File No. 65381

C A N A D A

IN THE PROVINCIAL COURT OF BRITISH COLUMBIA

(BEFORE THE HONOURABLE JUDGE F. HOWARD)

SURREY, B.C.

1997 JANUARY 27

REGINA

V

VICTOR EUGENE CAINE

PROCEEDINGS AT

CHARTER APPLICATION

APPEARANCES:

T. DOHM/A.CHAN/M.HEWITT, for the Federal Crown

J. CONROY, for the Defence

K. TRUEMAN/K.HILLEN Court recorders

S. HUTCHINSON, Transcriber

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1997 JANUARY 27

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. DOHM: Your Honour, recalling the case of Regina v. Caine. Mr. Connolly appears. He is present. He just stepped out a moment ago, just before you came into the room, with (indiscernible). Mr. Conroy's present and he's now speaking to Dr. Connolly.

THE COURT: All right.

MR. CONROY: Good morning, Your Honour.

THE COURT: Good morning.

MR. CONROY: Sorry for the delay. There's a bit of a mix up in terms of the experts and we were going to start off and use the time to qualify Dr. Morgan but Dr. Connolly is here, who you may recall was the witness that we were in the middle of last time, which was some time ago. I should say, I have with me Pamela Smith-Gander on this occasion and so we're ready to proceed.

THE COURT: Mr. Caine is present?

MR. CONROY: Mr. Caine is present.

THE COURT: All right.

MR. CONROY: And so we're ready to continue, if you are.

THE COURT: All right.

MR. CONROY: I'll also just indicate for the record that I have Dr. Morgan, who's our next expert, who's also present in the courtroom.

THE COURT: Do you have any objection to him remaining in the courtroom during this testimony?

MR. DOHM: We'd prefer that he not be present during the cross examination of Dr. Connolly but other than that we have no difficulty, Your Honour.

THE COURT: Is there any reason why you would wish one of your witnesses present—

MR. CONROY: At the moment, I don't see a problem with that. I just want him here so that he hears all of the evidence given in chief by certainly my expert so that if there's a question in terms of commenting on it, that he can do so.

THE COURT: All right.

ALLEN KNOX CONNOLLY, recalled, re-sworn, testifies as follows:

THE CLERK: Please state your full name and spell your last name for the record.

A Allen Knox Connolly, C-o-n-n-o-l-l-y.

THE COURT: You can have a seat, sir, if you wish.

A Thank you.

EXAMINATION IN CHIEF BY MR. CONROY continuing:

Q Dr. Connolly, when we finished off last time, which was some time ago, March of this—of 1996, we were talking about whether marihuana use or the effects of marihuana was much of a problem during the time that you were working in the public health field and primarily in relation to drugs and drug use. You told us that it appears to be a problem from the perspective of a number of people but from the treater perspective, the person that was involved in the treatment level, that you didn't see it as a problem. Do you recall that?

A Yes. That's correct. And since my clinical work was significantly, initially, primarily with younger people, that was the population that was experimenting with the drug and where most of the use was and most of the concern expressed by the larger community was. So, I

thought I had a fair view of what types of problems those younger people and other poly drug, multiple drug users brought to the various clinic settings that I worked at. As well as you might recall, I had positions of responsibility for programs throughout the province. So, even though I ceased to be primarily involved clinically for a few years, I also was overseeing programs and became aware of what was presenting and most of the portals of concern were drug abuse and drug misuse was being managed.

Q Was there any impact or effect on your ability—or did you find that there was any impact or effect on your ability to talk about the problem and educate the public about the problem or lack of problem, from what whatever you—what your perspective was?

A Well, looking back on my medical career, I've continued to—I've used generally an educative approach and so have always tried to maintain a fairly responsible, biased view, so that I could be helpful both with individual patients, their families and devote a lot of time to public presentations.

I was working for—initially for a foundation, a private institution funded by government that had an educative as well as a research responsibility, The Narcotics Addiction Foundation and later, the alcohol end of the Alcohol and Drug Commission and because—and was an employee and a civil servant of the provincial government. I always felt, as I became more informed, as I became—saw the dialogue and the arguments around the issue, the scientific evidence as it was unfolding, the history of the development of laws and practices around the management of people with problems related to drug misuse, I felt restrained

to—to the balant (phonetic) view. I would say, because of the nature of my positions and the way I was perceived by others, I would generally tend to be one of the people that would more likely to present information in a, I thought, a responsible way but it was definitely restrained by the political climate of the people that were superior to me. So, that was always a bit of concern for me at a personal level because it went to issues of integrity.

Q During that period which was, as I recall, up to 1981 roughly, you mentioned a number of scientists or people who have done studies in the field that were brought to your attention during that period. One person you mentioned was Kalanski (phonetic). I believe others were Campbell, Nahas (phonetic), Tennant. Do these names sound familiar to you?

A Yes. The—because of the nature of the climate at the time, the type of papers that would get the most currency in the field would be—were—were papers that,

for some reason, caught the public imagination, sometimes the media attention but also because of the very real concerns that they expressed.

If you take the example of Campbell, an article I can remember appearing in Lancid (phonetic) about the brain damage issue and that's still resonates—his work still resonates through most of the discussion that I've seen in the review of literature in the scientific documents since.

That was a very controversial paper. It turned out that most of the people, the small cohort that he had, people that had been multiple drug users, they'd used other drugs, they showed brain damage and that has never been affirmed. He used (indiscernible) cephalography, a certain technique, for demonstrating the shape and size of the brain. It was a fairly intrusive, uncomfortable behaviour, not—and there have been significant techniques developed since then and I don't think any of the more sophisticated, rarefied techniques have ever substantiated that work.

Kalanski and Moore also, I can remember being on Jack Webster's program many times and this was one that had a lot of currency with showing a group of adolescents that had very severe psychological, psychiatric problems, according to this report. Well, that certainly had—wasn't, in my clinical experience, the case but it was one of those papers that got a lot of currency in the field and in the general public, that I think tend to overweigh the balance in concern about the drug that I didn't think has proved to be justified and hasn't been justified, I don't think, to this day.

So, those were papers that—Nahas, the work around immunology, the effect on the developing fetus, these were—these were scientists that were responsible people that were developing information that was still controversial and could not be confirmed by others but those papers all became sort of the biased of the educational mechanisms and what the general public was subjected to. So, the general public, generally, has been misinformed about this drug because of those scientific biases that were maybe not as balanced as others might have thought they should be. But they were the ones that seemed to take hold and influence the attitude of the general public and educators, in fact.

Q So, after becoming familiar or hearing about these studies, I take it back then you would initially accept them for what they said and you've told us that—

A Yes. I—I mean, I had to be—

Q -- since appearing here last time—

A I was a physician first and I had to be concerned about the well-being of the patients and the people that I develop. I had to be very concerned about the position that I might promulgate in educational opportunities and so I would always have to state that these were findings that had not yet been confirmed but we had—and so, in

my clinical work, I would be always looking for some soft evidence of those difficulties and I was also advising patients that were—who—the few that I saw that had concerns about their use of that drug. I would use those papers too as an indication of why I should—they should be concerned and I should be concerned and they should maybe do something about their use.

Q Did you ever see anything in your clinical treatment practice to confirm any of the things that you'd read about or heard about in these studies?

A I certainly—in very rare instances, I had to deal with patients that had significant panic—panic attacks. Some of them that were initially attributed to their use of marihuana. That was one that—but some of the others, the evidence for brain damage, I never saw any example of and over the time, I never became aware of anybody that had had significant birth defects as a result of that, for example.

The notion that the population using marihuana, because of their reduced immunology or their compromised immunology would develop other infectious diseases that one would expect, I never saw anything in the literature, epidemiologically or in my own clinical experience that indicated that.

Q Since that time, you've endeavoured to try and get familiar with all the more current writings on the subject. Have you seen anything in what you've been able to go over so far that, in any way, tends to support or confirm any of these studies that you were familiar with many years ago?

A Well, since we last met, I've had the opportunity and the time to read almost everything that is before the court, presented as exhibits in evidence and I just feel more—I feel a little better personally about sitting here and giving evidence based on that review of that evidence because it's become more refined, some of the work and I think some of the concerns that we had in the early 70's have been put to rest. There are still—in the literature, it's not—it's unequivocal in the most recent Australian commission, which I think is very substantial but if I—if you compare it to what the Ledane Commission, which was done in the early—very early 70's under the auspices of the Canadian government, a lot of the conclusions are very similar and in spite of thousands of new scientific papers.

It also seems to me that there's a larger group of responsible physicians and scientists and academicians that are seriously challenging, in their work,

some of those positions taken by government around law and some of the concerns that we had as health consequences have been challenged. I think this is a good thing because I think the appropriate information should be made available to the public because I think people that get the right information are just generally healthier and I, as a physician, am always concerned about misinformation and its role and its contribution to bad health.

Q Would you classify some of those studies that you were familiar with years ago as being misinformation, based on your knowledge today or would you say that they are still valid?

A I wouldn't want to single out any study but I think collectively, the way that information was put out for the—because of the political climate at the time, the attitude of government has become more rigid in some ways around this issue over time. The law has made some significant changes in the 70's but basically, there's been a hiatus and I don't think the law or the government has kept up to date with the changing scientific evidence and the clinical evidence about the problems associated with marihuana.

Q You now work in a clinical setting with primarily seriously mental ill people, is that right?

A That's correct. My—I work as a psychiatric physician, exclusively in psychiatric clinics that deal with the chronically mentally ill under the auspices of the Greater Vancouver Mental Health Services. So, I spend my day almost exclusively seeing patients now and dialoguing with patients and their families.

Q And we've been told that one of the vulnerable groups in relation to use of marihuana are people with mental illnesses. Do you see that in your practice? Do you see them with marihuana problems?

A Well, the type of people that we see in our clinic would be—one clinic is on Commercial Drive and it has always serviced, if you wish, the lower socioeconomic levels of the Vancouver community and that seems to be over the past—one of the lower economic class, tends to have a higher incidence of the use because there's more sort of street involvement, more—and so we have to be concerned about that use. We—there's a whole initiative that's developed called Dual Diagnosis where you look at both substance abuse in the population as well as their primary psychiatric illnesses and marihuana is used. So, there's not a lot of research into the amount of use. I think in the population that I see, particularly younger males, significant use of it. They don't have the money

to do it on a very constant basis but I know some patients that almost do it daily.

I do still, as a part of my educative and medical responsibility, tell them that I think the use of marihuana destabilizes—has a possibility of destabilizing them if they're stable. I think it can undercut the effectiveness of the other drugs and I still use that if I—because I think that's a healthy approach to take with my patient.

There isn't hard evidence in the scientific literature for that. The discussion of toxic psychosis, cannabis psychosis and all of that, I think, is over exaggerated in the literature and I think generally responsible scientists, generally minimize the role of this drug but with people with a predisposition, I think this drug, in higher dosages, can have a destabilizing influence on their mental status and their psychiatric stability.

Q Now, to what extent—or what is the nature or extent of that problem? Are you able to—

A Well, even—

Q -- qualify that in any way for us?

A I guess my—to conclude fairly, even where I'm seeing exclusively psychiatric patients where there's a significant amount of marihuana use, we're not dealing very often with somebody who's destabilized because of that use. Sometimes that's hard to ascertain but clearly, compared to the amount that's being used as reported by my patients, the instability even in that vulnerable population is fairly minimal.

Q And you've been doing this now since about 1988, I think you said?

A No. Since 1982, actually. So, --

Q `82. So, over that whole period of time—

A Yeah. I've now had a fairly significant experience with a large psychiatric population.

Q Now, if you go back to your experiences prior to 1982, that whole period that you told us about when you were dealing with the poly drug users at the downtown mental health clinic and medical clinic and at The House and places like that, in that period, can you give us—you told us that, from some people's perspective, there was a problem but from your perspective as a treater, you didn't see marihuana use as a problem but can you compare—look back and tell us what you thought the

nature or scope of the problem was from a health treater perspective at that time? Was it a significant problem or wasn't it, from your perspective?

A The biggest problem that I initially saw was the problem within families because of high levels of concern about their young people in the very early 70's. So, I very quickly, as a general—I was still in general practice and it was in dealing with those concerned families that I became sort of involved, entrapped by the field for the next ten years of my life.

So, the concern that they would have, the breakdown in the appropriate type of communication between parents and their children, I think, was one of the biggest liabilities of the use. I very rarely saw people that, because of the sole use of marihuana had significant difficulties. Certainly there were a whole cohort of young people that used it heavily at the time and dissociated themselves from, you know, following the path of the community I think we prefer young people to take through the educational system in productive careers. They delayed that but I think they only delayed that. I don't think there's many that have been permanently compromised by their experimentation of marihuana during those years.

Unfortunately, and I continue to be appalled by this, the government and its mechanisms through the criminal justice system, continue to seem to need to use the heavy weight of criminal law to deal with what I see as a minor health problem and this is something that continues to concern me. In those days, the major problem a lot these people did have that I would see would be the fact that they'd become involved with the criminal justice system and that, very seriously, changed the course of their life significantly and over time, they would have problems as a result of that, not as a result of their experimentation or use or possession of marihuana.

Q All right. So, you had the perspective of the parent or the politician or perhaps others taking the view that it was a significant problem but as I understand you, as the health care worker in the field, could you identify any specific danger, from a health danger, any threatened or actual danger, or injury, to these people at that time, that you were—that you would say was of a serious kind or a serious nature that might effect all the inhabitants of Canada, for example?

A No. I can't think of having any clinical experience of significance with patients because of their use of the drug but certainly the—there was this continued notion in the larger medical community around—and the larger community that there were dangers that might manifest themselves down the line. But over the last twenty years, I don't think that we have any real evidence that those concerns have been translated into fact.

Q So, as a health care worker, do you see marihuana or marihuana use today, based on all of your experiences, including your current experiences, as a pressing and substantial risk to the public?

A I think there are certain risks with the use of drug or the high dose use and frequent use of the drug, depending upon the pattern of use. So, in certain patterns of use, there might be—there are certain risks associated with that and I don't want to minimize those. I think those—some of those risks are continually being elaborated by the medical scientific community and challenged. But I don't think there's anything in my medical experience, either in my reading or in my clinical practise, that has given me to change my mind that the major problem with marihuana is the consequences of the criminalization of people that have chosen to experiment with the drug or use the drug. I think that continues to be the major problem, not the minor health effects that some people experience because of certain patterns of use or individual susceptibility because of their unique biochemistry.

Q Now, one other specific area I wanted you to touch on and again, to draw on your experiences from back in the 60's and 70's and 80's, and this is this gateway or stepping stone theory that we hear of, that marihuana leads to other drugs. Can you comment on that for us, in terms of your experiences?

A It's another indication of the game's the same but the names have changed. We used to call it in the 60's, in the literature, the progression hypothesis. The stepping stone theory was another one that is used to describe it and now we have the gateway hypothesis and I was just looking at a provincial study of high schools and they were referring to it in the paper as a gate—marihuana as a gateway drug. So, here you have, in a responsible attempt to look at how to deal with young people and their association with it, there's already a built in predicated bias. Those of you who read drug literature, you know there's certain loaded words.

The progression hypothesis which suggested that through—through certain types of—the use of this drug would lead to the use of other illicit drugs and lead to what were referred to euphemistically as

hard—hard—the harder drugs, i.e., heroin, hallucinogenics such as LSD, PCP, the use of amphetamines and other drugs that do have more significant consequences for users because of the nature and the type of use and there's just no evidence that that's the case.

There are some—there are some things that you can say about the gateway. A person that uses marihuana frequently and heavily, a young person, is more likely to have experimented with other drugs. They're more likely to get into alcohol. You know, use alcohol in association with it but I don't think there's any indication that the kind of concern that was very, very large in the public mind because of their information, that people that started to use marihuana—if my child—daughter started to use it, soon I would be a Davies Street or a Seymour Street or a Hastings Street intravenous using prostitute or criminal. I mean, that was one of the big scare techniques that was used initially.

At the same—and I categorized the progression hypothesis, the notion of a gateway drug, as just one of these myths that continues to be used inappropriately as a way of educating people about the drug and its effects.

Q So, did the misinformation that you talked about earlier, did that—

A Yes, and this—

Q -- play a role in it?

A Yeah. The progression hypothesis, I thought, was one of the major myths at the time and continues to seem to be, even though they've changed the name of the hypothesis now to gateway or stepping stone theory.

Q So, if an individual came in to you, say on 4th Avenue in the old days and was provided with information about marihuana, was that information—would that information be what you thought was the truth, or would that information be what you felt politically you had to provide?

A One of the things that I would look at would—I would look at their personalities, the associations, where they were going to pick up the drug. One of the problems was because of the criminalization was that people that dealt with marihuana sometimes would have hashish or other substance or availability of other substance, i.e., LSD. So, I was very concerned about that and I would certainly get that in my inquiry.

The other thing that I would look at is whether there was any notion about—because I did see that a dividing line was primarily the use of a needle and that the problematic problems of drug use of some of these people who did move through marihuana, LSD, into the use of speed and opiates, was that decision to use a needle. I saw that as a defining act but the—generally, I would not use the progression hypothesis as an educative device with the younger people because they just knew it wasn't true. They were watching hundreds of their friends using marihuana and none of them going on to any

progressive use of even LSD, in some instances and—but certainly not onto speed or intravenous use of speed or others. But there was

just—there was a period of time when experimentation was the rule.

The other concern I had as an educator is that we did have concerns about the use of those harder drugs. They just—if they knew and discredited the information that educators and others provided them about marihuana, they then looked at these same people who were giving them information about other harder drugs, that might have had serious consequences for them and they didn't believe them either because they knew what they said about marihuana wasn't necessarily true.

So, I was always attempting to try and tease that out so that young people were appropriately informed and would have concern about any progression to other drugs and that there would be information in place that would prevent that progression.

Q You told us that back in those days, you did feel restrained, to some degree, in terms of the information that you could put out. Do you feel any such restraint today in relation to this topic?

A I don't feel the same restraint today, perhaps because I'm older and also, I don't feel the same restraint today because I've had a chance to review the information that's before the court. So, I feel much more comfortable with the position that I'm taking.

I also feel better because I have seen a conservatism in the area of drug treatment and drug management and drug education as sort of congealed in the 80's and I don't think it's changed to this date. I was delight—I'm delighted, looking back at my life, to have had the opportunity of interfaced with the community at a time when it seemed to have a lot more concern for the common wheel and a lot more concern about honesty and credible information. I thought that evolution that started in the 70's and continued, would have continued into the 80's. Unfortunately, it's my opinion that there's been a much more conservative rigidification of the approach to this whole issue. And the scientific community seems

to—medical community, continues to do its best but there seems to be a real fire wall between getting the appropriate information out to educators, out to governments and out to the criminal justice system so that they could perhaps bring their practise more in line, which I think would be appropriate for the wise consideration and health of Canadians.

Q So, based on all of your experiences, how would you categorize the issue today, the nature and scope of it as a health problem? Would you categorize it as a serious health problem or a minor health problem, or how would you categorize it today, based on all of your experience?

A I think in—in the area of public health and I think there's some evidence before the court from the—significant evidence from the court (sic) in regards to the British Columbia experience, this is—this is a health concern that has very low priority and there's nothing in my reading or in my clinical experience to dissuade me from that point of view.

Q Based on your knowledge of the facilities, medical and health care facilities available throughout British Columbia, do we have adequate facilities for someone to deal with this type of problem, or do we—is it a matter that you think we need the assistance of the federal government, in terms of the health issue, the health—

MR. DOHM: I have to object to that, Your Honour. It's an impossible question for the witness to answer. He's being asked a very complicated question on the division of power. He's being asked a legal question.

MR. CONROY: I would expect that a doctor working in the Province of British Columbia would have some sense of whether it's a matter that we have adequate health facilities to deal with in the province or whether they feel they need the assistance of the federal government in one way, shape or form. I can imagine certain types of epidemics in someone in which the medical profession would say yes, we really need the help of Ottawa. I want to know if that's the case here. I mean, how else are we going to determine where we draw the line between the federal government's responsibilities and the provincial government's responsibilities in relation to health if it doesn't come from the practitioners in the field?

THE COURT: I don't—I think we might be in trouble if you had to draw the line every single—on every single issue, based on all of the circumstances attending every particular issue as opposed to based on principles as to when the federal and provincial relationships merge or go their separate ways.

MR. CONROY: It seems to me we have to have some evidence on it. We can't just leave it—

THE COURT: Putting the evidence in front of, is one thing. Asking this particular witness to draw the conclusions from that evidence, in terms of political involvement of various levels of government—

MR. CONROY: No, no. I'm only asking him—here he is, practising as a doctor and he's told us what he thinks of the nature of the problem and he's now told us that he

thinks we have adequate health care facilities and so on to deal with it in the province. So, the question is—

THE COURT: There's your evidence.

MR. CONROY: I can maybe leave it at that but the question is, is does he think we need to call on the federal government for—I'm talking about assistance in terms of a health problem. I'm not asking him to tell me what he thinks the politicians think or anything like that but we have this medical—Canada medical assistance plan and we have all of these people in Ottawa who were involved in health and health issues and so I'm wondering if he thinks it's of such a nature that we have to get them involved in it.

MR. DOHM: Your Honour, with all respect to Dr. Connolly, the question has been answered by the Supreme Court of Canada in Regina v. Hauser (phonetic). The Supreme Court of Canada said unequivocally that the federal government has a role to play in this area. That, in my respectful submission to you, is the end of the issue as far as we are concerned. By we, I mean all of us here.

MR. CONROY: Well, I disagree with my friend on that. The Supreme Court of Canada, subsequent to Hauser, said that if they had an opportunity to reconsider Hauser they would say that this matter is not one involving peace, order and good government but criminal law. And one of the issues that seems to have been decided by the court in its most recent decision in R.J.R. McDonald, a tobacco advertising case, is that if the federal government has a role to play in relation to health, that it's health and its criminal law aspect or in its peace, order and good government aspect and as I understand that, in terms of peace, order and good government, they have said that they would reconsider Hauser because peace, order and good government would require something like an epidemic or some sort of major type of health problem affecting the dominion as a whole in a serious way. So, I'm trying to see if there's any evidence to suggest that, for one thing, here.

The also say that, in terms of the criminal law of power, that again it has to be a serious matter affecting public safety or public order or public health in a Canada wide sense for the federal government to get involved. So, I'm trying to determine what the evidence is to warrant the federal government being involved, if there is any because that's what they're doing at the moment and that's the very law that we're challenging.

So, surely we're entitled to try and explore what possible evidence is there to warrant the government—the federal government being involved in the first place. We say there isn't any.

THE COURT: Your question then—I had assumed that your question focused on whether or not the federal government needed to be involved on a practical level, either by providing resources or medical institutions.

MR. CONROY: Yes.

THE COURT: Is that what your question is about?

MR. CONROY: That's what I'm driving at. Is there—

THE COURT: Any difficulty with that? In other words, this doctor is a medical professional who deals with this particular field and is familiar with concepts or resources, funds, administration of the health

field—

MR. DOHM: Well, I'm not certain that this doctor has been qualified as a person capable to give evidence of the relationship between the federal government and the provincial government in the ways that monies are transferred from one level of government to another for health care and in various ways the different problems are attacked by different levels of government, including legislation such as that challenged, which consists of a prohibition, legislation promoting education and legislation which deals with treatment and with transfer of monies.

I just submit to Your Honour that you have not before you a witness who could assist on that, were it even an issue in the case.

MR. CONROY: Well, I'm just looking back to see your ruling in terms of qualifications and it's my recollection, because the witness had given evidence about his involvement back in the early days of being very involved in British Columbia and then being involved with them in Ottawa, in terms of the non medical use of drugs directorate and all the consultations and so on. So, he has quite a wealth of experience in terms of when the federal government thought it had an interest in the matter and was getting involved. Then he had this expertise in terms of approving funding and so on for

people who were doing experiments, trying to look into it.

So, my view is that he does have the experience. He's had the experience right up—at least until 1982 in that respect and he still continued to practise as a medical doctor, primarily maybe with mentally ill at this point but also mentally ill people who have used and abused drugs. So, the question is, does he think that there's a need to use the resources of the federal government in this area. Is the health problem of such a nature that he, as a health practitioner, feels that he has to make submissions or get the federal government involved to deal with this so-called problem.

THE COURT: All right. I'm far from satisfied that his expertise in terms—or experience in terms of dealing with funding and where the funds might come, qualify him to give opinion evidence upon the funding relationships between the federal and provincial governments and how those relationships operate. He has given evidence to the effect that this province is adequately looking after any particular problems that may arise, if indeed there are any, and it has the facilities to look after those problems. In my view, the question as to whether he sees any need for the involvement of the federal government, goes beyond his qualifications and is eliciting an opinion which, in my view, lacks any sort of general framework or factual underpinning, at this point in time.

In the absence of any evidence from any witness as to why, on a factual level, federal involvement is necessary, it seems to me you have already the evidence before the court. Your prime point is to establish that this province can look after this—

MR. CONROY: Yes.

THE COURT: -- on its own.

MR. CONROY: Yes.

THE COURT: I think, in a sense, you're already

established -- if that's your evidence that you're going to be arguing, that's already been elicited from this witness.

MR. CONROY: Yes. Very well.

THE COURT: I'm not going to allow the question that calls upon him to provide an opinion as to whether politically or constitutionally or even practically, the federal government needs to be involved.

MR. CONROY: Well, we did qualify him, I see it's at page 78 of the March 14th transcript, on policy issues relating to the control and regulation of legal and illicit drugs. I wonder if—and that's—after that it was health, education, both mental and physical. So, let me maybe put it to you this way, Doctor.

Q Based on your experience with policy issues, what you told us about before in relation to the period at least up to 1982, just maybe to refresh our memories, can you encapsulate for us the experience you had in relation to policy issues back then, in drug use?

A The issues around policy would be the—I was a physician and the clinical director of the Narcotics Addiction Foundation and was in constant dialogue with the people from the federal government about issues of concern. I was also on non medical use of drugs, several committees that looked at both funding

various—the federal government finding mechanisms to fund various programs of an educative and a therapeutic nature in the province. I also was involved in assessing, for the Medical Research Council, an agent of the federal government, certain types of research in this field. I myself wouldn't have been involved in sitting here today if it hadn't been for the involvement in the federal government because of their interest in the program that I was volunteering at as a physician.

I think it goes to the issue, in my mind, simply that the federal government, in my experience, has had a role to play both to fund programs that, at various provincial jurisdictions, they did not see as perhaps necessary or in their negotiations with the government. Saw it as a primary source for funding for some programs that were provincial in their scope. I did see the Ledane Commission, the federal government's involvement in that as providing one of the most significant documents in the field about research and the state of knowledge at the time of the early 70's. I don't think a provincial government would have taken on something as horrific as that.

I do see the misappropriation of resources from the criminal—in the criminal justice system from federal level. There's a lot of wastage, I think, because of the preoccupation with this particular drug and its

use—

MR. DOHM: Well, Your Honour, with respect—excuse me, Doctor. That last part about the criminal justice system, going beyond what the doctor sees, is clearly beyond both the question that my learned friend asked and it is beyond what Your Honour has indicated the witness can

answer. I'm tempted just to retain my seat and let him carry on in the interest of perhaps being briefer but—

THE COURT: You know, there's a great deal of material before me which I think, in the end, may be subject to arguments as to whether it—once viewed in the perspective of the entire case and the legal issues. Whether or not its admissible, although it's actually led before the court, I think that's just another way of approaching your tendency to perhaps wish to keep your seat and at the end of the day say this type of opinion was well beyond the expertise or not relevant to the issue. I can sit here and try and struggle through each issue as it arises but I have to tell you that I feel I'm operating in a bit of a vacuum, given the wealth of the material that has come in and the vagueness of how the issues are defined, at this point in time.

MR. DOHM: Well, we can—as long as we bear in mind that this is an argument based on an allegation that it's a principle of fundamental justice, that the federal government cannot legislate in this area unless they can demonstrate harm, as I understand my friend's argument, then—and with what Your Honour has conveyed to me in this most recent exchange, I will try to be more in my chair and less out of it.

THE COURT: I think you've been very good.

MR. CONROY: The position that we take is not simply that there has to be evidence of harm but that it has to meet the definition of criminal law as defined by the cases and that the legislation has to truly be criminal law and in its pith and substance, as they used to say, so that it's real criminal law, not just because the federal government thinks—or because the Americans want us to be involved in their war on drugs or because somebody misguidedly thinks that this is a serious problem.

There has to be some evidence to support that the federal government is justifiably exercising its legislative power and our position is that the evidence doesn't support that. And the cases say that there has to be—that criminal law isn't passed in a vacuum. That there has to be something there and the basis has to be public safety. And at one point my friend, I understood, was going to advance the driving and marihuana issue in relation to that issue. Public order was another head. Public health is the major one that we're faced with here and harm to others or to society as a whole by the conduct, if a person's, say smoking a marihuana cigarette or, in fact, what we're dealing with is simply possessing a marihuana cigarette.

So, this goes to the issue of public health under the definition of criminal law and whether or not this health issue is major or minor. And presumably it has to be major and of some significance before the federal government is warranted in exercising its criminal law power on a health issue because otherwise it falls within the provincial sphere.

Now, the doctor, as I understood his evidence, has said that from his perspective, both before and still today, the impact of the criminal law and the use of the criminal law is detrimental to health, from his—in his opinion as a health care worker. And that it causes more harm to health, that approach, than any health problems arising from the use of the drug itself. So, I'm simply exploring with him, I'm trying to determine the nature of the health problem and not so much whether it's nice to have the federal government put money in for us to do research and to check it out and so on, but whether or not it is a public health problem of significant dimension to warrant the federal government getting involved in the area.

Now, he may well have answered the question in saying he thought that we have adequate resources and facilities and so on to deal with the issue here in British Columbia. So, I'm prepared to leave it at that but it's the public health issue that I'm exploring, in terms of what evidence there is to support the federal government's position.

THE COURT: All right. With respect to the witness' last comments, which I believe the subject—specifically the subject of the objection, I thought they were going to be going in a direction of pointing out what harm might arise from the involvement of individuals in the criminal justice system in this area and I think that is a legitimate question to ask of this witness. If we're talking about how do we prevent a harm, we should at least canvass the notion of whether or not the solution isn't doing more harm than the original harm that we're trying to avoid, or whether it's doing any harm at all.

So, on a practical level, the impact of being involved in the criminal justice system for this witness' patients, I think is a legitimate question and I'll allow him to answer questions in that field.

MR. CONROY: All right.

Q Again, bearing in mind your involvement in policy issues and so on with the federal government in the past and your experience with people who've used or consumed marihuana and then have been dealt with by the criminal justice system, is it your view—what is your view in relation to the use of the criminal justice system vis a vis this so-called health problem?

A The consequences for individuals that use the drug, I think the—it's clear that the heavy sanctions against the

use of the drug in the criminal law, (A), are not a deterrence. I think there are some people that are probably deterred from the use because of the view that it's criminal activity but I think most of the literature, epidemiological literature suggests that young people, in their experimentation with this drug were not restrained by the fact that it was viewed as an illegal activity. In fact, there's even some suggestion that the—their—they say that as inappropriate and they had a general disdain for other issues of the law, that particular population, because of the—what they saw as inappropriate.

So, that's the first effect it had. It doesn't deter and it might even have some spill over effect into a general attitude of younger people towards the law and its mechanisms. That's been commented on in information before the court.

I think there's some evidence that certain types of drug use in certain populations, because it was illegal, increased—had an effect on the mental attitude of the young people who were using the drug such that they might be a little more anxious. They might increase the level of paranoid ideation as a result of the experimental use or the use of the drug. I don't think that's a big issue but it's certainly a contributing fact.

But I do think that the criminalization of it—and this is substantiated, I know, by the work of Erickson that's in the evidence before you, from a Canadian experience, a Canadian scientist at Addiction Research Foundation, a very responsible internationally recognized organization, that the—that falling a cropper of the law through the use of this drug and by getting a criminal charge and even a conviction and in some cases, incarceration, although that's not generally the rule but it used to be, that people's life is impacted. A young person's life, because of an experimental use of the drug, influenced by their peers and a certain social attitude, had long term consequences. And I think we've seen in the issue of education around tobacco, if you tell a young person not to smoke because they're going to die of cancer is twenty-five years, they say what's—that doesn't impact me. It doesn't impact them. To tell them that they might not be able—they might have restrictions of passport and travel when they're adult if they get a criminal conviction through their experimentation, I don't think that impacts them either but I think it has consequences for them that are life long.

So, I do agree with my medical colleagues when we sat on the Drug Dependency Committee of the British Columbia Medical Association in the early 70's and looked at illegal patterns of drug use, even for something as horrific as heroin use. I want to assure you that the physicians that I was sitting with on that committee had very strong beliefs about the negative consequences to the health and the community of heroin use. They said the major problem for the community at large was the response of the community for people that fell into patterns of use of that illegal drug and that their attitude was similar to that in regard to marihuana.

So, to this day, I think the criminalization of it through the criminal justice system, i.e., as a representative of the government in Canada and its laws is

a major problem with this drug and I think it is unhealthy because it creates a climate of misinformation, distrust, that does not allow for informed decision-making by people who are generally responsible in their decision making.

MR. CONROY: Thank you, Doctor. Answer any questions that my friend might have.

THE COURT: Do you wish to take the morning break at this time?

MR. HEWITT: That would be useful. I was going to ask for five minutes but it might be just as convenient to take the break.

THE COURT: Well, it's probably better to take the entire break.

MR. HEWITT: Yes.

THE COURT: All right. We'll stand down for fifteen minutes. If you can return after coffee. Thank you.

(WITNESS STOOD DOWN)

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RECONVENED)

MR. HEWITT: Recalling the Caine case, Your Honour.

ALLEN KNOX CONNOLLY, recalled, testifies as follows:

CROSS EXAMINATION BY MR. HEWITT:

Q Doctor, now you said in your evidence in chief that you are now up to speed on the literature since 1988, at least in terms of what we filed in evidence in this case?

A Yes. I would—I would confine that remark exclusively. I think if there's a lot of other information outside of this, then I'm not so familiar with that.

Q All right. So, you feel, to some extent, like you've caught up for the last ten years and caught up on the information that there's been in the studies in the last ten years?

A Yes. I feel comfortable with that.

Q Are there any significant changes in the literature, as far as you're concerned?

A I don't think—I think there are significant changes in the literature. As I mentioned, around the—some of the neurological investigations. There's been more sophisticated techniques and I think generally, in terms of probes of various neurotransmitters and the functioning of the brain, I think in my understanding in the neuro sciences, there's been exponential increase in the level of understanding of how the brain works and how chemicals work in the brain.

So, I think that, quite definitely, with that background, has probably influenced the sophistication of the research that's been done in the field and I think that's—you know, has advance our understanding significantly.

I think there are—there continue to be inquiries into a variety of the issues that were raised in the 70's and questions. So, I think there has been an advance and a refinement of the literature.

Q Okay. So, overall there's an advancement, is that fair?

A Yes. I think very definitely.

Q All right, and to some extent, some of the issues have been narrowed down because some of them are more resolved than they were ten, fifteen years ago?

A Right. And I think in some instances, it's a little like an onion. You take off one skin of certain levels of—you look at the anatomy and then you look at the cellular morphology and then you look at the biochemistry of the cell and then you look at the molecular levels of the interaction of chemicals deep within, structures within the cell and I think that's what we're seeing. Is that they're probing deeper and deeper with more refined instruments into the understanding.

My concern, as I've mentioned, is that they seem to always couch it. Even though there's clarification, they still couch it in the same generalities too often that they used in the past.

Q Is it fair to say there's still substantial uncertainty in terms of identifying all the potential risks of marihuana use?

A Uncertainty, I think, would be putting the emphasis on the wrong syllable. If we had the same level of concern

around other drugs that are used as—in treatment and medications that are available to doctors, I'd be a lot happier. I do think the uncertainty has been—the view is a lot clearer. There is a lot less uncertainty as a result of what's been done in the last ten years.

Q All right, but uncertainty persists to this day, in terms of absolute certainty, obviously?

A Yes. I think—and I think a lot of the uncertainty has to do with certain positions that have been taken by certain individuals in both the scientific and medical and larger governmental education committee and they stay locked into the same points of view and have not been maybe influenced by the clarity and the refinement of the scientific evidence. There are still responsible scientists that say that we need to continue to study certain dimensions of this drug longer before we can make—give—exonerate it. But I think there's not going to be new information that develops that's suddenly going to reveal this is a dangerous drug that poses a substantial health problem.

Q In terms of the list of potential affects that have been considered over the years, although some of those have been discounted, some of those still exist as potential problems and some of them haven't been resolved one way or the other clearly, is that fair?

A Yes. I think that's true and I think the best evidence before the court of that is when you look at the very responsible findings of one part of the—what is called the Australian Commission. I forget the—Hall. If you look into the Hall side of things, they will have a long discussion at the end and if you—and seemingly giving weight to the same kind of concerns as we had ten and fifteen years ago and then at the end of it they'll say, well, these are really minimal and then make some generalities about it that seems to shift the emphasis that was in the discussion, in their conclusions.

So, I—I just see that, like myself, when I was working as a representative of government and doing education, that I felt certain restraints about coming to certain conclusions that I might have privately already come to those conclusions. I'm just assuming that applies to commissions and people working within commissions when they are trying to be accountable and responsible. They tend to err on the side of caution.

Q Okay, and the reports that you referred to in your evidence in chief, Kalanski, Campbell, etcetera, those were—those were examples of reports that were erring on the side of conservatism or caution or just placing

emphasis on the potential harms rather than taking the emphasis off those?

A I—I would have—I would have to think that the scientists involved were doing that. I think there's

a—were doing that, were trying their very best to alert the community because of their findings. I think what happened was—is that because you had such polarized attitudes in the community that certain groups and certain people took those studies and gave them credence and currency in the educational information about the drug that was inappropriate.

I think there are a couple of the scientists, one in particular that I know and have had some experience with and have actually been asked by the federal government to critique a paper, I think he was being irresponsible and I think it was because he knew where his funding lay and that he—so, he would design his projects to support the—or to support the—a certain point of view and most of his science was demonstrated that way and his science has shown—has not withstood the test of time. In particular, I would be referring to Tennant.

Q The position you're currently in, the clinical position you're in, that you're dealing essentially with people with psychiatric disorders, is that right?

A That's correct.

Q And some of those people obviously have particular susceptibilities to, among other things, drug abuse?

A Yes. That's correct.

Q And (indiscernible) a number of people that you've had dealings with in the last ten years have been abusing marihuana, in particular?

A They've been using marihuana.

Q Using?

A Some of them have been using, a few of them have been abusing it.

Q And the—changing topic slightly, the policy work in the 70's and the 80's that you did, you had—you had opportunity to actually make input to Canadian government officials during that time period?

A That's correct.

Q And you shared your views with them then?

A Yes. I—when I was—had my opportunity around specific issues. I was not specifically involved in the development of any government policy around the issues of marihuana. I was more, around the issues of marihuana for the federal government, more involved in looking at health promotion issues and treatment issues.

Q Okay. So, there were no—you weren't consulted in relation to marihuana issues during that time frame with the government?

A Oh, I was—no, quite definitely but not legal issues, is what I'm saying.

Q Okay. Did you have, at the time, the point of view that you have now that the laws were essentially wrong?

A It wasn't that the—I didn't feel that the—I didn't feel, at the time, the law was wrong and I didn't think much about the law. I was a fairly middle class Canadian citizen that thought that the people that created the law were doing it on the basis of sophisticated information that wasn't available to me. After I'd been involved in the field and started to read extensively in the field and heard the history, then I saw how some of the problems—there were inconsistencies with the law between what I thought might—in the way it was practised and implemented in the community and the consequences for people who were my patients. When you think that in Vancouver, which had an extensive sort of drug squad, drug undercover history in the 60's because two thirds of Canada's heroin addicts were there, that when marihuana first started to appear, the line police would use the choke hold on people that were smoking marihuana. That's the kind of legacy upon which the—you sort

of—the law and its practitioners—it was just misinformed.

I think there was a real attempting during the 70's of the law to start to try and rectify some of these but one of the reasons I'm sitting here, that inclination within the government and the law-makers of the land, I think that inclination has been reversed. I was encouraged by those changes in the law in the 70's, where they started to reduce the penalties in regard to possession, for example.

Q And you—what you—you haven't come up with those views since that time? You held those views during that time, once you got into—

A That's a view that evolved over the ten years that I was a practitioner and I've had—I haven't changed my view because I haven't found anything that ever—any information that ever dissuaded me from that point of view.

Q And did—I'm not clear. Did you have the opportunity to share those views with the government during that time period when you were being consulted?

A I would not say in any—in a public sense I had the opportunity where I formally did a presentation either to a commission or did any writing on it. Certainly I had opportunity to talk to people within the Health Protection Branch and the Bureau of Dangerous Drugs about laws and relationship to that. Most of those people were physicians. They were not people that were really responsible for changing the law.

Q Okay. I want to ask you for awhile about—you saw the health effects associated with marihuana. I'm going to try, as best I can, to distinguish that from some of the policy and—policy issues that—

A Certainly.

Q -- you've discussed and we'll come back to those later. You referred to, in chief, the fact that—and this was back in March, this isn't today, that there were some problematic affects associated with marihuana use. That's a fair statement, isn't it?

A Yes. That's correct.

Q And I think you said also that you still, to this day, educate your patients about abuse of marihuana and try to prevent that kind of abuse?

A That's right. And once again, the word abuse, in my mind, is my value about certain patterns and types of use and so I would be very definitely discouraging my patients from abusive patterns.

Q And what—

A That are generally determined by—in a medical inquiry about that individual and the vulnerability they might have because of their premorbid personality or because of their particular unique vulnerability to the effects of the drug in certain dosage range and within certain patterns of use.

Q Some of the affects that you—well, the affects that you described in chief seem to focus mostly on things like anxiety attacks, dysphoria, depression, that sort of thing. The things that you were observing in the clinics.

A That currently would be the—what I would be most concerned about. As a person in my previous post, where I was seen as being an expert, in the general sense, around the drug and its implication for the larger community, I would be concerned about other things. I would be concerned about its affects on people under the—who are driving a car. I'd be concerned about people that were using it and the long term consequences for the development of lung problems. I would be concerned about whether they would

develop—people who were pregnant would have—and continued to use, the affects that it would have on the developing child.

So, I had concerns about most of the other issues as well. It's only that when I'm dealing with patients I generally have concerns and—around specific problems that might develop because of their misuse or abuse of the drug.

Q You've said earlier you read the Hall report and the summary of the various effects that it—

A Yes.

Q -- came to? And that's a fair summary of the literature and the existing known effects of marihuana?

A I think it is an excellent summary.

Q And no reason to dispute its conclusions with respect to health affects?

A I have some questions about their conclusions. For example, some of their conclusions around the affects on the lung but I think in the main, that the—that that report supports my point of view. That this is

not—the use of this drug in the community is not a substantial health problem.

Q Did you read also the 1981 report of the Addiction Research Foundation?

A Not in its entirety. I've read the summary that's before the court.

Q All right. And the A.R.F., as it's known, is know to you?

A Yes. And the world, yes.

Q That's a worldwide organization of scientists?

A It's a Canadian, provincial—provincial organization that has international reputation for its science and its education and so it's a highly respected organization. It is large enough and strong enough with a history that it can encompass a variety of points of view but most of what comes out of it is responsible science, once again, couched in the—in certain terms because they get their money from government.

Q I want to ask you about some of the health affects that are referred to in the literature. I'm going to try to do it without actually going to the literature. If, at any point, you need to refer to something, certainly ask and we'll—

A Okay. Sure.

Q -- get it, but I think we'll try to stay simple. You've already referred to some of them but I just want to go over them and get your views on whether these are actually health concerns or affects, all right?

A Yes.

Q First of all, and you referred to this quite recently, problems with respect to the lungs. Is it—is there a potential for marihuana to impair respiratory and pulmonary function?

A I think there's an over emphasis of some of the problems in the literature. I think responsible literature demonstrates that the—because the smoke of marihuana is almost indistinguishable from cigarette smoke, that a lot of the same problems prevail. I think the separation is that it has to do with the amount and the dose of both the—and the length of time that you're smoking, the amount of time that you have the particular volume of smoke in your lung. I think there are problems of bronchitis. I think they have demonstrated and they've demonstrated since 1972, histopathological changes in cell structures in the lining of the lungs that are consistent with changes that are seen as precursor to the development of cancer in the lung.

Well, they saw those in 1972 and I think the Australian study notes this, that there has not been a (indiscernible) increase in the amount of cancer of the lung that one would suspect if this was a precancerous change as a result of cannabis smoking.

So, for example, I think the emphasis on certain types of—the bronchitis, I think, is misrepresented. There's no doubt that there's an increase in sputum and bronchitic cough due to the irritating particulate matter and the drawing of the particulate matter deep down into the lung structure, but I don't think a lot of the disease—Tennant, in particular, in his literature noted, applies.

So, how problematic it is in the creation—in the problem of, (A), cancer of the lung or actual disease of the lung, I think is still one of those questions that hasn't been responsibly addressed—or that we can draw a responsible, complete conclusion about, rather.

Q So, you would—you would certainly suggest that there's potential for more study and perhaps a need for more study into that?

A Well, I guess what I'd have to say, unless I saw differently and I didn't see differently, they say that we could have potential but they're going to be saying that, would be my obser—we've had twenty years since some of these very significant findings were found out. I don't think epidemiological studies have demonstrated that those concerns, in twenty years, have been founded. Maybe—and I would doubt that another twenty years is going to clarify that particular issue.

Q In your evidence in chief you pointed out that after the Ledane Commission, there was a real shortage of funding with respect to marihuana research, do you recall that?

A I can remember—I can remember talking to—when he passed through the province after the Ledane Commission, Miller, Dr. Miller who was responsible for overseeing all of that research, he said there was—there were large buildings filled of half finished research that would never be done now. I think one of the things the commission started was a lot of very responsible research and perhaps a lot of that research has been done elsewhere and in Europe. But in Canada there was certainly suddenly a drop off in the amount of responsible research being done around this drug.

Q And there's a difficulty too, isn't there, in Canada and most places in researching this drug because of the fact that it's illegal?

A That's always been a major problem and it—to this day it makes it a continuing problem. So, -- and I think that's why the criminalization of the drug has to be reconsidered so that perhaps it would open up the horizon so that we could start to get, continue to get and develop more sophisticated information.

Q Given the fact that there is that difficulty around the world with the research and also the drop off in research generally, it might not be that surprising that in the last twenty years we haven't advanced that far on that issue?

A Well, I think the Ledane Commission mentioned in their report on marihuana that they'd considered two thousand six hundred different scientific papers and I've heard anecdotally that there's now about thirteen thousand that are available for consideration. There has been certain types of research that has been supported and continued and this is research that has generally supported the—if you wish, the status quo, the fixed view of this is a problematic drug. I don't think if you went to funding organizations and said I've got this study that's going to look at this aspect and I think I'm going to prove that we've always been wrong about this and, therefore, your policy ill-advised, I don't think that group would get funding and I think there's enough reports about that bias in the nature of the support monetarily for research in the States, that I think the same would apply in Canada.

Q Just returning back to the initial question, with respect and we were talking about respiratory problems in—

A Yes.

Q -- the lungs and that sort of thing. Is it not fair to say that the current state of the research—the research couldn't prove, from its current state?

A I think—I think the—in this regard. It's my understanding that there's very substantial research being done on long term studies that have not demonstrated the problems that have been suggested regarding the law in the earlier studies. If—I think other—if that was given credence and reviewed and further studies supported that point of view, then I think we would advance the understanding. But if they—to leave it the way it is now, I think, is inappropriate because I still think people are trying to make responsible statements, they're still coming to conclusions that this is a big problem and I don't think

it’s a particularly big problem, the effects of marihuana smoking, in isolation from cigarette smoking on the lungs of individuals.

Q Okay. So, --

A Unless they get into high dose and regular and chronic use that’s of such a—which is rare in the community, then they could have significant problems. I think the nature and the type and the pattern of use in the community will never cause a problem in terms of a significant public health problem in regards to the lung.

Q Okay. So, if I understand you correctly, there are certain reports still out there and certain people still out there who are disputing some of the newer points of view in this particular area, --

A Yes.

Q -- and that dispute—

A Yes. There’s no doubt that—

Q -- could stand resolution?

A Yeah. Further clarification for the benefit of all.

Q Okay. Turn to a different effect, that is cognitive impairment both of attention and memory. Is that—that’s something that’s experienced by people using marihuana?

A Yes. Most characteristically seen in people under the acute influence in the intoxicative stage of marihuana. Also seen in the chronic long term users that are in a state of chronic intoxication but this, once again, is an example—you use the word cognitive and then if you look at the literature, well, cognition has to do with a variety of elements, under a variety of influences. And a lot of the literature—somebody just makes a sweeping statement about cognitive effects without being very specific about what they’re referring to and I think that’s the kind of problem we have in the larger education. Is you start to get generalities made that really give it a lot more currency than is warranted.

So, certainly one under an intoxicated state has cognitive dysfunction. Well, I mean, that’s a statement. I think that goes to the choice to use or not to use. I think it’s responsible to say that these cognitive facts, with the discontinuation of the drug, that the brain returns to a normal functioning

capacity. I think that's a responsible thing to say too as well. The trouble is, you get the emphasis on the fact that there—a large problem with cognition. It's not a large problem with cognition, if you look at it in the full cognitive function of the individual and the various elements of cognition in the individual.

Q In the—

A But the concern to look at and try and explain and uncover the relationship of this drug to influencing cognition, the concern that it might have a permanent effect, I think on the basis of the literature that's been resolved. We know that it does affect cognition in certain individuals, under certain conditions.

Q And certain individuals in the long term with certain patterns of use, is that fair?

A That's correct.

Q Okay.

A And I think that's a small number of people that use the drug and therefore, I think that goes to the issue before the court.

Q And the short term, it would have—it impacts on most or all users, wouldn't it?

A Yes, it does. And nonusers too, so that they don't support practises in the community, or they do support practices in the community, or educational formats in the community that are helpful.

Q Turn to another health area, psychomotor skills. Are psychomotor skills impaired as a result of marihuana use?

A Psychomotor skills are impaired as a result of motor (sic) use but even by saying that, I'm starting to make, once again, a generality where very specific—very specific elements of psychomotor skills are influenced to a certain degree, in certain conditions, based on certain patterns of use. So, all of the same things regarding cognition apply to this. Yes. There is some impairment of psychomotor skills in users of marihuana.

Q Okay. Perhaps you can tell us which skills are impaired?

A Well, the skills that are impaired are for—generally, the literature that demonstrates this and it's not always confirmed by other literature, is when the task requires attention that, over time, when they are complex skills that require certain hand eye co-ordination that are complex with a changing milieu. That's the most likely case where you'll see psychomotor skill impairment.

In some of the driving tests in the very earlier literature, various factors contributed to a loss of co-ordination under the acute affects of the drug and in some instances even persisting, suggested by the literature, up to twenty-four hours. How problematic this is, once again, you can find some papers that say it's not very problematic and other papers that say it is problematic. So, that's another thing that I think has to be significantly teased out.

Q What's your view specifically with respect to driving a motor vehicle under the influence of marihuana? Would you consider that—

A I'd be very opposed to that. I think I mentioned that last March because I don't think somebody who's

under—who's intoxicated by any substance should be in charge of a ton and a half of metal moving at speed along public streets.

Q And marihuana certainly falls into the category of one of the intoxicants that has the ability to interfere with that ability?

A That's correct.

Q Did you, in your experience, or in reviewing the literature, come across psychological dependence with respect to marihuana?

A Both clinically, I've had—I had a couple of cases where I would have said it would be a psychological dependence and I think—I don't think there's any doubt that a small number of individuals who use the drug on a regular basis, in high dose situations, would eventually become psychologically dependent. This is not surprising but to suggest that this has a very high addictive potential or a high potential for psychological dependency, I think, would be misinforming. I think very few people become psychologically dependent upon it. When I was working in the clinics, I would occasionally be aware of and actually see individuals that were psychologically dependent upon the drug and brought that concern to the clinic. That was very rare.

Q Those—that small group of people that suffer from that type of dependence, they—an example of the effects it can have on them is it can interfere with their own personal development, as an example?

A Yes. They—they definitely—even they had come to that conclusion. Yes.

Q That's why those people would seek treatment?

A They would seek and try and get some support for changing the pattern because it was interfering with their function.

Q Now, this—turn to another area and this is certainly an area you've been dealing with, with the

psychiatric—people with psychiatric problems. There is certain literature that suggests that there's an increased risk of experience psychotic symptoms for people and specifically, schizophrenia, for people who are predisposed to that. Is that something you accept?

A That is something that I accept and I think I mentioned that this morning. The—there—in the terms of the literature that's before the court, generally in North America it's been difficult to substantiate the direct effect of it creating a psychosis, a cannabis psychosis. Most of the literature that is heavily weighted in that regard comes from other countries, particularly India and Egypt and that was done in the 70's.

Q There's a number of concerns with respect to pregnant women and I think you earlier, in cross examination, made reference to that. I want to ask you about a few distinct ones. First of all, there's some literature with respect to an increased risk of low birth weight babies. Is that something you've had the opportunity to read about or see?

A Yes, and I'd be satisfied that that has a legitimate concern. That applies to women that smoke. So, I think one would—of one's interested in sorting out this information, is it the effect of the drug or is it the effect of the nature the drug is taken, i.e., the smoking that has that effect. Because we've known for quite a few years that women that smoke have low birth weights as well.

The other issue that still, I think, is an imponderable, is the issue that is raised that if women expose themselves to cannabis in the—during the

pregnancy, if there's some affect on the development postnatally of the child in their early and very significant formative years. So, there's some evidence that raises that concern and I don't have a specific answer based on my review of the evidence of whether that's right or wrong. I think that's another example of where further scientific research would be necessary.

Q I think the report you're referring to is a rather recent one, a '95 report that's in the materials?

A Yeah. That's right. Fairly recent but I think it's sophisticated and I think it's responsible and I think that it's something that has to be addressed.

Q And it actually is in contrast to some of the previous literature on the same issue, isn't it?

A That's right. It—I think there had been a fair level of comfort about that developing and I think this raises a concern again.

Q There's also literature suggesting that there's a potential for birth defects as a result of use?

A Yes. This is one that—this is one that's been around for many years and based on my understanding and—I have an open mind about that. I don't think they've satisfactorily demonstrated that in the scientific literature that's before the court.

Q Demonstrated that it exists or doesn't exist?

A That it—that there's a real concern—there's a real issue here. There's a concern but I don't think the scientific evidence is conclusive.

Q There's also some literature suggesting the potential for leukaemia in offspring as a result of marihuana use, did you come across that?

A That's right. That was something I hadn't heard before. A particular type of leukaemia that can't be just wished away by people that want to, you know, support the legitimization of marihuana. I think this is another one but a more critical scientific experience with that particular type of problem, I think, needs to be clarified.

Q So, like the person who I referred to before about potentially operating a motor vehicle, I take it your advice to a pregnant woman also would be not to use marihuana?

A I think that's good—not to use marihuana, not to minimize the use of most substance under drug categories would be responsible medical practise.

Q Turning to another area and you referred to this in your evidence in chief, immune system dysfunction. I took your evidence to be that you—that that's been disproved? Problems in that area have been disproved?

A I think that's another example. Based on my review of the literature, most people, particularly with the large population in Vancouver and I was aware that the general rule of thumb in the education by doctors of their patients who had AIDS was that they—if they smoke marihuana, they would make themselves more vulnerable through compromising further immune system. I don't think that has been substantiated and therefore—and in fact, there is now a body of experience developing, I don't know how well it's being researched, where they are actually using marihuana in the treatment of people who have the disease AIDS because whatever you—AIDS is, in all people it's a wasting syndrome, where they lose their appetite and lose weight. There's some indication that by smoking marihuana, they can—they can improve their quality of life. They can improve their appetite. They can have less anxiety than they would have without it and this wasting syndrome seems to be ameliorated and there's no evidence that they are—their disease is being compromised through that use.

So, the concerns that were prevalent, and I think they were legitimate concerns, I think has been discounted by the science that's available, at this time.

Q And just as an—this is an example of one of the concerns that appears in the Hall and Solloway (phonetic) report and—I'll just go on. The report itself breaks down the health concerns in two areas, probable concerns and possible concerns. Do you recall that part of the report?

A Yeah. The Hall Report.

Q Hall is the Australian report?

A Yes. Yes.

Q And my recollection is that immune system dysfunction, they review the literature and they come to the conclusion that it's not as much of a concern but still in the group of possible concerns?

A Yes.

Q Some of the literature refers to negative impact marihuana use as on adolescent educational performance. You would agree that that has the potential to have that effect?

A I would doubt that marihuana use alone would have that effect and I think the—most of the discussions in regard to that are pretty responsible. That they suggest that there are generally other correlates that go to that issue, the premorbid personality and other factors. I don't think just through the use of marihuana—does any literature suggest that conclusion simply through the use of the marihuana, that it affects learning. In fact, there's some evidence that—there's some very good evidence and responsible research, as I understand, suggests that people that—adolescents that use marihuana in the way that most of them use it, which is episodically with friends, on occasion, in fact enhances some of their performances and doesn't detract.

So, I don't think that that evidence warrants the use of law as to deter.

Q Going back to the first part you mentioned about people with predispositions, for those people, the—who suffer reduction of their performance educationally and are predisposed, nonetheless, the marihuana can act as a catalyst with those people in causing that problem?

A Well, I think because it does effect cognitive function, if they want to take their particular attitude and belief system and smoke marihuana when they walk in and sit there and try and do a history class when they're stoned, they're not going to learn much. But to suggest that their capacity to learn is significantly compromised by most patterns of use that you see in young people, I think, is to put the emphasis over the board.

Q No, it's—yeah. What you're saying is it's a problem in some senses if you use it in certain ways and not a problem if you use it responsibly?

A Yes, and that's because I'm trying to be responsible in the weight that is being considered in the court—or giving opinion, as to what weight I think the court should consider in this regard. You keep raising these issues as if they're substantial health problems. I don't think they're substantial health problems. They could be health—they are health concerns. They are health possibilities and I think we need to work with them but I think we give some of these things that you're

mentioning too much weight and as a consequence, you end up with a frightened, concerned community that's willing to support fairly reactionary authoritarian practises by the government in regard to the drug.

Q Just to be clear, I'm not trying to put any emphasis on any of these concerns. I'm just asking if they exist.

A Yeah. Well, no. I'm not accusing you of doing that. I think your questions are very fair but I'm saying simply by raising the issue in the air, we give it a primacy that maybe it doesn't deserve.

Q Okay. Now, I want to just go back to something you said in chief back in March and I'm—it's a theory that you advanced rather than paraphrasing I'm going to read it to you because it was—

A In the scientific sense, I'm sure it was a hypothesis rather than theory.

Q Perhaps. It's too complex for me. I'm just going to read it to you. You said, "It's my belief that the only people that have trouble with marihuana are people that have a predisposition to that trouble and the setting and by that I mean the circumstances around which they took the drug. The set, i.e., the psychology of the individual and everything that led up to that moment. The drug is just simply a catalyst and unfortunately, a catalyst to bring out the difficulty. In a lot of instances, it's my opinion that they would have had that difficulty eventually, whether they had or had not smoked marihuana." Do you recall—

A Yes.

Q And you've been saying something quite similar to that again today?

A Yes, and I would—I guess for clarity, generally what I'm referring to is in the terms of psychiatric—within the context of psychiatric changes or psychological problems that might develop. Some of the other ones that are still out in the open for consideration that go to physical matters, have to do with certain individual vulnerabilities as well but I don't—I think I would—I was referring there primarily to psychological or psychiatric difficulties.

Q Thank you. That's what I wanted to clarify. And the theory would actually apply to all drugs too, wouldn't it?

A Yeah. I feel fairly comfortable with the statement—

Q Heroin—

A -- in that regard. I just—

Q Heroin, cocaine?

A I think as you move through the spectrum of drugs, I think the drug itself plays a stronger role in some instances but it would apply generally to most drugs.

Q Now, I'm going to switch from health affects and ask you some questions about the evidence you've given on policy and—

A Yes.

Q First of all, I take it from your evidence that you're of the view that—essentially that the harm reduction type model can be—ought to be pursued—

A Yes.

Q -- in relation to marihuana?

A Yes. Definitely.

Q Education and treatment are the primary ways of dealing with it, right?

A Education and treatment, I think, should be the primary ways of dealing with the problems.

Q And they are used, to some extent, currently?

A Currently. Some of the more impoverished than others.

Q In the course of your dealings with the government and bureaucrats with respect to the policy issues in the 70's and the 80's, you had the opportunity to meet with people with a variety of diverse interests in relation to the marihuana issue specifically?

A Yes.

Q And you met—the views that you have certainly met with opposition from a great number of people?

A Not at that time.

Q No. The views that you—sorry. That wasn't—

A Okay.

Q The views that you have now, that we're talking about today, with respect to the laws and the government and the position the government's taken, that's a view that received—was being advanced by other people then and was opposed by quite a number of people as well?

A Yes.

Q And your view now, the people who are opposed to those types of views, are wrong?

A I think they're misinformed.

Q And they might say the same about your point of view?

A Yes.

Q Now, in chief today, you said the law and the government, in your view, are not up to date on the current scientific evidence. Do you recall giving that evidence?

A Yes.

Q Can you say what evidence you have about what the government has taken into account in terms of scientific evidence and its current policies?

A I haven't seen any change, other than the recent attempt with C-7 and discussions around that. So, it's anecdotal, my information in that regard.

Q Okay, and when you're saying that, you're drawing inferences from the government's policies and assuming that they aren't up to date with the scientific evidence. You can't say whether they've considered it or not?

A I would hope they'd have considered it but I don't think the policy reflects that it's a serious consideration.

Q So, you—in your view, the current scientific evidence hasn't been given the right emphasis by the policy makers?

A It hasn't been—with those people that understand the scientific evidence, that have certain points of view, I

don’t think have been given full hearing and that they’ve considered that fairly. I can—but that’s an assumption.

Q Again, it’s an assumption. It’s your inference by looking at the policies, --

A Yeah.

Q -- that they can’t possibly be looked at?

A You know, but we’re gonna bring plutonium into Canada, so—

Q In chief you also referred to, at the end, the health impact of the criminal prohibition—the criminal prohibition of marihuana, as it was described to you, had certain health impacts and I just want to clarify what it is—what those impacts are, in your evidence. I have three points and I’ll go through those—

A Okay.

Q -- and you tell me if there’s more to it than that. The first was said in a few different ways, I think, but it’s summed up by the fact that there’s misinformation and distrust as a result of the existence of the prohibition and especially in young people, is that correct?

A I think, yes, it contributes—it’s a contributing factor.

Q And the second health effect you referred to was an increase in paranoia but you said that was a lesser effect?

A Yes. It’s something that needs to be described, yes.

Q And the third was the restrictions on people’s freedom, in terms of travel and passports and that type of thing?

A Yes, and the consequences of being—a criminal conviction and the impact that that has upon them.

Q And is that a fair summary of your position with respect to the health effects of the prohibition laws related to marihuana?

A No. I don’t think—I think—in terms—if you’re talking about health, I think there’s still enough concern that one has to be open about the possibilities that there are health effects and consequences, as we talked about, on individuals that will smoke but I don’t think those health

effects warrant the general liability that the criminalization creates for individuals.

Q Okay, and the general liability—

A Are the—

Q -- that you're referring to, have I summed it up—

A Yeah. Those three, yeah. Primarily.

Q Now, I have to ask you, in chief back in March you may recall referring to someone, we're not all sure who you're referring to. You described someone as a narrow-minded fascist. I think you were referring to the head of the Alcohol and Drug Commission?

A Yes.

Q Who was that?

A His name, I believe, was Bert Hoskins.

Q And what was the reason for describing him that way? I take it he's associated with the heroin treatment program, that was the main reason?

A He was also the individual that invited me to participate in the creation of The House, who invited me to panels in 1970 to talk to parents, who introduced me to parents and he then, around that time while I was still volunteering and we were starting to set up the program, he then was asked to step down from his position as the executive director of the Narcotic Addiction Foundation. I didn't hear—I would hear about him again occasionally on programs like Jack Webster when the Kalanski and Moore paper was getting a lot of publicity. Then later on, when the Socreds, in 1976 came back into power, he became the—appointed by the Minister of Health as the chairman of the Alcohol and Drug Commission and he dramatically impacted that commission.

Q All right. So, there's a change in government. As a result of a change in government, he's appointed and he's someone with whom you differ substantially in your viewpoints related to treatment of drug problems, is that fair?

A That's very, very definitely correct. I won't hold the fact that he's a bit fascist in his responses against him. He was trained in the Canadian army.

Q One final thing, I think.

THE COURT: Almost—

MR. HEWITT: I'm not touching that.

THE COURT: Yes. Lunchtime. Any—

MR. HEWITT: I have one question I was going to complete.

THE COURT: Just one question? All right. Go ahead.

MR. HEWITT:

Q You've made some reference to Dr. Harold Kalant, who I take it you're familiar with, both personally and through the literature?

A Yes. I—well, personally from the standpoint of being a student in his class and having read a book that he's co-authored and using it as a guideline in my educational initiatives in the early 70's. And reviewing his various scientific documents he's made over the years. I have tremendous respect for Dr. Kalant.

MR. HEWITT: All right. Perhaps if I could just have one moment?

THE COURT: Yes.

MR. HEWITT: Nothing further, Your Honour.

THE COURT: Any re-direct?

MR. CONROY: I have a brief amount. I don't know if the doctor's going to stay for lunch and come back or whether you prefer I just ask them now. Perhaps that's the easiest.

THE COURT: How long do you expect to be?

MR. CONROY: Five minutes, at the most.

THE COURT: Why don't we proceed.

RE-EXAMINATION BY MR. CONROY:

Q When my friend was asking you about psychiatric disorders and susceptibility to drug abuse and you clarified that, you said some are abusing and some using. How do we differentiate between those two, in your mind, when you answered that question?

A I almost regretted doing it but I thought for clarification, since he'd chosen to use the word "view" several times in his questions. Those of us that were very involved in the education of people and responsible for the education, tried to tease out the difference between misuse and abuse and the Ledane Commission said we don't want to use either word. We're going to call it nonmedical use. So, it's always been a conundrum in the field but it's clear to people who are educators and drug educators and people in the field, that the word abuse is a value judgment but does not help clarify the issue. So, I think misuse—I've tended to use misuse just as a—not to get into this issue of abuse.

Q When you were asked about health concerns or affects and specifically with respect to the lungs and you said there was still a question to be addressed and you talked about some of the damage, pathological changes in the lung tissue since 1972 but no increase in cancer and so on since, do you remember that discussion?

A Yes.

Q When you were answering the questions put by my friend in that area, were you talking about the effects of marihuana, or its smoke, or the THC in the marihuana, or can you clarify it or be specific on it?

A For clarification, it is definitely not the THC that is the problem. It is the carcinogens that are in the smoke—the smoke of marihuana and the smoke of tobacco that would cause those problems. There's evidence that in the—with marihuana smoke, because of the nature and pattern of use, that the problems you see with regular cigarette smoking might well not develop. The trouble is, you don't have—it's very difficult to find that pure population of people that just smoke marihuana alone episodically or in the general use pattern and not extremes at either end of the spectrum of use. It's hard to find a population that you can make long term predictions about and hopefully, they are—somebody's following one of those groups now and will get better

information about that. But I would suspect it is not going to demonstrate it is much of a problem.

Q Okay, and finally, the book that you referred to by Dr. Kalant that you had—that you said was co-authored by him and that you'd read and used in presumably that period prior to '82 --

A Yes.

Q -- with your patients and so on, that was this book, "Drugs, Society and Personal Choice," is that correct?

A That's correct.

Q And it's written by Harold Kalant and Oriana Joso (phonetic) Kalant, you understand to be his wife, is that right?

A That's correct.

Q This—but this is the particular book you were referring—

A That was the particular book I was referencing, yes.

Q So, as I understood, when you were in your practice and people came with drug problems, or parents or others, you would often refer to this book and information in this book to either assure them or provide them with information or whatever?

A Yes. Rather than with individual—I—it certainly went to my attitudes about the drug and the advice I'd give patients but I gave—over those ten or twelve years, gave several hundred public educative forums, speeches, panels and I would be influenced by what was in that drug (sic). In fact, I used it quite specifically time and time again for some of the—in certain types of presentations.

MR. CONROY: Thank you, Doctor.

THE COURT: Thank you, Doctor. You're excused.

(WITNESS EXCUSED)

THE COURT: We will stand down for lunch break. I have a judgment to deliver at 1:30, so why don't we excuse the Caine matter 'til 1:45.

MR. DOHM: Thank you.

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RECONVENED)

(OTHER MATTER SPOKEN TO)

THE COURT: Mr. Conroy, on the Caine matter, are you able to give me some indication of how the week is going to proceed?

MR. CONROY: Yes. My last witness is going to be Dr. Morgan and I expect he'll be this afternoon, all of tomorrow, including cross exam which may go into Wednesday. We then have—I understand my friend has Dr. Kalant coming tomorrow night so that he's available for Wednesday and I expect that we would hear him then the balance of Wednesday and into the Thursday, into Friday, if necessary. My friends' indication to me at this point is that they aren't going to have any other witnesses.

So, I don't know if we'll get argument completed. I have the original written argument, the law part of it is being redone today and I hope to have that for you tomorrow. That's all that I see being required. After that is simply marshalling the evidence that you've heard to fit it into that argument. We're having summaries in preparation now. We have most of Dr. Beyerstein summarized and so we hope that we'll have summaries of that for you.

I haven't discussed this finally with my friends today, although I had a brief discussion with Mr. Hewitt about it, that if—as long as we get the evidence in, so all the evidence is complete, we could then follow up with written submissions or if the Court wanted us to come back to make them orally but my hope is that we'll certainly have all of the evidence finished and so we'll be substantially completed by the end of the week.

THE COURT: Can I make a request of both counsel, which is if there's going to be written summaries of facts and of arguments, could you provide me with a copy of the disk, the computer disk, as well as a hard copy?

MR. CONROY: Yes. Certainly.

THE COURT: I think that would—

MR. CONROY: I have managed to overcome my—

THE COURT: -- be of immense assistance to me.

MR. CONROY: I've managed to overcome my (indiscernible) tendencies and even I know how to now press a mouse button.

MR. DOHM: I hired somebody who knows how.

MR. CONROY: Which program would you like, Your Honour?

THE COURT: We don't have our own secretaries, so I'm—

MR. CONROY: Word Perfect or Microsoft Word or—

THE COURT: Word Perfect. Windows For Word or Word— I'm confused now.

MR. HEWITT: Microsoft Word?h

THE COURT: No. Word Perfect.

MR. CONROY: 5.1 or whatever -- 6 point—

THE COURT: Well, I actually work under windows.

MR. DOHM: I don't use Word Perfect but it would be Microsoft Word for Windows.

THE COURT: I have Microsoft Word 5.0 but not in windows, just -- 5.0?

MR. DOHM: It's in windows. Mr. Hewitt will convert it.

MR. CONROY: And mine—

THE COURT: Word Perfect?

MR. HEWITT: To what you want.

THE COURT: All right.

MR. CONROY: If we could know by the end of the day exactly what is best for you, I'm sure that I can have our disk formatted to exactly what works for you

because I know our machine will convert to what—somebody else's. --

THE COURT: All right. I have—I can tell you exactly what I can operate under.

MR. CONROY: Okay.

THE COURT: Word Perfect 5.1, Word 5.0 or Word Perfect For Windows and I guess that's 6.1.

MR. CONROY: Another housekeeping matter just before I call Dr. Morgan. I don't know if you have the Kalant—or sorry, the Hammond (phonetic) situation sorted out. I have a package here. It's my understanding Ms. Smith-Gander went through the transcripts to see what we had given you and what we hadn't and it looks like this package is what you don't have. You may recall that we gave you the English—what was in English in the transcript but I don't think we gave you the French yet. My friends—the ruling was that we put everything in front of you, including the French. We're still working on getting some of the French translated but I wanted to make sure you had the complete transcript.

So, what this is, is the index essentially for the whole sets of volumes and then we believe that what we have excerpted here, which has various page numbers on it, are various arguments, submissions of counsel, things like that, that we hadn't reproduced before. There is also some evidence that was in French that you don't have before. So that if we give you this, you should have the full set but without the translation yet in the French part. This first page should show you how it all fits in to what you've got.

THE COURT: All right. I will, over the course of the week, go through the materials I've got and try to confirm that I'm not missing anything.

MR. CONROY: Yes, Your Honour, and if you could confirm whether or not we gave you the transcript of that Cholette (phonetic) case because we couldn't find that referred to in the transcript but I thought that I'd handed that up to you. It was the Victoria case.

THE COURT: I—yeah. I—

MR. CONROY: We've got extra copies here if you don't have it.

THE COURT: Well, I know I have the decision.

MR. CONROY: Yeah. Well, this is the transcript, just so that you have that too.

THE COURT: All right. I think my friend said I've given them that already. Now, we will have more materials to give you during the week just to round out the full picture. Most of it is just—I promised a copy of the Narcotic Control Act Regulations so you'd have the full statute in front of you and I have made copies also of some of the provincial health legislation and tobacco legislation, federally and provincially, so you see what the legislative scheme is in relation to tobacco and any other bits and pieces. I think that essentially covers it and we will—well, we'll hand out the rest as we go along. Hopefully, you'll have it all before the end of the week.

So, my next witness is Dr. John Morgan. Dr. Morgan, if you could take the stand over there, please.

JOHN PAUL MORGAN, a witness, called on behalf of the Defence, being duly sworn, testifies as follows:

THE CLERK: Please state your full name and spell your last name for the record.

A My name is John Paul Morgan. M-o-r-g-a-n.

MR. CONROY: I'm tendering Dr. Morgan, Your Honour, as a medical doctor, physician and as an expert on the effects of alcohol and psychotropic drugs including, specifically, marihuana on human beings. He is with the Department of Pharmacology at the City University, New York Medical School. So, I'll go through his curriculum vitae but the areas that we are going to be seeking to elicit an expert opinion are in relation to medical effects and pharmacological effects and the pharmacology of the drug.

Essentially, I'm going to be asking Dr. Morgan to take us through the myths surrounding marihuana use and review of the scientific evidence. You may recall Exhibit 6 in these proceedings. Dr. Morgan is one of the authors of that document and it has now been expanded—or is in the process of being expanded into a book. We have the manuscript available, to the extent that—as far as it's gone. I think there's only two chapters or two sections to—or one

section—two sections to complete and—but we have what's available to date for you. We had a photocopying problem and it's being sorted out right at this moment before we hand it up to you.

So, let me take Dr. Morgan through his credentials.

EXAMINATION IN CHIEF BY MR. CONROY:

Q Dr. Morgan, you're with the Department of

Pharmacology—

MR. DOHM: Excuse me, if I might—

MR. CONROY: Sorry.

MR. DOHM: -- just let Your Honour know that I will not be objecting to this doctor giving evidence as a medical man and—on the effects of alcohol and psychotropic drugs. So, his qualifications will be admitted, Your Honour.

MR. CONROY: Thank you.

THE COURT: All right. Based on that admission then, I will qualify Dr. Morgan to give expert opinion evidence as a medical doctor and to give expert opinion evidence on the effects of alcohol and psychotropic drugs on human beings.

MR. CONROY: I have two copies of his curriculum vitae, one that could be marked then as the next exhibit and one for the Court to use. My friends have got a copy of it.

THE CLERK: Exhibit 26, Your Honour.

THE COURT: Twenty-six?

EXHIBIT 26 - CURRICULUM VITAE OF DR. J.P. MORGAN

MR. CONROY:

Q All right. So, Dr. Morgan, you're a medical doctor and you're with the Department of Pharmacology, City University, New York Medical School in New York City?

A That's correct.

Q Now, you live in New York city?

A Yes.

Q And you were educated at the University of Cincinnati, Arts and Science, 1962?

A Yes.

Q And University of Cincinnati College of Medicine. You got your medical doctor's degree in 1965?

A Correct.

Q You then had postdoctoral training first at Upstate—City University, New York, Upstate Medical Centre at Syracuse?

A It's actually the State University of New York.

Q That's the State University. That's the difference between C.U.N.Y. and S.U.N.Y?

A That's correct.

Q All right. So, State University in New York, Upstate Medical Centre Syracuse as an intern in the Department of Medicine from 1965 to 1966?

A Correct.

Q Then at the same State University in New York, Upstate Medical Centre, an assistant resident with the Department of Medicine from 1966 to 1967?

A Also correct.

Q You were then with John Hopkins Medical Institution, Baltimore, as a physician, fellow, in clinical pharmacology with the Department of Medicine from 1969 to 1970?

A Correct.

Q You were then with the University of Rochester Medical School in Rochester, New York, as a fellow in clinical pharmacology with the Department of Pharmacology and Toxicology and the Department of Medicine from 1970 to 1972?

A Yes.

Q Okay. You're licensed—a licensed physician for the State of New York?

A Yes.

Q You were in the United States Air Force Medical Corp as captain from 1967 to 1969?

A Yes.

Q And at which you were honourably discharged?

A Correct.

Q You have a number of certifications with the National Board of Medical Examiners, 1965. American Board of Internal Medicine, 1971. California Society for the Treatment of Alcoholism and other Drug Dependencies 1984 and the American Society of Addiction Medicine 1985?

A Correct.

Q You've had a postdoctoral fellowship award as the NIDA, which is the National Institute of Drug Abuse—

A National Institute On Drug abuse.

Q On Drug Abuse. The Career Teacher Award, University of Rochester, 1975?

A Correct.

Q And you've had a number of faculty appointments which are listed in detail in your curriculum vitae which has now become Exhibit 26?

A Yes.

Q One of the other awards that I understand that you received was something to do with Gerald Ledane, I understand?

A That's correct. The Drug Policy Foundation, a Washington, D.C. based drug reform think-tank advocacy group, has a set of annual awards for awards in scholarship, awards in community activism, awards in journalism and they have always had an award in legal issues named for Gerald Ledane because of the prominence of the Ledane Commission report in the early 1970's here in Canada. I am the 1996 recipient of

the Gerald Ledane award as the individual who did the most to advance drug reform in the legal area. And of course, there's much commentary about why a physician would win such an award and it was basically because I have been available as an expert witness in a number of settings and hearings regarding drug policy reform, regarding marihuana issues, regarding sentencing issues in the United States, regarding urine testing issues and their application to individuals in the workplace and the criminal justice setting.

So, in November this year I won that award.

Q Okay. Your primary expertise is as a physician or medical doctor but with also a particular emphasis on pharmacology, is that correct?

A Yeah. I am trained in what's called, in the western world, clinical pharmacology. A group of physicians who became—interested and trained in the evaluation of drug affect in humans. So, it's a pharmacology particularly focused on humans and a drug effect being both that of evaluation of therapeutic effect and the evaluation of toxic effects.

Q So, you are able to give expert opinion as a physician with respect to the effects of alcohol and psychotropic drugs on human beings. Does that adequately cover your expertise?

A It does. I would only add that I also have spent a fair amount of time working in basic research and animal studies as many other pharmacologists have. Although I've not performed those of late, I have significant experience in performing the kind of work that pharmacologists who are not physicians perform.

Q And as I understand it, you've reviewed extensively the literature, scientific research, whether involving animals or human beings, in relation to the effects of marihuana specifically and perhaps other drugs as well?

A That's correct.

Q And so you can extrapolate or you can comment on the research that's been done using animal studies, for example, as well as those done with human beings?

A Yes.

MR. CONROY: So, I would ask, in the event that that expands his expertise, I don't think it does but obviously in talking about the effects on human beings he's had reference to studies involving animals, so I ask that that at least be covered as well.

MR. DOHM: That doesn't cause a problem, Your Honour.

THE COURT: All right. I—I'm content to leave the description of his field of expertise as it is, on the understanding that to become an expert in the effects of alcohol and psychotropic drugs on human beings, one would naturally look at a much broader spectrum of scientific research, including research on animals.

MR. CONROY: Thank you.

Q The rest of your qualifications, Doctor, I won't go through them. They are set out in your curriculum vitae which is now Exhibit 26 and it includes various society memberships, editorial advisory boards that you sit on and reviews that you conduct for various journals and so on?

A Yes.

Q It also contains extensively books, chapters, proceedings and other articles and so on that you have completed throughout your career?

A Yes.

Q Now, in October of 1995, a monograph was prepared called Exposing Marihuana Myths, A Review of the Scientific Evidence. I understand that was completed by you and a colleague, Lynn Zimmer, associate professor of sociology at Queens College in New York, is that right?

A That's correct.

Q And essentially, tell us a bit about that monograph and who it came to pass and then we'll go to the more expansive—

A In the summer of 1995, the National Institute on Drug Abuse held a meeting in Washington, D.C., focused on the harms and problems of marihuana use. This meeting grew out of, in part, the evidence that there is increasing prevalence of use of marihuana by young people in the United States. Although the usual surveys

of drug use indicate for the entire population in the United States, prevalence remains at a fairly steady rate over the past few years, that the prevalence in twelve to seventeen year olds is increasing. That's provoked concern in the United States and so the National Institute on Drug Abuse had held a meeting in the summer of 1995, in which they wished to comment on not only the increasing prevalence but the harms of marihuana.

Professor Zimmer and I had been working already on a book on the toxicity of marihuana and we decided, because of the announcements regarding that meeting and also because NIDA did not ask—or wish me to speak at the meeting, I volunteered to do so, that we would prepare this short monograph because we knew that at the meeting a number of people who had made publications in important areas regarding marihuana use were to comment.

So, we prepared this document to comment basically on the Washington meeting, although it doesn't say very much about that. In fact, I don't think it mentions that at all. So, this is a review of marihuana's harms or putative harms in a series of areas that are widely discussed in the United States and Canada, in what you might generally refer to as the claimed biological toxicity of marihuana, much of what we think is not true, both in the media and in the statements of government spokesmen and women.

Q Since preparing the monograph you have expanded on it and have almost completed essentially what will be a book that expands—

A Yeah.

Q -- on this monograph, is that right?

A Again, focusing on the idea that there are certain myths, very widely stated and very widely accepted. We have expanded the monograph, which I think was called Exposing Marihuana Myths, into a text called Marihuana Myths, Marihuana Facts, which will be published in approximately a month and is approximately a 125 page short text on marihuana myths.

Q All right, and you've provided me with a copy of that?

A Yes.

Q This document that I'm holding up is a copy of that document, to the extent that it's—

A Yeah.

Q -- been prepared?

A Yeah. I might mention that it has twenty myths, therefore, has twenty chapters but the copy you hold in your hand has an old myth number one, which has been replaced and you do not have a copy of that. Then myth number nineteen has not yet been completed. So, myth number one and myth nineteen are left out of the copy that you have.

MR. CONROY: Okay. I'd ask that that be the next exhibit, please.

THE CLERK: Exhibit 27.

THE COURT: Exhibit 27.

EXHIBIT 27 - DOCUMENT ENTITLED MARIJUANA MYTHS -

MARIJUANA FACTS

MR. CONROY: All right. Now, I should just mention for the court that the problems we had were page 10, it's now okay and it's Marihuana Use During Pregnancy but we have spliced in 10-3 and 4. So, I think the face page and then 3 and 4 you should have as loose pages that have been put in the book and that should give you the complete manuscript. So, if everybody's got that, then we all have the same thing. All right.

Q I'd like you then, if you have that in front of you, Doctor and if the Court does, to then—let's go to number two, --

A Okay.

Q -- Marihuana—and the headings, as I understand, for each chapter, set out the—first of all, the myth and then the facts, as you have determined them and then there is a brief chapter that provides further background on each—on this topic, is that right?

A That's right.

Q So, number two then is "Marihuana Is More Potent Today Than In The Past." The myth set out in the top of the chapter is that, "Marihuana is more potent today than in the past. Adults who used marihuana in the 60's and 70's often fail to realize that when today's youth use marihuana, they are using a much more dangerous

drug." Then there appear a number of quotes which are taken from various newspaper accounts, I take it, or

other—

A Sometimes government publications sometimes scientific papers.

Q Are there any that we should be particularly—that should be particularly brought to our attention in this chapter?

A Well, I like number one and number five. Number one says, "Baby boomers with fond memories of long hits around the lava lamp may not be particularly alarmed by news that pot is making a comeback but the culture of cannabis has grown considerably more dangerous since the flower children left Haight Ashbury. Today's marihuana is twenty times more potent."

And then myth number five—or the myth statement number five comes from William Bennett, the former drug tsar in the in the United States who said, 'If people confessing to marihuana use in the late 1960's sucked in on one of today's marihuana cigarettes, they'd fall down backwards.' "

The claims of increasing marihuana potency have been stated with regularity since 1974. The first claim that I ever heard that today's marihuana is much more potent came in 1974 and Professor Zimmer and I actually have a fifteen page collection of quotes about marihuana's increasing potency and there are now some statements that it's 200 to 500 times more potent than it was in the 1970's.

To cut through all of this, it's an extremely important claim because it's used to say to parents of today's youth, yes, you smoked marihuana and you had no trouble. This is true of some thirty million adults in the United States. But your children are facing a much more dangerous drug and this statement is made over and over again. In fact, one of the people responsible for making such a statement was I. I write a chapter in a very widely sold textbook called The Merk Manual of Medicine and in an edition about seven or years ago, I put down that apparently marihuana's potency is increasing in the United States. I was not, I now believe, being critical enough I contributed to the myth making as well.

So, basically, what this first chapter is, is an examination almost of meda (phonetic) toxicity, if you will. It doesn't focus on the particular harm that marihuana causes but it focuses on a very wide potential for harm because today's marihuana is an entirely different drug is the claim.

Q And what—when you then delved into this topic, what conclusions did you come up with?

A Today's marihuana, at least by available measures, is essentially the same as the marihuana sold in the United States and Canada in the 1970's. Basically, there's only one ongoing source of the measure of marihuana potency and that's the University—the United States funded project in the University of Mississippi, which came into existence in about 1974 but let me say a word or two and you'll have to warn me about being too prolix and taking up too much time.

Marihuana potency, by definition, is the concentration—the percentage, by dry weight, of Delta 9 THC in the marihuana preparation. That doesn't mean the concentration in the entire plant. It means the concentration in the preparation. This version of marihuana, this version of sinsemilla, this version of hashish contains X amount. Now, sometimes the amount in the entire plant is also estimated in these measures but it's important to say that it's not always the plant, sometimes it's the preparation.

Now, in 1974, the University of Mississippi was funded to begin a quarterly analysis—at least a quarterly report, of marihuana potency in material that had been criminally seized and that's very important because, at no time really, have police activities measured or reflected the entire amount of marihuana available. At various times the police, both the United States federal agency, the Drug Enforcement Adminstration and state and local police have been interested in seizing marihuana but it's shifted over time and so the amount of material supplied to the University of Mississippi for analyses has shifted.

Now, let me quickly say that from 1981, the first time the University of Mississippi project ever had more than four hundred samples to analyze, from 1994, there has been no change in the marihuana potency, of materials submitted to the University of Mississippi. And through the 1980's, the average number of submissions was over twelve hundred plants per year. In fact, in the 1990's, it often has gone over two thousand seizures per year.

So, from 1981 to 1994, there's been essentially no change and when I say essentially no change, the average potency is about 3 to 3.5 percent. Some years it's a little bit lower, some years a little bit higher and that reflects a mixture of smuggled material which, in the United States, is always more potent than domestic material. That's an important point to make because the claim of increased potency has been a kind of agronomic revolution among American growers in eastern Kentucky and Humble (phonetic) County and Texas and, I might add, in British Columbia as well, speaking of North America as well.

So, supposedly, growers of pot have learned so much they've increased the potency to dramatic heights. I's simply not true.

In smuggled material, that is material from Jamaica, Columbia, Afghanistan, Persia, is always higher in potency that American home grown, at least according to the University of Mississippi.

Now, so having said that, the government would agree with me that from 1981 to 1994, potency is about the same as it has been but there was a series of time from 1974 to 1980 when the government project reported very low potency annual values. In fact, as low as .4 in 1974, maybe even .7 in 1973. I don't have the exact data in front of me. I think you do. There's a table at the end of Chapter 2 which is entitled "Data For Table 1," which is average THC content of marihuana seized by the police. You see in 1973, it was .72. 1974 was .92. 1975 was .71. And these are the figures that the government spokesmen and anti-marihuana spokesmen of the United States have used. They look at a figure of say approximately .5 percent or—there was one year that one of the measures was approximately .4 percent and then they see a measure of 4 percent and that, of course, is a 40 times increase in potency. I'm sorry. I didn't get my math right there. A ten times increase in potency. And they've used similar figures, like for instance, one year there will be a 13 percent isolated potent product and they'll compare to the .7 percent in 1973 and say that's where the numbers of fourfold, tenfold, sixtyfold, etcetera, come from.

Now, I'm sorry for the length of all this but, basically, as you can see, there were very few seizures in the early 1970's, only 33 in 1973 and all of those were one source. Almost all of this material in the early 1970's came to Mississippi from seizures enacted by the Drug Enforcement Adminstration at the Mexican border with the United States. In fact, sometimes they didn't even have to seize it. Material was mailed by the Mexican government having seized it. So, they would mail it to Mississippi directly with the D.E.A.'s permission.

So that there were a few samples of very low potency Mexican marihuana, usually in the kilo brick form, in which the plant is compressed into a brick shaped 2.2 pound mass and transported for sale out of the United States.

So, a few of those samples in Mexico were very low potency in the early 1970's. I don't know exactly why. There are many speculations as to why marihuana from Mexico may have been so low in potency in those days. It's not now, in general. In fact, in 1980, Mexican marihuana potency seemed to be on a par with other smuggled material. But these low numbers from Mississippi have provoked the never-ending claim about the new marihuana's potency but if you look down into '92, '93, '94, '91, you see there's basically no change in potency, sometimes with over thirty-five hundred samples measured.

I will say one more thing and promise to conclude. There were other sources of analysis in the early 1970's. One important source was Pharm-Kim (phonetic) Laboratories in—near San Francisco, actually in Menlow (phonetic) Park, California. Another important source of analysis was the Addiction Research Foundation Laboratories in Toronto. And so these laboratories in the early 1970's always reported perfectly normal potency ranges. In 1974, I think I say in the text, the Pharm-Kim Laboratories reported most of their samples being between 2 and 4 percent, with a few samples at 5 and an occasional one as high as 14.

There's been no change in the potency of material generally available in what we've called the commercial criminal crop, available to American and Canadian youth for the last twenty to twenty-five years.

There may be some boutique marihuana grown in someone's closet with very high quality seeds using to start which produce higher potency marihuana. I'm sure that's true, although it's very seldom measured although it's frequently claimed.

So, at the high end, there may be some more marihuana at the high end but the general commercially available marihuana has not changed in potency, we believe, in the last twenty-five years.

Q And you believe that the amount—the average amount is somewhere between 2 and 3.4 percent?

A Yeah. Maybe 3 to 3.5 percent would be a fairer statement of the range.

Q And as indicated on page 2 of your—of Chapter 2, if the potency is less than 0.5 percent—

A Mm-hm.

Q -- I understand that has almost no psycho-activity?

A In fact, it has—basically has none and individuals given 1 percent material to smoke, often cannot tell it from placebo. Although, under certain experiences, under certain measures, you can find an impact. If you ask an individual who smoked 1 percent marihuana, he will usually not be able to distinguish it from placebo and again, at the level of 0.5 percent which is the acceptable level in commercial hemp grown in Canada—I'm sorry. Grown in France and Czechoslovakia and other places where hemp growth is legal, that's the cut off, at 0.5 percent, is plant fibre type cannabis, while higher amounts of THC are required for drug type cannabis.

Q Okay. Now, as I understand it and it's indicated again back on the first page, where you've set out the fact in relation to the myth. You say—first of all, you mention the samples and how the samples that did have this increased potency weren't apparently representative but—and you then go on to say that the data from the 80's to the present, which you've just reviewed, shows no increase in the average content but you then go on to comment if—even if it—they did contain more THC. What would that—what would the significance be if the marihuana today did contain more THC?

A The reason we made that statement is there is not a single paper in the medical literature showing or proving that higher potency THC is of greater hazard to human smokers. Not—there are no publications making a claim and there is an early publication looking at the panic reactions that individuals reported or the adverse psychological reactions and then a measure of the potency and adverse psychological reactions occur with material ranging from .7 to 7.5. So, there was no correlation. So, there's no proof that individuals smoking higher potency marihuana have more problems.

Then that led us to the speculation that many people have made in recent years. That is, if you give individual smokers material that ranges widely in potency, let's say as much as 3 to 400 percent, it is quite clear they smoke less of the more potent material. A number of studies have been done, particularly by a North Carolina scientist named Mario Perez-Reyes, with a hyphen, P-e-r-e-z, hyphen,

R-e-y-e-s. He's given individuals marihuana to smoke that's ranged as much as 3 to 400 percent in potency and he's found, without exception, that individuals given stronger marihuana smoke less. They sense, in some way, it's not clear in what way, that this is more potent marihuana and they begin to inhale with less commitment.

So, we have made the speculation, as others have, that higher potency marihuana might indeed be safer for individual smokers, since the most serious area of marihuana caused pathology is the lungs. So, giving people higher potency marihuana might ultimately be a harm reduction maneuver. There might be less harm. We don't know that for sure but we have made that speculation.

Q Now, let me see if I just understand that, if I can summarize that. If you gave somebody marihuana with 1 to 2 percent THC, they wouldn't be able to tell the difference?

A Usually not. That's correct. That's what the literature says.

Q If you then go up to a difference of 4 percent, that's usually where people start to sense a difference?

A They—if they report by a difference but even if they don't report a difference, their smoking behaviour changes. They may perceive their heart beating more quickly, more quickly. They may perceive more dryness in their mouth. They may perceive harshness. They may also perceive that my consciousness is changing very rapidly. This must be very good marihuana. And even without articulating it, they'll begin to smoke less.

Q So, they start to titrate or reduce—

A Correct.

Q -- the dose?

A They'll take in more air with the puff. They'll take in a smaller puff volume. They'll puff less off it. They'll do a number of adjustments so that they take in less marihuana, even if they continue to smoke and particularly in these experiments, when they're directed to continue to smoke, which is told as a condition of being in this experiment. We want you to finish this joint. They'll do so but they'll suck in more air, take smaller puffs, take less frequent puffs. Do a variety of things to diminish their absorption of THC.

Q And in addition to that, just because you've increased the dosage say 4 or 5 or even more times, there isn't an equivalent amount of—

A Yeah.

Q -- increase in the effects on the person, in terms of getting high?

A That's correct. And let me state that briefly and carefully, I hope.

Let's say that you triple the amount of marihuana—amount of THC in marihuana. Let's say you give people 1 percent marihuana to smoke and 3 percent marihuana to smoke, which is basically an increase of threefold or 400 percent, and you ask them to rate their high. That is, just make a subjective rating, ten being the highest I've ever been, zero meaning this is not marihuana at all. You will discover that people will rate the more potent marihuana slightly better in terms of producing subjective effect but within an increase in 300 percent potency, you may see an increase in 30 percent in the rating of high. With an increase of 700 fold, you may then see an increase of 40 to 50 percent in the high and that increase actually tends to last about thirty minutes to an hour.

So, there is a difference. That is, the individuals getting more drug, we presume and a greater effect but the effect is proportional to the increase in potency and the increased effect is relatively brief lived. There is an adjustment that occurs in a variety of ways to protect an individual from overdosing with Delta 9 THC.

Q Now, as I understand it, and this is indicated again at the first page, the THC itself does not cause damage to organs and tissues?

A There is essentially no convincing proof that THC is toxic to human tissues. At high dosage, THC has a big effect on mentation and consciousness and memory, which we'll come to talk about, but there is no evidence, convincing evidence of any sort, that THC damages human tissue, particularly in the usual doses consumed and even in much higher than usual doses consumed.

Q So, when you said a moment ago that one of the major concerns in terms of pathology is the lungs, you were talking there, correct me if I'm wrong, about the smoking process, not the THC?

A That's correct. The inhalation of combusted vegetable material is dangerous to the human lung. Whether that material be tobacco, whether it be marihuana, whether it be other vegetable materials that people have smoked in the past.

Q And the amount of damage varies, depending upon what?

A Mostly on the dose of smoke. We have, I think, Chapter 7, a discussion on the lung damage and it appears that the damage is related to the amount of smoke. So, even though an individual smoking a single marihuana cigarette, if he smokes it in the way that's become traditional in the western world with deep inhalation and breath holding, he may deposit for that one cigarette more particulate material and more noxious chemicals than a single tobacco cigarette. Ultimately, the doses smoked by a tobacco smoker is much, much greater. A heavy marihuana smoker, by definition of the United States government, is five cigarettes per day and that's a—very few marihuana smokers who consume that much. But a heavy smoker of tobacco smokes 40 joints a day or as my father did, sixty and this is an enormous dose of smoke and of noxious stimulants and hydrocarbons and particulate material. This is why tobacco smoking is so hazardous to the lungs.

Now, marihuana smoking we think is at least potentially hazardous to the lungs too but nowhere near as much because the dose of smoke is so much less.

Q Okay. Also at the end of that page, heading page for Chapter 2, you say, "Adverse psychological reactions from marihuana appear unrelated to potency."

A Earlier I had mentioned—in fact, I'll talk about it specifically. A study which we refer to by a group of

scientists in Los Angeles headed by a man named Ritslan (phonetic). It's not the best study in the world but, essentially Ritslan, who was affiliated with an analysis laboratory, asked individuals to submit samples of material which had caused unpleasant psychological reactions or adverse psychological reactions, and I'm sure we'll talk about that before we finish but marihuana sometimes provokes anxiety attacks, even panic attacks in smokers.

So, the laboratory at Los Angeles then analyzed a number of marihuana samples that individuals had sent in which had been associated with unpleasant psychological reactions. It's the only study I'm aware of in which unpleasant psychological reactions has been correlated with potency of the preparation and interestingly enough, there was no correlation. That is, some people who had unpleasant psychological reactions had submitted marihuana which was less than 1 percent THC and the highest one was 7.5 but there was no correlation between potency and unpleasant psychological reactions. And that's almost certain because unpleasant psychological reactions have as much to do with the set—in the setting of use as it has to do with the pharmacology of use. That is, how much THC has been inhaled.

Q All right. Is there anything further that you think the court should know about this potency question, in terms of health aspects? Impact on health of the citizens, based on your research?

A I would just emphasize that the claim of increased potency has been stated and restated ad infinitum, if not ad nauseam, by newspaper reporters and government spokesmen and they say see, today's marihuana is so much more dangerous and not only is today's marihuana not more potent, if it were, I don't think there's sufficient evidence to indicate that it would be more dangerous.

Q Okay, and there's one reference at page 2.4, "There is no possibility of a fatal overdose from smoking marihuana regardless of the THC content."

A I should have mentioned that early on. When we talk about an increased potency of other important drugs, such as heroin or cocaine, there is a risk, that the organism will be overwhelmed, particularly with heroin. The individual will die of a fatal overdose. There is no such thing as a fatal overdose of marihuana. That is, it has never been reported in the thousands of years of use and never been reported in the last thirty years of careful scientific study. It simply means that the cannabinoid (phonetic) receptor, the area that receives Delta 9 THC in the brain is not associated with

regulation of the vital centers of breathing and cardiovascular function.

So, it is not possible for an individual to overdose fatally on marihuana and that, of course, is another important reason why increased potency is of less importance than increased potency of heroin or increased potency of other drugs.

Q There's one other point and I think you've touched on this but you didn't use the term that appears at page 2-5 and that is this business of receptor down regulation.

A Yes.

Q Could you just explain what is meant by that?

A I shall, and I believe that Professor Beyerstein also referred to that during this case. I'd be pleased to do so.

We have discovered in recent years, not only that there is a THC receptor on the surface of cells, we have learned that it, like other receptors, can be regulated in a very rapid fashion. Let me mention an animal study which shows that very carefully.

A basic scientist named Oviedo, O-v-i-e-d-o, took some cells—or rather—yes. He took some cells that were in a cell culture that he knew contained cannabinoid receptors. He exposed them to a labelled form of THC so he could measure the cell uptake. That is, how many THC molecules were bound to the cells. Then he let the cells sit for a time with exposure to THC and later found out, when he exposed them to the labelled THC again, they took up less.

So, his language in that interpretation, is that cells exposed to THC down regulate. That is, they either expose fewer receptors on the surface or they actually tuck receptors inside. This is a mechanism that is commonly invoked as an explanation for acute tolerance to marihuana and to other psychoactive drugs. So that we have, surprisingly, at least surprisingly to me, the ability to regulate the density of receptors from moment to moment. So, an individual exposed to marihuana who gets a very big hit and is very high, he may, in a relatively short period of time, become less high simply because he has fewer receptors available for the THC to bind to.

This phenomenon of receptor down regulation has become increasingly stated as an explanation both for acute tolerance and as an explanation for self-protection. One of the things that we can do is regulate the internal milieu, a process called homeostasis, to protect ourselves from the effect of drugs and other things we ingest.

So, changing the amount of receptors available for the drug is a good way for us to protect ourselves.

Q All right. You've talked about the University of Mississippi—

A Yes.

Q -- and just for the record, the group or the name of the project there is the Potency Monitoring Project, is that right?

A That's correct.

Q And I recall you indicating to me that they also have a bibliographic service?

A That's correct. The University of Mississippi has been very important in marihuana studies in the United States for well over twenty-five years and is part

of—actually receive funding for a number of projects. We've mentioned the Potency Monitoring Project. Another project is a bibliographic service. That is, the University of Mississippi publishes now on an almost annual basis, annotated bibliographies of publications referring to marihuana or cannabis in some form. So that every year or every two years I can buy a bibliography of all of the marihuana papers, usually with a brief abstract attached as part of it. And that project has been underway since even before the monitoring project. I think it probably goes back to '69. The first set of papers annotated by the University of Mississippi service occurred in 1969.

Q And I'm told that there's something like thirteen thousand papers now or something—

A The current database at the University of Mississippi now contains separate publications numbered into the thirteen thousands.

Q Is this, in your experience as a physician and pharmacologist, is this usual or unusual in terms of the study of various substances?

A Well, it's unusual and it's imposing. Marihuana is the most studied psychoactive drug in the universe. Nothing has had thirteen thousand separate publications since 1970, with the exception of marihuana.

Q Okay. Let's go on then to Chapter 3, "Marihuana Related Hospital Emergencies." To start you say, "Marihuana related hospital emergencies are"—the myth

is that, "marihuana related hospital emergencies are increasing particularly among youth. This is evidence that marihuana is causing more harm than previously." Again, you cite a number of newspaper accounts and so on. Underneath that is the fuel, I take it, for the myth and then you set out the fact and following the same format, I take it, the chapter itself essentially provides the basis for what's set out in the fact?

A That's correct. I actually do not know if a hospital emergency reporting service exists in Canada. In the United States the federal government, again under NIDA, the National Institute on Drug Abuse, funds a project called the Drug Abuse Warning Network. The Drug Abuse Warning Network collects reports from a number of urban hospital emergency rooms and the project is set up to give some idea of which drugs are causing difficulty in hospital emergency rooms in the United States.

The DAWN project has been underway for a number of years and has faced a number of problems and as we have stated here, that DAWN began compiling data in the 1970's but our discussion is limited to the years between 1988 and 1995 because that's really the only time that the project was planned so that this sample of hospital emergency rooms could be regarded as a random sample and therefore, could be projected to the entire United States.

I have to say a couple of other things quickly.

The—when an individual enters a hospital emergency room that is part of the DAWN collection system in the United States and he mentions that he's there because of a drug, because of an adverse reaction to a psychoactive drug, then he is treated in a particular way regarding data. That a trained interviewer then approaches him and asks him about the drug and why he is there. Is he having withdrawal, is he having an adverse psychic effect, etcetera, etcetera. Is he overly intoxicated. And then the investigator asks the contribution of alcohol to that event, if it wasn't alcohol itself and then he asks the individual to mention up to four other drugs.

So, there are episodes. That is, I'm here in the emergency room because I took a drug and then there are mentions so that there may be four to five times as many mentions as there are episodes. And so both of those are then published with a list of the two hundred important drugs that cause the people to come to hospital emergency rooms or at least are associated with their admission to emergency rooms.

Now, we became aware, because of statements such as the first one here, which I think is from Lee Bennett who was—Lee Brown, who was the just retired drug tsar in the United States. He was replaced by General McCaffery. You will note that he says, "Marihuana is not benign. It is not harmless. It's a very dangerous drug

that can cause you to fight for your life in a hospital emergency room." Well, that's an interesting statement. What he means is that there have been mentions of marihuana in hospital emergency rooms and that the mentions have increased in recent years. Those two things are true.

What we have discovered, by reading the DAWN reports carefully, that marihuana, despite being the most widely used illegal drug in the United States, is not mentioned very frequently in hospital emergency rooms. We noted that where marihuana is—in 1994, fewer than 2 percent of drug related emergency room visits involved the use of marihuana use alone in the United States. One of the important reasons is, is that more than any other drug, marihuana is mentioned in combination with other drugs. Eighty percent of marihuana mentions are associated with other drug mentions, alcohol, cocaine, heroin, etcetera, etcetera. One of the things that's been happening lately and you will notice that is in quote number two, "In 1993, twice as many teenagers ended up in emergency rooms for marihuana use as for heroin and cocaine combined." Well, that received a lot of press in the United States. I don't know if it did in Canada. Well, teenagers have always mentioned marihuana more frequently than heroin and cocaine because teenagers almost never take heroin or cocaine, both in Canada and in the United States.

So, even though overall, heroin and cocaine are mentioned much more often than marihuana in emergency rooms, if you look at the twelve to seventeen year age group, marihuana is mentioned more often than heroin or cocaine. But we also noticed that aspirin is mentioned more often that marihuana. So, this has to do with the availability, currency and knowledge of the drug to the individual.

So, despite the increasing mentions of marihuana in a hospital emergency room setting, we think it is an issue of relatively little importance. First of all, essentially, none of these young people were ever admitted to the hospital because marihuana toxicity is mild and evanescent. Even if an individual is frightened by marihuana's effects, they go away quite quickly.

So, this increase of marihuana mentions, we think, is in fact spurious. Spurious is perhaps not the right word. It is deceptive and misleading and to policy advocates interested in continuing drug reform control or drug control in the United States, marihuana then becomes a much more dangerous drug. But as we've pointed out, marihuana alone does not kill anyone. Its place is quite low when one considers how frequently it's used. Less than 2 percent of hospital mentions were due to marihuana alone. 80 percent of the time marihuana is mentioned with other drugs, most often alcohol, cocaine and heroin. And we do not think that marihuana is constituting a new, great problem in hospital emergency rooms in the United States.

Q I notice on page 3-4 the reference to 1993, youths under age 18 mentioning marihuana at about 8 percent of the drug episodes—

A Yeah.

Q -- but they mention over the counter pain medications in about 47 percent of these drug episodes?

A That's right. An important category of drugs mentioned when individuals come to the emergency room with drug problems are ibuprofen, aspirin and acetaminophen. Those are the drugs that young people take in adventuresome overdoses. Those are the drugs that young people take when they're threatening suicide. So, they're much more often mentioned in hospital emergency rooms by young people than marihuana.

Q Anything further on the hospital emergencies that you'd like to mention?

A I guess I would conclude by saying that hospital mentions—it's become an important system in the United States, the DAWN report and it showed a kind of continued expansion which makes us think that individuals who are trained as DAWN reporters are probably biased to get more mentions, that keeps them more visible and keeps the DAWN system viable.

The other thing that I would emphasize is that the mention of a drug in a hospital emergency room is seldom confirmed by a toxicological measurement of that drug's presence. So, these are truly mentions and in a certain sense, they do reflect the popularity of drug names on the street. So, as marihuana use increases, then marihuana is mentioned more often in the emergency room. As iron use increases, iron is mentioned more often in the hospital emergency room and probably the best one I could have mentioned was ibuprofen. When ibuprofen became an over the counter drug, it's mentions went up and up and up very rapidly in hospital emergency rooms.

So, it's not necessarily a direct measure of toxicity as it is in part a measure of presence and popularity.

Q Okay. Our next chapter is the question of addiction to marihuana and here you set out the myth. "Marihuana is highly addictive. Long term marihuana users experience physical dependence and withdrawal and often need professional drug treatment to break their marihuana habits." Again, you set out a number of quotes that have been used to fuel that myth and then again you've set out the facts, based on what your findings are, set out in the rest of the chapter. What can you tell us about that?

A Again, addiction is—I'm fond of a quote from a colleague of mine in which he said addiction is an essentially contested concept. That when people talk about addiction, they're often talking about personal definitions, strange ideas, what they've been taught at their parent's knee and in the latest newspaper article.

So, it's necessary to define addiction, at least at some level and it has to do with overwhelming involvement with a drug and it does not necessarily mean physical dependence on a drug.

The opposite side of the coin is also true, that individuals who take morphine regularly for the treatment of serious pain are all physically dependent upon the drug. They all have withdrawal symptoms if you stop the drug but that doesn't mean their addicts. That does not mean that the morphine is ruining their life, or that they will buy it illicitly, or that they are overwhelming involved with obtaining the beloved drug. I don't think people who are taking opiates for chronic pain should ever be described as addicts, although they often are and sometimes they will describe themselves.

Okay. Having said that, there is very, very little evidence that marihuana is an important substance of addiction. That it provokes dependence and drug seeking behaviour in many people. Of the 31 percent of the population in the United States about the age who have tried marihuana, only one third of them took it in the last year. So, that means that individuals who try marihuana, try it and don't try it again. There's at least one estimate that of all the people who are using marihuana, 10 percent of them stop per year.

So that marihuana is a drug that people use occasionally, intermittently. When they don't have it, they stop use without any particular problem. Even heavy users report, in general, the ability to stop use without any particular problem, when they're crossing a border and are worried about being detected carrying large amounts of marihuana.

So, we do not think and have published evidence here, that marihuana is not an important drug of addiction. The reason for stating that is an increasingly common kind of language being used by drug treatment professionals in the United States who now say that marihuana addiction is an increasing problem. We're seeing more and more people who are finding it difficult to stop marihuana. We are seeing more and more people who wish treatment for their marihuana use.

The first thing to say is that surely it must be true in some instances. There are some people who are using marihuana at a heavy rate who would like to cut back or stop their use and some of those people may well consult individuals asking for advice on, I'm smoking too much marihuana. Can you help me to stop. I know that occurs but we think it occurs very rarely because most individuals who wish to cut back on their marihuana use cut back on their marihuana use.

Now, in the United States, it is quite clear that many people are being referred to drug treatment programs under coercion, most often from the

workplace. Seventy percent of Fortune 500 companies in the United States are doing some kind of urine testing in the workplace. Individuals who are employed are often given a sort of—a tiny bit of humanitarianism. That is, if you are detected positive for marihuana once, you are sent to treatment.

Now, such treatment consists of being referred to an agency which does marihuana treatment which gives you a brisk lecture and shows you a videotape and then orders you to not use marihuana anymore, at the risk of losing your job. And in fact, you're sent back to work with a random schedule of urine testing and many individuals stop using marihuana under those circumstances because they fear losing their jobs.

Now, that's referred to as treatment for marihuana dependence. What it is, is treatment for a positive urine test because the individual worker may not be impaired in any way whatsoever but he's been detected.

So, again, many, many words to say that most individuals who use marihuana stop without any difficulty. One can search the literature very hard to find evidence of marihuana's physical dependence and there are a couple of studies which show if you give individuals large doses of cannabis, particularly orally and stop it abruptly, that they complain of restlessness, irritability and some difficulty sleeping. So, to some, that constitutes marihuana withdrawal but the reality is that marihuana use is episodic. Most users have no difficulty stopping and marihuana addiction is neither an important problem, nor a growing problem.

Now, let me say one more thing.

At the NIDA conference that I discussed in the summer of 1995, an American scientist, a very prominent pharmacologist named Billy Martin, talked about a paper in a study he'd recently conducted and we refer to this in here. It has been impossible in the past to even show that animals have important withdrawal symptoms after they've been given large doses of THC and it's been stopped. Also, animals will not self-administer THC as they will heroin, alcohol, morphine or cocaine. You cannot train an animal to seek out THC, although you can train him to seek out other important drugs of abuse.

What Professor Martin did was to give animals a constant infusion of THC in very large dose levels for four days. That is, they were constantly exposed to THC. He actually infused it into their abdominal cavities. Constant exposure for four days. Then he gave a drug which blocks the THC receptor. A drug that's only been available for a short period of time, a cannabinoid receptor blocker, if you will. Those animals, under a kind of precipitated abstinence, had some withdrawal symptoms. Well, that was given a great deal of attention in the American press, perhaps even in the Canadian press, I do not know, showing—claiming we now know that marihuana dependence exists in animals. But of course, the study shows nothing of the sort.

The study shows that you can manipulate a rodent by enormous doses of THC and then you can knock the THC off his receptors and he has an adverse physiological consequence. Well, such a thing doesn't happen in humans. THC doesn't get knocked off of human receptors. It only leaves them very

gradually, which is why there's no obvious withdrawal syndrome even in heavy marihuana users.

So, again, we think the claim of the importance of addiction and addiction growing to marihuana in the United States and the truth that addiction occurs in animals is mostly rhetorical.

Q But one study you referred to where they fed these men large amounts of marihuana. That's the Federal Narcotics Hospital in Lexington, Kentucky, in the 60's that's referred to in your paper?

A Yeah. Right. We particularly like that study. Dr. Harris Izbel (phonetic), who was director of the Lexington Narcotics Hospital, which was a public health hospital in the United States, mostly individuals sent there were sent there for heroin dependence problems but Dr. Izbel took the opportunity to conduct a number of studies on individuals at the Narcotics Hospital. He reported a study in which he took, I think at least ten men, and tried to keep them stoned during their entire waking existence. They had to smoke at least one marihuana cigarette per hour—I want to make sure

I—

Q Page 4-3, the second paragraph.

A Yeah. The ten men were kept constantly high with at least one marihuana cigarette during every waking hour for thirty days. Upon the abrupt cessation of smoking, no withdrawal signs were seen. Now, the study never received much emphasis because (indiscernible) it's whatever everybody else believed to be true but it's only in recent years that we've begun to reinterpret and therefore, it's easy to forget a study which was done in the 1960's.

I will comment that there was one study done in the 1970's by Dr. Reece-Jones, who's name has been mentioned here, both by Dr. Beyerstein—and they've been interested in—but Dr. Jones' opinions have been entered in Brandeis Briefs by both of you.

Dr. Jones did a study in which he gave men very, very large doses of marihuana orally, the equivalent of twenty cigarettes, by mouth, by giving THC by mouth and then stopped it abruptly. I think he did this for thirty some days. These men had complaints. Irritability, restlessness, some difficulty sleeping, some change in appetite, some increased, some decreased. And so Jones reported this as a marihuana withdrawal

syndrome and it's very widely cited by individuals who want to claim that marihuana provokes dependence.

I've been intrigued by the fact that the only study that shows marihuana withdrawal in humans is this experimental study by Dr. Jones and the marihuana was given by mouth. As I may say before this is finished, marihuana by mouth is a much different drug than marihuana smoked and so I'm wondering if Dr. Jones' experiment, which is commonly cited as evidence of marihuana dependence, had to do with giving enormous doses of marihuana by mouth and it's much different than the smoking of marihuana, even at high doses.

Q You mentioned at the top of page 4-2, the study by Henningfield and Benowicz (phonetic).

A Yeah.

Q As I understand it, they were asked to rank the dependence potential of six psychoactive drugs, --

A Right.

A -- caffeine, nicotine, alcohol, heroin, cocaine and marihuana. They're both pharmacologists, I understand?

A They're both very prominent pharmacologists in the United States. Dr. Benowicz is currently head of—the president of the American Society of Clinical Pharmacology in Experimental Therapeutics. Dr. Henningfield works at NIDA, the National Institute on Drug Abuse and is very respected. Both of them are very prominent pharmacologists with an interest in drugs of abuse in the United States. So, Professor Zimmer and I were very pleased to find this interview with them in an article—in a newspaper article about nicotine dependence in which they were asked to rank the psychoactive drugs that are currently imported in the United States for their addiction potential.

Henningfield said the two drugs caffeine and marihuana were the same and Benowicz even ranked marihuana as less addicting than caffeine.

Q And those two were ranked as the least addictive of the whole group?

A That's correct.

Q And that evaluation appears to be accepted by the U.S. Department of Health and Human Services Report to Congress, --

A Yeah.

Q -- as quoted—the 1991 report as quoted by you on page 4-2?

A Right. Even though, in 1995, in the summer of 1995, Donna Shaleighla (phonetic), the current head of Health and Human Services talked about marihuana addiction as being an important thing. So, the government doesn't even have to be consistent from year to year when it comes to talking about marihuana.

Q Anything else we should know about the dependency issue, addiction and dependency?

A I guess I would like to conclude by saying that there are no psychoactive drugs which some people cannot misuse and I do not want to say it's impossible for an individual to display addictive behaviours when using marihuana, but it is so unusual that marihuana is not an important drug of addiction.

MR. CONROY: Take a break, Your Honour?

THE COURT: Yes. We're going to take an afternoon break for fifteen minutes.

(WITNESS STOOD DOWN)

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RECONVENED)

JOHN PAUL MORGAN, recalled, testifies as follows:

MR. CONROY: Just before we start, Your Honour, I take -- you don't have any objection to one using the computer in the courtroom, do you?

THE COURT: No, I don't.

MR. CONROY: Thank you.

EXAMINATION IN CHIEF BY MR. CONROY continuing:

Q The next chapter, Dr. Morgan, is "Marihuana As Medicine," Chapter 5. The myth is, "Marihuana has no medicinal value. Safer, more effective drugs are available including a synthetic version of THC. Marihuana's primary active ingredient which is marketed in the U.S. under the name Marinol (phonetic)." Again, a number of quotations form the basis for the myth and then the facts statement based on the survey and investigation done by you. Would you comment on that?

A Yes. I'll comment briefly that interest in medicinal use of marihuana has grown in North America for a variety of reasons. Perhaps one of the most important ones is the increasing utility of smoked marihuana by people with AIDS, both to treat nausea and vomiting and to increase appetite.

This has provoked a number of reactions in the United States, including the United States government cancelling a program in which people could receive crude marihuana from the government under physician application. It has led to two states having voter initiative laws in which the use of medical marihuana was decriminalized, that in California and Arizona. So, --

Q That was quite recently, was it?

A Quite recent. Oh, in fact, in 1995 or '96 -- '95. The bills passed in November of 1990 -- I'm sorry, November of 1996. And so both of those have attracted much attention and in the United States has set up this strong contention between the state government, particularly in California and the federal government which has moved in its usual direction in the United States of prohibition and more control of marihuana. While 56 percent of the voters in California looking at the evidence and propaganda from both sides approved a voter initiative to make marihuana available.

So, what we have done in the text is to try to review what's really a quite lengthy history of medicinal marihuana claims and studies looking at marihuana as a medicinal product. Then we've also spent a lot of time reviewing the issue of Marinol, the synthetic product, which is also available in Canada, marketed for the treatment of nausea and vomiting and now itself marketed, at least labelled in the United States, for the treatment of AIDS related wasting. That is, the hope that it would increase appetite in AIDS patients.

So, we've gone through this, particularly since the current drug tsar, the head of the office of National Drug Control Policy in the United States, General

Barry McCaffery, stood up at a press conference and said this is nothing but a Cheech and Chong show, which is fairly clever for an ex general but really was not appropriate or truthful because studies of medicinal marihuana have gone back—at least careful studies of medicinal marihuana have gone back to the 1970's in the United States. And at one point, the federal government in the United States was quite interested in studying medicinal marihuana. They are no longer interested in doing so and we've made these points in our study.

Maybe I'll talk about one quick issue. A physician, very respected physician in San Francisco who has been active in the treatment of AIDS patients and active in the potential evaluation of marihuana submitted a protocol to the federal government, to his hospital human investigation committee for the purpose of studying marihuana in AIDS patients. He wanted to compare smoked marihuana to the oral administration of Marinol. Four years later, he has actually finally given up, basically because the federal government will not supply him from their store of standardized marihuana in Mississippi.

The second part of the Mississippi project that I mentioned to you before is that Mississippi grows marihuana under standard conditions. They have seven acres available for growth at their plant—at their farm, the University of Mississippi, College of Pharmacy at Oxford, Mississippi and a Freedom of Information Act suit revealed that they have one ton of standard marihuana stored in Mississippi, available for experimentation and could be available for medicinal use but they refused to supply the one pound needed for Dr. Abrams (phonetic), to do this study. We, of course, those of us who have looked at marihuana as a potential useful medicine have felt that this was the politics. That it's politics and not science stopping the utility of smoked marihuana as a medicine in the United States and in North America.

It is unusual to smoke a medicine. It is quite unusual and we basically don't do it for anything else anymore but there is a reason, in this instance, a particularly important one and I'll mention it and then see what else you'd like to ask me.

Marinol, despite its being relatively pure THC, encapsulated with sesame oil in a small capsule, is very, very poorly available to the human body. When it's swallowed, not only is it poorly absorbed but it must pass through the liver where it is rapidly bio-transformed to other chemicals, most of which are inactive. So that it produces blood levels perhaps one tenth that of smoking. It produces them in one and a half to two hours while smoking produces peak blood levels within fifteen to thirty minutes.

I particularly had experience with a young woman, a colleague of a friend of mine, who was—who had serious metastatic breast cancer and she discovered that a few puffs of a marihuana cigarette made it possible for her to easily withstand the nausea and vomiting of cancer chemotherapy but she found Marinol absolutely useless. Not only would it sometimes provoke nausea and vomiting but that if it had an effect, it was an effect to make her feel drowsy and spaced out in a couple of hours with a slight impact on nausea and vomiting but often well after the nausea and vomiting had peaked.

So, we felt the need to prepare this chapter, to talk about the fact that Marinol, marketed as a highly controlled substance in the United States, does not meet the need of a community which would like medicinal marihuana available. That Marinol is, in many ways, a highly defective medication. That it delivers THC less effectively, less efficiently and at a much higher cost, even with the black market tax of illicitly grown and marketed marihuana.

Q So, from the evidence so far though, we do find that it is being used to reduce nausea, is one that you mentioned, reduce vomiting as well and both of those, as a result of cancer chemotherapy primarily?

A Correct.

Q Also, it's being used to stimulate appetite and promote weight gain and that's usually in relation to the wasting AIDS patients?

A It also will work as an appetite stimulant in people with the wasting due to cancer. The cachexia due to cancer is very similar to HIV related wasting. It appears to be a metabolic phenomenon in some people and smoked marihuana is reportedly useful for increasing appetite in AIDS patients as well as cancer—I'm sorry, cancer patients as well as AIDS patients.

Q And that it's also used to reduce intra-ocular pressure for people with glaucoma?

A Yeah. It's quite clear that the drug reduces intra-ocular pressure and reduces it profoundly in patients with glaucoma. It actually will reduce it in normals as well. There are relatively few case reports that people maintain for a long period of time on marihuana in the treatment of glaucoma, although there's a celebrated case in the United States. A young man named Robert Randall who sued the federal government successfully to supply him marihuana in 1976 and his periodic eye checkups indicate that marihuana has controlled his intra-ocular pressure elevation quite, quite well and, in fact, he's resistant to other medication.

So, what I believe and what I think many people believe in the United States is that marihuana might be quite useful for some patients with glaucoma but it's very rarely employed, despite this evidence that it works reasonably well.

Q Randall's case is well-documented in Dr. Grinspoon's (phonetic) book, "Marihuana - The Forbidden Medicine," is that—

A That's correct. And I guess the other point that that would lead me to is that Randall was part of a group of litigants who sued the federal government in a relatively celebrated case to reschedule smoked marihuana to Schedule 2, making it therefore useful and prescribable by physicians in the United States. This case was heard in front of the Drug Enforcement Administration's own administrative law judge. In 1986, Judge Francis Young, having heard many people, including myself and Randall and Lester Grinspoon and others mentioned in this chapter, basically said they're right. NORMAL, Randall's group, the Alliance With Cannabis Therapeutics and other groups looking for marihuana (indiscernible) are clearly right and Judge Young said that marihuana is among the safest therapeutic agents known to mankind and it should immediately be available.

Now, under the Controlled Substances Act in the United States, the D.E.A. administrator basically had the right to ignore Judge Young's recommendation and they did so. Then NORMAL and A.C.T. sued the D.E.A. once again and a federal appeals court finally decided in 1989, '91, that the D.E.A. did not have to do what Judge Young said. It's often referred to that we lost that case. We never lost the case, it's just that the law was so written that the D.E.A. had the right to ignore the decision of the hearing officer that it employed and it did so.

Judge Young not only noted the utility and nausea and vomiting, but he was quite intrigued by the claims, although not thoroughly studied, of utility and muscle spasticity related to multiple sclerosis and related to spinal cord injury and a few other indications which have not been widely studies. And Randall was very important there and actually, Randall arranged for the publication of most of the testimony at those hearings as well.

Q I was going to mention that as another use, that there seems to be some evidence to support is this muscle spasticity in patients with neurological disorders, that includes multiple sclerosis—

A Right.

Q -- and things of that kind?

A Particularly multiple sclerosis, cerebral palsy and spinal cord injury. A young scientist named Paul Consrow (phonetic), who's on the faculty of the University of Arizona School of Pharmacy, recently sent a questionnaire to large groups of multiple sclerosis patients. Now, this is not a random study to show that a high proportion of them use it but he had reason to know that many of these people had used it and he wanted to know what they used it for. Most of them told him that it was extremely useful in the spasticity in the

spasms related to multiple sclerosis, particularly the pain resulting from their spasticity. There is—there are two papers in the literature indicating that it's a fairly useful treatment for tremor in some people with multiple sclerosis.

So, I think there's a possibility, again, that it could be a quite useful drug for patients with spasticity. It's well-known in the Veteran's Administration Hospital in the United States, particularly in areas where there are large numbers of men with spinal cord injuries and spasticity secondary to that, that marihuana smoking is quite common, even on the wards in the V.A. hospital and often recommended by physicians. Again, unofficially and against the law but the medical marihuana movement has gained strength in the United States and it's currently in the middle of a large political battle, as part of all the things we've talked about.

Q There's anecdotal evidence, as I understand it, involving a number of other—

A Yeah.

Q -- medical or mental conditions, --

A Sure.

Q -- depression and things of that nature. It seems to work for some people and not for others?

A Yeah. Dr. Grinspoon, who's a psychiatrist, is very intrigued about its utility in depressed patients and has commented on that. He has also talked about the fact that he prescribed Marinol to a few patients with chronic depression and it seems to work. Again, this is not adequately studied but it's very hard to study it in the climate of illegality and the Schedule 1 status imposed in the United States.

MR. CONROY: We have an extra copy of this book, Your Honour, that's going to be part of your—

THE COURT: All right.

MR. CONROY: -- the defence Brandeis Brief. So, we'll be getting that to you one of these times.

A I can't—I can't resist telling you my favourite line regarding medical marihuana, which Professor Zimmer refuses to let me put in this text, which is the United States government's actions here can only be compared to the encouragement of the taking of Vitamin C and the illegality of orange juice.

Q Well, eight people, you say in your paper, are receiving marihuana through a federal compassionate use program but you also mention that that program was discontinued in 1992. Now, this is—one of these eight is Robert Randall, I understand?

A That's correct. This federal program grew out of Randall's lawsuit against the government in which he demonstrated that smoked marihuana was the only way to lower his intra-ocular pressure. Then after some indecision, the government made it clear that it would supply marihuana to individuals who went through a difficult application process and who had a physician who was willing to follow them and least ostensibly report on their progress, making this a kind of research program.

At its peak, there were twelve to thirteen patients on the compassionate I.N.D. program and in fact, some of the last patients admitted to the I.N.D. program were AIDS patients but then, under the Bush administration, sometime after 1990, it became clear that the program was going to receive large numbers of applications. I believe at the time it was stopped it was receiving more than thirty-five complete applications a month by people with AIDS. So, there was no question that the program was going to become an important supplier of smoked marihuana to patients with AIDS.

At that time, it was cancelled by the Bush administration. The ostensible reason stated by an assistant secretary in the Department of Health and Human Services, a physician named James Mason, was that the government should not be supplying marihuana to people with AIDS because it would provoke them to misbehave sexually. It's a horrible, devastatingly stupid thing to have said but that was the official statement of the United States government for cancelling the compassionate I.N.D. program. What it means is that no one can be admitted to the program now. The eight patients who were on the program—the eight people who were on the program in 1992 were still alive. There were ten, I think, at that time or continuing to receive marihuana.

Q And they receive marihuana cigarettes or joints or whatever, --

A Correct.

Q -- rolled form, not in the Marinol form?

A That's correct. It's a very important distinction that the federal government, the farm at Mississippi mails the rolled cigarettes to a pharmacy of the individual's choosing nearby and then the pharmacist dispenses it to the eight people.

Q Okay, and those eight now continue to receive it and none of the others—

A That's correct.

Q -- do? Okay. You're familiar with—you mentioned the resolution in California recently and in Arizona and you mentioned the position of the federal government in opposition to this movement. Are you familiar with—I assume you're familiar with the American Public Health Association and its resolution in this area?

A Yes, I am.

MR. CONROY: It's Exhibit 23 in our proceedings, Your Honour.

A What happens is that in a public argument, General McCaffery and others stating the federal government's position, are prone to say that the American Medical Association, the American Academy of Ophthalmology, have not supported the medical marihuana movement. So, it was important to us and as you had already noted, a few organizations in the United States have strongly supported the medical marihuana movement, including the American Public Health Association, the Federation of American Scientists, the American Lymphoma Association, a small group of physicians who organize themselves as physicians in care of people with AIDS and a few state nursing associations and others, have called for the legalization of marihuana for medicine. The American Public Health Association statement is the strongest and mostly widely—

Q In your paper you indicate the National Association of Prosecutors has taken this position as well?

A Quite a long time ago. They actually filed their statement during the Judge Young, D.E.A. hearing. I think also the National Association of Criminal Defence Lawyers—

Q Criminal defence attorneys.

A -- in the United States have done so.

Q And former U.S. Surgeon General—

A Oh, yes.

Q -- Jocelyn Elders?

A Jocelyn Elders has become very adamant in her support of medical marihuana since she left the federal government. It's very impressive.

Q Another name that was mentioned in your paper that surprised me, Newt Gingrich, as being supportive of medical marihuana. Is that the same Newt Gingrich that we hear about as the—

A It is, indeed.

Q -- big man in congress?

A In the last session of the House, a liberal Massachusetts legislator named Barney Frank, submitted a Bill to the house for medical marihuana. It was not acted upon but we have noted the noble tradition of people in the House of Representatives supporting state medical marihuana laws and discovered—we knew that Congressman Newt Gingrich then, in 1982 --

Q 1982, I see.

Q 1982, a youthful Georgia legislator, strongly supported it and wrote a letter to the American Medical Association and maybe I'll take the liberty of quoting what we took out of his letter, in which he says, "The outdated federal prohibition of medical marihuana was corrupting the intent of state laws and depriving thousands of glaucoma and cancer patients of the medical care promised them by their state legislators. According to Gingrich, the hysteria over marihuana's social abuse and bureaucratic interference by the federal government have prevented a factual and balanced assessment of marihuana's use as a medicant." Now, a number of people have tried to ask Congressman—speaker Gingrich if he still feels this way and he has pretty much refused comment but I suspect he probably still feels this way. After all, this is an issue of state's rights regarding the overbearing power of federal government and I assume philosophically, he's where he was before, despite being identified as a conservative spokesman.

Q I suppose if he was to admit that now he may—it might add to the problems that he's had in—

A It might. It might.

MR. DOHM: Well, Your Honour, we just had a really good example of why we have certain rules about hearsay evidence.

MR. CONROY: Well, when we have experts, it's quite common to have hearsay evidence before the courts, in my experience and it's then a matter for the Court to determine what weight to give to the evidence overall.

Q But the—what you've just—

THE COURT: I'm not sure that this fits under that exception.

MR. CONROY: Well, we have to have some humour and entertainment from time to time too about this famous personalities who—

THE COURT: Mr. Gingrich might not feel that way.

MR. CONROY: Well, that's his problem.

Q Is there anything else about marihuana's medicine that you'd like to bring to our attention specifically?

A You remember earlier I talked about the fact that oral marihuana was defective in many ways. One of the ways it's defective is that large doses of Marinol have reportedly caused much psychic distress, particularly in elderly patients and this is not because they're getting large doses of THC. It's probably because they're getting large doses of an activated cannabinoid that our liver makes.

If we take THC by mouth then we produce an active metabolite called levinhydroxy (phonetic) THC which has probably more psycho-activity than Delta 9 THC. We produce a little bit of it when we smoke but it doesn't matter but when we take Marinol by mouth, we produce large amounts of this active metabolite. So that Marinol is not only defective as a medical orally because it provides low levels of THC, it may be defective because it provokes higher levels of a distressing psychoactive metabolite.

So, we would like to see, I and others, would like to see smoked marihuana available as medicine as an answer to many problems of Marinol, while the government views the availability of Marinol as all they needed to do.

Q I don't know if you mentioned this point earlier when you talked about the two but, as I understand it, the speed at which—that one gets a reaction is a lot quicker from smoking than it is from the oral ingestion of the Marinol—

A That's correct.

Q -- and that's very significant?

A Marinol's absorption is slow and variable and produces low levels at a much later time than the levels that are achieved in the bloodstream from smoking.

Q There was one other ingredient that I meant to ask you about and that is the cannabidiol (phonetic) or C.B.D. factor. We also hear about THC being the main active ingredient and so on. You mention that at page 2 to do with some of the therapeutic effects. What should we know about that?

A Cannabidiol or C.B.D., which essentially always exists in fresh marihuana, in fact, it is the immediate precursor to Delta 9 THC, has been shown to be an anti-epileptic in a variety of animal studies and there is some reason to suspect it may be an anti-epileptic in some humans. So, people are interested in this cannabinoid, which is present in natural marihuana.

Then there are a couple of studies showing that C.B.D., somewhat modifies the psycho-activity of THC. There have been some studies that individuals given marihuana with a high C.B.D. content had a little bit less anxiety.

So, there's much interest in C.B.D., at this moment, although relatively little is known about it.

Q When we talk about marihuana as medicine, is this the appropriate area to get into the recent discoveries in terms of the receptors in the brain and so on and how that fits together, or should we deal with that at a later point?

A It's up to you.

Q In terms of the chapters and the myths and so on?

A Yeah. I actually think we have not focused specifically on the receptor issue and this could, therefore, be a good place to do so.

Q Maybe you could tell us about that because that's a fairly recent discovery, I understand, since 1991, I believe. So, within the last what, three years, this has been discovered?

A A little bit more. The last five years, probably.

Q The last five years?

A Yeah.

Q Okay.

A It is well-known that many important psychoactive drugs such as opiates, benzodiazapines, the Valium, librium type drugs and others, act in the central nervous system because they bind to specific receptors. The discovery of the opiate receptor is probably a—you know, a signal point is neuro science in our world. That not only is there a cellular constituent that binds morphine, heroin, etcetera, etcetera, but that those constituents exist on the cells at all times and we make something inside our own brain which binds to them and has physiological effect. So, that set the tone for marihuana research.

It was very, very difficult and it took a long time, until a similar phenomenon was seen in marihuana research. Basically, a young woman scientist named

Alynn Howlett, H-o-w-l-e-t-t, showed in certain cells, particularly—they were actually cells that were grown from a tumour, in cell culture, that they had cannabinoid receptors. It's a difficult and somewhat lengthy story how one proves that a receptor exists. Not only does it have to bind the chemical specifically, it doesn't bind slightly different forms of the chemical. It binds best the chemical that has the most activity and you have to show some kind of activity. You can't just show binding. You have to show that the binding does something to the cell. Well, Howlett accomplished all of that and identified the cannabinoid receptor.

Then in subsequent work by one of her students, William Devane and the father of cannabinoid chemistry, a man named Rapheal McHooan (phonetic), who's in Israel, (indiscernible), people vary in their pronunciation, I don't know quite how he says it, showed that we do make a chemical in our body which binds to the receptor, just as in the opiate story. There is an endogenous THC, if you will, which has now been named—identified and named, anandemide (phonetic). It's a chemical that we make and so it's quite clear now that the THC system, the cannabinoid system is a physiologic system in humans and mammals that we elaborate a chemical that binds to the cannabinoid receptors. And that some of the things that the chemicals do with the cells are modulatory and alter the function of the central nervous system and serve physiological affects. It's just at the moment it's a little unclear what those are.

It's a little unclear what this receptor system does but what it means and one of the reasons why marihuana is indeed apparently such a safe chemical because the Delta 9 THC, in very small doses, reaches the central nervous system, binds to cells that are used to being stimulated by cannabinoids and performs and causes certain changes in function.

I guess I would—maybe I should tell you the—well, it's not—again, as I said, it's not clear what the physiology is but this is a chemical which diminishes nausea, which causes muscle relaxation, which has some analgesic property, some pain relieving properties and alters, in some way, the way we see the world and think about it. One can imagine a variety of situations in which that might be useful in humans, such as labour and childbirth, for instance. Not only would some nausea and anti-muscle tone and diminished pain and diminished short term memory would be quite useful in labour and childbirth. In fact, I believe that's what happens, that the cannabinoid system is activated in labour and childbirth, although there's no firm proof.

But the bottom line is that now we understand this cannabinoid system much better than we ever did before. We—it's perfectly logical to think about medicines related to marihuana and it happens that smoking marihuana is the best way to deliver the most active medication, Delta 9 THC.

This stands at the—you know, we stand at the brink of learning much, much more about this entire system and about the utility of cannabinoids, both their good and their harm.

Q So, we've known that we have a receptor in our brains for the opiates?

A Yes.

Q And we've known that for some time?

A Yes. Twenty years now.

Q And that opiate is—correct me if I've misunderstood, but as I understand it, that receptor is found in the brain stem area primarily?

A Well, importantly, it is so. Yes.

Q The primary receptor?

A Yeah.

Q And that that's one of the reason why, if you take—well, first of all, the existence of the receptor indicates that we produce a similar substance in our bodies on our own, is that right?

A Correct.

Q And so if we introduce more of it externally, it increases the amount that we would normally have and if you take too much, that's how you can have the brain stem shutting down and one overdosing, in fact, --

A Right.

Q -- or dying, in fact?

A Yeah. The opiate receptor modulates effects in the brain stem which control the automatic drive to breathe. We'll continue to breathe even when unconscious or even when sick or even when asleep but a large dose of opiates will diminish the respiratory drive and people die of opiate overdose.

The cannabinoids—cannabinoid receptors are actually more widely distributed in the brain than the opiate receptor, much more widely, but their density in the brain stem is relatively slight and apparently not in any association with this automatic breathing mechanism. This is now a clear cut explanation of why marihuana cannot cause an overdose death. There simply is not a density of receptors in the breathing mechanism, in the breathing regulatory mechanisms that can provoke breathing—shut down breathing. So, there is no overdose death from cannabinoids, as there is from opiates.

Q And the main receptor sites for cannabis, as I understand it, are in the frontal lobe?

A Well, they're in the cerebral cortex. Yeah. In the frontal lobes, in the areas having to do with memory and—perhaps having to do with memory and cognition but there are receptors at other places in the brain, particularly in the area having to do with nausea and vomiting, which is in an area at the floor of the brain, closer to the—what we call the mid brain, the (indiscernible) encephalon. And there are cannabinoid receptors in the periphery in association with the spleen and lymphocytes. Not sure why they're there but they're there and we'll probably learn why.

Q So again, the existence or the discovery of the receptor sites indicates that there's a natural substance produced in our bodies that attaches to these receptor sites. So, when somebody smokes marihuana, they're adding more to than what they'd normally have and it has the same effects then as what we'd normally, actually produce?

A Well, and of course, even that's not well understood. Obviously people smoke marihuana because they like it and something in this complex set of effects in the brain is positive to individuals. They wish to do it again. It's not clear exactly how that relates anandemide and this system we have but it almost surely relates in some way. Anandemide is the chemical that we produce. There appear to be two or three anandemides. They are of a family of chemicals that we've known about for a long

time called the prostaglandins but the system is not really well understood yet, except its structure has been elaborated.

Q I remember reading somewhere—Her Honour asked us to keep chocolate out of this but I remember reading somewhere that this receptor site for cannabis was the same site as for chocolate. Is there any truth to that?

A This is the dilemma with a little bit of learning being a dangerous thing. There is a very small amount of anandemide in chocolate. It is not clear that the concentration is enough that it has any effect when humans eat chocolate. The pleasure of chocolate may relate to many things but it doesn't relate to the cannabinoid system.

Q I think the story I read said you needed a few tons of chocolate in order to get the same effect. What about alcohol? Does alcohol have receptors in the brain in the same way?

A It's interesting that we still don't have an easy yes or no to that. There are clearly some receptors that alcohol stimulates that are related to cell suppression and those receptors tend to involve the neurotransmitter GABA, gamma amino butyric acid, but at high concentrations, alcohol may act like anesthetic agents, in which it disrupts the entire cell membrane and causes the cell to decrease its function. So, there it's a membrane effect and not a receptor mediated effect, although in certain concentrations, in certain cells, alcohol does bind to brain cellular receptors, it's just that it's not so clear cut that that's all it does.

Q How about tobacco?

A Well, nicotine has receptors all over the brain. In fact, the beginning of western pharmacology has something to do with understanding the impact of nicotine, which is a very, very—which is a chemical which exerts a lot of effects in humans. It was just our bad break that nicotine is not well absorbed by swallowing so we had to smoke it to get it. Unfortunately, the smoking delivers noxious substances to the lung.

Nicotine itself has relatively little harm, at least to youthful animals. So, the harm of cigarette smoking is the damage to the lungs of inhaling other materials.

Q So, I think you said earlier the smoke in marihuana is the same as smoke in tobacco?

A Except for the active ingredients, nicotine in tobacco and the cannabinoids in marihuana, the content of those smokes is essentially the same, both in their solid and particulate matters and in the chemicals they contain. There's slight variations and different assays but they're basically the same smoke.

Q But are they the same—can you say that they're the same in terms of health consequences then? I mean, leaving aside for the moment what you've already talked about—

A Mm-hm.

Q -- in terms of frequency of use and dosage and so on and the effects on lungs, but what about other aspects of health effects? I mean, both of them have receptors, marihuana and tobacco.

A Mm-hm.

Q You've said both of them are smoked, in that way taken into the system and yet, we hear lots of things about tobacco that we don't hear about—in terms of marihuana in terms of health effects. Are they the same, are they different? What—

A Well, it's not a simple answer, although I'll certainly make it—I'll try to make it short.

In high doses, nicotine causes fatality, it's just that humans are very rarely exposed to such high doses, so nicotine is probably inherently a more dangerous chemical that Delta 9 THC but in low doses, humans tolerate them quite well. They bind to receptors and cause their affect and then leave the receptors and are metabolized and excreted.

The dilemma for smokers is one that Paracellsus (phonetic) talked about in the 12th century. It is the dose that makes the poison. So, tobacco is so dangerous to humans because the dose of smoke and particulate matters that people take in to get the small amount of nicotine that they come to like, is profoundly dangerous.

The dose of smoke that marihuana smokers take in, although in heavy smokers it may be enough to provoke symptoms, is nowhere near the amount.

So, to rush to the bottom line, marihuana smokers apparently have no danger of emphysema. Marihuana smokers may not have much danger of cancer, although it's unclear but there are no convincing reports of cancer in marihuana smokers and it is my belief that this is a phenomenon of dosage. Not of cannabinoids, not of nicotine but of smoke and its hazards.

Q And just dealing with that, bearing in mind the knowledge or the use that—the evidence we have of use over say the last twenty-five, thirty years, as a physician, I assume, and you correct me if I'm wrong, you see medical costs in the States and the hospitals and so on associated with tobacco consumption in large amounts?

A Yes. In the United States, there is enormous consequences, enormous health consequences in the consumption of tobacco. Not only the production of lung cancer which is rare in individuals who do not smoke, although fortunately, only a small percentage of smokers get lung cancer and then probably as important is the production of crippling pulmonary disease in the form of chronic bronchitis and emphysema. Smoking also makes an adverse contribution to cardiovascular disease, arteriosclerotic cardiovascular disease, although the mechanism is not entirely clear, but adult smokers have more cardiovascular disease as well as more lung disease, both of the cancer and the obstructive type.

So, there's an enormous cost to the culture in terms of health costs of the consumption of nicotine in the form of tobacco.

Q Bearing in mind all the users of marihuana now over this thirty year—let's just take the last thirty year period. We've heard figures in terms of large numbers of consumers at different times. Are we seeing a manifestation of similar problems from the marihuana smokers?

A No. Not at all.

Q And do you know if that's occurring anywhere that you've studied?

A No. In fact, it's interesting that in our text in the pulmonary section, we refer to a statement by a writer in the 1960's about the dangers of marihuana, in which she said in the 1980's, we shall see a marked increase in lung cancer due to the epidemic of smoking marihuana in the 1960's. Fortunately, she was wrong and probably because of the dosage issue.

So, the smoking of marihuana has not caused an epidemic in cancer, although it's conceivable that it could cause some cancers. No one has been able to elucidate them as yet. The smoking of marihuana could have provoked chronic lung disease but fortunately, we now have the studies of Dr. Tashkin (phonetic) over a decade from U.C.L.S., to show that marihuana does not cause the kind of lung changes that are associated with tobacco smoking and cause the obstructive airway disease we refer to as emphysema.

So, the pulmonary consequences of smoking marihuana are extremely small, maybe negligible. I won't go quite that far because there isn't quite enough proof. I hate to enter into the group of people always calling for more research but the reality is, there is very little evidence that marihuana causes significant pulmonary harm.

Now, let me qualify that by saying heavy smokers of marihuana report more pulmonary symptoms than nonsmokers. They have more cough. They have more wheezing. They have more production of mucous and phlegm. So, they have symptoms related to being heavy ingestors of smoke. Those appear to be relatively mild and because they're not associated with obstruction, as in tobacco smoke, there is little evidence that marihuana smoking is producing significant pulmonary harm. I'll give you an exact figure.

Keiser Permanente (phonetic), a large prepaid medical program in southern California looked at the records of all individuals who were heavy marihuana smokers and compared them to a comparable group and age of people who were nonsmokers. Over a lengthy period of time, the marihuana smokers had more visits to the hospital complaining of respiratory symptoms than nonsmokers. That prevalence was 36 percent versus 33 percent.

So, marihuana smokers who are heavy smokers have more lung complaints, just by little bit, than nonsmokers and I do not think it is profound and I think it is, fortunately, of minimal health consequence because marihuana smokers ingest such a low dose of smoke.

Q You mentioned Tashkin.

A Yes.

Q Tashkin, as I understand it, was NIDA, National Institute Drug Abuse funded study in Berkley, was it?

A No. On Los Angeles.

Q Los Angeles?

A And he is still funded. Has been for many, many years.

Q And this is—is this one of the only studies on long term users of marihuana?

A It is, in fact, the only study, unfortunately.

Q The only one in the U.S., or—don't we have one to do with Jamaicans and—

A Well, the Jamaican study was basically a one time study in which we went to Jamaica and recruited heavy smokers of ganja (phonetic), the Jamaican word for marihuana, which is also a Canadian word. You all hear

the word ganja. And compared those to individuals of similar education, age, etcetera, etcetera, who were not smokers of ganja.

Now, that study made many people feel good because the ganja smokers who smoked seven to eight large cigarettes a day, large cigarettes a day, who take in a lot of marihuana smoke, they had no greater prevalence of lung disease than the nonsmokers and that was very good to see but that's a one time study.

The reason the Tashkin study is so important is that he recruited people by newspaper advertisement in Los Angeles and he has followed four groups of people for at least a decade. Now, it's a little confusing in his reports as to how much they had smoked when he recruited them and how often he's followed them, but he's followed them at least eight years since he recruited them and the marihuana smokers were fifteen year marihuana smokers before he recruited them.

Now, he compared the marihuana smokers to a group of people who were marihuana and tobacco smokers, and he had a third group of tobacco only smokers, and a fourth group of people of comparable age who were nonsmokers. He's followed those same people forward, recruiting them and bringing them in for lung tests and reports and bronchial washings to look at their cells and a variety of studies, for at least eight to ten years now. These were heavy tobacco smokers, heavy marihuana smokers, heavy smokers of both and a group of control people who were not smokers.

Q And they've concluded?

A The most important conclusion is that the marihuana only smokers do not show the characteristic decline in lung function associated with emphysema and chronic obstructive pulmonary disease. So, marihuana only smokers, even at high rates of consumption, will not develop emphysema and that's critically important. Critically, critically important.

Now, again, Tashkin's people show no evidence of cancer but it's too small a group. Tashkin's very conservative when he talks about cancer and I know for a fact that he's applied to the federal government for money to try to do a large, different kind of study which he looks at the cancer prevalence in marihuana smokers versus cancer prevalence in nonsmokers and I hope he gets the funding to do that because he's honest and skilled. But the reality right now is that no one else has reported a series of cancer patients in marihuana smokers and so I'm optimistic that the low dose of smoke will mean no cancer but I don't know that. But I do know that Tashkin's studies indicate there is no emphysema danger in smoking of marihuana alone.

Q You hear about all these applications for funding and they all seem to be applications to fund investigations to determine whether or not marihuana does harm in some way.

A Yeah.

Q Do you ever get funding—you know, people applying for funding to see if marihuana does some good in some way or some positive health benefits?

A The last attempt I described to you was Donald Abrams to show that marihuana might be useful in AIDS patients and that was according to the director of NIDA. The only protocol they looked at in the last ten years for a medical application of marihuana, but that's not an adequate answer to your question.

There is—in Dr. Grinspoon's book and in other places, there is a speculation that marihuana smoking, which leads people to not think so much in the usual linear fashion but causes them to have intrusions of memories and ideas and causes people to speculate. So, a number of people have written this might be useful in the creative writer, in the playwright, in the poet.

Now, if I went to NIDA an asked for funding to study a large group of people and measure their creative employment of words or their ability to solve plot problems when I gave them marihuana, I would have no chance of funding because the only way one can get funding for marihuana research, I believe, is to make sure that there is a chance that—or to structure your research so that you're looking for harm. We don't look for good in marihuana funding, we look for harm.

Q You mentioned a moment ago you didn't want to be in that category of people that were calling for more research. I wonder if you could comment on that. A number of other people who have written or given evidence in relation to this issue have said that there's sufficient things that they've seen in the literature or in the research that they feel there should be more—

A Yeah.

Q -- research. You obviously disagree from the comments you made earlier. Can you—

A Oh, no. I—

Q -- explain that or explain—

A I don't disagree entirely. I was once funded by NIDA in the mid 1970's and I would love to be funded again and for all I know, I will some day come up with a protocol, maybe when the political climate changes, so that I could be funded again. But—and of course, there's always something new to study.

What I object to in the call for research is the sort of idea, well, we cannot make any decisions regarding policy particularly criminal justice policy, until we have more research. That's what I disagree with. We have enough information to make decisions about policy. In fact, I, of course, regard the continued retention of criminal justice approaches as a policy decision and I think we now have adequate research to rethink that policy and we don't need more research to rethink that policy. We may need more research in a variety of ways and I will call for it the same way as others but we have enough research now to think about marihuana policy in a new way.

MR. CONROY: Okay. Our next heading is "Marihuana's (indiscernible) in the Body," but I note the time and it's going to take longer than that to go through that one. So, tomorrow morning, Your Honour?

THE COURT: All right. Why don't we take a break for the day. You can return tomorrow morning, 9:30. Thank you.

(WITNESS STOOD DOWN)

(PROCEEDINGS ADJOURNED TO 1997 JANUARY 28 AT 9:30 A.M.)