximately 5%. One of the reasons given for this difference was that the local variety was fresher and contained a lower ratio of cannabinol to Δ^9THC. In addition, *Nether-Weed* resembles sinsemilla, which comes from the unfertilized flowers of the female plant and is cultivated in greenhouses.
- In France, the Roques report referred to concentrations of up to 20% in the case of certain Dutch hydroponic varieties.[34] In its recent report, France's *Institut national de la santé et de la recherche médicale* notes a toxicological study conducted by Mura on the Δ^9THC concentrations of seizures since 1993. From 1993 to 1995, the average concentration was 5.5%, but approximately 8% since 1996, with spikes of up to 22%.[35] In 2000, 3% of marijuana samples analyzed contained Δ^9THC levels of more than 15%.
- Lastly, in the United States, data for 2000 show an average concentration of 6%, compared to 4.1% in 1997. In fact, recalling a study recently conducted in Mississippi, Dr. John Morgan noted:

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[32] Wayne, H. and S. Wendy (2000) "The THC content of cannabis in Australia: evidence and implications", *Australian and New Zealand Journal of Public Health*. 24: 503-508.

[33] *Ibid*, page 504.

[34] Roques, B. (1999) *La dangerosité des drogues*. Paris: Odile Jacob.

[35] INSERM (2001) *Cannabis: quels effets sur le comportement et la santé?* Paris: Les Éditions Inserm.

(...) in the midst of this furore over the remarkable increases in marijuana potency, it is interesting that the potency of the commercial crop sold in the United States has not varied enormously over the 30 years that potency has been assessed by the analysis of THC content in criminally seized marijuana. In fact, I recently looked at the report, which also comes from Mississippi, that the mean THC content of some 40,000 seizures since 1974 is about three percent. It has gone up in the last 10 years. In fact, in the last 10 years I believe the arithmetic mean is more than four percent while in the 10 years before that it was about 3.5 percent. [36]

The following table summarizes some of the data on a historical basis for certain countries.

Year analysed	Domestic Marijuana, USA			Sinsemilla, USA		
	= 3 %	= 5 %	= 9 %	= 3 %	= 5 %	= 9 %
	63%	25%	3%	93%	77%	49%
	63%	29%	6%	96%	85%	64%
	Average of 6.07% (DEA)			Average of 13,65% (DEA)		
	75%	48%	7%	93%	87%	35%
	80%	55%	4%	100%	99%	78%
	Between 0.6% and 13%					
	Average of 3,8%					
1999	Average of 6%			Not available		

(1) Source: Rigter H. and M. von Laar (2002) " Epidemiological Aspects of Cannabis Use", International Scientific Conference on Cannabis, Brussels, page 32

(2) Drug Enforcement Administration, http://www.usdoj.gov/dea/concern/marijuana.html

(3) Source: Hall, W. and W. Swift (2000) *op. cit.*, page 505

(4) Source: RCMP, Annual Report for 1999

In short, it appears that the main change has been in maximum concentrations obtained as a result of sophisticated cross-breeding and cultivation methods, whereas average concentrations have not significantly changed over the past 30 years.[37] What conclusion can be drawn from this? In the minds of some, if cannabis could still be called a "soft drug" in the 1970s, that is no longer the case today. Some are not reluctant to say it is a drug comparable to heroin or cocaine in its addictive power. As an example, the Canadian Police Association has issued the following opinion on the risks associated with cannabis.

Generally, marijuana and its derivative products are described [as soft drugs] to distance the drug from the recognized harm associated with other illegal drugs. This has been a successful yet dangerous approach

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[36] Dr. John Morgan, Professor at the City University of New York Medical School, testimony before the Senate Special Committee on Illegal Drugs, June 11, 2001, Issue No. 4, page 29.

[37] ElSohly, M.A., *et al.* (2000) "Potency trends of delta9-THC and other cannabinoids in confiscated marijuana from 1980-1997", *Journal of Forensic Sciences*, 45(1): 24-30.

and contributes to the misinformation, misunderstanding and increasing tolerance associated with marijuana use. Marijuana is a powerful drug with a variety of effects. (...) Marijuana use is associated with poor work and school performance and learning problems for younger users. Marijuana is internationally recognized as a gateway drug for other drug use. Risk factors for marijuana dependence are similar to those of other forms of drug abuse. [38]

Others associated the increase in demand for treatment for cannabis dependence with the increase in active ingredient concentrations. As the National Post reported:

The potent BC Bud, which has a THC content as high as 25% compared to the 2% typical in the 1970s, is also leading to health concerns in the United States. Admissions for marijuana drug treatment in Washington State now exceed the rate for treatment of alcoholism. Cannabis admissions in Cook County, Ill., have risen by 400% in the last year. [39]

Can it be said that cannabis has in fact become a "hard" drug like cocaine and heroin? Apart from the validity of the effects of cannabis itself as described by the Police Association, and as will be discussed in detail in the Chapter 7, that contention does not take into account the way in which the drug is used or the lack of knowledge of the effects of Δ^9THC concentrations. Studies on the ways in which cannabis is used, considered in Chapter 6, show that regular users appear to prefer medium to mild cannabis, and that they adjust their use to the strength of the drug. Interviews with individuals who use cannabis for medical purposes tend moreover to confirm this perception. More significantly, for lack of any specific studies on the question, the effects of higher Δ^9THC concentrations are simply not known. Lastly, as will be shown in the following section, the bio-availability of Δ^9THC, that is to say the proportion that is actually absorbed by the body following combustion, is highly variable. As emphasized in the report of the World Health Organization (WHO) on cannabis, considering all these factors, the actual quantity of THC absorbed by the cannabis user is difficult to estimate.[40] Ultimately, while it can be a legitimate preoccupation, the real issue of Δ^9THC content has more to do with our ability to control it and better know its effects, rather than making all kinds of alarmist and unfounded statements about its level.

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[38] Sergeant Dale Orban, Regina Police, at the Senate Committee hearing on May 28, 2001.

[39] National Post, May 17, 2002.

[40] World Health Organization (1997) *Cannabis: a health perspective and research agenda.* Geneva: WHO, 1997. On line at: www.who.org.

Pharmacokinetics [41]

Upon inhalation, and depending on the smoker's way of smoking and smoking experience, between 15% and 50% of the Δ^9THC present in the smoke is absorbed into the bloodstream. The percentage also depends on the Δ^9THC concentration in the smoked product. The substance is absorbed very quickly, and maximum blood concentrations are achieved in less than 15 minutes after the start of inhalation. The effects felt almost immediately after absorbing the smoke diminish gradually over the next 60 minutes and generally last a maximum of three hours after inhalation. In other words, THC levels in the blood plasma are highest immediately after absorption, whereas maximum effects are felt approximately 30 to 40 minutes later. The following table reproduced from the ISERM collective assessment, shows the time to appearance and duration of detection of cannabinoids in the blood.[42]

Concentration, time to appearance[1] and duration of detection[2] of cannabinoids in the blood after smoking a marijuana cigarette containing 15.8 mg or 33.8 mg of Δ^9THC

Component	Maximum concentration	Time to appearance of peak (hr)	Duration of detection (hr)
[illegible]	84.3 (50-129)[3]	0.14 (0.10-0.17)	7.3 (3-12)
	162.2 (76-267)[4]	0.14 (0.08-0.17)	12.5 (6-27)
[illegible]	6.7 (3.3-10.4)	0.25 (0.15-0.38)	4.5 (0.54-13)
	7.5 (3.8-16.0)	0.20 (0.15-0.25)	11.2 (2.2-27)
[illegible]	24.5 (15-54)	2.43 (0.8-4.0)	84.0 (48-168)
	54.0 (22-101)	1.35 (0.54-2.21)	152.0 (72-168)

(1) average interval between start of consumption and appearance of a concentration peak
(2) average interval between start of consumption and moment when lowest concentration of component is detected (> 0.5 mg/ml)
(3) cigarette containing 13.8 mg (1.75%) of Δ^9THC
(4) cigarette containing 33.8 mg (3.55%) of Δ^9THC

Bio-availability of Δ^9THC is slower and weaker when the drug is ingested orally (cookies, cakes, herbal teas): approximately 4% to 12%; although slower to be felt and different in quality, its effects are longer lasting.

In all, we do not know how the effects of THC (concentration) interact with personal factors (way of smoking, health status, alcoholism or medication). However, it is likely that the same THC concentration does not have the same effect on all smokers, which moreover tend to be confirmed by the plasticity of cannabis in the hormonal stream (see below).

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[41] This section is based to a large extent on the INSERM 2001 report as well as the European scientific report 2002 and the survey work done by Wheelock 2002 for the Committee.

[42] INSERM (2001) *Cannabis. Quels effets sur le comportement et la santé?* Paris: author, page 340.

Δ^9THC is highly lipophilic and is quickly distributed to all fatty tissues, including the brain. It is also characterized by an entero-hepatic cycle and renal reabsorption which results in persistent effects. In a driving simulator study, a significant linear correlation was found up to seven hours following absorption, particularly on the trajectory control.

Δ^9THC undergoes oxydative metabolism resulting in the production of various elements, in particular 11-hydroxy-tetrahydrocannabinol (11-OH Δ^9THC) a psychoactive metabolite which, transported by albumin, whereas Δ^9THC attaches mainly to lipoproteins, penetrates the brain more deeply than Δ^9THC; 8 β-hydroxy-Δ^9-tetrahydrocannabinol, potentially psychoactive but whose action would be negligible; and various other components not known for their psychoactive effects. In addition to the potentially psychoactive elements, cannabis contains approximately 200 derivatives of combustion and pyrolysis comparable to those found in tobacco, though some of which are highly carcinogenic and are more concentrated in cannabis smoke than tobacco smoke.

Cannabinoids are eliminated in various ways: through digestion, the kidneys and perspiration. Approximately 15% to 30% of Δ^9THC in the blood is eliminated in urine, 30% to 65% through stools. Because it binds strongly to tissues, Δ^9THC is eliminated slowly in urine: the urine of regular heavy users contains traces of Δ^9THC-COOH 27 days after they have last used cannabis.

Regular users metabolize Δ^9THC up to twice as fast as individuals who have never previously used the drug. One study showed, in particular, that the intravenous administration of one 5 mg dose of Δ^9THC resulted in higher blood levels in regular users than occasional users.[43]

Cannabinoids act on the body through the endogenous cannabinoid system, consisting of neurochemical substances (endogenous ligands) and specific receptors. The behavioural and central effects of cannabis are due to the agonistic action of its main ingredients (in particular Δ^9THC, exogenous cannabinoid), on the endogenous cannabinoid receptors (anandamide, 2-arachidonoylglycerol) present in the nervous tissues of the brain.

Although the chemical structure of Δ^9THC was identified by Mechoulam in 1964,[44] it wasn't until very recently that the characteristics and location of the endogenous cannabinoid system was determined.[45] Two types of cannabinoid receptors have been isolated: CB1 in 1990[46] and CB2 in 1993.[47] CB1 is mainly expressed in the

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[43] Cited in INSERM (2001) *op. cit.*, page 148.

[44] Guoli and Mechoulam (1964) *op. cit.*

[45] Devane, W.A. *et al.* (1992) "Isolation and structure of a brain constituent that binds to the cannabinoid receptor", *Science*, 258 (5090): 1946-1949.

[46] Matsuda, L.A. *et al.* (1990) "Structure of a cannabinoid receptor and functional expression of the cloned DNA", *Nature*, 346(6284) 5561-564.

central and peripheral nervous system. CB2 is expressed essentially in the cells of the immune system. It follows from this distribution that CB1 is essentially involved in psychotropic effects and CB2 in immunomodulatory effects.

The main endocannabinoids are arachidonoylethanolamide (also called anandamide - a word derived from Sanskrit, literally meaning congratulated) and 2-arachidonoylglycerol (2-AG). These are the only two endogenous molecules known to be capable of binding to cannabinoids receptors CB1 and CB2 and replicating the pharmacological and behavioural effects of Δ^9THC. Anandamide levels in the brain are comparable to those of other neurotransmitters such as dopamine and serotonine. The highest levels corresponding to high CB1 density areas, that is to say the hippocampus, striatum, the cerebellum and the cortex. Like anandamide, 2-AG reproduces all the behavioural effects of Δ^9THC or anandamide, but its action is less powerful.

The CB1 receptors are among the most abundant neuronal receptors in the central nervous system, and their distribution correlates remarkably with the behavioural effects of cannabinoids on memory, sensory perception and control of movements, as shown in the table below.

Location of CB1 receptors in the CNS and correlated pharmacological effects [48]

Structures	Marking	Physiological consequences	References
			Herkenham et al., 1990
	+		Herkenham, 1992
	+		Tsou et al., 1998, 1999
	++	Cognitive effects	Katona et al., 1999
	++	Locomotive effects	Rinaldi-Carmona et al.,
	++	Cognitive effects (short-term memory inhibition), antiepileptic action	1996 Matsuda et al., 1990, 1993 Hohmann, 1999
	+	Endocrine and antinociceptive effects	Marsicano and Lutz, 1999 Westlake et al., 1994
	-		
	-		
	-		
	-		
	+	Antinociceptive effects	
	-		
	-		

[47] Munro, S. *et al.* (1993) "Molecular characterization of a peripheral receptor for cannabinoids", *Nature*, 365: 61-65. Note that a recent scientific conference of the National Institute on Drug Abuse in the United States reported on the work of researchers on the hypothesis that there are additional receptors and other ligands. To our knowledge, the latter have not yet been formally identified in the research setting.

[48] Table reproduced from INSERM (2001), *op. cit.*, page 298.

Structures	Marking	Physiological consequences	References
Bridged nuclei	–		
Brainstem	–	No lethal dose, no acute mortality	
Cerebellum	++	Motor effects (balance)	

++: abundant marking; +: intermediate marking; –: little or no marking.

This concentration of CB1 receptors largely explains the effects of Δ^9THC. Intense expression of CB1 receptors in the basal nucleus and molecular layer of the cerebellum is thus consistent with the inhibiting effects of cannabinoids on psychomotor performance and motor coordination. Their expression in the cortex and hippocampus is consistent with the modulation of elementary forms of learning, explaining in particular the reversible deleterious effects on short-term memory and cognitive function. Their lack of marking in the brainstem explains the absence of acute toxicity or lethal doses of cannabis derivatives. The CB1 receptors in the thalamocortical system participate in the sensory disturbances and analgesic properties of cannabis. Similarly, the presence of receptors in the periaqueductal area and the dorsal horn of the spinal cord contribute to its antinociceptive power.

We also note that the CB1 receptors do not merely inhibit brain function. As a result of circuit effects, cannabinoids can stimulate certain neuron populations, in particular dopaminergic cells in the mesolimbic pathway. Together with the observation that prolonged treatment with cannabis (at doses corresponding to the equivalent of 575 cannabis cigarettes a day!) appears to induce lasting adaptive changes to the central nervous system and to the positive relationship between cannabinoids and stress hormones (corticotrophine), this explains the difficulties (irritability, sleep disorders and so on) observed in regular users when they have stopped using cannabis. We return to this issue in the Chapter 7 in the discussion on cannabis tolerance and dependence.

Lastly, recent works suggest there are significant interindividual variations in the effects of cannabinoids depending on sex steroid hormones in men and women: it appears that the effects of exogenous and endogenous cannabinoids can be modulated by the hormonal state of each individual and that, in exchange, the CB1 receptors and endocannabinoids are able to regulate hormonal activity.

As was observed in the WHO report in 1997, various research questions remain unanswered, in particular how and to what extent cannabis use alters the endogenous cannabinoid and what the relationship is between blood plasma cannabinoid levels and induced behavioural effects.

CONCLUSIONS

In conclusion, the Committee makes the following findings:

Conclusions of Chapter 5

- The size of the cannabis market is estimated at 800 tonnes a year.
- The size of the national production has significantly increased, and it is estimated that 50% of cannabis available is now produced in the country.
- The main producer provinces are British Columbia, Ontario and Quebec.
- Estimates of the monetary value of the cannabis market are unreliable. For example, if 400 tons are grown yearly in Canada, at a street value of $225 per ounce, the total value of the Canadian production would be less than $6 billion per year, less than the often quoted value of the BC market alone.
- An unknown proportion of national production is exported to the United States.
- A portion of production is controlled by organized crime elements.

- THC is the main active ingredient of cannabis; in its natural state, cannabis contains between 0.5% and 3% THC.
- Sophisticated growing methods and genetic progress have made it possible to increase THC content in recent years, but it is impossible to estimate the average content of cannabis available in the market; it is reasonable to consider that content varies between 6% and 31%.
- THC is fat soluble and readily spreads in the innervated tissues of the brain; it reaches a peak in the blood plasma in less than nine minutes and falls to approximately 5% after one hour.
- The body is slow to eliminate THC and inactive THC metabolites can be detected in urine up to 27 days after use in the case of regular users.
- Psychoactive effects generally last two to three hours and as many as five to seven hours after use.

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