The Facts About THC and Other Active Substances in Cannabis
The Union for the abolition of cannabis prohibition is an independent, non-commercial foundation, established after the first Cannabis Tribunal in The Hague in December, 2008. For two days, scientists, activists, entrepreneurs, consumers and politicians discussed the future of Dutch cannabis policy. Not a single political party or organization appeared prepared to come up with convincing arguments for the present prohibition on cannabis.

The VOC’s goal is to come to a reasonable and responsible cannabis policy in The Netherlands in order to promote public health, and combat criminality.
Contents:

Introduction
1) Cannabis and cannabinoids
2) THC and CBD - a complex relationship
3) "Strong weed"
4) The Garretsen Report: alibi for increased penalties
5) The Di Forti research - Cannabis and schizophrenia?
6) Cannabis and vulnerable groups
7) Testing for active substances: how and what?
8) Why prohibition doesn't work
'Classifying cannabis with a THC content above 15% with hard drugs is nothing more than a diversionary maneuver that serves no purpose. We have only one problem in The Netherlands, and that's the prohibition of cannabis. Because of that, criminals have free reign, and the quality of cannabis,- however expressed - cannot be controlled.'

Hans van Duijn, former chairman of the Dutch Police Bond, now active the for Union for the abolition of cannabis prohibition (VOC), and Law Enforcement Against Prohibition (LEAP)
Introduction

The government wants to move cannabis products with a THC content of more than 15% to List 1 of the Opium Law, and thereby, declare it a hard drug.

This regulation is without scientific basis. It will not lead to less-problematic cannabis use, but instead to a considerable stimulus for the illegal circuit. Moreover, it is practically unfeasible as long as growing cannabis is prohibited. Ultimately, the regulation takes an ax to the root of our drug policy; - the successful separation between cannabis on the one side, and hard drugs such as heroin and cocaine on the other side will disappear.

In this memorandum you will find information about THC, and other active substances in the cannabis plant. It will be clear that the THC percentage alone is inadequate to determine the effect and the "strength" of cannabis products. Due to the complex working of cannabis, it's a question of whether or not "strong" is a usable term anyway.

The idea that prohibitive regulations ensure less, or less problematic use is pervasive, but incorrect. The prohibition of cannabis with more than 15% THC will not solve the real problem of problematic cannabis use with a specific group, - especially young consumers. Much more effective is adequate educational advice, and use of recent scientific insights about the role of CBD in the working of cannabis.

Just as earlier with the "weed pass", the government is principally threatening to give an impulse to the black market by setting a maximum limit on one or more of the active ingredients in cannabis. It's up to Parliament to prevent the government from taking this misstep.
Overview of a number of cannabinoids and their specific efficacy and effect.

Note: The partitions do not correspond to the proportions of the cannabinoids.
1) Cannabis and cannabinoids

Cannabis has been used in our country certainly for 4200 years because of its psychoactive properties. In April, 2012, *De Volkskrant* reported about an archaeological find during the construction of the Hanzelijn railway in the small village of Hattemerbroek. In a grave from the Stone Age, the archaeologists came across a 4200-year-old supply of cannabis. 'The Dutch weed was probably used medicinally for its pain-relieving effects, just as is happening again these days', according to the reporter.

So far, 483 different chemical compounds have been identified in the cannabis plant. 85 of them are the so-called cannabinoids. The most well-known of these cannabinoids is THC, or rather, Δ⁹-tetrahydrocannabinol. It wasn't until 1964 that THC was isolated for the first time by the Israeli professor Raphael Mechoulam, one of the great pioneers of modern cannabis research.

The workings of THC were described as follows in the report *Rankings of Drugs* (National Institute for Public Health and Environment, (RIVM) 2009):

>'THC influences various neurotransmitters and neuromodulators. An increased regional cerebral blood transmission is observed, namely in the brain regions that correlate with the user's subjective experiences. Effects are a feeling of relaxation and good spirits, an enhanced sensory awareness, and heightened social activity. After smoking, the biological availability of THC is 10 to 25%, after eating it's only 6%.'

Research into the various cannabinoids and their specific effects and mutual cohesion is still in the kindergarten stages. This is largely to blame on the world-wide prohibition of the cannabis plant. In the meantime, it *is* certain that the ultimate effect is determined by the combined action of the various active substances.
Figure 2.10 Average THC percentage in cannabis products since 2000

Dutch weed

Imported weed

Imported hash

THC and cannabidiol (CBD)       Dutch weed       Imported hash

Source: DIMS, Trimbos Institute

2) THC and CBD - a complex relationship

The role that CBD (cannabidiol) plays appears to have been seriously underestimated until now. CBD curbs the working of THC, and has a dampening effect on anxiety and other negative feelings. Recent Australian research on CBD shows surprising results with the prevention and treatment of Alzheimers. On February 6th, 2013, De Telegraaf reported: 'Neurologists involved with the research announced that the substance cannabidiol has properties which are beneficial for the brain, and have the possibility to combat memory loss.'

From the research conducted by the Trimbos Institute, it appears that most of the cannabis produced locally contains (very) little cannabidiol. In the report by the Garretsen Commission - on which the government is basing its intentions - it's emphasized that the discussion about THC is one-sided:

'The one-sided attention given to the THC content of cannabis ignores the fact that from scientific findings it appears that the working of THC is possibly influenced by another cannabinoid; - cannabidiol (CBD). There are indications that CBD buffers some of the effects of THC, such as acute psychotic symptoms, anxiety and deterioration of memory. It appears that the ratio between THC and CBD plays a role with regards to the measure of health risks involved with cannabis.'

In April 2012, the Trimbos report THC, CBD and the effects on health from weed and hash: recent insights was published. The conclusion of this extensive literature study is clear: there is no scientific proof for the assumption that cannabis with a high THC content is riskier or more damaging than cannabis with less THC. A number of conclusions from this report:

'THC is a substance of relatively little toxicity. It hardly causes any physical damage. From the literature at hand about the toxicity of CBD, it can be concluded that this material is less toxic than THC.'

'Due to the lack of relevant scientific data is it impossible at the moment to make a judgment about possible differences in toxicity between hash and weed. Also, no research has been done from which a limiting standard for THC can be determined. In other words, a prognosis cannot be made concerning what concentration of THC in cannabis is (extra) harmful.'

'Very little research has been done into the effects of cannabis where the variety of cannabis, or the composition in terms of THC and CBD with regards to recreational use has specifically been investigated.'

'It is not known whether cannabis with a higher THC content and/or a low CBD content is related to the earlier onslaught of a first psychosis, or if the course of the illness is further worsened than with other forms of cannabis.'
'It is being suggested more often in the literature that the use of cannabis has acute and lasting deleterious consequences for psychic health. The research relates primarily to psychotic symptoms, anxiety and depression, diminished cognitive functions, and the tendency towards misuse and dependency. Frequent use of cannabis allegedly increases the chance of these negative effects. One would quickly conclude that weed with a high THC content would certainly be more harmful than weed with a lower THC content. The fact is, however, that this also has barely been researched. With the exception of one investigation by Di Forti c.s., no studies have been done in which the use of different types of cannabis in patients with a psychotic disturbance has been looked into (Di Forti e.a., 2009).'}
Coincidentally or not, Di Forti's research is also the only source named in the report by the Garretsen Commission in connection with possible extra risks from "strong weed". In Chapter 5, more can be found about this study. The most recent Yearly Report by the National Drug Monitor announces the following about THC and CBD:

'The average THC content in Dutch weed fell from 20 to 16% between 2004 and 2007, and has stabilized at this level in the years since. In 2011 the average percentage of THC in Dutch weed was 16.5%.'

'The percentage of THC in imported hash stood at 14%, and fluctuated in the years before between 11% in 2000 and 19% in 2010. In 2011, 75% of the Dutch weed analyzed and 43% of the imported hash contained more than 15% THC.'

'Dutch weed contains relatively little or no cannabidiol (CBD) (average 0.3% in 2011), - a substance for which there are indications that it counters some of undesirable effects of THC, like acute psychotic symptoms and anxiety. Imported hash contains more CBD (6.7% in 2011), and the possibility exists that, because of this, it is less risky to health than Dutch weed.'

Summing up: A satisfactorily high CBD percentage is at least as important as a high THC percentage. In the medical marijuana dispensaries in the United States, both percentages are stated on the packaging of cannabis products. Often, the instructions for use also contain percentages of other active materials such as cannabinol (CBN), and cannabichromine (CBC). In this manner, well-informed patients and consumers can accurately choose the kind of cannabis best suited for them.

Such a system is impossible in the Netherlands as long as growing cannabis remains completely forbidden. Also, after the cultivation of cannabis is regulated, the distribution of reliable and understandable information about its composition should be at the forefront, not the arbitrary maximization of one or more active substances.
3) "Strong weed"

From the previous quotations, it appears that the THC content is insufficient to determine the effect or the "strength" of weed. Additionally, it is shown in theory and in practice that consumers adapt the dosage to the desired effect. Els Borst-Eilers, Minister of Health from 1994 to 2002 already declared in 2001 that a high THC content is 'actually a positive quality standard'. 'You don't have to smoke as much to achieve the same result'.

The same conclusion is drawn in the study *Strong Weed - marijuana-smoking behavior, harm, and cannabis dependency* (Bonger Institute, UvA, 2004). Consumers adjust their smoking behavior if a particular sort is stronger than they're used to:

'If the users being studied would encounter stronger cannabis than they were accustomed to, most would adapt their use by putting less cannabis in a joint, taking fewer puffs and/or inhaling less deeply.'
In its Plan for Action to Suppress Cannabis (2004,) the second cabinet term headed by Jan Peter Balkenende acknowledges:

'On the basis of available data, the CAM (Coordination point for the Assessment and Monitoring of New Drugs) concludes that, in general, hardly any extra risks are connected to the use of cannabis with a higher THC content.'

It's worth the trouble to read this Plan for Action to Suppress Cannabis again. The accountable ministers of Health, Welfare and Sport, of Justice, and of Internal Affairs report:

'At the same time, the sharp rise in the THC content in cannabis is evident. Therefore the government has also decided to give a new impulse to the repressive policy (preventing use, and in particular, problematic use). Additionally, further research is being requested about health risks of cannabis use in relation to psychic disturbances and about the risks of the use of cannabis with a high THC content.

If, from research, it appears that the use of cannabis with a high THC content leads to serious health risks, then the government will consider the consequences for administrative and criminal policies. If the risks are comparable with those from hard drugs, placing cannabis varieties with a very high THC content on List 1 of the Opium Law can be the outcome.'

'The poorly-underpinned 'problemizing' of the used of 'strong' cannabis has also left its mark in The Netherlands. It has lead to social consternation, and concerned parents. Next to stories that the production of cannabis is allegedly dominated by organized crime, the THC myth about Dutch weed provided the political basis for the unadulterated punitive policy of western cannabis production in The Netherlands.'

Adriaan Jansen, economist and cannabis market researcher,

Cannabis-growing in The Lowlands (2008)

Nine years later, is it true that cannabis with a high THC content leads to "serious health risks comparable with those associated with hard drugs"? The answer is no. That is crystal clear from the report THC, CBD and the effects on health from weed and hash: recent insights, and from the most recent yearly report by the National Drug Monitor:

'The role of the relatively high concentration of THC in Dutch weed in the appearance of acute and chronic (health) problems is not certain. ( . . ) The use of cannabis with a higher THC content does not automatically lead to more acute and long-term consequences'.

Note that the present ministers of Health, Welfare and Sport, of Justice, and of Internal Affairs again acknowledge this themselves in their letter from February 14th, 2012 to the government regarding the THC restrictions:
'A high THC content, respective to alcohol content, is in itself no contributing factor to addiction, and this interim connection is still no proof of a possible causal relationship between addiction and the content of active materials in the substance. Addiction is a complex disorder in which diverse factors play a role, such as genetic predisposition, personality, certain social and environmental factors, etc. It is unclear if more people have become addicted to cannabis as a result of a higher THC content because there are no repeated comparable estimates at hand of the number of cannabis addicts in the population.'

Although there is thus no proof for the presupposition that cannabis with a high THC content is extra-addictive, harmful, or risky, the government still sets forth its plans for maximization:

'The cabinet takes the advice of the Expert Commission on the Listing Systems in the Opium Law to set a limiting value for cannabis. The expert commission recognizes that longitudinal scientific research that will require several years is necessary for the underpinning of a marginal value. The government considers it unadvisable to wait for such research.'

Also, on balance, in the Impact Analysis of Heavy Cannabis on List 1 (July, 2012) that was sent to the House last March 26th, it's obvious that possible extra risks are only based on assumptions:

'It's suspected that a higher THC content can lead to more health- and addiction problems, although there is not yet any clear scientific proof to support that. It is true that the number of requests for help has increased with the rise in the THC percentage in Dutch cannabis. But it is unknown whether or not this is related to a higher THC percentage, the chemical composition of cannabis, more attention being paid to the harmful consequences of cannabis, or to the larger offer of treatment possibilities for problems with cannabis.'

**Rankings of drugs**  
*A comparison of the harmfulness of drugs, National Institute for Public Health and Environment (RIVM 2009)*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Drug</th>
<th>Score</th>
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<tr>
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<tr>
<td>02</td>
<td>Heroin</td>
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<td>04</td>
<td>Tobacco</td>
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<td></td>
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<tr>
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<td>06</td>
<td>Methamphetamine</td>
<td>(3.73)</td>
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<td>07</td>
<td>Methadone</td>
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<td>08</td>
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</tr>
<tr>
<td>09</td>
<td>GHB</td>
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<td>10</td>
<td>Benzodiazepine</td>
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<td><strong>Cannabis</strong></td>
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<td>12</td>
<td>Buprenorphine</td>
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<td>Methylphenidate</td>
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<td>16</td>
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<td>LSD</td>
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<td>19</td>
<td>Magic Mushrooms</td>
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</tbody>
</table>

**Figure 1.** Rising ratings for the total harm given in the first (score 1) and second round (score 2). Ratings are sorted on score 2 and based on the score for the social harm per user. **Source:** Rankings of Drugs, National Institute for Public Health and Environment (RIVM, 2009)
4) The Garretsen Report: alibi for increased penalties

*Drugs in Lijsten* (Drugs in Lists), the report from the Expert Commission on the Problematic Listing in the Opium Law, better known as the Garretsen Commission appeared on June 24th, 2011. Six of the 66 pages are devoted to cannabis. The commission concludes that there is no definite proof that the use of cannabis with a high THC content is extra harmful or risky. The exception is an English investigation by Di Forti from 2009. Chapter 5 contains an analysis of this research.

Although no scientific basis exists for the enforcement of a maximum THC content, also not according to the Garretsen Commission itself, they *still* recommend such a statutory limitation. In the reactions from experts on Garretsen's advice, two critical points keep reappearing: maximization ignores the complex working of cannabis, and is practically impossible without the regulation of cannabis-growing.

Sociologist Nicole Maalsté, who has done (field) research into cannabis for more than 20 years, sees the report as a step towards the regulation of growing:

'From research, it appears that there is not much of a difference in effect between cannabis that has a high THC content, and cannabis that has a lower THC content. I consider this as a step towards regulation. The benefit to be gained from this is that we again look at cannabis from a health standpoint. And that is necessary. You have no control on the quality of a product in an illegal market.'

In the meantime, it's become obvious that the THC regulation has absolutely nothing to do with public health. In their letter dated February 14th, 2012, the ministers involved declare that the regulation is simply meant to increase the penalty for growing cannabis:

'It's common knowledge that a considerable portion of Dutch cannabis-growing is destined for foreign countries. The criminality associated with it, and the criminal profits that this illegal growing and export produce are to such a degree that the threat of punishment from Article 11 of the Opium Law is no longer deemed appropriate. By placing cannabis with a THC content of 15% or more on List 1 of the Opium Law, the threat of substantially higher penalties will apply. ( . . . ) The expectation is that this change will have a generally preventative effect, since the criminal entrepreneur will assume a substantially higher risk.'

The fundamentals of our drug policy - the separation of the natural product cannabis on one side, and hard drugs like heroin and cocaine on the other side - will disappear if this legal alteration is actually carried through. And that, while a deadly dose of cannabis is impossible. It's not without a reason that the National Institute for Public Health and Environment (RIVM) placed cannabis in 11th place in its Ranking of Drugs by harmfulness, and alcohol and tobacco in 3rd and 4th place respectively.
Peter Cohen (Haarlem, 1942) studied experimental social psychology and sociology at the University of Amsterdam. Since 1980 he has specialized in drugs, and drug policy. He has carried out a large number of research projects, and was director of the Amsterdam Drug Research Program at the University of Amsterdam, and later at the Center for Drug Research (CEDRO).

Cohen has advised various governments and organizations, among others, the establishment of the Observatoire de Drogues in the European Union, and the Global Cocaine Project of the World Health Organization (WHO). In 1999, he published his dissertation "Drugs as a social construct". In 1993, Cohen received the prestigious Lindesmith Award from the American Drug Policy Foundation. He is still a much-requested speaker at conferences about drugs and drug policy world-wide.

5) The Di Forti research - Cannabis and schizophrenia?

The Garretsen Commision concludes that there is no conclusive evidence that cannabis with a high THC content is extra harmful. The only exception is allegedly an English investigation from 2009 by Marta Di Forti et al, High-potency cannabis and the risk of psychosis. On pages 45-46 of Drugs in lists, the report by the Garretsen Commission, we read:

'Epidemiological research has shown that cannabis use during adolescence is a risk factor for the occurrence of schizophrenia at a later age. Cannabis with a high THC content appears to form a higher risk than cannabis with a low THC content [28: Di Forti et al, 2009].'

This is by far the most alarming conclusion from the Garretsen Report. The only source, - the Di Forti research, - cannot hold up to scientific scrutiny, however. The cannabis that the
research group used was never tested for the content of active substances. This appears from an analysis by Peter Cohen, internationally recognized drug- and drug policy expert. His article *Less thc, more public health?* was published in October, 2011 in the scientific journal *Drugs and Alcohol Today*. The Dutch version is posted on the VOC website: http://tinyurl.com/Cohen-THC. Below are a number of citations worth reading from this article:

**Peter Cohen: Less thc, more public health?**

'Let's assume that what the commission says is correct; that cannabis use during adolescence is a risk for the development of schizophrenia symptoms at a later age. Under that assumption is the question whether or not that risk factor is 'the use of cannabis', or 'the use of strong cannabis'? Or put another way, would that risk for those who are more sensitive to it occur more frequently, or only occur if 'strong' cannabis is consumed?

Di Forti has tried to say something sensible about that question with a sample of people in London who were admitted for treatment for complaints of schizophrenia. She asked the patients which kind of cannabis they preferred, and found that 78% preferred 'skunk'. The strength of the 'skunk' these people used was not measured in the investigation, but estimates of the strength of 'skunk' in London do exist. According to Di Forti, that strength is estimated at between 12 and 18%. The suggestion that strong weed increases the chance for schizophrenia has less strength than that by comparison.

We have many problems with regards to validity here. If the patients have a preference for 'skunk', we still know very little, since the cannabis the patients used was not tested a single time. In reality, how often did the patients find 'skunk', and what is 'skunk' precisely in the English context?

'From a strategic standpoint, the 15% regulation is perhaps a very smart decision. [Minister of Health] Edith Schippers is well aware that her wish to get a grip on the composition and quality of weed is only possible with a regulated "back door" [to the coffeeshops]. ( . . . ) It's bizarre that the advice from experts to regulate the back door is so frenetically ignored with a false appeal upon international agreements. The new regulations drive many marijuana smokers into the hands of street dealers and to illegal house addresses. That is alarming.'

**Nicole Maalsté, NRC.Next, October 10th, 2011**

'Ultimately, when it comes to enforcement, it must be noted whether or not coffeeshop customers who don't want to switch to cannabis with a lower THC content will buy their cannabis outside the coffeeshop.'

**Drugs in Lists, report by the Garretsen Commission, June, 2011**

Still more important is the question of how we should interpret the pre-supposed use of strong weed by the patients. Is their preference for stronger weed a consequence of their complaints, or are their complaints the result of stronger weed? Di Forti et al immediately draw the conclusion that the observed relationship must be viewed as a causal connection. 'The chance
of schizophrenia is higher with the use of stronger weed', but they claim this assertion without producing any serious evidence to back it up.

If a connection lies between weed use and schizophrenia - which is unsure on the face of it - the question that follows is whether or not the schizophrenia caused the weed use, or was the result of it. It's also not been addressed whether or not the schizophrenia allegedly had anything to do with the cannabis (strong, or not) to an important measure, or that cannabis is only part of a cluster of determinants.

Since there is hardly any theory about the etiology [science of causes, ed.] of schizophrenia, and because schizophrenia is so difficult to define, it remains very difficult to know if 'cannabis' has a role, and if so, an important, or only a side role, and if this role is the same with every patient.

The finding by Di Forti et al that people with schizophrenic problems more often express a preference for strong weed than a 'normal' control group seems to say a lot, but it doesn't. It's hard to say how representative this is for local 'cannabis consumers' from the 'control group' assembled via newspapers and internet from the same neighborhoods in London in the Di Forti research.

Putting together truly representative national or local samplings is very costly, and thus often not possible, as can be understood. But it makes the use of 'control groups' a precarious business because it cannot be known to what extent the results from such a sampling can be repeated.

The present state of knowledge concerning a possible relationship between 'cannabis' and 'schizophrenia' is in any case far below the standard required to hang a 15%-policy on it.

The dealer: no age limit, no separation of markets, no closing hours, and no control (photo: ChooseLifeProject)
EenVandaag [television news program], March 20th, 2013: adolescents in particular rush into drug-dealing due to the weed pass

Jamale Boukhettame, youth worker at Wel.kom Venlo regarding problem adolescents: 'We can hardly handle it at the moment. Actually, young people are extremely busy earning a little money for themselves. You have an age limit at the coffeeshops, but not on the street. So you also notice that teenagers are coming in contact with drugs at a younger age, and using drugs earlier, too. It's not only dealing that concerns us, but also that the very young are getting in trouble.'

Hans Gilissen, Mayor of Venray: 'We've lost them. That's very painful and frustrating, because in the past years we've invested a lot of energy in getting and keeping this precise target group on the right path. And the statistics were also indicating that it was succeeding quite well. So you understand: not only do you have a very concerned mayor, but also a bit of a frustrated mayor.'

The entire report [in Dutch]:
http://regio.eenvandaag.nl/archief/45201/overlast_door_wietpas_verdubbeld

6) Cannabis and vulnerable groups

The misuse of cannabis by vulnerable groups of people, primarily teens, has correctly been given more attention in the last few years. Investigations in this area invariably show that cannabis misuse by these groups is only one of a broad scale of problematic behavior patterns and circumstances. Also, there is almost always the matter of a problematic home situation, abuse of alcohol and other drugs, skipping school, and delinquency.

The discovery that brain development continues till age 21 reinforces the necessity of prevention and counseling about the risks of using cannabis, alcohol, and other drugs at an early age. There is still a world to conquer in this area. It's at least as important to realize that effectively combating the illegal circuit, - where all kinds of drugs are for sale to any age group, - goes hand in hand with the coffeeshop policy.

When there is an insufficient number of permitted points of sale for adults, the illegal circuit increases in magnitude proportionally, with the result that under-age youths can buy drugs easier. The illegal circuit in the south of The Netherlands got an enormous stimulus with the implementation of the weed pass on May 1st, 2012. Dealers still do a good business in the south, where the coffeeshops are still being forced to refuse foreigners. Mostly, young, and even very young dealers fill the gap in the market, aided by digital services like WhatsApp and Twitter.

If only - popularly-speaking - "limp weed" can be bought in the coffeeshops, then the illegal circuit will again be the laughing third party. Precisely that vulnerable group of under-aged teens will have a broader access to drugs. Not only cannabis, but also heroin, GHB, speed, meth, XTC and cocaine. The dealer doesn't recognize any age limit, and certainly no "separation of markets"; - that's exactly what the coffeeshop was intended for.
A second vulnerable group consists of people with a genetic predisposition ('inherited tendency') for the development of psychic illness or psychosis. A section of this group uses cannabis as self-medication. For another part, cannabis intensifies the symptoms. Intensive cannabis use can trigger psychotic phenomenon and episodes. Just as diabetes patients must avoid sugar, these people can do better to stay away from cannabis. It would be senseless to ban sugar because it can be very dangerous for diabetes patients.

The development of cannabis varieties with more diversity in the content of active substances can help to lessen and prevent problematic cannabis use. It is very important to have an insight into the composition of the cannabis and the working of the various cannabinoids, certainly for people who use cannabis as a self-medication. Also, young, inexperienced cannabis consumers can be better informed about this matter. The coffeeshops can fill an important role here.

[Article Panic in the coffeeshop, NRC.Next, April 10th, 2013]

7) Testing for active substances: how and what?

Testing for active materials in cannabis can be accomplished by different means. Gas chromatography, thin-layer chromatography, and light spectrum analyses are the most-used methods. What is missing is a standardized testing method. The Trimbos Institute has employed various methods in the past decades. Because of this, their accuracy is questionable; - certainly since all the results are compared interdependently.

Belgian research into percentages of active substances in cannabis seems to produce (much) lower values. The Belgian newspaper Het Laatste Nieuws reported on Oct. 29th, 2012:

'The average yearly THC concentration in confiscated plant cannabis in the period 2002-2011 varied between 7.78% (2006), and 13.82% (2003). In 2011, it amounted to 9.76 percent. Also for hash, the variations through the years are limited (from 9.3 percent in 2006 to 16 percent in 2005). With hash, the average THC concentrations are a little higher than with plant cannabis (averaging 11.8 percent in 2012).'

Note that it's about the same sorts of cannabis, the same growing methods, and the same know-how as in The Netherlands. In some cases, it's even Dutch growers who've grown the cannabis on Belgian soil. And still, the THC percentages come out considerably lower (an average mean of thirty percent). With the enforcement of such a sweeping change in the law, complete clarity and agreement should exist regarding accuracy and standardized test methods. In this case, there is no mention of it.

Even if there would be standardized test method, big practical problems remain. Different parts of the same plant contain deviating amounts of THC, and the THC content strongly depends on the manner of drying and storing. The error margin would have to be very large when determining the percentage in order to rule out miscalculations. Such a miscalculation can mean the closure of the coffeeshop, or prosecution for hard drugs production.
The judicial branch will have to invest still *more* time in cannabis, while not one less gram of strong weed will be smoked, and the illegal circuit profits by definition. This time, not only in the three southern provinces such as with the weed pass, but in all of The Netherlands.

Experience shows us that the illegal circuit is best counteracted by a sufficient selection of controlled, bona fide coffeeshops. It's not without good reason the municipal council of Utrecht is calling for expanding the number of coffeeshops. *Spitsnieuws* reported on April 5th, 2013: 'The council calls the further decrease of the shops undesirable, because the illegal sale increases. That considered, Utrecht would rather have more coffeeshops.'

8) **Why prohibition doesn't work**

*The vision of Wim van den Brink, Professor in addiction studies*

Prof. Doctor Wim van den Brink has a long history of service in the field of addiction care. he has been a professor of addiction research at the Academic Medical Center Amsterdam since 1992, and director of the *Amsterdam Institute for Addiction Research* since 1995. Van den Brink is the editor of the *Addiction Handbook*, and two scientific journals in the field of addiction. In the *Eindhovens Daglad*, he expressed sharp criticism on the maximization of the THC percentage:

'The question is: how are you going to keep tabs on it? Take a sample from every joint? Moreover, you have the danger that producers will reduce the THC content to 14.9%. It's essential that the general composition of weed consists of THC and cannabinol. Perhaps it's the combination of both that can cause a psychosis in the user, for example.'
'Additionally, it appears from research that due to the increase in the THC content, a large group uses less, and that weed smokers inhale less deeply, usually because they don't like it anymore. The popularity of that heavy weed decreases. Otherwise, the THC percentage would certainly be higher.'

'It's maintained that the use of strong cannabis can give rise to psychoses, and in the worst case, to schizophrenia. Next to that, it's allegedly more quickly addictive. But neither of these hypotheses has ever been scientifically proved. The fact that more young people come knocking at the addiction care center can also have to do with the fact that it enjoys increasing notoriety.'

'It also varies per person. The one can handle alcohol just fine, while the other becomes heavily addicted. But it doesn't help to lower the THC content, because then they will just smoke more, and inhale deeper.'

'If you place cannabis in the hard drugs category, that's not to say that the market for it will directly disappear. In other words: weed growing will be pulled into illegality, more so than is now the case, with all the accompanying criminality surrounding it.'

'Ironically, the countries surrounding us are following the Dutch permissive policy more and more, but now, it looks like the Netherlands is making a reversal.'

[Comments, NRC April 11th, 2013: A quasi-prohibition of weed, with, below:]

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