File No. 65381

C A N A D A

IN THE PROVINCIAL COURT OF BRITISH COLUMBIA

(BEFORE THE HONOURABLE JUDGE F.E. HOWARD)

SURREY, B.C.

1995 JULY 07

1995 NOVEMBER 27

REGINA

V

VICTOR EUGENE CAINE

PROCEEDINGS AT

TRIAL

APPEARANCES:

D. GODWIN for the Crown

T. DOHM

J. HEWITT

J. CONROY for the Defence

K.L. TURNER Court recorder

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PART IV - JUDGMENT

MR. GODWIN: Your Honour, David Godwin. I appear for the Federal Crown this morning. It's on the Caine matter.

MR. CONROY: John Conroy appearing on behalf of Mr. Caine, Your Honour. Mr. Caine is present. My friend, I understand, is wanting to adjourn the matter so I'll let him speak to that.

THE COURT: All right.

MR. GODWIN: Thank you, Your Honour. This is a matter in which my friend, on behalf of Mr. Caine, is making a Charter challenge alleging that Parliament is creating the offence of simple possession of marihuana and including that in the Narcotic Control Act violates Mr. Caine's Section 7 rights.

This matter has been adjourned a number of times previously at my friend's request. I received a memorandum of argument on the issue from my friend last week and there's somewhat luminous books of authorities. The pile is there. In any event, having received that I nearly—

THE COURT: Are you opposing this application?

MR. CONROY: No, I'm not, Your Honour. Counsel are getting briefer but the judges in the Supreme Court of Canada are getting more long winded.

MR. GODWIN: Be that as it may, Your Honour, I understand that my friend is also planning on calling a couple of expert witnesses to testify as to the pharmacological properties of marihuana and to the—to their opinion anyway that the personal use of marihuana by individuals has no harm to other individuals or to society generally. I received a copy of the curriculum vitaes of those experts this morning from my friend and I would like an opportunity, before they testify, to review the materials generally, I suppose, and to review this matter overall with the Department of Justice as it's obviously an important issue for the federal government. I have not been able to—since receiving the materials from my friend last week I have not been able to get instructions from the Department of Justice on this matter. The person who I normally take my instructions from, Jim Wallace, is on holidays and he's back on Monday. He is the one who is familiar with this case and he is the person that I've been taking instructions from so for all those reasons I'm simply asking Your Honour to adjourn this matter so that I might have an

opportunity to respond to the materials that my—to my friend's argument and to review his materials. The—

THE COURT: I have no difficulty with that, subject to what your friend has to say. I think it's advisable for everyone to be well prepared and ready to go otherwise we'll just end up adjourning in the mid—in trial.

MR. GODWIN: I think so that we don't do nothing today we can at least file—there's an agreed Statement of Facts that my friend and I have managed to put together so I think if that's not been filed already we can perhaps do that.

MR. CONROY: We'd like to do that if possible, Your Honour, if we could sort of start so that there's a judge who is seized of the matter we can perhaps have a look at the material between now and next time and that should shorten down considerably the arguments.

THE COURT: I understand.

MR. CONROY: Because we have agreed—we have an agreed set of facts and so the only evidence that we would anticipate calling would be some brief—well, hopefully brief evidence from Professor Neil Boyd and Professor Barry Beyerstein and if I can perhaps explain.

The essential facts in terms of the alleged offence are admitted so this is an objection prior to plea challenging essentially the Schedules of the Narcotic Control Act that add Cannabis Marihuana to the Schedule to make it an offence of simple possession under Section 3. Because it's our submission that that violates Section 7 and that the onus should shift to the Crown under Section 1 to adduce evidence as to whether or not it's a reasonable limit on Section 7 rights. I expect that's going to be one of the major arguments and the issue seems to be a live one in the Supreme Court of Canada with some of the members of the court feeling that public interest issues can be argued under Section 7 and other members of the court saying that they have to be argued under Section 1. So the applicant was proposing to call some evidence to persuade—try and persuade the Court that simple possession of marihuana for one's own use causes no harm to others in society or to society as a whole in order to try and meet a—to adduce some evidence to persuade the Court that this should be a Section 1 issue with the onus on the government.

So what we would hope to do is if we could proceed by just filing the Statements of Facts, providing you with a little bit of other material, then going to the trial co-ordinator to get another date with a view to presenting the applicant's position perhaps on a day or half a day followed then by a ruling on that issue, whether or not there's a liberty interest and there's a principle of fundamental justice involved, and if the Court rules in the applicant's favour on that issue then it would go presumably to another day for the government to produce its evidence under Section 1. So I think if we—

THE COURT: Does that—I'm just wondering whether that might—that process that you're suggesting might presuppose a resolution of whether or not the respondent's position is under Section 7 or Section 1.

MR. CONROY: That's right. If the Court rules that the onus is still on the applicant under Section 7 then that's the end of the matter. If the Court rules, no, that we have established a Section 7 violation then we agree that the government should be then given an opportunity to try and demonstrably justify that it's a reasonable limit under Section 1.

THE COURT: Is it—is it conceivable that the Department of Justice would call evidence on the Section 7 argument?

MR. GODWIN: I think it probably is, yes.

THE COURT: And—all right. I'm in agreement with the procedure that's been suggested.

MR. CONROY: All right. What—if we could then do this, Your Honour. The Court should have a Memorandum of Argument that was filed June 23rd. The Court should also have those four volumes, three volumes of cases and one volume of Statutes or Regulations. I noted that in the Statutes or Regulations inadvertently Schedules—the Schedules from the Narcotic Control Act were not included and so that should go under tab 25 of that slim volume that's at the bottom of the pile. I would then tender the original, and I don't know how many copies the clerk would like, of the Statement of Facts. I have an original and four—an original and three actually—

THE COURT: What—

MR. CONROY: -- but I should advise the Court that in the Memorandum of Argument it's duplicated in there, in any event.

THE COURT: The Statement of Facts?

MR. CONROY: Statement of Facts, yes.

THE COURT: Is in the Memorandum of Argument.

MR. CONROY: It's in the Memorandum of Argument as well just so that we have the original as an official exhibit and then whatever additional copies the clerk requires but in the Memorandum of Argument, part one, it sets out the agreed Statement of Facts. And then the

only other two documents that I would tender for the benefit of the Court is first, the Curriculum Vitae of Neil Boyd. Perhaps that could be then Exhibit 2 if we have the Statement of Facts as Exhibit 1.

THE CLERK: Do you want it an exhibit or should we just file that?

MR. CONROY: Well, I think we could file it and then make it Exhibit 1.

THE COURT: Exhibit—first of all, do we have a Constitutional Questions Notice?

MR. CONROY: Yes, there should be one in the file.

THE COURT: All right, let's mark that as Exhibit 1.

MR. CONROY: All right.

EXHIBIT 1 - NOTICE OF CONSTITUTIONAL CHALLENGE

THE COURT: Is there a copy of that in the Memorandum of Argument as well?

MR. CONROY: No, Your Honour.

THE COURT: All right.

MR. CONROY: No, Your Honour. That should have been included but I apologize.

THE COURT: All right.

THE CLERK: There's just the original Notice from the file. Do you want that made the exhibit?

THE COURT: Exhibit 1, yes, and the Statement of Facts, Exhibit 2.

EXHIBIT 2 - STATEMENT OF FACTS

MR. CONROY: If I could just have a look at that Notice just for a moment to make sure—okay. There's a slight amendment to the Notice that I believe I discussed a long time ago with my friend and if the Court could have a look at the notice, if I could just make it clear that what should be added after—in paragraph number 1, line 5, after the word "date" there's a comma and that should read, in addition, "insofar as it relates—"

THE COURT: I'm not with you.

MR. CONROY: Oh sorry.

THE COURT: Where? Page—

MR. CONROY: Paragraph 1, numbered 1 on page 1 --

THE COURT: Yes.

MR. CONROY: -- line 5, after the word "date"—

THE COURT: Yes?

MR. CONROY: -- there's a comma and then what should be inserted immediately after that is the following: "insofar as it relates to personal possession and use contrary to Section 3(1) and (2) of the Act." So insofar as it relates to personal possession and use contrary to Sections 3(1) and (2) of the Act. Just to make it abundantly clear that the challenge is only to personal possession, limited to that. So if that Notice is then Exhibit 1 --

THE COURT: Can I propose that you file, when you get a chance, an—

MR. CONROY: An amended Notice?

THE COURT: -- amended Notice.

MR. CONROY: Yes.

THE COURT: I'll indicate on this original—I've written in the amendment but it would be a lot easier—

MR. CONROY: All right.

THE COURT: -- if a formally amended one is filed.

MR. CONROY: And then 2 -- Exhibit 2 was the Statement of Facts. Exhibit 3, then, would be Professor Boyd's C.V. and 4, Professor Beyerstein's C.V. and I think that's all that we could usefully do and then perhaps go to the trial co-ordinator and see what we can arrange. I would anticipate that this first stage will obviously take a day and then I think what we would want though would be a ruling then from the Court on the question of whether we go to Section 1 or not and then we could pick another date at that point.

EXHIBIT 3 - CURRICULUM VITAE OF PROFESSOR BOYD

EXHIBIT 4 - CURRICULUM VITAE OF PROFESSOR BEYERSTEIN

THE COURT: Perhaps we should select the two dates now.

(DISCUSSION RE ADJOURNMENT DATES)

THE COURT: I can have you adjourned directly by the trial co-ordinator. You don't have to come back. Attend at that office. Don't leave until you've got new dates.

MR. CONROY: Thank you, Your Honour.

(PROCEEDINGS ADJOURNED)

1995 NOVEMBER 27

(PROCEEDINGS RESUMED PURSUANT TO ADJOURNMENT)

MR. CONROY: Just for the record, John Conroy appearing on behalf of Mr. Caine, Your Honour.

THE COURT: Is that also on behalf of Mr. Fredericks?

MR. CONROY: No. Sorry?

THE COURT: There's two individuals named in the Information?

MR. CONROY: Mr. Fredericks—if you have the agreed Statement of Facts, which was Exhibit 2 --

THE COURT: Yes.

MR. CONROY: -- paragraph 10, while it simply indicates that Mr. Fredericks was present, he is not part of this. He has dealt with his situation so this is just—

THE COURT: All right.

MR. CONROY: -- Caine. Now, Your Honour, you may recall that at the conclusion of the last time we were here we talked about filing an amended copy of the Notice. The one we had filed as Exhibit 1 failed to contain a sentence that I felt it required so I have brought with me substitute documents.

THE COURT: All right.

MR. CONROY: Now, they haven't been filed in the Registry but there are two copies for the Court, a copy for my friend. Essentially, Your Honour, the amendment is what's underlined in paragraph 1.

THE COURT: All right. Shall we file that as the next exhibit?

MR. CONROY: If that could be—or should that replace Exhibit 1 so that it's the—

THE COURT: Any objection to that?

MR. DOHM: I have no problem with that, Your Honour. My name is Dohm, D-o-h-m, initial T and with me is M.J. Hewitt, H-e-w-i-t-t.

THE COURT: All right. We will replace Exhibit 1 then with the amended exhibit. Let's make this Exhibit 1 and the original unamended one, 1A. I don't think it should disappear from the court file.

MR. CONROY: What we should then have is this is Exhibit 1, the old one is Exhibit 1A, the Statement of Facts is Exhibit 2, Dr. Boyd's or Mr. Boyd's C.V. is Exhibit 3 and Dr. Beyerstein, Exhibit 4. I think those are all the exhibits to date.

EXHIBIT 1A - NOTICE OF CONSTITUTIONAL

CHALLENGE (FORMERLY MARKED EXHIBIT 1)

EXHIBIT 1 - AMENDED NOTICE OF CONSTITUTIONAL

CHALLENGE

MR. CONROY: Now, Your Honour, you have the written argument filed by myself on behalf of Mr. Caine. It was filed June 23rd and at that time we also filed three volumes of case books which I believe you have. Now, in those case books, although not referred to in the written argument, is the case of Rodrigez (phonetic), tab 17. In addition, since that time, there are two other cases that I want to refer to at some length and one is Haywood (phonetic) which—I don't believe you have my friend's materials as yet but I—as I've indicated, I received those on Friday and having discussed the matter with him he has kindly included in his case books a copy of Haywood. I wonder if we could hand those up to you now?

MR. DOHM: We're prepared to hand in the case books and the Crown Brandeis Brief as it exists now as well as a copy of our submission which we'll probably have to amend depending on how the evidence comes out, Your Honour, but—

THE COURT: All right.

MR. DOHM: Okay.

MR. CONROY: I can say in a nutshell the Haywood case was decided prior to me filing my argument but didn't come to my attention until afterwards and it deals with the question of overbrets (phonetic) under Section 7.

MR. DOHM: Does Your Honour want any of these things—the Brandeis Brief should be marked as an exhibit, I suppose. The others are—can simply be filed. Is

that—

MR. CONROY: I don't see a problem.

THE COURT: Your Memorandum of Argument was not marked as an exhibit proper.

MR. CONROY: No, it wasn't as an exhibit.

MR. DOHM: No, I wouldn't offer that as an exhibit. It shouldn't—our memorandum shouldn't be an exhibit but perhaps the Brandeis (phonetic) Brief should be.

MR. CONROY: I wonder if my friend wants to just leave the - - I don't mind if it's marked now. I don't think it matters if it's marked now or marked later in my friend's case. We know what it is between us and it's just so we—of ease of finding it and knowing what exhibit it is.

MR. DOHM: Okay.

MR. CONROY: So if we mark my friend's Brandeis Brief—it would be what, 5, for both volumes?

THE COURT: Volumes one and two?

EXHIBIT 5 - BRANDEIS BRIEF

MR. CONROY: Now, Your Honour, because I didn't receive this material from my friends until five o'clock Friday, including a draft of their submissions obviously my experts haven't been in a position to look at their Brandeis Brief and consider it testifying and I'm going to want them, of course, to do that and I haven't had time

to go over all of my friends' authorities and everything in their argument because I didn't have the complete argument and there simply wasn't enough time to do it. But I've mentioned these, the Haywood case, and the other case that's fairly new, September of 1995, that is of particular importance is R.J.R. MacDonald which is at tab 15 of my friends' materials and it's the case ...

(SUBMISSIONS BY COUNSEL)

MR. CONROY: I'd like then to proceed, if I may, to call Dr. Barry Beyerstein. Would you take the stand over there, please, Doctor?

BARRY LAINE BEYERSTEIN, a witness called on behalf of the Defence being duly sworn, testifies as follows:

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

A Barry Laine Beyerstein, B-e-y-e-r-s-t-e-i-n.

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

A Thank you, Your Honour.

MR. CONROY: I had Dr. Beyerstein give me an outline in very summary form that I provided to my friends and it may have been—the one I gave my friends may have not been the final edition but I have extra copies and I have one for the court that may be of some assistance. Now, we filed Dr. Beyerstein's Curriculum Vitae as Exhibit 4 I believe.

THE COURT: What do you wish me to do with this document?

MR. CONROY: That's just so that you have an outline, Your Honour. It's just to—I'm going to be taking him through that and a lot more. It's just to—I might even file it as an exhibit but—

MR. DOHM: He might have a little opposition to filing it as an exhibit, Your Honour.

MR. CONROY: Well—

MR. DOHM: However, I've often handed those things to the judge just as an assistance for note taking purposes. It might sometimes save you taking notes.

MR. CONROY: That's essentially the purpose of it. I intend to—

THE COURT: You have no objection to it being before me on that basis?

MR. DOHM: Oh no, you might find it helpful, Your Honour.

THE COURT: My doubt—okay, if you're prepared to go that far. My difficulty is whether something should be before me that isn't marked as an exhibit.

MR. CONROY: Well, I see it more as a matter—it's like a Memorandum of Argument in a sense. I mean I know it contains evidence and I intend to go through it and, as I say, call more evidence than just that but—so it's there really to just assist you but if you prefer not to have it I'll take it back.

THE COURT: I—it doesn't matter to me one way or the other. I am just very leery of having something before me that I might or may not refer to that is not marked as an exhibit. I suppose if we all understand the very limited purpose to which its use might be put—

MR. DOHM: Certainly, Your Honour, and the Crown recognizes that the courts hear and see things everyday which they must disabuse themselves when it comes time to make a determination so the fact that you have that before you causes us no difficulty at all.

THE COURT: All right. What I propose to do then is mark it as an exhibit for the purpose simply of keeping track of it within the proceedings and everyone will know precisely what it is I may or may not have looked at.

MR. CONROY: Should we call it A, then, or something to distinguish it from exhibits proper on the trial? I'm just thinking if this goes up the ladder we don't want it stuck in.

MR. DOHM: It should probably be marked as an exhibit solely for the purpose of identifying it so perhaps A for identification purposes then.

THE COURT: All right. Exhibit A with the understanding that it—it's being filed as an A to the Court.

EXHIBIT A FOR IDENTIFICATION - DOCUMENT

MR. DOHM: Now, we have Dr. Beyerstein's Curriculum Vitae as Exhibit 4. I am going to be taking him through it to some extent and asking that he be accepted as an expert in the areas of psychoactive drugs, their affects on the brain, consciousness and behaviour.

THE COURT: Psychoactive drugs.

MR. CONROY: Their affects on the brain, consciousness and behaviour and on the policy issues surrounding drug regulation. If the Court has the exhibit in front of it—

THE COURT: Let me just clarify procedurally what we'll be doing here. I understand that you're going to want to take him through his qualifications regardless.

MR. CONROY: To some extent.

THE COURT: The questions for—that I have is whether or not expertise and the issue of whether he might give an opinion and in what areas he might give an opinion is going to be in issue because if it is then we should have a voir dire to determine—

MR. DOHM: I don't—

THE COURT: -- that issue.

MR. DOHM: -- expect that there will be an issue about his expertise, Your Honour, but I would simply like to have my learned friend lead him through the areas upon which he intends to qualify him.

THE COURT: All right.

MR. CONROY: If the Court has Exhibit 4, I don't know if Dr. Beyerstein has a copy of his C.V. in front of him. I have an extra copy, if I can put that in front of him, and the Court could follow on Exhibit 4. My friends have it, I believe.

EXAMINATION IN CHIEF BY MR. CONROY:

Q Dr. Beyerstein, you have a Bachelor of Arts, Honours First Class 1968 in psychology from Simon Fraser University, is that correct?

A That is correct.

Q And you also have a Ph.D. in experimental and biological psychology from 1973 from the University of California at Berkeley?

A That is correct.

Q In addition, you were on the supervisory committee—interdisciplinary committee on Neurosciences at the University of California, Berkeley, when you were there?

A No, actually that refers to the specialties of the people under whom I qualified. That is there to indicate their

specialties and the fact that each of them examined me in their areas and supervised a different part of the research that I submitted for my doctoral degree so those are faculty members of the University of California who essentially passed on my degree qualification.

Q And so that includes Mr. Freeman (phonetic), Mr. Devawois (phonetic), Mr. Barlow (phonetic) and Mr. Rosenswythe (phonetic), is that correct?

A That's correct.

Q And the areas of specialization then are set out next in your Curriculum Vitae, Exhibit 4. Does that give us a broad idea of the particular areas of expertise that you've developed since your graduation?

A Some of them were included at that time and others are ones that I've been led into by events since then.

Q In that area is referred to brain behaviour relationships and then psychopharmacology. Could you describe for us what that is?

A Yes. This is an interdisciplinary study of the affects of drugs on the central nervous system, the brain particularly, and their ramifications for psychological processes such as consciousness, behaviour, social behaviour or any other psychological quality that a psychologist would be interested in.

Q And does that enable you or does that—did that involve your investigating, for example, marihuana?

A Yes. For instance, I teach psychopharmacology at the undergraduate level, at the graduate level. I have reviewed articles in that area for learned journals. I've been on the editorial boards of journals that deal in that area so this is the area that I do research in, that I teach in and am qualified by the university to supervise graduate students in.

Q And I take it it involves many different types of drugs, not just marihuana.

A That is correct. All psychoactive substances are under the purview of a psychopharmacologist and would be taught in say a course called drugs and behaviour which is one of the ones that I teach.

Q Does that then enable you to know exactly what the particular drug is made up of and what its chemical components are and things of that nature?

A Yes, you start with chemistry and you work to biochemistry which is, of course, its interaction with the constituents of the central nervous system. Then you work through physiology which is the functioning of the nervous system and how that is affected by the chemicals that are put into it by whatever means and then finally one studies the outcome of that which is the change in someone's subjective experience or outward behaviour.

Q And in doing that would you become cognizant of the distinctions between different types of drugs in the sense of some being classified as narcotics, others being classified as non-narcotics, some other type of a drug?

A Yes, that's critical because one way one makes that classification is on chemical grounds, of course, but there's an equally valid way of doing it and that is to say one class of drugs affects a certain set of receptor organs, a certain set of neurophysiological entities in the brain, another class has a totally different spectrum of places that it works and mechanisms by which it works and this is largely what psychopharmacology is, is trying to justify all of those things so that we have a clear understanding of why, say, stimulants work to arouse someone and depressants have exactly the opposite affect.

Q And in becoming, then, familiar with the nature of a particular drug and its affects I take it—please tell us, are you then involved in studies that involve either laboratory studies involving animals or studies involving human beings in the taking of the particular drugs and what affect it has not only on them as an individual in the sense of their health, mental or physical, but also in terms of how they interact with others?

A Yes, that is essentially the sort of research that I have been involved in.

Q And how long have you been involved in that research?

A Since about 1975, that particular aspect of it.

Q Now, in your Curriculum Vitae, after setting out the areas of specialization, some of which we've just dealt

with, you then set out your teaching positions from 1968 through to the present?

A Yes, I believe so.

Q And that essentially shows us the different places that you've been and that you're now an associate professor, Department Psychology at Simon Fraser University, is that right?

A That is correct.

Q And on the next page we have your research positions from 1968 through 1973?

A That is true.

Q And I take it since 1973 all of your research has been in the capacities indicated in your—with the various universities that you were at subsequently, is that right, or have you been involved in other research positions?

A My subsequent things have only been visiting professorships but they've all been in the general areas that we've discussed, brain behaviour relationships and pharmacological affects on brain behaviour.

Q There's an indication on page 2 of a number of scholarships and awards that you've received and then you've set out the detail of various research grants, the balance of that page and over on to page 3.

A Yes.

Q Now, I see that, for example, the second research grant had to do with interactive affects of caffeine and alcohol on psychomotor performance. We talk about these drugs and your level of expertise. Does the definition of psychoactive drug include tobacco?

A Quite clearly?

Q Alcohol?

A Definitely.

Q And caffeine obviously.

A Yes.

Q As well as what are popularly known as the soft drugs, marihuana, or harder drugs, heroin, cocaine, things—

A That's right. Any—any drug whatsoever that's capable of interacting with the central nervous system would be a psychoactive drug. Some of them happen to be legal. Some of them happen to be prescription only. Some of them happen to be illegal but they are—from the psychopharmacologist's viewpoint they are all essentially the same although they work on different neural systems and have different affects.

Q The—another one you were involved in that says 1978, non-medical use of drugs, Directorate Health and Welfare Canada, an ecological study of bar room aggression. What was that about? I assume it must have been something to do with alcohol.

A Absolutely. I trained—I trained a large group of graduate students to go and be participant observers in drinking establishments to look at the ability of alcohol to incite people to aggressive behaviour and, in other words, to be scientist observers quietly posing as patrons in these places and then look at the dystocial factors, the physical setting, the amount drunk by the individuals, whatever could be told in that kind of environment about the individuals themselves that is likely to make violence more—or more common in that situation.

Q Okay. There are a number of other research grants indicated. I'll just touch on a few more. The Rat Park Experiments. Did that involve analysis of various amounts of drugs being fed to rats and things of that kind?

A This was a semi open field, semi natural environment similar to what a rat might experience in the wild where a large group of these animals in a big, open pen that we made some attempt to make like a natural situation and then we had a computer system that they could control to dispense either pure drinking water or that water with morphine in it and we compared their willingness to ingest voluntarily, since they were not required they could take the water or the morphine, to take the morphine and compared their willingness to that of individual animals in the usual, small, foot square, wired cages that animals live in in the typical lab environment. And I don't know—would you like a capsule summary? In effect, what happened was we were able to show that—as others have shown before us, that animals penned up in this little isolated cage would

drink sufficiently from the morphine spigot of the two bottles that were on the cage to become physically dependent whereas the animals living in a large social colony in this big open space with things to interact with, to chew on, to mark his territory et cetera, and, of course, to form social groups and territories that they could defend wouldn't. In fact, we couldn't get the animals in that park, as we sort of humorously called it, to ingest the morphine. We eventually forced them by turning off their water and so if they wanted their daily water they had to take the morphine with it. Under those conditions they drink it and drink to the point of becoming physically dependent which is they show withdrawal symptoms if they stop and that's, in fact, what they did. When we turned the water back on and the animals in Rat Park turned back to the water and voluntarily underwent withdrawal to be able to be free of the drug and go back on pure water.

THE COURT: So their liquid of choice was pure water.

A That's correct.

MR. CONROY:

Q Now, did you—have you been doing studies or been involved in research of this kind with marihuana?

A Not with animals, no. Our interactions with marihuana smokers have been—since we're not a medical school we can't administer it to people the same way we can ethically and legally to animals so our work with marihuana smokers has been with people who choose to do it illicitly and to study them in terms of their achievements, their attitudes, their social behaviour and that sort of thing but we don't administer the drugs as we do, say, to the animals in these other experiments.

Q Basically because you're precluded from doing so by the law.

A That's right.

Q Now, nevertheless you've had considerable involvement, it appears, with the question of various drugs, particularly the opiates and alcohol and so on but you appeared, for example, as an expert witness, I see, in 1987 in the Supreme Court of British Columbia on addiction, affects of marihuana, amphetamines, and substituted phenylethamines (phonetic) --

A Ethamines (phonetic), yes.

Q Is that right?

A That's correct.

Q And you have, as indicated on the fourth page of your C.V., appeared as an expert witness in relation to various drugs and issues of drug affects including combined affects of alcohol and marihuana in 1993 and psychoactive drugs and disassociative states in 1994, is that right?

A Assuming those dates are correct—I haven't checked them—but, yes, I have been qualified in those areas for sure.

Q Could you tell us—tell us then what your expertise is in relation to marihuana specifically, bringing it within your general expertise.

A I teach, as I said, psychopharmacology at the undergraduate and graduate levels so, for instance, I've held a graduate seminar. We've reviewed the entire world's literature on psychoactive affects and health affects and social affects of marihuana where the students would read through that literature and we would—I would lecture on it, they would discuss it, that sort of thing. I serve as an advisor to various drug study and education addict help organizations, international drug policy groups and all of those have at one time or another dealt with drug policy and, more specifically, my interest has always been to try to take the scientific evidence and bring it into the policy arena, in those particular cases anyway, to inform policy, to make it congruent with the best scientific evidence on the topic.

Q I take it obviously you'd be kept informed then of current research programs or current articles and things of that nature on the topic of marihuana and marihuana affects on health and these sorts of things.

A Yes, I need to do that for my work.

Q Okay. And can you then express opinions, from your knowledge of the drug of marihuana? Are you able, as a pharmapsychologist or psychopharmacologist to speak to the affects of that particular drug on the brain, on consciousness and on behaviour?

A Yes, I feel confident I could do that.

Q And are you able, based on your experience, to talk about not only the affects of the drug on individuals but how it then affects those individuals in society?

A Yes, that's the far end starting with the chemical, the person, the small social unit and finally the society at large so that's what psychopharmacology encompasses.

Q And in that last area, including the affects on the individual when involved in various tasks or skills such as driving.

A Yes, that would be the intermediate stage, the affect on the central nervous system and what that would do with respect to various tasks an individual might be asked to perform.

Q And do you also, in studying this area within your overall experience, do you look at the impact of this on, say, society as a whole? Is that an aspect of—

A That is correct. I am on the Board of the Drug Policy Foundation in Washington, D.C. and the Canadian Foundation for drug policy, both of which are think tanks that attempt to marry the best in the scientific literature with that in the legal and social policies spheres.

Q Okay. Maybe just fill us in a little bit more about those two organizations in particular. The Drug Policy Foundation in the United States is one?

A That's correct, yes.

Q It's—it comprises a number of individuals. Can you give us some—an idea of who is involved in that and what's involved in it?

A The president is Dr. Arnold Treeback (phonetic) of American University who is a lawyer and a criminologist. The Board includes people such as Dr. Lester Grinspoon (phonetic), Harvard Medical School, Dr. Andrew Wile (phonetic) of the University of Arizona Medical School, Dr. David Lewis (phonetic) of John's Hopkins University in Baltimore, Maryland, Craig Ryderman (phonetic), sociologist from the University of California, various lawyers, including Rufus King who grabs the doyen of the American Bar in the area of drug law, as a matter of fact, and several other equally eminent lawyers as well so it's mixed interdisciplinary group all of whom come together to discuss scientific and legal policy issues with respect to drugs.

Q And so am I right in understanding that they not only look at the particular drug itself and its affects on individuals or groups of individuals but they look also at various approaches to the control or otherwise of these particular drugs.

A Very much so and it's also an international organization and it includes people from the U.K., from most of the European countries, from Australia, New Zealand, Canada and, of course, the U.S. and all of our meetings are always two pronged, that there's a purely scientific medical stream and there's a purely policy stream but to say that they are pure does not mean that they don't interact. In fact, that's the purpose of holding them in tandem is so that the two will interact.

Q Okay. Now, the balance of your Curriculum Vitae consists of various conference grants, consultantships, offices and positions that you've held and then a long list of publications that you've been involved in or that are in progress as well as talks you given either at symposiums or conferences or also to various community groups and conventions and so on. Is there any in particular that should be brought to the attention of the Court in terms of your expertise in this area with respect to marihuana and marihuana affects that you would point to?

A I suppose that I am frequently asked by public organizations to lecture on this topic. It's one that I get frequent requests from either service clubs, other universities, the school system and numerous requests from the media. I must get probably two or three requests a month from the print media and electronic media to comment on either the psychoactive affects, the social affects, the legal status of marihuana.

Q What is the most recent scientific study that is available with respect to marihuana and its affects?

A Probably the most recent is not a study individually, it's a review of the world's literature, that there have been four or five major reviews going all the way back into the last century with the India Hemp Commission and most recently the Linda Smith Centre in New York City commissioned another major review which was simply intended to update those done by Canada's LaDane (phonetic) Commission and the LaGuardia (phonetic) Report in the United States and others done for various congressional committees in the U.S. and to bring it up to present, looking at the most recent additions to that literature.

Q And was that done in 1995, the Linda Smith Study?

A That's right in—just in the last couple of months, if I'm not mistaken.

Q Okay. So that should be the most current—as far as we know anyway, the most current review of what's gone on in this area.

A Yes, I think so.

Q Okay. Just so that we have that background clear in terms of various studies, because I think we'll be coming back to it, what was the first one? Was that the British—

A The India Hemp Commission?

Q When was that roughly?

A It was the latter part of the 1800's. I just don't recall the exact date.

Q And the next major one after that?

A Would have been the LaGuardia Report which was in the early 1940's. Mayor Fiorello H. LaGuardia of New York City struck a panel to look into the affects of marihuana and make policy recommendations.

Q And following on that the next major one?

A The next big one would have been the LaDane Commission Report, the commission—

Q 1970 --

A -- the query into the non-medical use of drugs.

Q 1973.

A '73, yes.

Q And following on that what would be the next?

A It would be the Select Committee. I forget the exact title of it but of the Australian Government. In fact, in the Crown's list of submissions they—they referenced the Hall Report which was actually one of four reports that were struck by that—or at least commissioned, rather, by that committee to advise the territorial and

federal governments of the country of Australia on marihuana policy.

Q And that's the document called National Drug Strategy, the Health and Psychological Consequences of Cannabis Use?

A That's right. Hall and colleagues?

Q By Hall, Sollowy (phonetic) and Lemon?

A Yes. That's right.

Q Okay.

A That was one of four papers that were commissioned at the same time, reviews of the literature.

MR. CONROY: For the Court's benefit that's tab 3 of my friend's—

Q And following on that?

A That would be the Linda Smith review that we just discussed.

Q Okay.

A Oh, excuse me. I missed an important one. 1982 the Institute of Medicine of the National Academy of Sciences of the U.S., Marihuana and Health, that was another major blue ribbon panel struck by—at the request of the U.S. Congress so I should have inserted that one. Excuse me.

Q 1982, this Australian one was 19 -- is fairly recent, 1993, 1994?

A That's right.

Q Is that right? Okay. And from your readings and your involvement in this issue do you feel that you're completely up on the current status of the affects of marihuana on individuals and on society generally?

A Yes, I've reviewed all of those publications and for my class last semester dealt with them quite extensively actually.

MR. CONROY: I'd ask then that Dr. Beyerstein may be able to provide opinion evidence in this area specifically, as indicated at the outset, areas of psychoactive drugs, their affects on the brain, consciousness and behaviour.

Q So essentially the affect of psychoactive drugs on individuals of various ages and the consequences of their consumption of the drug in terms of the interplay with other individuals in society—

THE COURT: Say that again.

MR. CONROY: I beg your pardon?

THE COURT: Consequences of?

MR. CONROY: Of the consumption of these types of drugs by individuals on their interaction with others.

THE COURT: Wouldn't that be—

MR. CONROY: In society.

THE COURT: -- covered by behaviour?

MR. CONROY: Well, it might be but they may act in a particular way alone. I want him to cover that. I want him to also cover what happens in conjunction with interaction with other people and impact on society as a whole as well as on various policy issues. Now, my—I anticipate a bit my friends' position because in their argument they say that what we're trying to do here is essentially get the Court to make a policy decision instead of a legal decision and it may seem that way from time to time but, as I understand the cases, we have no choice in the matter when a constitutional argument is made and all we're asking the Court to do is to look at this following the constitutional—to determine what the constitutional parameters are in relation to this particular drug. In order to do that you have to look at the affects of the drug, you have to look at the affects on the individual interacting with others but you also have to look at what are the various policy options in order to determine whether or not they've gone too far and there are other alternatives and options available to them that would meet the objective short of a complete prohibition that affects liberty.

So I'm asking that Dr. Beyerstein be qualified to give expert evidence in those areas.

THE COURT: The Crown's position?

MR. DOHM: I would just like to ask questions on one point.

THE COURT: Yes.

CROSS EXAMINATION BY MR. DOHM:

Q Doctor, you mentioned the Canadian Foundation for Drug Policy.

A Yes.

Q Can you tell me about that, please?

A It's a brand new organization spearheaded by Mr. Eugene Oscapella (phonetic), a barrister in Ottawa, and it now has a Board of, I believe, about eight members. It's—has a grant to hire a small research staff, buy the usual office equipment, that sort of thing, and it has a web site for disseminating information on drug policy and to connect the far flung members that are in Toronto, the University of Western Ontario, Ottawa, here on the West Coast and various places in between but it's largely intended to be like the Drug Policy Foundation in Washington that I described to Mr. Conroy, an attempt to mix the scientific world with the legal policy world in this area.

Q These then, I take it, are both organizations comprised of groups of people who are interested in the area.

A Interested in and experts. They're invitational. I mean they have membership as well but to be on the Board it's invitational. You need to have distinguished yourself some way in the area.

Q Okay. It's groups that are sort of self-selecting then.

A As all groups are. I mean you are—you choose your people by the expertise you need to get the job done.

Q Okay. I just wanted to be sure that I understood what that organization was. And when was that started? You said it was new?

A Yes, it's about two years old.

Q About 1993?

A Thereabouts. I just forget the exact date.

MR. DOHM: Thank you, Your Honour. I have no difficulty with him offering opinions.

THE COURT: In—

MR. DOHM: In the areas—

THE COURT: In the—

MR. DOHM: -- outlined?

THE COURT: -- areas described by—

MR. DOHM: Yes.

THE COURT: -- the defence?

MR. DOHM: That's correct.

THE COURT: All right. Based on the evidence that I have heard and in the review of this witness' Curriculum Vitae I am satisfied that he is an expert in and can give opinion evidence in the field of—Mr. Conroy, if you'll just double check my wording of this—psychoactive drugs, their affects on the brain, consciousness and behaviour of humans and, in my view, behaviour of humans encompasses solitary actions as well as interrelationships of one another and societal behaviour and, finally, on the policy issues relating to drug relation. Is that satisfactory?

MR. CONROY: Do you want to start now or take the break?

THE COURT: It's an appropriate time for the afternoon break.

(WITNESS ASIDE)

(PROCEEDINGS ADJOURNED)

(PROCEEDINGS RECONVENED)

BARRY LAINE BEYERSTEIN, recalled, testifies as follows:

EXAMINATION IN CHIEF BY MR. CONROY continuing:

Q Dr. Beyerstein, let's then start—if you can tell us what is marihuana?

A Marihuana is the colloquial name for the plant known botanically as cannabis sativa. It is a plant that contains a number of psychoactive cannabinoids, the most potent of which is delta 9THC or tetrahydrocannabinol which is a unique substance in nature. It's not found in any other plant that botanists and ethnobotanists have been able to discover and it turns out to be the source of the psychoactive properties when the plant is eaten or smoked.

Q And it grows in most—

A Another colloquial name for it is weed and—

Q -- climates?

A -- the reason being that it is one of the most ubiquitous plants known. Its cultivation is known to have gone back at least five thousand years and it's found in all parts of the world. It grows in varied climates, soil conditions, et cetera, and it's a very useful economic plant. The fibres are useful for weaving cloth, for making paper, for a variety of other purposes and the oils are useful for paints and very other chemical processes over and above the medicinal uses which also go back several thousand years.

Q And many of those uses existed up until around about the turn of the century or in Canada in the early 1920's.

A That's right, that it was part of the United States pharmacopoeia and the British pharmacopoeia which we used here in Canada and it was used for control of epileptic seizures, menstrual cramps and menstrual irregularities. It was used for migraine headaches, used as a general pain killer, relaxant for stomach upsets. It had a number of documented uses, many of which are actually coming back now thanks to the work of Dr. Lester Grinspoon of Harvard who is spreading its use not only as an anti-glaucoma drug but as a drug that seems to affect the symptoms of multiple sclerosis in a good fashion and perhaps most significantly it seems to be very good for reducing the nausea that's caused by various strong drugs that are used in the treatment of cancer and aids incidentally.

Q Prior to it becoming illegal in Canada in 1923 and perhaps before that in the United States was there a—from your knowledge of the literature and so on, was there any indication of a public health problem from consumption of marihuana at that time?

A No, and as Professor Boyd will tell you the impetus to bring it under legal control, ban, et cetera, was largely due to the people who were using it, that it was a drug that was used by people who were considered outside the main stream of society, of different ethnic origins, were feared and disliked by the dominant classes of the time and whereas they were willing to lead their own drugs that they had a long history of familiarity with alone, they considered these to be somehow emblematic of everything they disliked and feared in those other groups.

Q I'm going to ask you to tell us exactly what it does but first I'd ask you to slow down a little bit.

A Sorry.

Q While it does get taken down on transcript, nevertheless everybody is sort of making notes and wants to get—

A Excuse me.

Q -- generally down what is said.

THE COURT: I was just wondering how your students manage in your lectures.

A Unfortunately my—my teaching evaluations are generally positive but there is one item—

THE COURT: He speaks too fast.

A Yes. I'll try to do better. Excuse me.

THE COURT: We'll see if we can break you of the habit.

MR. CONROY:

Q What is a narcotic?

A A narcotic is a drug that is either synthetic, that is manufactured from raw materials, or derived from the opium plant and so the opiates include morphine, which is by weight the largest narcotic substance in raw opium from which we get all the other natural narcotics. It includes things such as methadone, meperidine which we generally know as Demerol. It includes smoking opium. It includes Talwin and literally a thousand other or synthetic opiate molecules that are used in various aspects of medicine or could be if they were needed.

Q And is marihuana a narcotic?

A No, it's not. In fact, it's a unique substance, as I said earlier. It doesn't fit into any of the other pre-existing drug categories for a number of reasons.

Q Are there any comparisons to a narcotic? Is it like a narcotic?

A Only in the sense that narcotics, if you had to make the crude distinction of being more excitatory or inhibitory, that is, more of a depressant or a stimulant, narcotics, although they're not classic depressants, they are more on the depressant side and in terms of the way

it affects consciousness and behaviour I would say that marihuana is more like the depressants but it's clearly not one of them either, although it has some aspects in common with them.

Q So when we talk about different types of drugs the opiates generally fit under this definition of narcotic.

A In fact, those two words are interchangeable.

Q Okay. Alcohol. How would you categorize that?

A Alcohol is part of the category known as the alcohol - hypnosedative category which includes beverage alcohol, ethyl alcohol, which is the only drinkable kind, and the barbiturates and the so-called minor tranquilizers, of the benzodiazapine (phonetic) or valium type.

Q And then things like amphetamines and so on.

A Amphetamines are called psychostimulants or members of the psychostimulant class and it includes—you used the term—substituted phenethylamine (phonetic), well, amphetamine is phenethylamine and there are many modifications, all of which are stimulant or, in some cases, more hallucinogenic of that type and then cocaine and caffeine was a psychostimulant, as well.

Q So cocaine fits within the amphetamine?

A Cocaine and amphetamine have essentially the same effects but by different mechanisms in the brain.

Q And caffeine?

A Caffeine works on a totally different system but it certainly is a psychostimulant.

Q What about tobacco?

A Tobacco is a unique substance as well. It affects the acetal colleen (phonetic) system in the brain and has some quite strong affects on attention and arousal and I would say that's probably the main reason it's used is that it's an efficient way of manipulating someone's state of arousal and attention and we know that certain people are attracted to it because it, although has some negative health consequences down the road, is, in fact, quite useful in the short run in manipulating psychological state.

Q Has our knowledge of marihuana and its affects changed much in the last few years, say since 1993?

A Yes, there have been several dramatic breakthroughs. The first is that scientists, particularly Professor Howlett (phonetic) and her colleagues in the United States, finally succeeded in identifying the receptors in the brain, the unique places where the THC molecule binds and exerts its effects on the physiology of the brain and once that was successfully done then, of course, the next question was, as obviously we don't have marihuana in our bodies normally so why would we have a—why would we have a receptor for it, there must be something the body manufactures naturally on its own, an indigenous ligand we call it, that normally fits into those receptor sites that THC was shown to occupy and the big breakthrough there was about two years ago a Professor Mechoulam, that's

M-e-c-h-o-u-l-a-m, in Israel and a post doctoral student by the name of Devane (phonetic) succeeded in identifying the endogenous neurochemical that THC mimics in the brain and they've since named it anandamide so we now know where it works in the brain, what systems it's found in and what the naturally occurring substance in the brain is that works on those receptor sites.

THE COURT: Can you spell—

A Anandamide, a-n-a-n-d-a-m-i-d-e.

MR. CONROY:

Q And you called that an endogenous—

A Ligand, l-i-g-a-n-d, that simply means something that binds chemically so endogenous means, of course, that it's produced naturally by the biochemistry of the body or, in this particular case, the brain and it's the nature substance that fits into the receptor sites in the—a person who has never seen or experienced the exogenous substance, in this case the THC containing plant cannabis.

Q And so what's the significance of having found—having found this receptor in the brain and this—

A Well, we now know that all the drugs that we've talked about work on specific neurochemical systems and those are anotomically distinct and that's why some drugs are

stimulants and some are depressants, why some are hallucinogens and some are anti-anxiety drugs. There are different systems in the brain for all those psychological processes and—

Q All right. Well, let me—

A -- we now know—now that marihuana affects a particular set of receptor sites and it happens to fit with the known effects of the drug that we've known for literally thousands of years.

Q All right. Well, let's take each one of those major drugs and if we can explain to the Court what each one of them does so we can compare what marihuana does to some of them. Why don't we start with, say, alcohol.

A Alcohol, as I said, is a member of the alcohol hypnosedative class and the endogenous neurotransmitter in this case is one that goes by the four letters G-A-B-A, Gaba, as gamma amena—excuse me, gamma amino butyric acid (phonetic) and it is an inhibitory neurotransmitter and it controls ion gates that allow chloride ions to pass through the walls of cells in the neurons, the nerve cells, and thereby it affects their excitability and so that whole class that includes, you'll remember, alcohol and the barbiturates and the valium type drugs all work on slightly different places on that Gaba receptor and they all enhance the affect of Gaba and so since Gaba is an inhibitory neurotransmitter which tends to shut down when the system—when it's active any of those drugs will have the same affect, namely to depress the processing in any synapse in the brain where Gaba is the neurotransmitter and that's why they are general central nervous system depressants.

Q So the person takes a drink of alcohol, the chemicals in the alcohol have that affect on those areas of the brain.

A That is correct.

Q And causing, as you say, some—the person to shut down or to be—

A That's right.

Q -- as a depressant as opposed to a stimulant.

A And that's why it's dangerous to mix alcohol with either the barbiturates or the valium type drugs because

as the receptors are very close—they're all part of the same complex but they are separate and when you mix the two together the affect on that system is more than the sum of A plus B, it's what we call a synergistic and that's why people are cautioned not to drink when they are using sleeping pills or any of the other legitimate reasons one might use one of those or anti-anxiety drugs.

Q And with alcohol can one overdose?

A Oh clearly, yes.

Q And that's from simply too much alcohol or it can be alcohol in combination with a barbiturate or something like that.

A Either one will do it on its own. The combination of the two will do it more efficiently, quicker and it does so by paralysing the breathing centres in the brain stem which cause death by asphyxiation.

THE COURT: Is that what overdose means?

A That is correct. In that particular case. Now, death by overdose for other classes of drugs could be different mechanisms but for all the central nervous system depressants that's generally the case, that it's asphyxiation because it paralyses the centres in the brain that control automatic breathing that we don't normally have to think about.

MR. CONROY:

Q All right. What about a narcotic, then, the opiates?

A The opiates were the success stories of the 1970's that -- '70's that we've again known for thousands of years that these are very good drugs for controlling diarrhoea, they're very good drugs for controlling cough, excellent cough suppressants and, of course, they're still the best pain suppressors that we have at our disposal and this had been known as long as people have been cultivating opium poppies and using raw opium. In the 1800's we learned what the active ingredients were, they're codeine and morphine, and until the 1970's we assumed that there had to be receptor sites, et cetera, to mediate their affect but again it was the big breakthrough of that decade to find where exactly those receptor sites lie and, again, once they were identified, to be able to say what is the endogenous ligand, what's the normal brain produced substance that fits in there when somebody is not or never has used an opiate and

that turns out to be a substance called endorphin, e-n-d-o-r-p-h-i-n, an endogenous morphine-like substance. It turns out it's actually about four substances. There are variants on it but we call them the endorphin collectively.

Q So that is the equivalent to gaba in alcohol.

A That's right, exactly.

Q And with the opiates it's the endorphin.

A That's right.

Q Okay. And would the opiates be—have a depressant affect or a stimulant affect?

A It varies. If I had to say one or the other I would say it's more of a depressant but it actually stimulates some areas as well and, again, these neurochemicals are spread in anatomically distinct places around the brain but it's not unheard of, in fact, it's probably—usually the case that the same neurochemical might affect one anatomically distinct system over here in perhaps an excitatory way and another one over here that doesn't normally have much commerce with the previous one in an inhibitory way.

Q Now, what about drugs like the amphetamines?

A Amphetamines affect another class of neurochemicals called the catacholamines, that's c-a-t-a-c-h-o-l-a-m-i-n-e-s, and that's primarily the neurotransmitters, neuropheneferam (phonetic) dopolmine (phonetic) and what amphetamine does is it causes an excess release of these neurotransmitters and since they are primarily involved in the attentional and arousal mechanisms in the brain as one would then expect an excess release of those chemicals would have the result of increasing alertness, awareness and generally stimulating the person. Cocaine works on the same system but instead of causing primarily extra release of the neurotransmitter it causes the normal deactivation of what's released not to occur so it works in a different way but in both cases you end up with more of the neurotransmitter there and because it's excitatory you get excess excitation out of it. Amphetamine and cocaine ultimately cause the same kind of stimulation.

Q Okay. What about tobacco?

A Tobacco works primarily on another neurotransmitter system called the acetylcholine, a-c-e-t-y-l-c-h-o-l-i-n-e, and this is the primary neurotransmitter of all neuro muscular junctions so wherever the nervous system comes into contact with a muscle to cause it to contract or release acetylcholine is the neurotransmitter and it's also found in various areas of the brain having to do with arousal and particularly learning, that Alzheimer's Disease, for instance, is primarily a malfunctioning of the acetylcholine system of the brain and that's why we get the loss of memory and confusion that we associate with the degenerative neuro condition called Alzheimer's Disease and in this case the affect of tobacco is not to kill the neurons, which is what happens in Alzheimer's Disease, but to stimulate them and, in fact, in neurophysiology we refer to those as nicotinic receptors because they were the first ones discovered and they were found to be the ones that nicotine, the active ingredient in tobacco, turns out to stimulate.

Q When we talked about alcohol you said clearly a person could overdose and die from taking too much. Is that—the same is true with opiates?

A Yes, in fact a similar—slightly different sites of action but in both cases it's death by respiratory arrest, that they both paralyse the breathing centres and the person asphyxiates.

Q And what about from amphetamine?

A Amphetamine being a stimulant, when it is taken in very high doses it causes death by convulsion. It's over excitation, in other words.

Q And is the same true for cocaine?

A Yes.

Q And what about tobacco? Can you overdose on tobacco?

A No, because it's a very—if you were to actually eat and digest the entire amount of tobacco in about one cigar it would be lethal but generally speaking you can't overdose on it because it affects the vomiting centre in the brain and if you try to eat it you regurgitate it and so—and it has very, very unpleasant psychological affects before it gets to the toxic level and so—I suppose in theory you could—you could overdose on tobacco but I've never heard of it being done, it's just too unpleasant

and people would stop smoking, they would pass out before they succeeded probably.

Q There's a built in mechanism.

A That's right, that's right.

THE COURT: What would be lethal about it? What is the overdose mechanism, so to speak?

A Probably—if you could get the doses high enough it would probably be similar to that of amphetamine. It would be a compulsive type thing because it's a stimulant drug and it's a stimulant at the neuromuscular receptors and it would probably cause—cause convulsions but I wouldn't like to be held to that without checking because it's such a rare occurrence that we hardly ever discuss it.

MR. CONROY:

Q What about marihuana? What does marihuana do in

this—

A It turns out that the receptors that Professor Howlett discovered are in—they're in the cerebral cortex, they're in the areas known as the hippocampus and the limbic (phonetic) system which are involved in learning and that's primarily its site of action on short term memory. The hippocampus is a mechanism for short term memory in the brain and most of the psychotropic affects of marihuana can be attributed to the combined affects on cortex and the hippocampus but it has very few, if any, receptors down in the old brain stem regions which are, of course, the ones that control digestion, blood pressure, heart rate and breathing and most other drugs have their—if they have a lethal affect it's by affecting those brain stem mechanisms which are the very old ones that are most like—in our brains like those of lower species that handle the very basic vital functions of the body and since marihuana doesn't have any receptor, THC, to be more precise, does not have receptors in those old brain stem regions the ability to overdose is well again practically unheard of. In fact, I don't know of any documented case of a death from marihuana overdose. It just doesn't affect those parts of the brain that are lethal if you overstimulate them.

Q Could you kill yourself from smoking too much?

A I doubt it. I don't know of anybody that's ever—it would probably, in fact, almost—it would certainly cause you to pass out because people who smoke marihuana alone are more likely to drift off into sleep. It's the social stimulation of others that keeps them going in more communal situations where it's smoked so I think the person would drift into sleep before it got anywhere near a lethal dose and, as I say, there's no documented case I'm aware of of anybody dying from a strictly true overdose of THC or marihuana.

Q In the tobacco case you said though that if somebody took a cigar and ate it essentially that the regurgitation problem would occur—

A If—

Q -- before you could probably kill yourself. Is that true with marihuana?

A Again I don't think it probably would because I think people would pass out and just fall into a deep sleep and come out of it later and so it probably wouldn't even get near that but the case of tobacco there—around the turn of the century there used to be quite a few deaths every year of babies from tobacco because they used to use tobacco plasters, just like you may remember from Victorian novels they used mustard plasters as a therapeutic device and enough tobacco or, sorry, enough nicotine can be absorbed through the skin in a baby, for instance, that they actually overdosed some and killed them by use of tobacco plasters and nicotine plasters in babies.

Q So do we know of any cases involving death from marihuana smoking, an individual smoking marihuana?

A Several authors have checked the world literature trying to find such a thing and no one has yet come up with a documented case of death from marihuana alone.

Q All right. Now, would you give us then the affects of marihuana. If somebody smokes marihuana what exactly happens and what does it do?

A The primary affects are on arousal, as I've already said, it's a mild relaxant. It affects emotion. For most people it's a euphoriant, that is that people begin to feel generally good and warm, pleasant feelings and occasionally it can provoke some anxiety feelings but it's pretty rare and they generally pass quite quickly, even in that particular instance, and they rarely have any—in

fact, I don't think ever have any hold over affects into subsequent days after that or anything like that. It has various affects on perception and it's these combination affects on perception and mood that make it a social drug, that the majority of people who use it find it—it reduces anxiety, it has a general relaxant affect, they like the affect, the heightening of taste and vision and it has an affect on concentration so that people can zero in on small aspects of global perceptions and so the taste of a food, people can zero in and say, you know, there's some subtle note to that that I didn't notice before and I want to concentrate on that and the same with music, you know, I've listened to that passage a dozen times on a stereo but I never realized that counter melody there and I can now zero in on that and enjoy it specifically with that heightened attention, and it's that kind—and people also claim that it has some more affects for sex, that they find the affects—sensory affects to be heightened and pleasurable and that's the primary reason they engage in using it. Now, it does have an affect on short term memory that we know there are different memory systems in the brain for short working here and now type decisions and longer—or information that you wish to transfer into permanent storage in the brain. It doesn't have any affect on the permanent storage or much, if any, affect on the retrieval of things that are already in permanent storage but it does—because it affects attention people suddenly get pulled away from the things they're attending to right at that moment and so that information get's dropped out of short term memory, therefore, doesn't get translated into long term memory and so that's where the primary cognitive affect is on short term memory.

Q And is—in each of these situations is that all because of this anendamide (phonetic) affecting of particularly the two areas of the brain that you described, the hippocampus, I think, was one of them

and—

A That's right, hippocampus.

Q -- the cerebral cortex.

A Insofar as all of that is pharmacological, that is, directly resulting from the drug, yes, it seems to be from that particular system but in psychopharmacology we talk about what's called set and setting and set being the attitude and knowledge and expectations and hopes and wishes of—and personality of the user and the

setting being the psychological and physical surroundings in which the drug is used which, of course, includes the meaning, am I taking this to have a calm, relaxing, sensory experience or am I taking this in hopes of having a religious kind of revelation experience or am I taking this as a form of defiance of my parents' values or whatever and those set and setting variables very strongly interact with the purely pharmacological and that's why you need the psycho part as well as the pharmacological part in psychopharmacology. So an example of this is that in our culture or more often than nought if you ask people, "Does it affect your appetite?" they said, "Yes, I get sort of hungry and taste becomes very salient to me and I enjoy it and, therefore, I run the—I run for the kitchen." In other cultures where food isn't so relatively cheap and abundant and packaged so nicely as it is in ours you ask people why they use ganges (phonetic), they often call it there, and they'll tell you, "It's because when I get stoned I don't feel hungry any more and it takes my mind off the fact that I'm malnourished," and so the same drug in two different cultures with two different histories and two different attitudes and availabilities of food can have diametrically opposed results and so, yes, it has a chemical underpinning but it works through changes in attention and memory too.

THE COURT: When you talk about the affects of marihuana are you describing anecdotal reports from users or actual studies or—

A Both, that the—these things usually are sort of multi-pronged things that on the one hand can't duplicate very well in the laboratory, all the things that you would like to have with respect to the set and setting and so it's always going to be somewhat artificial. On the other hand, in the laboratory you have very precise control over various important aspects that you don't have in the natural setting and so a good study would include both, that it would look at retrospective reports, just you know, questionnaires, what you remember from the last time you used this, it would use participant observers sort of like the case you asked me about, our bar room aggression study, and it would use controlled laboratory studies with the usual kind of precise laboratory controls which lack ecological validity because being in a laboratory using this substance is importantly different in some ways from using it at a party or using it at a religious, this Rastafarian (phonetic) ritual, or some other place that one might engage or indulge in it.

MR. CONROY:

Q Set and setting can have a reasonably significant affect—

A Very much so.

Q -- on what the affect will be on the individual.

A That's quite so.

Q When we come and look in detail at such things as the Linda Smith Report, the most current review that you talked about, will it be apparent for the Court to be able to see what research has been done that is through tests and in the lab or laboratory, things of that nature, as compared to that which is anecdotal?

A Yes, they make a point of, in the text, trying to emphasize that where it's relevant and each time they make a statement there is a superscript number which refers to the—what is it, over two hundred references, I think—no, sorry, it nine-two references in the back and they give the title of the article from which you can generally tell whether it's a naturalistic field study or whether it's a laboratory study, whether it's a human study, an animal study, whatever.

Q Okay. The affects we've discussed then so far, particularly affects taking into account set and setting but affects on the brain and, in turn, the affects on the process that you've described, the affect on the brain and then the manifestation of that affect, is that correct?

A That's right. You have to deal with them as a unit because they're so highly intertwined.

Q Okay. What about affects on the respiratory system, lungs, for example?

A This is only relevant, of course, in the case of marihuana if someone chooses to ingest it by smoking and that's not the only route by which the drug can be taken but—

Q Well, let me just stop you there, then, to be clear on that point. If one was to take marihuana in some form other than smoking would it have any affect on the lungs?

A None that anybody's ever been able to demonstrate that I'm aware of and none according to the review that the Linda Smith Centre has put out.

Q Okay. And so the affect on lungs would only be then if somebody was smoking it, is that right, that is, because of the smoking process?

A That's right, yes. It's the burning product, you put smoke from burning biological material into your lungs. It has certain affects regardless of whether it's tobacco or marihuana or burning garden leaves, for that matter. There are tars and there are particulate matter that come from the burning process of vegetative matter and it's largely the same regardless of which of these things it is. Of course the psychoactive ingredient or total lack thereof, in the case or garden leaves, is quite different.

Q All right. So if you were able to take nicotine, the active substance in tobacco, and take it into your system in some way other than smoking would the same hold true? There would be no affects whatsoever in terms of lungs? It's the smoking of the leaves and the combustion process and what it gives off that causes the damage to the lungs.

A That's correct. In fact, we do this—you can buy Nicorette (phonetic) gum which contains nicotine and can be absorbed quite nicely through the buckle cavities, the mucous membranes of the mouth, or more recently there are time release controlled nicotine patches and some people find that in tapering off from a smoking habit that they find it easier to stop smoking but to use one of these like a large bandaid essentially that has a way of releasing enough nicotine through the skin—this goes back to the baby example of overdose that I mentioned earlier—that you can get enough nicotine into the blood stream, which is always the critical factor with all of these drugs because the blood carries it to the receptors in the brain, that one can stave off the withdrawal symptoms of nicotine withdrawal when one stops smoking by taking either the gum or the nicotine patches.

Q And so if a person is smoking marihuana are they affects on the lungs then solely due to the smoking and the process of releasing all of these other things through combustion process or does THC play any role at all?

A To the best of my knowledge and the sources that I've reviewed THC is not damaging to the lungs itself just like nicotine is not damaging to the lungs itself. It's the tars and particulate matter and the volatilised chemicals that come out of the burning of the leaf in both cases that is potentially harmful to the tissue of the lungs—

Q I seem to—

A -- and airway

Q Sorry?

A Oh sorry. And lungs and I just added airway because, of course, it's the trachea, as well, and bronchial tubes.

Q I seem to recall, in reading some of the literature, that there is an indication that marihuana has a different affect in the smoking process than tobacco and it has to do with the use—it was at one time or may be under investigation still to help out asthmatics. Do you know anything about that, the bronchodilator (phonetic) affect?

A Right, the—to the extent that there are differences there's a longitudinal study at University of California at Los Angeles Medical School now -- it's been going on since 1982 -- monitoring on, I think, yearly or half-yearly intervals a cohort of people who choose to smoke marihuana at fairly high levels and monitoring their pulmonary function, that is, their breathing apparatus and to the extent that they find any differences between tobacco smoke and marihuana smoke it seems to be that tobacco adversely affects the small airways, the alveoli, which are the transfer mechanisms where the air comes into contact with the lung tissue and thereby transfers CO2 out into the air, oxygen back into the blood and it's the elasticity of that tissue that's damaged, say, in emphysema and that seems to be one of the worst consequences of tobacco smoke. According to the U.C.L.A survey marihuana doesn't seem to have as much an affect on that system. The affect seems to be more, as you say, on the bronchial tubes, which are the airways leading to the lungs themselves and it does cause some changes to the chemical of the cells—chemicals of the cells that line the bronchial tubes and that's the primary difference. It does have what's called a bronchodialatory affect, which is to open up the airways and actually increase the passage of air or make it more easy.

Q So it would be fair to say that generally speaking the smoking aspect has a similar affect whether it's marihuana or tobacco, the burning the leaves causes these other tars and so on to release which can have an affect but in addition to that, tobacco, the nicotine has yet another affect which sounds like a plugging up of parts of the lungs—

A We don’t know whether it’s the nicotine per se but tobacco smoke, to the extent that there might be some subtle difference in something in tobacco—

Q Whatever it is seems to have that affect.

A -- it has more of that, call it clogging if you like because that’s not a bad description.

Q Which marihuana doesn’t have. It seems to be an unplugging—

A Not according to the U.C.L.A. people and, of course, the thing to remember here is that all of these things are dose dependent so the probability of any of these affects goes up with the amount and so we have to keep in mind that the average, typical marihuana smoker does not take nearly as many puffs or consume nearly as many marihuana cigarettes per unit of time as the average tobacco smoker does and so even if it were found that marihuana smoke was equivalent to tobacco smoke in terms of any of the deleterious affects on the airway you would still have to factor in the fact that most—the overwhelming majority of marihuana smokers don’t smoke nearly as many joints as the average tobacco smoker smokes cigarettes and then, of course, the other thing is that they don’t really have to be smoked at all. They could be taken other—other ways if someone wished to avoid that possibility altogether.

Q In which case that the whole smoke aspect we can eliminate from the equation if—

A If—if someone chose to bake marihuana leaves into brownies or cookies or in the Far East they like to mix it with butter and herbs and make little confections with it, it can be taken orally. It’s not as efficient and so it’s really a bi-product of prohibition that people smoke it because it’s really quite a cheap substance. You can grow it in flower pots, hence the term "pot" and on your balcony, if you wish, assuming it were legal, and so the inflated price is a bi-product of prohibition and because the price is inflated then people with to get the maximum affect out of it and if it’s more efficient to smoke then they will do it that way but it wastes some weight for weight if you take it orally and it’s a little slower onset, it takes a little longer to take effect, but other than that, once it gets into the blood the brain can’t tell where it came from and the effect is exactly the same so if it weren’t expensive people would probably opt to eat it and eliminate the need to smoke it

or at least a large portion of the population probably would.

Q Certainly they could avoid certain health effects that are not caused by the marihuana itself but by the smoking process.

A Absolutely.

Q Okay. So we wouldn't need a law to prevent that. If people knew that that was what the effect would be on their health they could take that sort of action to avoid that health consequence and still have the same effect from the marihuana.

A I think so. I think education is the key here. I mean if you inform people what's in their best interests and you make it easy for them to follow their best interests I think most prudent people would do so.

Q Now, what about potency. We'll get into this maybe in more depth later on but while we're talking about tobacco and marihuana you mentioned dose in terms of quantity, amount of joints or amount of cigarettes. What about the powerfulness itself, the strength itself, of the marihuana?

A Well, as I said at that beginning, this plant has been cultivated for its hemp content. The best ropes in the world, prior to the Petro-chemical revolution, were made from the fibres of this plant and when it's been selected by its long, tough fibres, from which we can make paper and all of these other—or cloth and other products, it has been selected for those economic purposes and the drug content is relatively low. On the other hand, people have selected and done the kind of plant breeding and genetic selection and to increase the amount of resin in the leaves and in the flower portions which are the areas that contain the highest content of THC and that variant of the plant has been drawn into the direction of producing stronger or concentrations of THC so it's really just like alcohol, that you can—and what determines how drunk an individual becomes is the blood alcohol content, BAC, which we can test with a breathalyzer and the breathalyzer can't tell you whether you drank a thimble full of highly concentrated liquor or a whole bottle of wine. It—the two might have rough—that might be a slight exaggeration but with that taken into consideration the two would have the same absolute amount of alcohol and that would be the final determinant of what the blood alcohol level would be and so you can take it—a lot of it in dilute form or a little

of it in highly concentrated form and so the same thing is true here and apropos of your earlier question about smoking, what people do is they learn to recognize the affects that they like, like the euphoria, the fun parts of the experience, and they smoke enough to get to that level. And so in terms of health consequences it would be far preferable to have the most potent marihuana you could possibly have because you could get that THC content that produces the desired affect with far few puffs and, as I've just said, it's the number of puffs exposing you to the particulate matter and tars that correlates with the adverse affects on the lungs. So if you wanted to be health conscious that would be another way of going, is to use the most potent material you can so you didn't have to smoke as many tokes over as long a time to get the affect that you wanted.

Q Do we know if that's what's happening today? I mean we hear the strength of the marihuana today is a lot stronger than it used to be in the sixties, for example. Do we know that the people smoking it today are smoking more or less because of the potency?

A Yes, well, in fact, there's the two aspects of that question. One is that the degree of difference between the present concentration and the earlier ones is probably somewhat exaggerated for reasons of how the samples were taken in the early time and where they came from and so I think particularly in the popular press the—the increase in average THC content has been quite exaggerated but—but even if it weren't or granted that there has been some increase is what people do is they do what they call titrate their doses and this is true of alcohol drinkers, it's true of cigarette smokers, that part of becoming used to using a brain affecting psychoactive substance is to recognize the affect that you want and the level of it and so people become very good at knowing when to say no and so if they are exposed to more potent forms of marihuana then they'd definitely take less of it.

Q Leaving aside questions of driving or getting involved in other physical sort of activities, if somebody's sitting around drinking alcohol—I think it's common knowledge that some people might pass out from drinking too much, some people might get quite aggressive from drinking too much, some people apparently could actually overdose if they drank enough and actually kill themself. Is there any parallel like that with marihuana? I mean you did tell us that most people would pass out once they get too much. But is there—are there other sorts of—I mean you've told us you can't kill yourself

from it in the sense of smoking too much in the way you can drink too much but is there any other affect, besides passing out, that we'd see with marihuana?

A At very high doses people tend to become quite confused and, again, primarily because of the effect on short term memory and this might become a bit scary to an individual who had never experienced something like that before and they may begin to feel that they're losing control and that could again be anxiety producing and so confusion and anxiety might be a possible affect but there again it's highly dependent on how experienced the user is and what the setting is, that somebody who is with good friends in a safe, conducive environment can easily be talked down and calmed down and it's very unlikely that that kind of anxiety reaction would occur but somebody who was a bit apprehensive and takes more than they thought they were going to or had experienced before, it could cause some anxiety and—but generally speaking the most common thing, if somebody is just left on their own and they try to read or watch television or listen to a—music on a stereo system or something is that they will become drowsy and go to sleep. If anything, marihuana, far from what Reefer Madness and movies like that would have you believe is not a drug that's likely to cause violence. In fact, it's quite the opposite, that it has a calming affect on most people and, in fact, is likely to reduce violent behaviour or aggressive behaviour rather than cause it.

Q So the underpinnings of Reefer Madness were propaganda and untrue, is that—

A I showed that—I showed that video to my Drugs and Behaviour classes as an example of propaganda gone wild.

MR. CONROY: The Court might like to watch that video again.

THE COURT: Could I pass?

MR. CONROY:

Q All right. How about affect on other parts of the body, reproductive system, for example, from marihuana?

A There are some measurable affects on testosterone levels and oestrogen levels. The THC molecule is very fat soluble and these hormones are derived from cholesterol, fatty substance, in the body but I think what the best way to describe this is what my former

department chairman used to call a true trivial affect. In other words, you can measure it but nobody's been able to show that it has any kind of adverse affect, for instance, male impotence or inability to achieve orgasm in females or anything like that. In fact, again if you go out and you survey people who use marihuana recreationally and you say, "Well, what are the things you like about it? What keeps you willing to do this?" One of the things that they say is that they find sex more enjoyable so it certainly doesn't have any affect on fertility on any kind of endocrine functioning that has an adverse affect that any of these major surveys have been able to demonstrate. You can demonstrate a slight drop in some of these hormones but not enough—I mean generally speaking those levels are so high in normal people that dropping them a little has no discernible affect on their behaviour or enjoyment or reproductive activities.

Q So we don't have people going into emergency wards saying, "I've got too much THC accumulated in the fat—in my fatty deposits of my reproductive organs and I'm suffering from this and I need some kind of treatment or something"?

A Never that I know of.

Q Okay. What about immune system, affect on immune system?

A There were, back in the 1970's, a couple of reports that claimed that marihuana had an immunosuppressive affect but what very soon was countered with this was that the—there are different definitions of immune response and it's a fairly complicated subject, I'm sure you're aware, but the one that was being used to show that marihuana had the negative affect was a different one from what most people mean in the vernacular or even in the scientific literature if they say immune response and the one we generally mean is that if you have immunosuppression you become more susceptible to infections, for instance, and so in that Institute of Medicine Report that I mentioned earlier they went out and looked and said, "Well do marihuana users have a higher incidence of common cold, influences, other infectious diseases?" and they couldn't really find anything to substantiate that. Now, the Australian studies that we mentioned corroborated that and I suppose a double irony in all of this is that, you know, a drug was allegedly immunosuppressant is now actually being used with Aids patients to counteract some of the unpleasant side affects of some of the anti-Aids

medications that are being used and so the last thing in the world a conscientious physician would ever want to do would be to give his or her patient a—who is suffering from a deficiency of immune system a drug that allegedly further impairs it and so to the extent that you find Aids patients who use it spontaneously because they find that the psychotropic affects help them with the psychological difficulties of this terrible condition that they have or that they use it to counteract the nausea affects, they don't seem to be adversely affected. They've been studied quite carefully as well so it seems to be again an early argument that just hasn't been borne out by careful repetition of the studies over the years.

Q Apart from effects of smoking and what happens in the brain is there an affect on the brain? You used to hear brain damage, for example.

A There again this largely goes back to a study that was—actually two studies, one in humans and one in rhesus monkeys, and the rhesus monkey study claimed to show some affects of brain damage and, again, in the hippocampo regions that we mentioned earlier that are important for learning function in normal individuals. The problem there was that the doses that those monkeys were given were over two hundred times that that could be achieved by any reasonably smoking method and usage of an average person and it turns out a hundred times the normal human dose didn't have the affect, two hundred times did and so when you get down to physiological levels that are anything like what a normal human user might experience, and this had been done, a study in University of Michigan did this, actually got the doses—it's hard to get monkeys to inhale the smoke, as you can imagine, and they had to devise some clever ways using a face mask, et cetera, but they actually—instead of injecting in these massive doses that the other study did, they actually got the monkeys to inhale the equivalent of, oh, I think it was six or eight joints a day, something like that, and they then autopsied their brains and didn't find the same kinds of affects that those earlier ones did. The other ones were some early cat scan studies that were done in England and there was clear evidence of brain damage. Nobody disputed that. The only problem was that they hadn't excluded multiple drug users and so there are other drugs that we know that can have toxic affects on the brain and to the extent that somebody uses marihuana and any of these other toxic substances you have no way of knowing what—what the actual cause is and so later studies then looked at marihuana users who used

nothing but marihuana and didn't find the same kind of degenerative processes in the brain.

Q What about the heart? Any affects on the heart?

A I am not a --- really an expert in that area. I can only refer you to the Institute of Medicine Report which has a whole chapter devoted to that and basically said that they have not found any indication of damage to that organ in otherwise healthy individuals. Increase and blood pressure and pulse rate which is a normal affect of the drug could be something you wouldn't wish to happen to somebody who had pre-existing heart conditions. That might not be a good idea. But in terms of causing primary damage to the cardiovascular system the Institute of Medicine again didn't find anything that they were willing to attribute to marihuana.

Q If you had somebody with this predisposition heart rate problem are there other drugs and other things that we know of that they have to watch out for—

A Almost all—

Q -- like marihuana?

A Almost all of the ones that we've indicated that we've talked about today, that they can all affect blood pressure and heart rate in one way or another and—

Q Certainly alcohol and tobacco?

A Yes.

Q So again it depends on the individual has this particular medical problem, the educate themselves as to what might affect them one way or the other.

A Yes, this is the job for the educational system and family physicians and the media.

Q Okay. Now, can you think—I think we've dealt with most—at least the major parts of the body or the health system that it would have an affect on, brain, immune system, reproduction, heart, lungs. Can you think of any other affects, and I'm just looking at it now, chemical affects and—

A Long term chronic affects or—

Q Well, we'd start with—well, let's deal with chronic affects and by "chronic" we mean affects that you will have after use over a period of time as opposed to—

A That's right. Not acute.

Q -- as opposed to acute which—

A Exactly.

Q -- is when you're actually doing it, is that right?

A That's right.

Q Okay.

A Yes, well again in the 1960's there were various claims that marihuana had permanent negative affects on ability to recall, learn material or to learn new material, affects on other cognitive abilities like attention and ability to focus and sustain attention but again these turned out to be confounded by the fact that the people who were studied had other kinds of drugs that they were using simultaneously and that there were differences in the individuals themselves to begin with and so later studies have done things like looked at college grade point averages across a wide variety of institutions and to separate the people who admit smoking marihuana from those who don't and look at their grade point averages and this is a crude estimate of intellectual competence, of memory ability of symbolic manipulation ability, of attention and certainly of motivation which is, of course, another claim we could get to, and what the overwhelming majority of the studies have shown is either no difference or—and a few actual differences in favour of the marihuana smokers which probably doesn't mean that marihuana improves your intellectual abilities but it probably means that who smokes it at different times in history is—is a function its legal status, its trendiness, its being introduced or not introduced into certain socioeconomic classes and there are—there are socioeconomic differences in I.Q. and educational attainment and so on and that confound these things and so I think the fair thing to say is that there's really no proven deleterious affect of marihuana on higher cognitive abilities that are used in universities, at least.

Q We're near the end of the day but I want to just read something to you from the tobacco advertising case.

MR. CONROY: And, Your Honour, it's my friends' materials at tab 15, which is the blue book.

Q Dr. Beyerstein, this was the evidence with respect to tobacco in the tobacco case.

A Is this the—

Q R.J.R. MacDonald (phonetic) case, yes.

A -- R.J.R. MacDonald?

Q And I want to put to you what the evidence was. I want you to tell me if there's anything close to this—are we talking about anything close to this in terms of health affects or harmful health affects, public health affects in terms of marihuana.

MR. CONROY: And I'm referring, for the benefit of the Court, my friends' page 24 and 25, actually starting at 25 and over on to 26 and 27.

Q It starts off with a—it indicates that this evidence was introduced and not disputed in that case, that—and there's a quotation by the then Minister of National Health and Welfare, Jake Epp, who says, "The Federal Government has taken an active role in addressing the issue of cigarette smoking. It is important for people to understand why smoking, which is thought of as merely a personal habit, has become a legitimate public concern. There is overwhelming evidence that tobacco smoke is the largest preventable cause of illness, disability and premature death in Canada." Stop there for a moment. Do we know if marihuana smoke—if there's evidence to support that marihuana smoke fits into that same category?

A I think on the contrary, that all of these studies I've alluded to in my testimony so far have said that there may be some irritative affect of the smoke but by comparison the affects are much more benign than those of tobacco and now that should be in the context, of course, that most people don't expose themselves to nearly as much marihuana smoke, even if they use it recreationally over a long period of time, as the average cigarette smoker would do of tobacco smoke.

Q Bearing in mind this is a quote from a politician, from a Minister, not from a medical person—

A I testified before him, as a matter of fact, --

Q All right.

A -- or met with him on a conference—

Q He then goes on and he says, "Moreover it has also become evident that Canadians who are consistently exposed to smoke in the environment may suffer from adverse health affects of the second hand smoke issue." Do we know anything about that in terms of marihuana smoke?

A In the context of what we've already discussed, if we find some similar affects on the primary smoker then one would expect the same to be true of marihuana of secondary smoke as well but, again, people don't smoke marihuana the same way they smoke tobacco and the real problem with tobacco was that until recently it was perfectly acceptable for people in enclosed areas and on the shop floor, in the factory and the office, in the classroom even, to smoke and expose other people in the everyday going about of their business and people have never used marihuana that way. It's always been for ritualistic or religious or recreational purposes and to that extent it's a much more voluntary activity and so it happens more infrequently, to begin with, so second hand smoke would be less of a problem for that reason and people are much more—the kinds of settings in which marihuana smoking is permitted where—or the culture considers it appropriate people are much more in control of their own behaviour and they can absent themselves if they are offended by it or find it physiologically irritating or anything else. It's not likely, in the practical sense, to have as bad an affect.

Q He goes on, and I'm skipping a bit here, at the end of his quote to say that, "It is responsible government action in reaction to overwhelming evidence that tobacco, despite its widespread use by a third of the adult population, is actually responsible for a hundred deaths a day in Canada." First of all, do you agree with that figure roughly, the number of deaths per day?

A Yes, thirty-five thousand a year is—

Q Thirty, thirty-five thousand—

A -- the average—

Q -- per year?

A -- that you generally hear by most responsible—

Q Three hundred or four hundred thousand in the U.S.?

A That's right. Our—it's another case where our figures are approximately ten percent of the U.S. given our population is approximately ten percent too.

Q And now do we have—you've told us a person can't really kill themselves from marihuana. Do we have hospital emergency room or other type records that show anything—any deaths from marihuana?

A Nothing that anyone has ever been able to point to. That pulmonary function study at U.C.L.A. is still ongoing and, of course, they're following these people through a fairly large sample in a cohort and testing them at periodical—at periodic intervals as they age and so far they have not found any—a reason to believe that's a likely outcome or they certainly haven't found it yet.

Q Okay. It goes on on the next page to talk about statistics in terms of the percentage of Canadians over the age of fifteen that consume tobacco, the consequences of it to the society and to the community as a whole, the estimated cause of premature death, thirty thousand Canadians annually that you mentioned and that again says there's overwhelming evidence introduced at the trial of this case that it's the principle cause of deadly cancers, heart disease and lung disease and that it simply has devastating health consequences that arise from consumption. It goes on a summarizes some of the scientific evidence, lung, oral, larynx, oesophagus, bladder, kidney and pancreas cancer from smoking, oral use causing oral cancer, twenty-nine percent of the deaths in Canada from cancer each year. This quote from '89 is estimating 15,300 deaths and then it says also, "Evidence is accumulating that passive smoking, exposure to environmental tobacco smoke increases risk of lung cancer in non-smokers. Again, do we have anything like this going on in relation to marihuana?

A No, we don't and given that marihuana, as you've mentioned earlier, is a very strong political issue, you can be absolutely certain that people have looked hard for this, that marihuana has become a symbol of a set of attitudes and a set of social values that some people find distasteful and I think it's safe to say that if any other substance had been looked at with the high power microscope that marihuana has and found so little in the way of psychological or social or medical harm, that it would have been a non-issue a long time ago and so the

fact that people have looked so hard and not come up with it is really quite significant and, you know, in that Institute of Medicine Report, for instance, when the panel was struck nobody doubted the high qualifications of the panellists—they're a blue ribbon panel in every sense of that word—but people did say at the beginning that they were worried that it had been chosen with a political agenda, in other words, that they'd been picked because they were on record as having a certain distaste for the whole area of marihuana use and that people were afraid that this would colour their conclusions and to their tremendous credit it turned out that these were not only highly competent people but they were people of great personal integrity and that they set about doing a proper survey of the world's literature as far back as they could trace it in the medical and social spheres and they didn't come out and say that there's absolutely no chance that anybody could be harmed, that would be irresponsible, but they certainly came out with a much more benign view of the whole thing than the political masters who asked for the original report wanted and they were really quite upset when the report came back.

Q It would be fair then to say then the Court in this case summarizes what I've just said to you and says that, to put it bluntly, tobacco kills. I take it then, from what your evidence is, is that there is simply no evidence that marihuana kills?

A Nothing at all like tobacco and, as I said, no—no proven incidents of direct death and, as yet, no evidence of lung cancer or deaths either.

Q No evidence of significant contribution towards all the types of cancers and heart disease and so on that we spoke about a moment ago quoting from this case in terms of tobacco.

A You can be sure that if anybody had found any indications of that it would be front page news and we haven't seen that.

Q That Institute of Medicine Report that you were talking about, that was the one that was done for the U.S. Congress, was it?

A Yes, the National Science Foundation in the United States is the research arm of Congress and when they have an issue of national importance that bears on some legislative program that they may have they go to the National Science Foundation and ask them to pick the best people and it's considered an honour to be chosen

to sit on one of these panels that's struck to instruct Congress.

MR. CONROY: Is this a convenient time, Your Honour?

THE COURT: Yes. All right. We will resume tomorrow. Is it going to be in this courtroom, do you know?

MR. CONROY: We'll stay here? Okay, great.

THE COURT: All right. I can leave these things here? All right.

MR. DOHM: I'd like to note, for the record, that the accused was present today, Your Honour.

MR. CONROY: Oh, I'm sorry, yes, Mr. Caine is here, Your Honour. I'm not just appearing as agent.

THE COURT: Then let me ask another question then. Is there a plea recorded?

MR. CONROY: I believe—what did we do way back in the very beginning? I thought—no, we didn't because this is an objection before plea. We're saying that the whole law is unconstitutional so we had to do that before plea even though we admit the adjudicate affect.

THE COURT: All right. We'll resume tomorrow, then, at nine thirty. We'll have you back at—this witness back at that time.

MR. DOHM: Nine thirty, yes.

THE COURT: Thank you.

(WITNESS ASIDE)

(PROCEEDINGS ADJOURNED TO 1995 NOVEMBER 28 AT 9:30 A.M.)