

**GUIDEBOOK ON THE PREPARATION
AND SUBMISSION OF EXPERT WITNESS' EVIDENCE**

ORIGINALLY PREPARED FOR THE ONTARIO MINISTRY OF THE ENVIRONMENT

BY:

THE PUBLIC INTEREST ADVOCACY CENTRE

AUTHORS: ANDREW J. ROMAN
ADELE WORLAND &
THOMAS ZIZYS

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CHAPTER IINTRODUCTION

Assuming you have specialized training and experience in a particular discipline or area of endeavour and are called upon to testify as an "expert" before a Board, your opinions can be used as expert testimony only after your qualifications have been presented to and accepted by the Board. Normally this is a relatively simple and uncontroversial formality, unless your evidence includes information or opinions outside of the scope of your qualifications (e.g. a biologist offering opinions on physics, engineering or economic matters). However, the fact that expert opinion is readily received by a tribunal does not mean that an expert can expect to have an easy time of it at the hearing.

Science and technology do not in general accommodate themselves easily to a legal setting. A scientist is accustomed to thinking in terms of hypotheses, probabilities, margins of error, conditions and qualifications. He may find it difficult to express his opinion in a legal framework of categorical statements, statutory definitions, and definitive assignments of responsibility, all in an adversary setting with an aggressive lawyer waiting to attack his every word.

A good scientist is not necessarily a good witness. Scientific detachment and intellectual objectivity are important traits in a good scientist, but self-confidence in confrontative situations, a shrewd sense of tactics and an ability to think on one's feet are important qualities in a good witness.

Although a few persons are "born" good witnesses, most acquire the skills through training. This manual can provide part of that training by setting the legal context and outlining a few of the pitfalls. But it is no more possible to learn to become a good witness from reading books than it is to learn to become a good skier by watching skiing movies; skills can best be developed through practice and coaching. These require special exercises such as simulations and role-playing, which develop confidence and good reflexes, to enable the witness to know, intuitively, "when to duck and when to swing".

The stakes are high in proceedings before regulatory tribunals. In many cases the decision will be whether or not a costly undertaking will proceed. A hearing in such a case may be as fiercely adversarial as in any court case. The proponent can be expected to retain highly competent counsel and to present first-rate expert evidence. The proponent's counsel will consider it part of this assignment to attack and destroy any evidence which compromises his client's position. An expert witness must expect challenges to the soundness of his theoretical assumptions, his objectivity, and the accuracy of his findings. Where the evidence is not readily susceptible to direct attack on these bases, counsel will usually attempt to minimize its effect or to undermine the general credibility of the witness.

Another unnerving experience for the expert is the emphasis of his own counsel on presenting evidence to build a good case rather than exploring all of the issues fully from a scientific point of view. The proponent's "case" will rarely depend on the evidence of a single

expert; usually the testimony of several will be necessary. Each of these experts will be expected to work as a team with the others, as well as with counsel.

A witness in these circumstances may be subject to a range of conflicting duties, which conflicts he must ultimately resolve for himself. First, as an employee of the proponent, he has the duty to advance the work of his employer, not to frustrate or contradict it's work. Second, as a witness before a quasi-judicial tribunal which possesses many of the attributes of a court, he has the duty, testifying under oath, to tell the truth, the whole truth and nothing but the truth, regardless of what his superiors' or the proponent's official position may be on any particular matter. Finally, as a scientist and as a human being, he has the responsibility to be true to himself and to his own personal sense of ethics.

Although it is beyond the scope of this manual to analyze these potential conflicts in depth, they are referred to and considered where relevant. For example, if a number of experts prevail upon one of the members of the team to compromise his views (to adopt a position closer to that of the others, as part of the usual process of consensus-building), in the adversary context a shrewd lawyer might make this appear to come rather close to witness-tampering. If several witnesses all testify as if they were unanimous on every point, a skillful cross-examiner can make this unanimity appear incredible, as if all the evidence has been carefully homogenized by the co-ordinator, or alternatively, that the proponent has hired a bunch of clones. On the other hand, if there is obvious and important disagreement, the opposing counsel will suggest to the witnesses that they go back to the shop until they "get their act together". It is the task of opposing counsel to create precisely such "damned if you do and damned if you don't" situations. They cannot be avoided. They must be anticipated and handled competently.

A witness whose personal beliefs run contrary to the proponent's official policy can very easily get into serious trouble.

In addition to worrying about the experts and the counsel on the other side, an expert must also remember that most Boards, which is his primary audience, are composed of laymen. It will be impossible to persuade a Lay Board to accept your opinion if it cannot understand it. It will need to understand not only your conclusion but also the evidence and rationale by means of which you arrived at it. For reasons which will be made clear in later chapters, it is important to reverse your usual method of delivery. The expert will usually tend to outline the basic elements of the theory, or the principles which underlie his testimony, and then provide evidence or illustrations of it. This usually falls flat before a Board. The rule should be to start with the specific and proceed to the general. This requires some adaptation of thought processes and habits.

An expert witness who too enthusiastically adopts the adversarial tone of the hearing to serve as an outspoken advocate of his party's position risks losing the respect of the Board and perhaps that of his

professional peers. On the other hand, a witness who refuses to learn the rules of the game, and to play it with skill, cannot be an effective witness regardless of how impressive his scientific credentials may be.

CHAPTER II GENERAL OUTLINE OF HEARING PROCEDURE

The Stages of the Main Hearing

In courts of law, each party's presentation can be divided into evidence and argument. In order to reach a decision in a dispute between parties, the court must "find" the facts, based on the evidence, and then apply the relevant legal principles and precedents to them. Evidence concerning the factual situation is presented to the court by witnesses; either those who have first-hand knowledge of the facts or those who, being expert in a relevant area, can assist the court in finding the facts or drawing the necessary inferences from them.

When all of the evidence has been heard, counsel for each party presents his final argument in which he marshalls the evidence and discusses the legal principles and precedents in an attempt to persuade the court to find in his client's favor.

It is tactically very important to distinguish between evidence and argument, yet many experienced witnesses and lawyers regularly fail to do so. Since there is no cross-examination of what is said in final argument, and since cross-examination is usually more risky than argument, the ideal division of labour is to present as much of one's position as possible in final argument (which can be written in part, or entirely, by an expert advisor!). Moreover, because final argument is not usually written and distributed in advance, the other parties will have less time to prepare and plan a sophisticated "hatchet job" in reply. The only limitation on final argument is that the person delivering it cannot give evidence in the guise of argument, i.e. cannot make statements, of fact, or offer opinions which rely on facts not properly presented in evidence. He could not say "In my opinion as an expert, the proponent's evidence is weak because it contains no empirical basis for the conclusion that... and is self-contradictory in its positions on pages... and..." However, without qualifying himself as any kind of expert, he could say the same things; anyone is free to point out evidentiary failings, or flaws in logic, without being subjected to cross-examination. The tactical question is how persuasive someone will be in this role, versus the risks of having a witness testify. A suggested "test" would be to ask "What is this witness proposing to say that cannot be presented credibly in final argument?" His evidence should contain what passes this test, and no more.

Most Boards usually follow the standard court sequence. Preliminary motions are dealt with before evidence is heard. The proponent presents his evidence first. Other parties do the same, and finally, participants other than parties may, with the Board's permission, present submissions or call witnesses. The proponent will be permitted to call reply evidence, if he wishes. Then argument is presented by parties and

participants in the same order. The final step in the hearing process is the Board's decision.

a) Preliminary Motion

A motion is any kind of procedural argument made to the Board at the beginning of or during the course of a case, requesting a procedural order. Motions deal with matters of procedure and timing rather than with the substance of the evidence itself. Typical motions might include motions for an order to require a party to provide responses to interrogatories, or to produce requested documents, or to adjourn to study new evidence which has been filed.

Motions will probably be made orally rather than in writing and the form is simply, "Mr. Chairman, I have a motion to make. I move that ... and my reasons for making this motion are as follows ..." Every other party is given an opportunity to speak to the motion and then the mover is permitted a final rebuttal to the opposing arguments. The Board then decides whether to allow the motion. The rules will probably impose time constraints on motions. They may be allowed only at the beginning of each day's session, so as not to interrupt the orderly presentation of evidence.

b) Evidence

i) Examination-in-Chief is the initial presentation of evidence by a party or by an expert witness or a panel of witnesses called by a party. Even where the evidence has been previously submitted in written form, it will usually be presented orally at a hearing. Evidence may be presented in the form of a lecture or an interrogative dialogue with counsel, who takes the witness through his presentation by means of pre-planned questions which open the way for the witness' answers.

ii) Cross-examination of the witness by other parties or their counsel or agents then takes place. They question the witness directly or submit questions through the Board. Finally, Board members themselves or Board counsel may question the witness.

ii) Re-examination of the witness by counsel or agent for the party by whom he was called sometimes takes place at this point. No new evidence may be introduced by the witness, but he may clarify points of evidence which may have been confused during cross-examination.

This process is used for the other witnesses called by the proponent and, then repeated for all the witnesses called by all of the other parties, in turn.

iv) Rebuttal Evidence (by the proponent only) is limited to contradicting new issues raised by the other parties' or participants' evidence and not covered in the evidence originally presented by the proponent. It may be presented by calling new witnesses or by recalling previous ones. Any witness called to present rebuttal evidence may be cross-examined. The Board would wish to limit rebuttal evidence as much

as possible, preferring that rebuttal be handled by counsel during final argument.

c) Final Argument

Final argument is an attempt by counsel or agent for each of the parties and participants to sum up their versions of the evidence presented and to convince the Board of their view of the adequacy of the environmental assessment or the advisability of approving the proposed undertaking, with or without conditions. The order of presentation is the same as that for evidence.

d) Decision of the Board

Generally speaking the rules of natural justice provide that only those members of the Board who were present throughout the hearing to hear the evidence and argument of the parties may participate in making the decision.

Boards are generally not required to give written reasons for their decisions, although they generally do so.

CHAPTER III

EXAMINATION-IN-CHIEF

I. INTRODUCTION

At Board hearings witnesses usually present evidence orally, even if it has already been submitted in written form. Oral evidence is presented during "examination-in-chief". While some witnesses do present evidence in narrative form as a kind of lecture, it is more usual for a witness to do so in the form of an interrogative dialogue, a series of questions by counsel and answers by the witness.

Whether you prefer a narrative or interrogative dialogue format, the substance of your oral testimony at the hearing must, in fairness to others, be based on whatever written material you have prepared.

Although all Boards do not require witnesses to submit written versions of their proposed evidence prior to the hearing it may be good practice to do so.

II. PREPARATION OF EVIDENCE

A. WRITTEN SUBMISSIONS

1. First Impression

Your written submission may be the first exposure Board members, other parties and participants have to your work. It is important to avoid creating a negative impression that you will have to work hard to

overcome in your oral testimony. It is, of course, possible to amend, add or delete parts of the review or other submissions from the hearing evidence. But it would be difficult to make more than small stylistic changes without seriously undermining your client's and your own credibility, and risking forcing an adjournment to allow others to study your changes. You will want to state your views and express your concerns as precisely and persuasively as possible the first time.

2. Checklist

You will receive assistance from the case coordinator and counsel and perhaps from your colleagues. You will probably go through several drafts as you attempt to:

- reduce the number of technical terms included and define those that are avoidable;
- ensure that your language reflects the tone or attitude you and your team wish to convey;
- ensure a logical sequence of ideas with no gaps in reasoning or argument;
- eliminate extraneous material or unnecessary detail;
- find and refine analogies to make complex technical issues clear to a lay Board;
- place your comments or arguments in context for the Board via a brief, clear explanation of the theories and methods relevant to the point or criticism you wish to make;
- include or delete defences of your method or discussion of contradictory opinions as seems most effective (see the section on Scientific Issues below).

B. ISSUES TO BE CONSIDERED

While cross-examination is often the most dramatic part of a hearing, it is your written submission and oral presentation which will determine, to a great extent, the effectiveness of your performance in cross-examination. Edit and re-edit ruthlessly. Rough work cannot survive good cross-examination.

1. Scientific Issues

a) Probability and Risk

The nature of scientific statements is more likely to be understood in Board hearings than in a courtroom situation. Where an applicant must prove, for example, that there is sufficient evidence of "imminent irreparable harm" to justify the granting of an injunction, he might encounter difficulty because expected harm can be scientifically expressed only in terms of probability or risk of harm.

An administrative tribunal is not strictly bound by the rules of evidence.

Where topics such as radiation are concerned, lay participants in proceedings before the Board may tend to question the acceptability of any degree to risk. Thus, your testimony that you cannot categorically guarantee that X will or will not occur may be taken as tantamount to an admission of danger.

If this kind of issue is likely to be raised by your evidence before the Board, give some thought to how you will deal with it. It is generally best to avoid unequivocal or unqualified statements where you cannot be completely certain that your projection will in every case be accurate. Such an approach will preclude a cross-examiner from scoring points by emphasizing the statistical margin of error of the hypothesis. You would then be forced to retract your initial assertion and admit that, in a certain percentage of cases, your prediction will not hold true. It might then be argued that you had deliberately tried to conceal the limits of your study.

The detrimental effect of equivocal statements can be lessened by including in your presentation a brief general discussion, for example 2, of:

- a) some of the ways in which we all implicitly accept varying degrees of risk in everyday activities, such as driving a car or,
- b) the ways in which we all have to make decisions based on more or less sophisticated analyses of risk or probability, such as in decisions to sign mortgages or buy bonds based on our estimates of probable future interest rates or,
- c) the function of risk or probability analysis in less controversial and more easily accessible areas of science.

- b) Qualification of Your Opinion
 - i) Limiting Conditions

Your hypothesis may also be valid only under certain conditions, such as those assumed in the analysis, or those under which the experiments were conducted. An obvious example of a limiting condition which could become contentious is the geographical area where studies or experiments were conducted. Unless the limiting conditions are self-evident to a non-scientist, it may be necessary to qualify your opinion accordingly. Such qualification, strategically placed and emphasized in your own presentation to the Board, will obviate the possibility that the unstated limits of your opinion could be exaggerated on cross-examination.

- ii) A Question of Degree

You may criticize a proposed method or result but not because it is totally inadequate on the basis that it is less complete or precise than it might be. Some expert witnesses feel that a witness should express his opinion categorically, rather than as a matter of degree. In their

view, it is difficult to convey to a lay audience that criticism is significant if expressed as a matter of degree. There is, moreover, the possibility that opposing counsel could, on cross-examination, attempt to minimize your objection by suggesting that it is merely a matter of degree.

On the other hand, an overly categorical criticism will be attacked on cross-examination as an exaggeration. Opposing counsel can use this to try to undermine your credibility. On balance, it is probably best to state your opinion of the adequacy of a method as a matter of degree, if that is your opinion, and at the same time to emphasize your reasons for considering the degree of inadequacy worthy of note.

c) State of the Art

Many of the areas dealt with in environmental litigation are relatively new, scientifically speaking. Hydrogeology has, for example, been referred to as more an "art" at present than an exact science. Water quality modelling has been similarly described. You will want to give some consideration to the ways in which and extent to which the same is true in any area.

If the relative imprecision presently characteristic of some aspects of your speciality is relevant to the points you make or the questions you raise, you will want to consider how to present this information to the Board. On the one hand, it is dangerous to overstate, but on the other hand, you will want to avoid having your position unnecessarily weakened by undue emphasis on unavoidable imprecision. A balanced presentation is essential. If you ignore the issue altogether, it may come back to haunt you in cross-examination.

d) Absence of Scientific Consensus

There may very well be controversy in the scientific community over some aspects of your testimony. It would probably be imprudent to avoid acknowledging the controversy in some way because another party may present testimony from an opposing school of scientific thought. You may also be confronted in cross-examination with conflicting opinions arising either from the testimony of other experts or from texts written by recognized authorities. But whether you discuss the controversy in examination-in-chief or simply prepare to field questions on it during cross-examination, it is essential that you be well briefed to discuss the elements of disagreement in some specific details and be prepared to defend your preference for one side over the other.

Even if you feel yourself undecided regarding an issue, it is usually better for the purposes of the hearing, after a full discussion of opposing views, to come down on one side or the other. Be prepared to defend your option, even if all you can say is that the evidence on both sides is as yet inconclusive and you prefer to go with Dr. X, for whose previous work you have great respect, or that your own work leads you to believe that his position is more likely to be the better one. If you cannot form an opinion one way or the other, you cannot help the Board, and should not testify. The Board needs "solutions", not more problems;

it would rather have oversimplified answers than overcomplicated questions.

You may later change your mind on the basis of your own reasoning or further research. But if you "waffle" in your presentation, you take the risk that the whole area will appear so uncertain to the lay Board that counsel for another party will, during final argument, easily persuade the Board that you cannot be relied upon for any definite, useful opinion.

e) Prior Inconsistent Opinion

i) Your Own

You may have changed your own opinion on the validity of a conclusion or method in your area. Your previous opinion may be more or less public: it may have been published or presented at a conference or it may have appeared in a letter to a colleague or to a co-worker. Whether or not it will become an issue before the Board may depend on which end of this publicity scale it falls into. If your previous opinion was published, counsel for another party will very likely be aware of it. In that case, you will be forced to come to terms with it in your evidence. Otherwise, it will be up to you, counsel and the coordinator to decide whether it should be mentioned.

In either case, it may be better to handle the relationship of your previous and present opinions in your initial presentation on direct examination rather than waiting until another counsel brings the matter up in his or her cross-examination of you. There is no reason why such a change in your scientific opinion ought to be cause for great concern. Presumably, you have done or read of further research on the issue or have re-evaluated the original research or analysis. You will be able to explain these reasons to the Board. If you do so clearly and persuasively, this will provide further support for your present position.

ii) Your Client's

You may be taken to be a "spokesman" for the proponent. As such, you will be expected to assume some responsibility for the relationship between what you say now and earlier opinions expressed by others testifying for the proponent.

Ideally, the same experts would be involved from the beginning to the end of the case and there would be no such surprises. But this may be practically impossible. If you do arrive in a case late in the game, find out what has previously been said and done, discuss any problems with counsel and coordinator, and decide upon a method of dealing with them.

f) Differences of Opinion

Your opinion may differ in some way from that of another expert on your team, who has approached the issue from a different perspective, or simply formed different value judgements. Two possibilities arise. One

is to decide which opinion takes priority, and then to delete or qualify the other. Alternatively, both opinions may be candidly presented as different but acceptable opinions. You and the other expert may appear together before the Board as a panel, either stating the relative importance to the case of each opinion, or openly defining the honest difference of opinion. Presenting the information on examination-in-chief would minimize the extent to which the differences between the opinions might be exploited on cross-examination. The second alternative is preferable as it enhances credibility. It has the further advantage of leaving to the Board, as statutory decision-maker, the decision as to how much weight it is to give to differing views.

g) Area of Expertise

You must take care to define carefully for your counsel and coordinator the limits of the specific area in which your education and experience qualify you to speak as an expert. If, for example, the determination of the safety of a substance depends upon both a chemical analysis of its properties and a biological determination of its effect upon the physiology, different experts should be called to testify on each of these two issues. Similarly, if a determination depends upon both the methods used to collect material and those used to analyze it, experts in each area should be called. For example, where aerial photography is used to demonstrate the source and degree to pollution, both the photographer and the analyst may have to be called.

Unless someone expert in the related area is called, you may be taken to be at least implicitly testifying as to the validity of methods or results in an area in which your qualifications are weak. If this is exploited in cross-examination, it will weaken the credibility of all of your testimony, even that within your own area of expertise. In final argument, opposing counsel can have a lot of rhetorical fun describing you as a self-styled ubiquitous expert.

2. Factual Issue

a) Objectivity of Techniques

An expert witness is always open to attack by counsel for another party on the grounds of bias in favour of the party who called him. Any appearance of bias, whether actual or imputed, tends to diminish the weight of testimony.

The methods of research, measurement or analysis you use (or those used in studies on which you rely) should, of course, permit conclusions which support your views. If acceptable alternative techniques are available, however, you should show the Board that you have seriously considered them. Either demonstrate that you have used each technique but have good reasons for preferring one, or explain why it was not feasible to do so - constraints of time, data, cost, etc. Otherwise, opposing counsel may very well call an expert to testify that his method of analysis results in conclusions more supportive of his client's position. If you have not dealt with alternative methods of "up front"

in examination-in-chief, you run the risk of being accused of bias for having selected one method over other acceptable methods simply because you preferred the conclusion which your method produced.

In one instance, an expert witness depended on others to gather information, simply to illustrate the working of the method of analysis he was proposing. The particular information chosen happened to be adverse to another party's position on several questions not immediately in issue. Though the validity of the information was not directly at stake, that party's counsel felt obliged to undermine the expert's evidence on cross-examination. He tried to force admissions that the expert had not himself chosen or checked the material he had used to illustrate his method, and that had he gathered the material himself he might have chosen differently.

In another instance, studies relied upon by an expert for support of his opinion concerning wind carriage of radioactive dust had been done in the United States. Counsel for the proponent challenged his opinion on the basis that differences in snow coverage in Canada made it impossible to apply the U.S. studies. Similarly, test results favourable to an expert's opinion have been challenged on the basis of the seasons in which the data had been collected.

b) General Acceptability of Techniques

The methods you have used to arrive at your opinion on an issue, or those you rely on for support of it, will be less open to challenge if they are generally accepted by other scientists in your field. In analyzing hair samples in forensic cases, for example, the two methods available can result in quite different conclusions. Neutron activation analysis of the molecular structure of a hair sample is one method. But the method used by most forensic specialists is microscopic examination and comparison. An expert who expresses conclusions based on the latter, more generally acceptable method, is likely to be considered more reliable.

Using the more generally accepted method is not, of course, a hard and fast rule. You may have good reasons for relying on a method which is not, or not yet, generally used. If so, you ought to be prepared to justify the use of your chosen method. Whether you include such a justification in examination-in-chief or simply prepare yourself to handle whatever questions are asked on cross-examination is a matter of tactics to be discussed with counsel and coordinator.

c) First-hand Observation

Where personal observation is relevant to the accuracy of the data, your opinion will be more credible if you have collected the data yourself rather than used data collected by others.

Similarly, evidence based on real life research is often considered more reliable than laboratory investigations. However, when one expert was challenged on this basis, his response, showing that laboratory analysis was usual in his area of expertise, was enough to end that line of

questioning. Should this be a probable issue concerning the methods you have used to arrive at your conclusions, you would do well to cover the point in direct examination.

d) Records

No matter how supportive the factual bases of your opinion, if your records are incomplete, inaccurate or sloppy, or if you are not thoroughly familiar with them, the credibility of your testimony can be undermined. In a recent case, an expert in hydrogeology testified as to his usual method of doing sample drilling and then went on to discuss the results of the drilling in the particular instance at issue. His testimony was compromised when counsel cross-examining him was able to show that the expert's own records indicated that these particular drillings had not been done in the usual pattern. In another instance, opposing counsel attempted to cast general aspersions on an expert's method by referring to the sloppy appearance of a routine form.

It would be wise to collect and review not only your own records but those of any other study or experiments within the Ministry on which you intend to rely.

You will also want to collect any of your own or others' articles or texts relevant to the issue on which you will give evidence at the hearing. It is a good idea to organize these materials so that they will be easily accessible for reference during your presentation or on cross-examination.

e) Several Experts on the Same Issue

The credibility of a position is obviously enhanced by presenting consistent opinions by several experts who have not collaborated in their testimony.

Nevertheless, both practical and tactical considerations may preclude calling numerous experts on any one issue. There may not be many proponent's experts qualified to testify in any one area. Those qualified may very well have collaborated on the development or execution of the relevant theories or tests. It may not be possible to release more than one expert in an area of a particular case. The practical limits in the patience and attention span of members of the Board must also be taken into account. A parade of witnesses all testifying to the same effect on the same issue may, simply by virtue of the resulting tedium, weaken the effect of the testimony.

You may want to use other experts' published opinions or test results to support your own conclusions. If so, supply the Board with copies of the articles or citations from the books to which you refer. As is true of your own publications, references to material published in refereed journals is likely to be more persuasive. In any case, it is necessary to avoid extending such studies beyond the limits established by the circumstances in which they were originally prepared. In summary, although such material can be persuasive, excessive citation can work against the effect of your testimony.

3. Communications Issues

If you cannot communicate with a lay Board on its terms, all of your expertise will be of no avail. People cannot be expected to agree with what they do not understand.

a) Educate

Board members may, in a few cases, have science or engineering backgrounds, but you can be virtually certain that none will have very specific knowledge of your particular area or even of the general scientific discipline within which your specialty falls. If the Board in your area of expertise is part of your task as an expert witness. You will want to ensure that the Board becomes sufficiently conversant with the general principles involved to grasp the particular concern you are voicing or the specific criticism of the proponent's proposal or studies that you are making.

b) Explain

For this reason, it is probably advisable to include, in your presentation to the Board, a general explanation of whichever theories and methods are relevant to the point you wish to make. This will serve to orient the Board to a context within which your evidence can be placed. Employ layman's language wherever possible. Translate into ordinary English or illustrate those technical terms which are unavoidable. The following examples were selected from transcripts of hearings before the Environmental Assessment Board.

i) FIRST EXAMPLE

In the first example, the expert witness provides a general introduction to modelling and cost-benefit analysis.

(Witness) A - Well, we would like to present a framework or an approach whereby a large number of facts, figures, data and different kinds of information and even opinions can be presented or can be organized in a manner that can allow for a rational and easy comparison, and to allow for the display of this information so that it is easier to read and understand.

(Lawyer) Q When you make these comparisons what actually is it that you are comparing?

A Well, on the one hand in the situation we are comparing the costs, the financial costs and other types of costs of environmental protection activities and on the other hand we are comparing those costs against the benefits of the environmental protection activities.

Q When you come to assess the costs of environmental protection, is that something you would have difficulty in doing?

A No. Relatively speaking, the costs of environmental protection activities or pollution abatement are relatively easy to

assess, to measure and to determine dollar terms. This is because the resources that are required to undertake these activities have market prices generated by our market system, our economy, so we can easily add up the financial costs of these activities.

Q When you talk about costs, are you talking about the costs of machinery, the costs of labour, the costs of maintenance, that sort of thing?

A Yes.

Q What about the benefits? Is that something you can assess easily?

A Relative to the costs, no, it is more difficult. Now, the benefits of environmental protection are, in general, the reduction, the elimination or the avoidance of environmental damages. Now, these benefits are difficult to value in dollar terms, but they are nevertheless real to individuals and to society as a whole.

ii) SECOND EXAMPLE

In the second example, the expert more specifically describes the steps necessary to construct a water quality model, as a prelude to his criticism of the model proposed by the proponent, that one of these steps was omitted.

(Lawyer) Q By way of a general introduction then, can you indicate whether or not there is some basic framework or scheme in place which might be used or is used by modellers?

(Witness) A Yes, modellers and water quality modellers in particular have developed a general framework, a series of processes that one might use to aid in the model development. If I might draw the Board's attention to Exhibit 356 called "Material Pertaining to Water Quality Modelling," under the first tab — it is from a text actually called "Ecological Modeling In a Resource Management Framework, Clifford S. Russell, Editor," and on page 293 there is an outline of the modelling process.

Q Perhaps you could run through that outline for us and just perhaps give us some indication of what you understand the terms listed there to mean?

A Very well. The first term "Conceptualization" what that means is — to put it in simple terms, it is the formulation of the system that one is modelling and the interactions involved in the models into boxes and arrows, if you like. The boxes representing the lakes or rivers, whatever the case may be, of water quality and the arrows would represent the movement of parameters from one box to another.

Q Is that where one perhaps sets the assumptions that one is going to use in the physical boundaries that one is taking into account?

A To a large extent, yes.

The next step is the "Functional Representation" and that is the translation of a conceptual model into mathematical terms, basically presenting the model as a series of equations. Each equation would represent a sub-model of the total model.

The next step is the "Computational Representation" and this probably means the formulation of the model into a form that would then be used in a computer solution to the problem. Most problems are too complicated to work out without the aid of a computer.

The "Calibration" step is an important step used by the model developer to assist in selection of values for those parameters in the model and those constants in the model that are most difficult to assess. So — well, it has a second purpose too. Well, let me go on to "Verification".

"Sensitivity" analysis we have included here and that is the step in which one would test the sensitivity of the model to changes in one of the model constants to see what the total integrated effect would be on the model of one or more parameters that might be of concern, at least in terms of their accuracy.

Now, the final step, "Documentation" is the step in which everything that was done will be laid down in an orderly manner and this would then aid reviewers and model users and planners to determine the limitations of the model, the capabilities, perhaps whether it could be applied to another situation.

Q With that last one if I understand you correctly, documentation is in essence then the communication between the modeller and whoever is reading the model so he can assess the interpretation of it; is that correct?

A That is right.

Q Just in those terms, is a model really right or wrong in the absolute sense?

A The model itself is not right or wrong. It is simply an equation. What is right and wrong and what is subject to error would be the application of the model or the translation of the predicted values.

Q Can you just indicate in that context what the importance or documentation would be?

A Yes. Documentation would clearly lay out where the limitations of the models are, where its weaknesses are and it would help a model user to interpret it.

Q So it allows, in effect it allows the model interpreter to understand for himself the degree of confidence, for example, he puts in the model?

A Yes, that is right.

c) Illustrate

i) Verbally

If the evidence you will present is abstruse, at least from a layman's perspective, you may want to use an appropriate analogy from a more accessible area of science or from common experience. In the following excerpt, the witness first uses physical models as a more accessible example of modelling in general than is the mathematical model, about which he will make his point on examination-in-chief. Then he uses the model airplane, with which we are all more or less familiar, as an even more concrete example.

a) Example

(Lawyer) Q Perhaps I could start then with a fairly basic question and ask you really what the concept of modelling really is?

(Witness) A Simply stated a model, you need a model to understand any physical phenomena or otherwise any phenomena at all. Stated in one way, a model is a caricature of reality. I used "caricature is something which emphasizes essential features of a physical phenomena or something else. To give you a specific example, one of the models most people are familiar with is the physical model. I am sure people are aware of how they design new airplanes and one of the ways they understand — okay. Let me go to the first example which is a physical model. The physical model is essentially used when you can mimic nature in a certain fashion, for example, mimicking an airplane, that is, you build a scale model of an airplane, put it in a wind tunnel and see if it flies in the wind tunnel in some sense. I think it would be absolutely disastrous to build a plane that doesn't fly and that is one of the reasons you need a physical model. But a lot of times you cannot use a physical model the relationships may be too complex and the system itself might be so large that you need to use a mathematical model, what essentially is a mathematical model. A mathematical model does the same thing as a physical model, but it replaces logical relationships in terms of mathematics. Why mathematics and why not something else? Because mathematics is extremely precise language, the grammar of mathematics is very well known and universally accepted, and you can manipulate mathematics in an extremely routine manner and you don't have to think about it because the laws of mathematics are fairly well known. That is one of the reasons people use mathematical models.

(b) Limits

It is important to keep in mind the limits of the analogy you choose and, if relevant, to include them in your presentation. If, for example, you wish to illustrate evidence on the odour of a particular effluent by saying that a teaspoonful could be smelled five miles away, it might not be necessary — depending on the terrain and the locale at issue — to mention that mountains would cut down on this distance. But if the specific amount could be perceived only under certain atmospheric

conditions, and those conditions would likely occur only once every ten years, it would be most unwise to use the analogy without qualification.

(c) Tactics

When using analogies from common experience, it is a good idea to keep their effect on your audience in mind. It may be counterproductive to use an analogy based on an unpleasant personal characteristic to which a key participant in the proceedings could relate all too well.

(ii) Visually

Visual aids can be very helpful in presenting complicated scientific principles or methods to a lay audience. They can be used to illustrate a particular point or even as a focus around which to organize your material. They can range from hand-outs to overhead to overhead projections or even videotape presentations. More usual would be photographs, slides, maps or charts, graphs, or lists of statistics. It is a good idea to distribute individual copies, even of material otherwise presented, for later reference to the Board and parties or even to the public in attendance. Whatever aids you choose, consider what kinds of equipment will be necessary to display them effectively. It is not unheard of for a witness to bring along to a hearing a large chart or map and discover that there is no proper stand for it. Check with the Board and arrange to bring along whatever is necessary. If your preferred means of presentation would involve the development of specialized mechanical or electrical devices, contact the relevant section of the Ministry in time to refine the device for use in your dry run so that any bugs can be worked out well in advance of the hearing.

d) Mode of Language

It is sometimes necessary in hearings to use language that is more definitely critical than would perhaps be usual in scientific writing, for example, in order to convey to a lay audience that a substantial criticism is, in fact, being voiced. In the following brief example, counsel encourages a witness to adopt a more definitive mode of language:

(Witness) A - The range around the mean within which one would have confidence tends to increase.

(Lawyer) Q - It is not like saying that the potential for error increases; is that the same thing?

A - Yes, that is the same thing.

Which style is likely to be more effective in written or oral evidence is, in any particular case, a tactical matter to be discussed with counsel and co-ordinator. A definitive style is arresting and would likely be more memorable. An aggressive manner might cause negative response. The style of language you choose will convey to a certain extent your stance in the proceedings. It is wise to avoid appearing as

either too strong an advocate for a particular position, or as too "wishy-washy".

A bland, bureaucratic style will probably elicit the same lack of response as technocratic jargon. In general, slight understatement is preferable - always within the range established by a witness' own natural style. Lawyers are particularly sensitive to what some call "the civil service passive": an absolute abhorrence of saying "I believe", or "in my opinion", while distinguishing largely subjective views with a pseudo-objectifying use of the passive mode. Such use would include, for example, "it is recognized that" or "it is generally acknowledged that". These expressions cry out for the questions "By whom!" Similarly, overly subtle language can look evasive. For example, a witness referring to a "water flow regulation device under evaluation", if he meant that planning was underway for the construction of a large dam in a river, might, from the perspective of a layman, appear to be trying to "slip something past" the Board. Call a dam a dam.

III. PRESENTATION OF EVIDENCE

A ESTABLISHING YOUR QUALIFICATIONS

1. Content

The first stage of examination-in-chief of an expert witness consists of establishing his qualifications to express an opinion on the relevant issue. Counsel will have requested that you provide him with a complete general resume of your academic credentials, quasi-professional training (internship, research assistantships, etc.), professional status and affiliation, scholarly publications (including an indication of which appeared in refereed journals), and professional experience. He will also want to have your study, training, experience, and publications in the specific area or on the particular point on which you will be giving evidence. He will want to know what involvement you have had in this case - if you prepared studies, consulted other experts or transcripts, or attended the hearings during another expert's testimony.

2. Presentation

Often a complete resume of your qualifications will be entered as an exhibit or appended to your written submission. Nevertheless, your counsel will want to review this material orally for the Board in order to emphasize significant portions and, in general, to impress the Board with your competence. If the Board has not seen you perform, the only chance your counsel will have to build you up in the Board's eyes is when he goes over your credentials. Occasionally counsel for other parties will offer to "concede" a witness' qualifications, i.e. to admit them without having them reviewed at the hearing. Such an offer is rarely accepted because a witness about to face cross-examination needs all the affirmative, credibility-enhancing support he can get.

There are several ways of presenting this biographic material to the Board. Counsel could ask you to describe your background, but because you might appear immodest, counsel will usually:

- a) read the material and ask you whether the account was substantially correct; or
- b) ask you to affirm each piece of information separately; and/or
- c) pose questions which allow you to expand upon some portion of your biography.

If this last technique is used, you and counsel will go over the questions and responses prior to the hearing in much the same way and for the same reasons as for the questions posed in the body of the examination-in-chief.

B PRESENTING YOUR EVIDENCE

1. Form

There are two major ways of presenting oral evidence during examination-in-chief: narrative, and interrogative dialogue.

a) Narrative

A witness using the narrative form simply presents his evidence as an address, somewhat like a lecture to the Board. The Board or Board counsel may punctuate the presentation by questions for the sake of clarification, and opposing counsel may interrupt to object to the introduction of some specific material. The witness' own counsel plays no part in the presentation when this form is used, except to respond to objections on his witness' behalf. Witnesses are usually advised for the sake of effect not to read their presentations but this is not a hard and fast rule.

Preparation for this form of presentation would consist of rehearsing your evidence with counsel and coordinator, and perhaps colleagues or other witnesses. During rehearsal you would become accustomed to answering (or deferring until later) questions which interrupt your presentation. You might just as well discover, at this stage, that certain portions of your evidence are unclear, and alter them accordingly.

b) Interrogative Dialogue

Some witnesses, particularly those with more experience in administrative hearings, present their evidence in narrative form, but the most usual form is the interrogative dialogue. Counsel asks "scripted" questions, with which the witness is obviously familiar, and the witness responds with the "scripted" answers. Often both the questions and the answers are prepared by the witness.

i) Leading Questions

It is a general rule of court advocacy that counsel may not put what are called "leading questions" to his own witness in examination-in-chief (although such questions are routinely used in cross-examination). Leading questions are those in which the answer is suggested by the question, e.g. "Do you feel that the proposed project is an environmental disaster?" The purpose of excluding such questions is to prevent counsel from telegraphing to the witness the answer which his client wants. It is the evidence of the witness, as expressed in his own words, that is supposed to be presented. Counsel is not to give evidence, nor to put words into the witness' mouth. The non-leading version of the above question would be: "What is your opinion of the probable environmental effects of the proposed project?" Practice before boards and tribunals is not as strict as practice before the courts. Some leading is allowed, as long as it is not too blatant.

There is also an exception of the prohibition against leading questions which permits the lawyer to lead the witness through his credentials when qualifying him as an expert. This is to save time with non-controversial matters.

ii) Familiar Questions

The questions you are asked by counsel will, then, usually not tip you off as to the very information you want to present to the Board. Nevertheless, they must be at least familiar enough that you can understand immediately what part of your evidence is being requested. To ensure even minimal familiarity, counsel will inform a witness in advance of the hearing of the general effect of each of his questions and what portion of the evidence he will expect in response. But under the stress of the hearing environment, a witness could miss the point of a question he would ordinarily easily understand to be directing him to a particular portion of his evidence, and respond, instead, in a rambling, ineffective way. For this reason, it is considered a good idea, and entirely ethical for counsel to rehearse with a witness the precise wording he will use for each question. Sometimes the witness is given a copy of these questions. Then counsel and witness review the responses appropriate to each question. It is usually advisable for the witness to construct in advance the precise answer he will give to each question.

iii) Hypothetical Questions

The traditional method of obtaining expert opinion in court cases is to ask the expert to assume the truth of certain facts propounded to him in the form of a hypothetical question. The expert then gives his inferences based upon these assumptions. One reason for requiring the use of hypothetical questions is that if an expert were permitted to render an opinion based solely on his consideration of all the evidence, he would form his opinion by weighing the evidence and the credibility of witnesses, thereby invading the province of the decision-maker.

The hypothetical question has been criticized because it allows counsel to slant the question in his client's interest, and is often so verbose,

intricate, and complex that the decision-maker becomes bored or confused. The question itself may be more of a problem than the answer.

In several jurisdictions, the rules prescribing the use of this kind of question have been changed to allow expert witnesses to present their opinions directly. They may then be required, in examination-in-chief or cross-examination, to specify the data upon which their opinions are based.

There is, in contrast to a court, no requirement in hearings for experts to express their opinions in the form of a response to a hypothetical question. Nevertheless, counsel may want to use this form for the sake of effect. If you are the first witness on an issue, he may want to pose such a question for the sake of including facts to be established by the evidence of the witnesses to follow you.

It is essential that you be thoroughly familiar with the implications of any hypothetical question to be used and with all of the assumed factors included in it. It is a standard tactic on cross-examination to ask a witness to repeat these factors. If you forget one, opposing counsel might be able to suggest that you are not sufficiently aware of all the assumptions on which your hypothesis is based. Or opposing counsel might go over each assumption, asking whether you have any hard evidence to support it, in an attempt to show that your opinion is all pure hypothesis. Counsel will want to review with you the exact wording of any such questions and discuss thoroughly all the factors involved.

iv) Panels of Witnesses

An expert may present his evidence to the Board as a member of a panel of witnesses. This method of presentation has advantages and disadvantages. It is often used where one expert's testimony is closely inter-related with that of another, where one may raise technical issues as policy questions which can only be discussed competently by another, or seeming conflict between two opinions might otherwise appear temporarily unresolved. A panel approach avoids frequently having to refer questions to past or future witnesses and allows panel members to support each other in an interdisciplinary way on cross-examination. But unless the evidence to be presented is solid and the relationship between the various opinions well worked out, panel members can be used against each other.

The examination-in-chief of a panel of expert witnesses is usually conducted using the interrogative dialogue format. Counsel could ask questions of the witnesses in turn or haphazardly, but he will ordinarily spend a block of time with each witness.

v) Organization of Presentation

After his general qualifications are established, an expert witness is often asked by his counsel to describe what he studied in relation to the case at hand. Then he is questioned about how he studied it, the

sample size, method, and so on. He then presents his conclusions and, sometimes, recommendations.

An alternative and perhaps preferable method is to present the conclusions first. Having thus given the Board something it will feel of immediate use, Board members will be more inclined to listen attentively while the witness places his conclusions within their scientific context by describing in lay language his methods and theoretical assumptions. While the provision of basic education is useful and even necessary for a lay Board, the sequence of evidence is important. Presenting theory before giving your conclusions might appear academic or condescending, and would probably result in their "tuning out" until you come to something more concrete.

2. Audio-Visual Aids

The use of audio-visual aids is discussed above in the subsection on "Communications Issues". Here it is sufficient to say that it is necessary to review whatever aids you plan to use as carefully as you do the substance of your written and oral evidence to ensure that they are complete, accurate, attractive, available and in good working order.

They ought to relate well to the material that precedes and follows them and be introduced, handled or distributed as efficiently as possible.

3. Dry Run

Depending upon your experience as a witness and the time you, counsel and coordinator have available, you will probably go through several dry runs of your presentation.

It is difficult to gauge the effect of spoken or visual material without trying it out on an actual audience. It is a good idea, too, to include in your audience several colleagues who have not worked with you in editing your material.

At the dry run, counsel will pose the questions you have reviewed with him and you will respond as you have planned to do at the hearing. The others present will probably interrupt to comment or ask for clarification more often than will be the case at the actual hearing. These comments and questions will serve to identify the points at which you may want to use different language, expand upon some point, define a term, or be especially careful of the clarity, loudness or tone of your voice. It may be a good idea to have someone present make notes on these points, and perhaps have the whole rehearsal recorded or video-taped.

If time and resources permit, one or more lawyers may be asked to role-play a cross-examination. This is particularly useful if you have not had extensive experience in testifying. Nothing else will expose your weaknesses and inexperience in handling lawyers' games. It is far less painful to learn these things during a dry run than before the Board, with its unrelenting shorthand reporter preparing a verbatim transcript.

4. At the Hearing

(i) Substance

Be careful not to inadvertently introduce material which you have not prepared, thereby risking embarrassment on cross-examination. If one of counsel's questions does not sound familiar, ask that he repeat it. He may have changed the wording with which you are familiar and can re-phrase it at your request. You can be almost certain he will not purposely be asking you about material you have not discussed with him.

It may be advisable to agree with counsel on a standard phrase such as "Is that all you wish to say at this point?" to be used as a cue to you from counsel that you have not fully answered his question.

(ii) Manner

Respectful - It is necessary to convey respect for even those expert opinions which you are most professionally critical. The presumption is that each has done as creditable a job as possible no matter what disagreements exist. Failure to maintain a tone which conveys respectful disagreement may damage your presentation more negatively than it does the material criticized.

Serious - In general, your position as an expert requires that you and your counsel maintain a general level of seriousness. Even those advocacy text which recommend that counsel in a civil trial establish an easy conversational tone with his witness make an exception for expert witnesses for whom a more serious manner is customary.

Straightforward - A straightforward and polite manner is in order. There is no need to be stuffy, condescending, nor excessively humble. If you feel you should explain a particular term you have inadvertently used, there is no need to apologize "I'm sorry. I should have explained that term..." Prefacing the definition with "Perhaps I should explain" will do.

Address the Board - You will probably present your evidence as a series of responses to questions with which you are familiar. Acknowledge the question and the questioner briefly, to be polite and to dispel the appearance of a mechanical performance, and then address your answer primarily to the Board members. Speak just loudly enough for all to hear, at a speed and with sufficient clarity to accommodate the Board reporter.

(iii) Appearance

a) Dress

It is trite to say that your appearance will convey some impression to the Board and to other participants in the hearing. All the usual advice about good grooming applies in this situation. You will probably feel most comfortable in the hearing room in the standard hearing "uniform", a fairly conservative business suite or dress, since that is what the other participants will be wearing. Dress that is

distinctively different from that of other participants may be taken as some sort of deliberate statement, even if it is normal attire for a particular witness. You will want to avoid such subliminal messages to the Board because they might interfere with the substance of your presentation.

b) Material

It is a good idea to ensure that your exhibits, files or reference material as well as their containers, present as neat an appearance as you do yourself. It is standard advice to witnesses to ensure there is nothing on the back of any photographs, maps, or charts that would compromise the case. You will be more at ease if this material is arranged in such a way that you can retrieve what you want to refer to at each stage with a minimum of shuffling.

CHAPTER IV

CROSS-EXAMINATION

A. INTRODUCTION

Cross-examination consists of a series of questions posed to a witness by those parties opposed to his or his client's or employer's interest, following the presentation of the witness' direct testimony. It is designed to test the soundness of the evidence, and to give parties adversarial in interest an opportunity to make the witness retract, modify or qualify his testimony. Unlike the narrative format followed in examination-in-chief, cross-examination will take the form of a series of leading questions containing obvious or subtle inferences which may evoke responses helpful to his case.

One should always keep in mind that the presentation of one's own position occurs during examination-in-chief. The sole purpose of cross-examination is to allow opposing parties directly to confront the witness and to attack the validity of his evidence. Our purpose is to uncover the mystique surrounding cross-examination techniques in order to assist the expert witness to survive in spite of them. Cross-examination is a battle of wits which witnesses as well as lawyers can win.

Many view cross-examination as the epitome of all of the worst aspects of the lawyer's trade: the tendency to twist words, to distort meanings, to take arguments out of context, and generally, to try to confuse and browbeat the witness. There certainly is some truth in that perception. Accordingly, within the limits of the format, this manual will try to expose some of the more commonly used lawyer's tricks.

Little can be done, however, for the witness who presents evidence that is, at bottom, weak. If the witness is testifying as to matters beyond his professional qualifications, stretching his data to conclusions it cannot support, making unverified assumptions, arithmetical errors and so on, the opposing lawyer will go straight for the jugular. Hence the need, almost compulsively, to go over your evidence again and again, number by number, word by word, clarifying ambiguities, editing

over-statements, and making the whole piece as "bullet-proof" as possible; also, to anticipate lines of cross-examination.

Some of the lawyer's games identified below may at first seem transparent, and one may question their potential effectiveness. However, they are often used successfully by lawyers to give an unaware tribunal the impression that a witness whose evidence is basically sound has made an admission repudiating his whole position, or affecting his credibility, when in fact this may not be the case. These games are often dependent upon getting the witness to admit something relatively trivial, and building a whole framework on that admission, never allowing the witness to explain or the tribunal to see how flimsy it all is. At the end, the witness appears to be admitting that he was wrong, or appears to be withdrawing or watering down his earlier conclusions, even though he is not.

Many of the lawyer's cross-examination techniques depend for their effectiveness on the fact that the process of cross-examination in a long hearing is often so tedious that the tribunal will not listen very closely to the precise wording of every question and answer. Accordingly, it will tend to be left with rather general, sometimes superficial impressions. The lawyer often exploits this soporific quality of hearings. For example, one favorite trick is to ask a witness whether, in preparing his evidence, he read the report of such-and-such a Royal Commission or Task Force, or the famous text written by Professor so-and-so. The answers, usually, will be in the negative. The list of what has not been read will always be a lot longer than the list of what has been read, especially if the lawyer carefully selects works of marginal relevance. Through a combination of incredulous and scornful acting gestures, he can leave the impression that the witness hasn't done his homework.

There are several techniques for breaking up this games. The one which you select should depend upon the circumstances, your experience and skill as a witness, and the personality of the opposing lawyer. One simple technique would be for the witness' own lawyer to object to the question on the ground that the cross-examiner hasn't established the relevance of the work to the subject matter of the testimony; there are different ways this objection can be made, each with its advantages and disadvantages. Another technique is for the witness to say, "No, but are you suggesting that it was an error on my part not to have? Why is this article indispensable? What does it contain that I could not have learned elsewhere?" That approach, too, has its advantages and disadvantages.

In general, it is better to be "up front" about such tactics, once it seems clear where the lawyer is going. For example: "I had three months in which to prepare my evidence, not three years, and during the course of that time I read 142 articles and reports, totalling several thousand pages. The best of these are cited in my bibliography. Of course you can always find some I haven't read. In my opinion, I read all of the most important and relevant literature time and resources permitted, and I'm not prepared to concede that anything of importance escaped my scrutiny simply because you can dig up a few articles not on

my bibliography which I did not read. If you can establish the relevance of all of these, show that there is something in them not contained in the articles I have read and demonstrate that this should cause me to change any of my conclusions, of course I would do so. But I am not especially dismayed that out of the total universe of articles and books, you can find a few I haven't read. I have to draw the line somewhere, or my evidence would never be ready, and your client would be criticizing the Ministry for devoting an excessive amount of taxpayers' money to the endless reading of articles for a relatively simple piece of evidence." This kind of tough candour, if not overdone, will thwart, and soon stop the playing of such cheap games.

If testimony is not particularly damaging, opposing counsel will obviously not bother to cross-examine or will pose only token questions; similarly, with the rare piece of evidence which appears irrefutable, counsel may decline to cross-examine because he feels no substantial gain would be made. Where counsel does decide to cross-examine, the range of questioning techniques that he chooses to employ depends on the extent to which the testimony of the witness or the witness himself may appear to be vulnerable. Therefore, a very tidy initial presentation of the evidence is critical.

It should be assumed that one will face tough, competent counsel on cross-examination. Never take the risk of preparing less than adequate work in the hope that opposing counsel will overlook a sloppy presentation. Similarly, a perfectly sound presentation can be destroyed by a witness' inadequate skill at sufficiently high in environmental assessment hearings to warrant opposing parties retaining high-calibre lawyers who can sense and exploit the most insignificant errors or personal weaknesses.

1. The Role of the Expert Witness in Cross-Examination

There are two basic ways in which submissions can be made before a hearing: evidence and argument. Evidence is the sworn testimony of witnesses presented during examination-in-chief, challenged by cross-examination, and clarified, if necessary, during re-examination. This whole exercise provides the factual foundation upon which the judgement will be based. In many cases, where the facts are not particularly controversial, the inferences to be drawn from those facts may be of crucial importance. The lawyer gets the last word on these, during final argument.

In most hearings, although there may be numerous dramatic moments during the evidence, the climax of the hearing is final argument. For this, the lawyer can select any pieces of the evidence which he feels will be convincing, and say anything he considers likely to persuade the tribunal to adopt his client's point of view. Often the evidence has so confused or bored the tribunal that they place great reliance on a final argument, although it may occupy only a fraction of the time of the entire hearing. It is important for an expert witness to keep in mind, therefore, that one of the main reasons why he is being cross-examined is to provide ammunition for the lawyer to use in final argument. A better appreciation of how final argument is prepared, and what can be

done during final argument with relatively innocuous-sounding questions during cross-examination, will give the witness a better idea of how to avoid inadvertently providing an opposing counsel with ammunition with which to blow his case out of the water. A useful suggested exercise would be to read several transcripts containing final arguments.

In environmental assessment hearings the final argument of each counsel will summarize portions of lengthy and complex evidence most favourable to his case and package it as persuasively as possible. There have been many cases before similar tribunals in which one side has had very strong evidence but the case has been won by the other side, with almost no evidence, on the greater strength of a forceful piece of rhetoric in final argument. Using a line of reasoning that a chain of evidence is only as strong as its weakest link, a minor evidentiary weakness can appear in argument as a major disaster.

Cross-examining intelligent, skilled witnesses, sensitive to the nuances of every question, have been likened by lawyers to walking into a buzz-saw. Unless his evidence is rather weak and the lawyer unusually strong, such a witness will score so many more points against the lawyer than the lawyer will against the witness that the lawyer will soon terminate the cross-examination before he gets further behind. Your objective as an expert witness should be to ensure that the tribunal gets all the necessary facts, and any reasonable qualifications or clarification which should be provided during cross-examination, but without giving any ground to the opposing counsel, so that he will not bother to cross-examine you extensively.

An experienced witness will attempt to deduce from the line of questioning the probable conclusions the cross-examiner intends to draw during final argument. By correctly anticipating the inference opposing counsel intends, the witness can, by exposing the game, correct the damaging impression before it has had time to set in the tribunal's mind. Thus he wins that round. This also destroys the utility, for final argument purposes, of a whole series of questions which may have preceded the one in which the witness exposed or detested the game. Similarly, where the lawyer leads the witness by a series of questions into a rather subtle trap, the experienced witness will jump out of harm's way just before the jaws of the trap slam shut. This results in the lawyer having wasted perhaps an hour of the tribunal's time setting a trap which didn't work. If this happens too many times, most hearing chairmen will lose sympathy with the lawyer's failed attempts and ask him to "get on with more important business". To borrow a somewhat frivolous example, the ideal relationship between witness and lawyer, from the witness' point of view, is analogous to that of the Road Runner and Coyote cartoon characters. A few vigorous leaps over a cliff, followed by a landing flat on his face, would make the hapless legal Coyote wish he were elsewhere.

A useful technique for a witness who has correctly anticipated the probable outcome of a line of questioning is to lead to the inference that such and such is the case. If the lawyer does not agree, you have guessed wrong. If he does, this gives the opportunity to point out that the lawyer's inference is wrong, for a number of reasons which you can

spell out in great detail, and which the lawyer may not have anticipated, or in any event did not want the tribunal to hear.

As an expert witness, your entire professional reputation is on the line every time you testify. The personal consequences of a serious mistake extend beyond any particular case and the short-run interests of the party who called you as a witness. It is your credibility and integrity as an expert which will be attacked, and you must be prepared to defend it. The exigencies of your employer cannot override your legal duty to the Board, and your personal investment in your own career. If your credibility as an expert witness is even once severely tarnished, especially on account of your attempting to cover up the inadequacies of a particular practice or policy, your utility to the Ministry (and to anyone else) as an expert environmental witness in future cases is substantially diminished, if not destroyed.

In instances where your opinion is at odds with that of other witnesses testifying on behalf of the same party, or not very different from that of an opposing witness, your responsibility and legal duty lies in presenting the evidence as you believe it to be. To thy own self be true. The matter of resolving possibly contradictory testimony - if a range of opinion cannot be tolerated - lies with the party that called you, not with you. Naturally, you will attempt to iron out such difficulties during the preparation of the case. But this will not always be possible, as you cannot anticipate every line of questioning by every cross-examiner. Where there are honest differences of opinion with the evidence of other proponent witnesses, or even with previous proponent techniques or policies, your duty as a witness in a quasi-judicial process to tell the whole truth and nothing but the truth - overrides any duty you may have to anyone else. Your choice, therefore, is either not to testify at all, or to face the possibility of having to disclose - preferably "up front" during examination-in-chief, but perhaps during cross-examination - an opinion on some rather important matter which differs from that of others within the proponent. Any attempt by an expert witness to cover up for the lack of unanimity runs the risk of being spotted by a tough lawyer who will exploit it mercilessly. This is not by any means a remote possibility; transcripts of such instances abound.

2. The Lawyer's Attitude to Cross-Examination

When preparing to face cross-examination, it is useful to understand the attitude of the lawyer. Most trial counsel are quite vain about their real or imagined cross-examining an expert witness whose evidence they do not understand because its technicalities exceed their ability to comprehend them. A lawyer is especially vulnerable if he does not have an expert beside him to assist him in cross-examination, to assess your toughness as a witness, and his chances of scoring any points. If he succeeds in drawing blood early, he will pursue you relentlessly; if his first few thrusts are successfully carried, he will probably continue to press for an opening; however, if he is thoroughly perforated in the first couple of rounds he will try to end the cross-examination with his hide intact. Your objective, therefore, should be to "let him have it", early and hard.

3. The Lawyer's Style on Cross-Examination

A good cross-examining lawyer will have no particular style which the witness can predict. He will be a versatile actor who can adapt his techniques and personality to the witness he is cross-examining and to his objectives in relation to that witness' testimony. He can be alternatively seductively charming, casual, abrasive, bullying, or formal. Whatever colour the chameleon adopts, recognize that it has one purpose: to get something from you that you otherwise would not give him. You should be particularly wary of the cheerful, friendly cross-examiner who seeks to paraphrase your testimony for purposes of "clarification", in his own words, which are just slightly different from yours. Watch out for "In other words, you're saying...". Successive small concessions of form can gradually be turned into concessions of substance. A shrewd lawyer can, adopting a Columbo-like bumbling pose, paraphrase your evidence in such a way as to reduce the scope of your conclusion somewhat. Out of a misguided sense of charity for his apparent lack of intelligence, you may feel that it would be unkind to correct him. In final argument, to your dismay, he may show you how clever he has been in getting you to weaken your earlier story.

The bullying cross-examiner may try to get you to back off your story by putting psychological pressure on you through overstating your position and forcing you to back off that overstatement. He will try to get you to make concessions which are useful to him, in your hurried attempt to back away from his rather extreme overstatement of your position. For example, in cross-examining you on your carefully worded evidence that a particular assessment understates certain risks, the lawyer, with calculated bombast, may try to evoke the following exchange:

Q: So, Dr. X, you're trying to tell this Board that my client's project is unsafe?

A: That's not what I said. In my evidence I said that....

Q: (Interrupting and overstating) I've read your evidence, doctor, and I know what you said. But boiling it all down, aren't you saying that my client's project is unsafe?

A: No I'm not.

Q: Then its safe isn't it.

A: No, not exactly its...

Q: Oh come on doctor, stop quibbling. Its either safe or its unsafe! Which is it? You've said its not unsafe, are you backing down on that now?

A: No, its not as simple as that.

Q: Its never as simple as that, doctor, if you're a scientist, but I'm not, and neither are these members of the Board who have to decide, very simply, whether the project is safe or unsafe. Now you've

conceded that it isn't unsafe. You seem to be reluctant to admit that its safe. Let me put the question to you a different way: Does your evidence prove that its unsafe?

A: No.

Q: Then it would follow, would it not Dr. X, that if I were to say to you that the project were safe, you would not be able to prove that it was unsafe?

A: Yes, I guess that would follow, but...

Q: No further questions.

B. GENERAL METHOD OF CROSS-EXAMINATION

1. The Lawyer's Plan

It would be a mistake to underestimate the seriousness with which a competent lawyer approaches a case. Most lawyers understand that intensive preparation is the key to success. A good lawyer will be very familiar with all of the evidentiary aspects of the case he is conducting. He will normally have done everything in his power to be conversant with all the theoretical and practical aspects of the case. Although a lawyer's knowledge of a general scientific field will never approach that of an expert witness, he may often, on a particular and narrow piece of evidence, be as well-versed in the area as many experts, and sufficiently familiar with the evidence to be able to conduct a devastating cross-examination.

The competent lawyer approaches cross-examination with a carefully developed plan and well-defined objectives. A part of this plan, frequently, is to appear to have no plan, but to ask questions seemingly at random. A favourite act is to appear disorganized and ill-prepared.

Usually, the cross-examination will have three main objectives:

1. To sue the testimony of the witness to contribute to the favourable development of his case;
2. To discredit the adverse portion of the testimony of the witness;
3. To use the testimony of the witness to discredit the unfavourable testimony of other witnesses adverse in interest to his client.

Normally, the first phase of cross-examination would be to encourage the witness, while things are still friendly, to say favourable things about the other side's case, or to limit the scope of his own evidence. This might include questions such as "Dr. X, you have read the evidence of our expert, Dr. Y, you don't disagree, do you, with his conclusion at page 12 where he says...?" Another type of question might be: "Dr. X, looked at superficially, your conclusion might appear to be totally at odds with the conclusion of our expert, Dr. Y. However, would you agree

with me that you are not necessarily in disagreement when he says...?" Alternatively, the witness might be asked, where he has stated certain facts but not drawn certain possible inferences or conclusions from them, which he has left dangling for the Board to draw: "Now you provided the following evidence at page 15 of your memorandum..., but your own evidence doesn't draw any inferences or conclusions from that, it merely puts the evidence forward that way, doesn't it?" Clearly, the usual and obvious answers to these questions may give the lawyer some comfort in final argument.

Following the friendly phase of the cross-examination, when the witness is carefully encouraged to limit the adverse things he is saying, and induced to agree, where possible, with certain parts of the other side's evidence, the cross-examination may either end abruptly, or switch to an unfriendly phase. During this phase, the lawyer will attempt at all times to prevent the witness from elaborating on points that strengthen his testimony given in examination-in-chief. He will do everything in his power to interrupt the witness, or to direct him forcefully away from saying anything positive about his evidence. If this is done, your own counsel should strongly object, insisting that you be allowed to answer the question fully and in your own way. If he does not, you should tersely and firmly say: "May I finish my answer please? I would like the Board to hear all of my answer." And then go on as though the lawyer hadn't interrupted.

The lawyer's prime intention is to keep control of the tempo and direction of the cross-examination. By the use of carefully drawn questions, he will try to prevent the witness from minimizing discrepancies by way of lengthy, self-serving speeches. He will tend to paraphrase these in a few words, to the witness' disadvantage, and move on. As he is pursuing his own objectives in cross-examination, the lawyer will rarely follow the order of the evidence given in examination-in-chief. He may deliberately ask a question at the start which will surprise the witness, or force him to search through his documentation for answers to questions he has not prepared, in an attempt to unnerve him.

2. How the Lawyer Goes About Executing His Plan

a) Expertise

Although the tribunal has granted the witness recognition as an expert, the lawyer may attempt to question the depth and breadth of the witness' expertise, or its relevance to the question at hand. He may also try to suggest that the expertise has been gained all on one side of the question, implying a strong bias. Because these common occurrences, actual examples can be enlightening. The following two excerpts from hearing transcripts are illustrations of attempts by opposing counsel to limit the extent of the witness' expertise.

In the first example, the lawyer tries to underline the witness' lack of practical field experience. The cross-examiner poses the question several ways, in order to drive home his point. The witness, feeling somewhat defensive perhaps, does not exploit the poor wording of the lawyer's questioning, and fails to object to the indeterminate nature of

the question asked. When the lawyer tries to draw the witness into making a guess, the witness correctly avoids doing so, but sounds somewhat defensive. He could have used the opportunity to turn on the lawyer, exploiting the ambiguities and confusion in his questions, rather than dwelling on his own lack of field experience.

Q: Dr....., can you describe for me your field experience in the area of saltation, any investigations that you have done that have been specifically related to saltation and I am talking about large flat surface areas or with tailings?

A: In the area of saltation itself I have not worked on a specific project.

(Ed. comment:

It might have been somewhat stronger for the witness to answer: "My area of expertise is in the physics of saltation. I have not spent any time running around tailings in the field collecting samples.")

Q: Well, if you have no experience there, then your experience in respect of saltation I take it is scientific experience, is that correct?

A: I have knowledge of the physics of saltation.

Q: And you have had experience in working with saltation equations?

A: Yes.

Q: Based on your experience does linear regression apply between aggregate measurements and observed values from tailings?

(Ed. comment:

This is the key question. A better way of wording it would have been to ask what the relationship is between aggregate measurements and observed values from tailings. The phrase "Does linear regression apply" is problematic because linear regression analysis is a technique itself can always be applied. Hence the lawyer appears confused. Perhaps what he meant to ask was: "How good is the correlation between aggregate measurements and observed values from tailings?" If this is his question, the answer obviously depends on the accuracy of the measurements and of the observed values. Hence the question cannot be answered without some clarification, if not further information. This weakness in the question permits several alternatives to the answer actually provided.)

A. As I pointed out before, I have not worked on any specific project concerned with saltation so I cannot answer the question.

(Ed. comment:

Given the analysis of the question in the foregoing comment, it may not have been necessary to have any practical experience with saltation to answer the question, if the question is answerable).

Q. Do you think it might apply?

(Lawyer is here pressing the witness, giving him one of two bad alternatives. If the witness speculates, he will be condemned for guessing; if he declines to answer, his inexperience will again be underlined.)

A. I think all I can do is guess. If a model is good it has to be calibrated so you cannot use a model without calibration.

(Is the second sentence a guess, or a general statement unrelated to the first sentence?)

Q. I am sorry, I couldn't understand the first part of your answer.

A. I mean any answer to you has to be a guess which I do not want to venture.

(But wasn't the second sentence in the previous answer precisely such a guess?)

Q. But you seem to be using those guesses here today in condemning the model developed by (the witnesses for my client.)

(That is an inference drawn from the comment about calibration, which followed immediately after an expressed reluctance to guess. Because the witness has unfortunately juxtaposed a sentence about guessing with a sentence about calibration, the lawyer has cleverly linked the two and tried to etch in the minds of the Board members that the witness' comment about calibration is merely a guess. The witness, somewhat defensively, in his next answer backs off condemning something he perhaps intended earlier, and perhaps rightly, to condemn).

A. I am not condemning the model, I am must pointing out the fact that calibration or validation in the usual sense has not been done.

This is a frequently used witness evasion: he professes not to condemn, but that can be the only consequence and reason for pointing out the fact that the calibration or validation has not been done. If the absence of calibration is irrelevant, the witness shouldn't be asking the Board's time with this comment; if it is relevant, then presumably it indicates an oversight or weakness. This willingness to condemn inferentially, coupled with a denial of so doing, provides beautiful rhetorical ammunition for a lawyer.

In the second example, the expertise of the witness has been raised as an issue by way of objection by opposing counsel during the witness' examination-in-chief. When the issue is raised again during cross-examination, the witness clearly identifies his qualifications, and does not let his area of expertise be too narrowly confined. At the same time, the witness seems totally unwilling to admit the obvious, that his evidence does in some way challenge the evidence of the lawyer's expert. He goes to such extraordinary lengths to avoid saying anything negative that his position becomes harder and harder to defend,

until finally he makes a key admission of potentially great use to the lawyer.

Q. Okay. Now I would like to discuss with you your area of expertise and that is the statistics to which you referred and I would like to refer you to Table 1.

A. I would like to say something about my field of expertise. I am Professor of Environmental Studies, adjunct Professor of Environmental Studies at Concordia University and I am very conversant with the literature on radiation effects. I do not pretend to be a medical person. I do not pretend to be an expert in any way in the biological effects of ionizing radiation but it is certainly part of my qualifications that I am a scholar in this area and I am conversant with the literature.

Q. I think you have made that perfectly clear. I am suggesting to you that the area of your particular expertise and training is the area of mathematics and statistics, and if I am not mistaken, that is what you said throughout your evidence.

A. That is correct but I also said throughout the evidence that the epidemiological and experimental evidence showing non-conservatism at low doses for alpha radiation are to my knowledge...there is no countervailing evidence as to low doses for alpha radiation on the other side and I have asked Dr.....at the.....Commission precisely that question and he has not been able to cite any evidence and I have literature searches that I am unable to find any.

Q. That is not the area of expertise, of your particular expertise no matter how well read you may be in the area?

A. I beg your pardon, sir, it is. My field is mathematical modelling and mathematical modelling involves not only interpreting results but looking for and testing the model to see if there is evidence pointing away from that particular model.

(Ed. comment:

With this answer, the witness dug a potential trap for himself because in testing a model and looking at evidence, he first has to decide what is evidence and what is not, and second, what weight to give various kinds of evidence, possibly conflicting. This requires considerable understanding of and expertise in the area of the evidence itself.)

Q. Are you telling me now that it is part of your expertise to determine the legitimacy of the assumption which Dr.....has used, the linear doses relationship?

(Of course he is! The legitimacy of any assumption can be questioned, with or without expertise. That is inherent in the nature of assumptions, especially where the witness said in a previous answer that he must look at evidence pointing to and away from a particular model. He has to be making value judgements about that evidence).

- A. I am sorry, that is not what I said. What I said is that in testing a mathematical model you look to see whether there is any evidence which supports the use of that model and whether there is any evidence which denies the validity of that model. So what I am saying is that at low doses of alpha exposure, I as a Professor of Environmental Studies can testify before this Board that I know of numerous items which indicate the possibility of a non-linear, non-conservative model and I know of no such evidence on the other side. That is all I am saying. It is not up to me to judge whether that evidence is valid.

(The witness' answer is a defensive "waffle", and on the face of it, absurd! Of course it is up to him to judge whether the evidence is valid, or he would not know whether or not to include it. However, by retreating to the point of denying being in a position to judge whether the evidence is valid, he has made a key concession: that he is not in a position to say anything negative about the other side's witness. Thus a feeling of defensiveness and unfamiliarity about the scope of his own qualification and an exercise of an abundance of caution has caused the witness to neutralize his own testimony. The lawyer won an easy victory, and underlined it in the mind of the Board, to emphasize it further).

Q. Okay. I think that last sentence sums it up just perfectly.

From the lawyer's view point, of course, it is just perfect.

b) Facts

The lawyer will also question the reliability of any facts given in evidence, as well as the personal knowledge of the expert with respect to these facts - that is, the accuracy of the expert's perception, recall, and expression of the data, and the sincerity of their recital. Moreover, the arithmetic and the assumptions in any quantification will be carefully scrutinized. If different assumptions or different mathematical methods yield different and perhaps opposite conclusions, you may be virtually assured that the witness will be confronted with these in as embarrassing a manner as the lawyer can muster.

c) Method

Expert evidence often relies on the compilation and analysis of evidence prepared by others. Thus the expert may be expected to answer questions relating to the "hardness" of the data, its accuracy, and the degree of control over the observation. For example, when being questioned on research design, the expert will probably be asked about sample size, methods used, why these rather than alternative methods were selected, the consequences of the use of alternative methods, the completeness of the investigation, the disclosure and suppression of data, and so on.

The expert should be prepared to explain his methods and any generally recognized alternative methods, particularly if he has declined to employ one of these methods where it would lead to results less favourable to his position. If other studies are referred to, one

should be careful not to extend them beyond the bounds of application. As well, the witness should be careful not to omit relevant information from his presentation for the purpose of making his opinion appear stronger. It is far better to present a series of alternatives, to indicate why the particular alternative which was selected for conclusions is preferable, and to understate rather than overstate the strength of the conclusion that can be based on the evidence. This will deprive the cross-examiner of the opportunity to destroy the credibility of the witness for overstatement or suppression of information.

d) Credibility

The most important issue from the witness' viewpoint is his own credibility. Seemingly contradictory statements made in previous testimony or in published works can be used as weapons; fortunately, such occurrences are rare and the witness should be able to distinguish, on the facts, previous statements which seem to conflict with his present position. He should be prepared to justify his current views or reconcile any apparent contradictions. Overstatements and understatements made in support of the witness' view are often effective in attacking credibility, as are half-truths which are in the nature of misleading innuendo or non-disclosure.

e) Bias

Another way of attacking a witness' credibility is that of seeking to demonstrate that he has bias - personal, institutional, or otherwise.

In the following illustration drawn from an environmental hearing, a lawyer attempts to discredit an expert witness on the grounds of his association with a well known anti-nuclear group. The cross-examiner is clumsy. The witness does not let himself be pinned down as an anti-nuclear zealot, and leaves the impression that he is merely a concerned scientist.

Q. Dr....., you are Chairman of the group called the Canadian Coalition for Nuclear Responsibility, is that right?

A. That is correct.

Q. And you hold I think it would be fair to say strong views about what I might call, to use a cliché, the proliferation of nuclear energy?

(The use of the word "proliferation" is inept because of its obvious negative connotation. Proliferation is plainly something bad. Who would be in favour of proliferation?)

A. That is correct.

Q. You are against it.

A. That is incorrect.

(The lawyer's question should have been either "what are your views on nuclear proliferation" (if he insists on using the word), or "are you in favour of or against nuclear proliferation?")

Q. You are against the proliferation at this time, aren't you?

(He has lobbed the witness a very slow, straight pitch which he is about to slam out of the ballpark.)

A. I do believe the proliferation of nuclear power throughout the world is overhasty and I think that there has been inadequate consideration given to the nature of the problems and what can be done to prevent those problems from becoming extremely serious.

(Note that the witness has built in some value words such as "overhasty" and "inadequate". The lawyer could then press him with questions as to what constitutes adequate consideration, what makes it adequate, how long does adequate consideration take, how much does it cost, and so on). The lawyer then quoted from a previous hearing, the portion of the witness' testimony:

Q. I am reading from the transcript there, the brief you filed, I will read you the question and answer you gave in regard to a brief you filed. Mr.....was cross-examining you at page 34.

"Presumably as you have already accepted this is a biased and selective document. You will agree that the summary of international attitudes specifically here (page 35) is itself highly biased and is in at least three incidents positively misleading.

Dr.....: Certainly not misleading. I think it is definitely biased. It is showing a trend among other trends and that trend is a rising concern internationally about nuclear power and the implications of a nuclear future."

A. Yes, I think that is perfectly accurate.

Q. Well, then it is quite fair, is it not, that you hold strong views against the proliferation of nuclear power and that you are biased against that proliferation?

A. No, I beg your pardon. I did not say that and I would not agree to that. What I have said is that there is a growing concern and this concern is expressed at the very highest levels.

This lawyer was not able to score any points against this witness.

The same expert was then cross-examined by another lawyer, who avoided engaging the witness in an extensive and detailed discussion on the substance of his views. Rather, he made his point with one small, dramatic gesture.

Q. Is that your briefcase on the floor by the podium?

A. Yes.

Q. Would you pick that up and read the logo on the other side?

A. It says "Nuclear Power? No thanks" with a picture of a smiling sun.

Q. Do you think that accords perfectly well with your views which you have expressed here today, and other places as to nuclear energy?

(Clearly, the logo rejects nuclear power. If the witness accepts this as according with his views, then it means that he too rejects nuclear power. The witness tries to waffle.)

A. It is a very widespread opinion in our society. If solar energy turns out to be technically viable and economically viable to meet our energy needs, the choice is clear. The real debate over nuclear power is whether we actually need nuclear power or not. That is a debate that is by no means resolved. That is a rather humorous logo here that indicates that if the sunshine turns out to be adequate to meet our energy needs, then we won't need nuclear power and I suspect that most governments would move rather quickly to disengage from the technology.

Here the witness is vacillating. He is asked either to associate with or disassociate himself from the wording of the logo. He tries to distract the questioner by including a hypothetical assumption ("if the sunshine technology turns out to be adequate to meet our energy needs, then we won't need nuclear power"). If the real debate over nuclear power is whether we actually need it or not, the slogan in the logo makes it plain that the answer is, we don't. The lawyer picks up the witness and sets a trap for him in the next question.

Q. Did you say if the sunshine technology is feasible?

Here the lawyer underlines the hypothetical nature of the witness' previous assumption.

A. Exactly.

Q. I have no further questions.

The lawyer has successfully demonstrated that the witness rejects nuclear power without knowing if solar power is feasible. This strongly implies bias. It looks very much like the lawyer won this round, because whether he used it or not, he was in a position to say in final argument that the logo humorously but unequivocally rejects nuclear power, and so does the witness, without knowing whether "sunshine power" is feasible. If the feasibility of solar power is the pre-condition to the rational rejection of nuclear power, and if we don't know whether or not it is feasible, the rejection of nuclear power in the absence of that knowledge appears to be a bias.

A number of alternatives were available to the witness. If it were factually true, he could have said that someone merely stuck the symbol on his briefcase, and he had never given it much thought. He could have likened it to someone putting a poppy or daffodil into someone's lapel for making a donation during a tag day. Alternatively, he could have said that it oversimplified rather than summarized his views, but since it was amusing, he carried on his briefcase anyway. This, too, would have defused the appearance of bias. Finally, he could have said that he believed that solar power (and possibly other energy sources) were sufficient to render nuclear power unnecessary.

f) A Hidden Psychological Game

Cross-examination involves more than a simple direct assault on the witness. Often the cross-examiner attempts to lead the witness to one of two possible extremes: to have the witness adopt an exaggerated version of his testimony, an extreme position that may later become untenable or to suggest a more "reasonable" interpretation which makes it appear to be in substantial agreement with that of his own side. The careless witness might thereby be thrust onto the horns of a non-existent dilemma. At no time should the witness feel obliged, in order to appear affable or co-operative, to agree with statements or even opinions suggested by the cross-examiner. Beware of the tactic of gross exaggeration of one side of the argument coupled with innocuous understatement of the other as a form of pressure to move your position along the continuum to the point the lawyer's client would prefer.

g) The Exploitation of Uncertainty

In any scientific discipline a self-respecting expert witness would agree that on many points, the opinions of equally learned and honest men may differ. Many of the predominant theories and practices of the day may well be tentative, inconclusive or wrong. Every scientist will acknowledge that there have been significant errors made in scientific discovering and theoretical assumptions. Given these admissions, the lawyer can either attempt to show that the witness' conclusions should be taken with a grain of salt, or try to "lean on him" to be more conclusive and definitive (and perhaps excessively so). He will use rhetorical questions such as: "Do you expect this Board to reject an important project, and all the jobs that go with it, on the basis of that kind of as yet inconclusive evidence?" While this form of cross-examination may appear bombastic and puerile, the expert witness must avoid over-reacting, either by adopting an extreme and indefensible position in response, or by timid waffling and hedging. All that he need maintain is that in the context of present day theories and "the state of the art", his evidence is as good as it can be. In deciding whether to approve or reject the project, therefore, the Board must decide on the basis of what is often less than mathematically certain evidence both for and against the project. It is not very dangerous to concede that the evidence of environmental risk is somewhat inconclusive if the witness points out at the same time that the evidence of environmental safety as submitted by the proponent is perhaps even less conclusive.

h) Exaggeration

The lawyer will often attempt to persuade the witness to exaggerate his own case. The psychological principle at work here is that it is often easier to get a witness to put his opinions too high than to get him to agree that he is wrong. A skillful lawyer will submit to the expert a series of statements that support his previous testimony. Surprised and pleased by this unexpected occurrence, the witness will too readily agree with opposing counsel. The cross-examiner then gradually exaggerates the expert's position until it becomes clearly outrageous. The commitment to the lawyer's line of reasoning must now be qualified by the witness, with a possible loss of credibility. One can be sure that counsel will exploit any backtracking to his own advantage, expressing marked surprise at the witness' need to keep changing his mind.

i) Exploiting Personal Mannerisms

The lawyer recognizes that a hearing setting is his forum, not that of the witness (unless he is quite experienced). He tries to use this to his advantage. It is also he who is asked the questions.

Lawyers may at times choose to adopt bullying tactics because nothing provokes inconsistent statements or backtracking as effectively as intimidating questions posed by a glaring counsel to a nervous witness. Thus the lawyer may attempt to exploit nervousness, belligerence, forgetfulness, or, in the case of many government witnesses, an extreme unwillingness to offend, all to establish an imputation of substantive uncertainty or lack of credibility. Although such tactics may backfire if the counsel takes them too far, particularly if he persists when the witness does not fall for them, unfortunately a tribunal will rarely rescue a witness who is being bullied if he is backtracking, because that is recognized as one of the purposes of cross-examination. Thus the lawyer has little to risk by bullying. If he is unsuccessful, he can stop and change his tactics quickly. If he is successful, the Board will not rescue the witness.

Apart from tone of voice and phrasing, counsel may attempt to direct the witness towards certain conclusions with a use of leading questions. He may attempt to provide subliminal feedback to the witness by nodding his head sympathetically to a favourable answer, raising his eyebrows or frowning to an unfavourable one, or even walking up and down and turning his back on the witness if the witness is making a long speech which the lawyer doesn't like. All these tactics are designed to influence the nature of the witness' answers. An experienced witness can often turn these tactics back on the lawyer to keep him from scoring points.

Friendly persuasion also takes several forms. As mentioned earlier, he may try to re-assure the witness that what he is saying is undisputed. This is to give the witness confidence from the friendly reception that his testimony evokes. Slowly and carefully, the cross-examiner may, through this amicable discussion, draw out mild or even major concessions from the unsuspecting witness. Alternatively,

counsel may present contrary testimony or writings of other experts and politely suggest to the witness that he is being given an opportunity to slightly modify his prior testimony in relation to that of these other experts, out of fairness and consideration to the witness. By emphasizing subtly the expertise of those persons who hold opinions contrary to the witness, the lawyer attempts to undermine, in a backhanded way, the confidence that the witness has in his own capabilities. This is to apply a form of peer pressure in suggesting to the witness that his testimony is somewhat out of line with accepted scientific norms. The intimation that the witness is, out of kindness, being given an opportunity to redeem himself, coupled with the intimidating setting of the hearing itself, may result in the witness feeling that he is better off accepting the helpful reformulations of this testimony as suggested by cross-examining counsel.

j) The False Analogy

Opposing counsel will frequently attempt to put to the expert a complex hypothetical question which deals with matters similar to those of the fact situation around which the present case revolves. Counsel, if he elicits an answer from the expert which he feels can be helpful to his own side, will attempt to draw an analogy between the problem he posed to the expert and the facts of the case. For such a technique to be effective, counsel will usually wish to obtain an unequivocal answer, either a "Yes" or "No", to the hypothetical question. Then, in final argument, he will submit that this answer expresses the expert's opinion on the determinative issue as well in the actual, present case. Notwithstanding that the lawyer will phrase the hypothetical question in such a way that it contains variables which significantly differ from the facts in issue (that is, it may well be a false analogy). The decision-maker may not always be sufficiently well-versed in the field to perceive this, and thus may be swayed by the superficial resemblance drawn by counsel. The expert witness and his own counsel must be alert to this possibility and should, while being cross-examined, point out to the tribunal the features of the hypothetical situation which differ from the facts in issue.

k) "Answer Yes or No"

Generally, a witness can never be required to answer a question in a form with which he does not agree. Faced with a counsel who seeks to force a Yes-or-No choice, the witness may conduct himself as follows:

(Lawyer) Q: On the basis of our discussion of the last few minutes, would you agree with the passage that I had quoted to you earlier.?

(Witness) A: Would you read the passage again, please?

(Lawyer reads the passage)

A: No, I could not agree with it entirely.

Q: Then you don't agree?

A: I cannot with certainty answer 'yes' or 'no'.

Q: I take it you don't know.

A: I have an opinion on the subject which would necessarily be qualified which I can elaborate upon if you wish.

Opposing counsel can be quite stubborn in his insistence on a 'yes' or 'no' answer. In the following excerpt, the cross-examiner poses a question which receives a qualified answer. He admonishes the witness twice for his verbosity, then poses the question again. At this point, the witness gives a definitive response. The general impression created was that the latter answer could have been given at the outset, so the witness was either inattentive to the question or evasive. A close reading of the transcript shows that the lawyer actually reformulated his question to change its emphasis; so that the witness found he could agree to it in its reworded and changed form. To avoid such a situation, the witness should point out to the Board the precise part of the question to which he cannot respond in definite terms, and any reason why the questioner's desired response might be misleading to the Board.

(Lawyer) Q: Dr....., there are just one or two questions which I would like to ask to clarify, if I may, exactly what it is you are trying to tell the Board. Is the burden of your evidence that recent developments have suggested that the linear method of calculation which has been used by Dr.....in the preparation of his appendices is not warranted?

(Witness) A: It is the purpose of my evidence to say that recent publications, recent published data, if correct, may indicate that Dr.....'s calculations could seriously underestimate the risk of lung cancer, yes.

Q: Are you indicating that in your view, whether expert or not, that these recent publications are correct?

A: As I mentioned on Friday, there are three criteria--

Q: Excuse me. I really think that question can be answered by yes or no, Dr.....

A: I have been unable to find data which points in the opposite direction. I would not say that one can possibly conclude at this early stage with the scanty data at the present time and without proper elapse of time for the scientific community to come to a consensus on this point, I don't think it is possible to say one theory or the other theory is correct.

What I can say is my knowledge of the evidence indicates evidence on one side and I have been unable to identify evidence on the other side.

Q: Dr....., I realize the difficulty in answering yes or no or maybe but I think it would be more helpful if you can, if you would, if you can give responses to that. If the question doesn't lend itself to that, I will try to rephrase it. It will ask the question again: Is the burden of your evidence that recent developments have suggested that the linear method of calculation used by Dr.....in his appendices may not be appropriate.

A: Oh, yes, that is certainly correct. "May not be appropriate" is far less categorical than "is not warranted".

1) Asking Questions Based on Assumptions

When answering a question containing an assumption, the witness must expressly recognize this assumption and repeatedly state that his answer holds true only if the assumption is also true. The assumption might be included in a question of this type: "Given that A and B exist would not C and D also exist?"

A simple 'Yes' answer to an apparently simply question of logic might be interpreted as an admission by the witness that A and B do in fact exist, although the witness intended to answer a purely hypothetical question. A better answer would be: "If A and B did exist, which I will not accept without proof, C and D would also exist", leaving no doubt that the expert refuses to accept A and B as established facts.

Even assumptions which the opposing counsel clearly identifies as hypothetical may eventually be exploited to create confusion. The technique used to achieve this result is simple: once the assumptions are established, the lawyer launches into a long series of questions about the logical consequences of these assumptions. The intent, of course, is to make everyone forget that these effects are in reality merely derivations from assumptions which may or may not be true. To prevent this confusion from occurring, the witness must always - even at the clear that each of his answers are based on the original assumptions. This will reveal the lawyer's game, and thereby destroy its effectiveness.

Only close scrutiny can detect hidden assumptions but certain words and phrases beginning a sentence are usually good indicators. Among these are: "accepting that", "since", "if", "because of", "in view of", "the fact that", "given that", and "recognizing that".

The following witness is careful to qualify his answer and emphasize the fact that he is commenting on an assumption:

(Commissioner) Q: Tell me, what do you think your position would be if there were a friendly takeover?

(Witness) A: I think there would still be very -- firstly, its

difficult to foresee how it could be a friendly takeover. But let's presume for a moment that it was....

Often assumptions are hidden in questions seeking categorical choices, e.g. Do you prefer a pristine environment and massive unemployment or a bit of environmental impact and full employment in a depressed area. This is not necessarily the total range of choices, available. Rather than saying that one can't answer 'Yes' or 'No' to such a question, which may sound weak or evasive, the witness might say "I cannot accept the hidden assumption in your question". The lawyer may stop the game, or feel obligated to ask "What hidden assumption", to which the witness replies "That those two extreme, oversimplified, hypothetical situations are the only choices available to the Board".

m) Asking for Opinions Based on False Data

When asked to base an opinion or calculation on numbers already entered into evidence the expert witness must always verify the reliability of the numbers with which he is asked to work. A very common task an expert witness is asked to perform while under cross-examination is that of making computations or drawing conclusions from numbers which the opposing counsel tells him are correct, or are already entered as evidence. The result is often contradictory to the expert's previous conclusion. This, of course, does nothing to add to the expert's credibility. The reason for these unfortunate results is usually not incompetent witnesses but incorrect starting figures, or simply unreliable numbers drawn from crude statistical methods offered by the opposing counsel. My being aware of the questionable reliability of the starting figures the witness may, through his testimony, put the blame for unsatisfactory conclusions where it belongs, on the original figures submitted to him. His conclusion should always be stated as "subject to my verifying the numbers you have provided. After cross-examination, immediately go to the quoted source and check the numbers. If they are less reliable than yours, or simply wrong, ask your counsel how to get a statement to this effect on the record.

n) Playing the Semantic Games

The skillful cross-examiner will sometimes try to get the expert witness to define, or to agree to a certain definition of a term which he may have used, without the witness being alert to all of the possible implications of that definition. The lawyer will then confront the witness with a part of his testimony where he uses the same term in an unusual manner, one that falls outside of his earlier definition. The witness then either has to admit that his original definition was too narrow, forcing him to change his definition (which appears to be backtracking), or to admit that that part of his evidence doesn't square with his own definition. In argument, then, the cross-examiner will imply either that the witness was using a key term in apparent ignorance of its true meaning, or that the witness was attempting to mislead the tribunal by the deliberate mis-use of a technical word.

While it is far preferable for a witness who finds himself confronted with such a situation to admit that his previously offered definition was too narrow, obviously the best course of action is to avoid locking yourself into a restricted definition of a term.

C. GENERAL RECOMMENDATIONS TO WITNESSES ON CROSS- EXAMINATION

1. Introduction

Evidence should be prepared with the expectation that it is going to be attacked in cross-examination for the purpose of giving the opposing counsel ammunition in final argument. Thus good evidence cannot be prepared without a better appreciation of the kinds of arguments usually made during final argument. You should, as an expert, read extensively in the proceedings of a range of tribunals to look at the kinds of arguments used. Thus you will learn to recognize various alternative ways of making your point during your evidence and you will intuitively select those which are least amenable to successful cross-examination.

2. Preparing for Cross-Examination

Although the substance and direction of cross-examination rests in the hands of the opposing counsel, there are a few things the expert witness can do to prepare himself. Simulations with staff lawyers can help. The witness should also try to place himself in the other party's position. He has a general idea of their objectives, and should in most instances be able to surmise what form the thrust of their cross-examination will take.

The witness should be conscious of those areas of his testimony that are controversial given present-day scientific practice and theory. Cross-examination in this area is fairly predictable. Similarly, the witness should be sensitive to how his testimony would sound to someone without his expertise. Counsel may play up results which sound improbable in relation to ordinary persons' experience.

Once these potential areas have been identified, the witness should formulate the suitable answers. Although all the possible lines of attack of a skilled cross-examiner cannot be anticipated, the exercise will help the witness to learn his material more thoroughly, and give him a greater feeling of confidence on the witness stand.

3. Demeanour of the Witness

The witness should speak in a clear, strong voice, and slowly. this is especially important in the rapid cut and thrust of cross-examination, so that his answers do not appear garbled and incoherent in the transcript. Humor should be used only cautiously.

The excessive use of humor indicates either extremely nervousness or an inability to take the situation seriously, which is an insult to the Board.

It is also desirable for the witness to show respect for the opposition, including their lawyer, and not to portray frustration or bad temper. Although you may feel that the other side is wrong, and their tactics deplorable, this conclusion has probably not yet been reached by the tribunal. Each person is presumed to be doing his best and the witness' position can be undermined if he shows contempt for the other side. Likewise, if counsel is asking a question, the witness should not interrupt, no matter how misguided or misinformed the question may appear to be. The occasional use of a deferential tone towards counsel, for example by answering "yes, sir" or "no, sir" to questions, often create a favourable impression.

No one enjoys the company of a pompous, conceited person, and the expert witness should realize that the tribunal is probably no different. He should avoid being ostentatious, being a name-dropper, and talking down or hiding behind technical jargon. Especially if one is feeling somewhat insecure in a hostile environment, there may be a tendency to become an intellectual snob; but the wiser position would seem to be to make the Board think that it is just a bit more intelligent than you are, because it has so rapidly and perceptively discerned your point.

One should be prepared to admit mistakes, as nothing destroys credibility as quickly as a feeble attempt to cover up error. If you are caught out in an error, admit it - tomorrow is another day. That is not to advocate that one should give in to every challenge to one's testimony, only that in explaining contradictions or errors (which often can be legitimately explained) one should approach the task in a frank and professional manner.

4. Objections during Cross-Examination

Even though the expert witness may feel that he is being badgered or subjected to an unfair line of questioning, it is preferable, if at all possible, to refrain from objecting personally. A personal objection can look very much as if you are unwilling or unable to answer the question and trying to get out of it by using tactics which are best left to your lawyer. You may well be told by the Chairman to get on with answering the question, whereupon you can count on having lost some credibility and can expect to have your answer closely scrutinized because it looked as if you wanted to avoid giving it.

There are two exceptions to the foregoing general principle. First, if your lawyer is not present, you have been left to your own devices; second, if your lawyer is present but appears to have fallen asleep, or has failed to object to a series of questions because apparently he has failed to recognize their unfairness (this may be because they exceed his technical grasp of the subject). Nevertheless, when in doubt, do not object, but answer the question. Objections

should be reserved for the most outrageous situations. It is often desirable to let the questioner go on asking unfair questions for some time, without objection, in the hope that the objection will come from the Board itself, which is much more effective.

If a series of particularly unfair questions has been asked, and neither your counsel nor the Chairman appears to want to do anything about it, you should give consideration to objecting, but only if:

- (a) You feel confident that you understand the appropriate reasons and techniques for making an objection, and
- (b) The questioning is so unfair or misleading that the tribunal is getting a false picture of what your evidence is all about.

In any case, before commencing an objection, leave counsel enough time to register any objection he might make. Alternatively, you may ask the Chairman to give you a moment to seek the advice of your counsel, which may or may not be granted. If it is, you should ask your counsel whether you are required to answer the question or whether it is objectionable on the basis of whatever grounds you might consider for making an objection.

If your counsel is not present, or the Chairman does not permit you a consultation, then any objection you choose to make should follow the generally accepted format. The wording is fairly standard: "Mr. Chairman I object to answering that question (or, to this line of questioning)". You must make it clear that you are making an objection, formally and on the record, because then a ruling is required. If the opposing counsel tries to brush you off with a comment like "I'll bet you do, but let's get on with the question", do not be bullied. Respond with: "Mr. Chairman, there is an objection before the Board on which a ruling must be made. Cross-examination cannot continue until you have decided whether the objection is to be allowed. I feel that the question asked is objectionable because (and here, set out the grounds), and would request your ruling on this."

Because an objection is a species of motion, opposing counsel will be permitted to reply, following which you are permitted a final rebuttal. In that rebuttal to his reply, you cannot raise any new points or arguments, but you can refute or attempt to deal with arguments he has raised. If the objection is sustained, you need not answer the question. Then be wary of the lawyer seeking to ask a closely related question with slightly different wording. He is not permitted to ask a question that would be covered by the same objection, although he is permitted to repeat the question removing the objectionable feature, or to reword it in such a way that it is no longer objectionable. If you feel that he is trying to slip you a question from which the objectionable portion has not been removed, make another objection, indicating that this new question is objectionable for precisely the same reasons as the old one. This will then require a new ruling. If you are sustained on this one again, only a most foolish lawyer would try it a third time. On the other hand, if he can slip an objectionable question past you in slightly altered form, and you are insufficiently

vigilant to protect yourself, some lawyers might perceive that to be "fair game".

It is not possible to provide a comprehensive list of all of the grounds on which a question or line of questioning can be considered objectionable. Obvious grounds would include irrelevance, needless repetition of the same question (if already answered), insistence on a "yes" or "no" answer to a question not capable of being answered in a way, refusal to allow the witness to complete his answers, and questions which are abusive or excessively personal. As a general rule of thumb, if you feel that the question is an attack on your personal dignity (setting aside the loss of dignity you may suffer if it is your evidence which is being successfully attacked) the chances are pretty good that your intuition is right. Witnesses do not have to put up with bullying or abuse.

5. Time to Think

Inexperienced witnesses often feel that they have to answer a cross-examiner's question instantly. That is not so. In some cases, an intelligent answer may require the performance of certain calculations, or the examination of evidence or other material which you may not have at hand. In such a situation it is quite acceptable to indicate to the Board that you would prefer not to give a superficial answer or to hazard a guess, but would appreciate having some time over the lunch hour, overnight, or perhaps over a few days, to prepare and provide an adequate answer.

Sometimes a witness will be asked a question which startles him, and poses a dilemma. It does not require any calculations, so that excuse cannot be used to get an adjournment over night. There are various techniques for delaying responses, some more effective than others. At the very least, you should stop and think through the answer you are going to give, with whatever implications you can see at the time, before you answer. It should always be remembered that pauses do not show on the transcript.

If you have the answer with you, take the time to look it up rather than risk being wrong, even if the silence sounds deafening. If you need to consult a subordinate (e.g. if you are not quite sure how the calculation was done) you may request time to do that. There is no point in providing a potentially wrong answer simply because you save a minute or two. Your function as an expert witness is not really to be a sparring partner for the opposing counsel, although that may be the way he tends to see you; your primary purpose is to be helpful to the Board. Inaccurate factual information, or overly hasty responses which do not correctly describe your position, provided under duress, are not really helpful. If a lawyer is badgering you with rapid-fire questions, and wants instant answers, do not feel intimidated into playing his game for fear that you will appear slow or evasive. Greater sympathy will be gained if you are pensive and prudent. If you consider it necessary, feel free to say "I am sorry to take so long to provide this answer Mr. Chairman, but I am trying to be helpful to the Board and would not want to give you misleading or inaccurate information".

6. Discouraging Cross-Examination

Some witnesses are so effective at turning every lawyer's question to their advantage that they become virtually uncross-examinable. One way to acquire this skill is to pick up a lawyer's question and answer it more thoroughly than the lawyer expects. If, for example, you are asked to answer the question with a "yes" or "no" answer, recognize that the lawyer is entitled to have an indication as to whether or not you agree with the statement or assumption contained in his question, but not to have this presented without qualification. Therefore, as a "yes" or "no" answer you might say, "Yes, I agree with you, but not necessarily for the reasons you might think. My reason for agreeing is that..."

Similarly, if a lawyer puts a statement or fact to you and asks whether or not you agree, and if the answer to the question appear damaging on the surface, don't take the chance that the Board will look beneath the surface. Feel free to say, without sounding argumentative, if possible, "Yes, I have to agree that that is so, but, taken in context, your point is trivial, because...." An alternative response might be "Yes, I agree with the implication of your question, even though it looks on the surface as though that runs contrary to my testimony. I don't view this as any concession, because if you take into account such and such factors, you will see that the point you seem to be making strengthens rather than weakens my conclusion."

Conversely, if you are disagreeing with a statement or proposition put to you by the lawyer, and your disagreement sounds superficially unreasonable, explain why, at bottom, it is not so. Do not just let it go with a superficial answer.

It is important to be sensitive to what it is that you are communicating to the Board, both verbally and non-verbally. Appearance is often as important as substance. If you appear to be giving ground, but really are not, don't take any undue chances with the Board's ability to see through the situation. They are not scientists, and are probably not paying nearly as much attention to the subtleties of your testimony as you think they are. Spell it out for them, in unmistakably clear terms. Remember that you are here to help the Board, not opposing counsel. Feel free to say "I must answer that question in the negative, but I am afraid that in doing so I may leave the Board with the wrong impression. Let me clarify what I mean by my answer, then, so that no wrong inferences are drawn from what I say."

A witness who is adept at keeping the record straight, and sensitive to the appearances of the situation, will deprive the crafty lawyer of an opportunity to make unsubstantial stylistic points, and will limit him to attacking errors of substance in the evidence. If there are none, the witness gets away scot-free. There is no reason why a witness with perfectly sound evidence should be able to be brow-beaten by a lawyer into looking foolish or uncomfortable simply because of unfamiliarity with lawyers' tricks or games. The evidence should stand or fall on matters of substance. But it won't, unless the witness can at least stalemate the lawyer, if not beat him at his own game.

In addition to clarifying the points that you are making so that the lawyer is not able to score "points of appearance", you can actually go further to discourage cross-examination by creating a disincentive to continuing to play the game. This is done by repeating the main point of your testimony, underlining and etching it indelibly in the Board's memory. Thus you might say "The answer to your question is no, because..., and its precisely for this reason that I point out in my evidence that (here you repeat and emphasize your main point)". If the lawyer's attacks miss the mark, while your responses positively re-affirm your examination-in-chief, he will actually be "losing" the cross-examination because the Board will be remembering the affirmative parts of your testimony. The majority of lawyers find this approach very difficult to deal with, and tend to back off rather quickly.

7. Sticking to your Opinion

Affirming a proposition dogmatically for the purpose of saving face in order to appear consistent can lead to difficulties during cross-examination. However, one should not be driven from one's position if one firmly believes in it. A favorite lawyer's stratagem is to ask a number of questions which evoke minor concessions individually, but may have a certain cumulative weight, at least superficially. If the appearance of a number of concessions is left with the Board, the lawyer will frequently ask "In light of all the things you have just said, do you still stubbornly stick to your testimony?" If you say "yes", you appear stubborn, if you say "no", you have retreated. The superficiality of the "concessions" must be explained.

The only solution for the witness, in many cases, is simply to respond: "I am just one expert in this field, and I can only give you my opinion. I am sorry that you do not like it, or appear not to agree with it, but I cannot change it for you. This is a matter in which there may be a range of opinions, and you may find no difficulty in retaining another expert, equally well-qualified, who disagrees with me. I have had similar experience with lawyers' opinions. Nevertheless, I am here to give you my opinion and I have done so". The expert need only change his position when he can no longer reasonably defend it, and then only to the extent necessary.

8. Answer the Question that is being Asked

The expert witness should ensure that he understands the question that is being asked (sometimes they are so badly worded as to be almost incomprehensible) and then should respond in a short and simple manner. He should not try prematurely to out-guess the cross-examiner and give the answer to the proposition to which the counsel is leading. Often, this results in the witness appearing to be argumentative or evasive. Likewise, he should not volunteer information that is not relevant to the lawyer's question. He need answer only the question that is being asked, and add nothing, unless it serves some useful purpose. For example, the answer to the question "Do you know what time it is?" is "yes", not "2:45". So long as the witness answers the questions posed to him truthfully and directly, he will maintain his appearance as an objective, expert witness and at the same time will not provide openings through which opposing counsel may further extend his cross-examination.

It has been suggested that an experienced witness will wait until the jaws of a trap are just about to close, then will leap aside. An inexperienced or insecure witness will, at the very sight of the jaws of the trap, try to leap aside. He will appear merely skittish. It is important not to give the answer to the proposition to which you think counsel is leading, in case he is not leading there at all, and you merely look defensive. Wait until he baits the trap and has just about closed it before you try to escape it. This requires good intuition, but he should be no more than one or two questions away from his final one before you jump out of harm's way.

9. "I Don't Know"

The expert should never be afraid to say "I don't know". Where opposing counsel questions an expert on matters outside his area, the expert should feel free to define for the Board the area in which he was called upon to testify, and his intention to so restrict himself. On the other hand, if there is no other expert that your side intends to call, you can qualify a response by saying that you are not an expert in this area, but that you would speculate that the answer might be so and so. This is quite dangerous, and should not be used unless you have reasonable confidence that the answer you are giving is correct. When in doubt, don't guess.

Even within your area of expertise, you cannot be expected to know everything. If you have not done certain empirical work, and if you consider this kind of work essential to the provision of a worthwhile answer, then simply explain that.

Some inexperienced witnesses try to avoid saying "I don't know" by defining their credentials so narrowly that virtually any question asked of them falls outside of their area of expertise. This merely gives the Board the impression that the witness is not very broadly knowledgeable or confident. Sometimes it may be best to state clearly that you have not done the empirical work necessary to provide a definitive answer, but as a scientist in the field who has read the results of related

research, you would be willing to provide an educated guess should the Board wish to receive it.

If you are asked a lot of questions to which it is necessary to say "I don't know", it may well be that these questions are unfair. Cross-examination is not an academic quiz where the lawyer (with the assistance of his own expert advisory) is permitted to make up a test for you, such that you will be marked on your ability to provide correct answers instantly. If such a pattern begins to emerge, feel free to say "I don't know, but is there some reason why I should know?" If there is not, you will have exposed the lawyer's game.

D SUMMARY

Much of cross-examination is a battle of wits. Keep yours about you and you will win it.

APPENDIX I

THE LAW OF ADMINISTRATIVE PROCEDURE

INTRODUCTION

Regulatory boards, commissions or tribunals, hereafter referred to as "administrative tribunals", are often given substantial decision-making powers. Where such decisions can affect rights, the law imposes the duty to conduct public hearings and to make decisions by means of a procedure that is fair and lawful. The decision made must also be within the scope of the jurisdiction of the tribunal. A tribunal derives all of its powers from its statute; it only has such powers as are granted to it in the Act.

Any decision or order which exceeds the statutory powers of the tribunal may be attacked, by a party to the hearing, in the courts, where it may be set aside. Similarly, if the tribunal employed a procedure which either fails to meet standards of "fairness" set by the courts, violates procedural requirements set out in the governing statute, runs contrary to the "rules of natural justice" as evolved by the courts, or violates The Statutory Powers Procedure Act, the court may set it aside. In other words, any serious breach of statutory or common law duties and standards of conduct by the tribunal may be challenged in the courts and the decision may be set aside.

It is therefore important that persons who will be participating in such proceedings acquaint themselves generally with the kinds of rules and standards which govern the conduct of hearings. The result will be a more comprehensive awareness of one's duties, rights and options before such tribunals.

B THE SOURCES OF PROCEDURAL RIGHTS

There are several sources of procedural rules governing tribunals. First, there is the common law of administrative procedure, which has for more than a century been defining "the rules of natural justice",

and in Canada in the last two years, has evolved an emerging notion of "fairness" which applies when the rules of natural justice do not. Both of these will be explained briefly below. Second, there are the statutory rules contained in the enabling statutes of the tribunal, and such rules of procedure as may be passed by the tribunal which are not inconsistent with the Act. Finally, there may be statutory provisions ensuring minimum rules of fair play, such as the Ontario and Alberta Statutory Powers Procedure Acts, to tribunals exercising a "statutory power of decision".

In courts of law, procedure plays a very important role. The rules of civil and criminal procedure number in the hundreds, and their very application is a subject of considerable litigation. Judges tend to apply the rules rather strictly. By way of contrast, many administrative tribunals (such as the Ontario Telephone Services Commission) have no written rules of procedure at all, and operate on the basis of the Chairman's notion of "common sense". Other tribunals have written rules but rarely apply them, while still others are almost as formal as courts of law.

The relationship between the judge-made procedural rules and those made by the Legislature is that the former applies to the extent that it is not expressly suspended, amended or varied by legislation. Since the Superior Courts (in Ontario, the Supreme Court of Ontario) have historically had the duty to supervise so-called inferior tribunals, it seemed natural that when administrative tribunals began to be formed in England about a century ago, and in Canada in the early 1900's, that the courts would regard administrative tribunals as just another species of inferior court. Even though legislatures have tried to get around this supervision by including sections in the Acts governing tribunals which purported to legislate that all decisions made by the tribunal are final and unreviewable, the courts have generally ignored such provisions by deciding that this was only true so long as the tribunal stayed within the boundaries of its statutory powers, and whether it did so or not was a question of law subject to review by the courts. Indeed, as the administrative tribunal has grown as an arm of Government in the 20th century, leading to contemporary cries for de-regulation, the courts have jealously guarded and expanded their asserted powers to control jurisdictional and procedural abuses by such tribunals. With the passage of Statutory Powers Procedures Acts, the Governments of Alberta and Ontario explicitly recognized the importance of this judicial review, and imposed minimum standards applicable to most of their provincial tribunals.

C. NATURAL JUSTICE

The term used to describe the common-law duties of a tribunal is "natural justice". It has often been observed that the so-called rules of natural justice are neither rules, nor natural, nor just. They are a small group of somewhat vague general principles which in practice may amount to little more than a sophisticated judicial sensitivity for balancing between the competing considerations of due process and fair procedure against the need to make regulatory decisions quickly and at reasonable cost.

While some tribunals may have a variety of functions, including investigating certain questions or advising the Government, when a tribunal exercises powers which will have this effect or by making a recommendation which is likely to be relied on by the Government, and if so would have the same effect as a decision, the courts will usually impose upon the tribunal a duty to act as if it were a species of court. In the jargon of the courts, the tribunal is said to have been acting "quasi-judicially". While this does not necessarily require the tribunal to adopt the full range of formalities and complex procedures used in a court of law, the tribunal must conduct its affairs in a "just" manner, without bias to one side or another and giving each side a fair opportunity to present its case.

The courts have long recognized that tribunals were established by Governments precisely because they were less formal and therefore presumably more efficient at certain tasks than the courts. It was recognized, particularly in criminal cases where proof had to be "beyond the reasonable doubt", that the courts had to apply procedural safeguards and rules of evidence which were designed to protect the individual against a miscarriage of justice resulting in an innocent man being in prison; they were not designed to be particularly efficient. Different priorities apply in administrative tribunals. Although the rules of natural justice are used by courts in assessing the legality of tribunals' decisions, courts apply them with an enlightened understanding of the special role of administrative tribunals. The common-law acts as a guide to the tribunal limits; it should not be considered as a source of hard and fast rules.

There are two main branches to natural justice; the rule against bias and the rule that each party must be given a fair opportunity to present his case or to answer the case against him, as the tribunal has the duty to "hear the other side". These two principles are discussed in turn.

1. Bias

This rule is somewhat hard to describe simply because of the variety of ways it has been applied. Obviously, a person sitting as the judge of important matters must not have a direct financial or other material interest in the outcome of the hearing (this is known as "actual" bias). For example, the decision-maker must not own any shares in a company appearing before him, seeking permission to proceed with a project. He would have to disqualify himself from sitting on the case, and have other members of the tribunal make the decision, without any discussions with the member who had the bias.

There is a second kind of bias, known as bias in law. The conduct or background of a decision-maker must not be such as to raise in the mind of an ordinary, objective person, a reasonable apprehension of bias. Obviously, it is hard to decide what such a person is really like. However, the rationale behind this test is that it is not possible for the judge to get into the mind of the decision-maker itself, in the manner of a psychoanalyst, to determine whether or not he is biased as a mental phenomenon. Rather, the law holds that the public has the

right to have confidence in judicial and quasi-judicial proceedings; the appearance of impartiality cannot be compromised to the point that a reasonable person would lose confidence in the tribunal's impartiality.

An apprehension of bias can arise in a variety of ways. In the case involving Marshall Crowe, the former chairman of the National Energy Board, the Supreme Court of Canada held that he could not sit as part of a panel to hear the applications for a Mackenzie Valley Pipeline because reasonable apprehension of bias would exist, based on his former position as a senior public servant whose responsibilities had included working toward the construction of the very pipeline which was before the National Energy Board. Once one member of a group the National Energy Board. Once one member of a group hearing a case is found to have had a bias, the entire panel becomes "tainted", and the case must commence anew.

Another way in which the appearance of bias may be created is for one or more of the Board members to have participated in private meetings with any of the parties to the forthcoming public hearing at which anything related to the subject matter of the hearing was discussed. Another and rather rare form of bias which occasionally manifests itself is the situation of a tribunal chairman or single decision-maker who prevents one party from adequately participating in the proceedings. This may involve persistently rude and harassing conduct, preventing the party or his counsel from speaking when he should be allowed to do so, and other grossly abusive behaviour. Alternatively, it may simply involve an unfair application of rules. A famous illustration of the latter was committed by the National Energy Board when, with the intention of saving time, it refused to allow one party to a hearing to cross examine the witnesses of the other, but no vice versa. A judge of the Trial Division of the Federal Court of Canada issued an order prohibiting the NEB from proceeding further with the case because it had failed to treat the parties as equals. (The court actually expressed its judgement in terms of the second rule of natural justice, as described below, but it could just as easily have done so on the basis of the bias rule).

Since the only totally open mind is a totally empty mind, obviously there are practical limitations to the application of the bias rule. Tribunal members are not expected to be totally ignorant of the matters which are discussed before them; quite the contrary, they are often selected precisely because of their expertise in the industry. Hence a general connection with the regulated industry itself, or even the making of a speech suggesting a certain policy viewpoint of a broad, general nature, would not, in the absence of something specific to the case before it, be sufficient to raise a reasonable apprehension of bias. The courts will tend to presume that notwithstanding earlier industry connections or speeches, the decision-maker would apply his mind objectively to the evidence before him.

2. "Hear the Other Side"

The second principle of natural justice is the obligation to hear both sides fairly and completely. "Hear" in this context means more

than sitting and listening passively. It involves the positive duty to ensure that each side is given a fair opportunity to present its case at the hearing. This duty has been well developed by the courts, and is elaborated in the sub-headings set out below.

i) Notice

Even where a statute stipulates that a tribunal shall give notice to all who might be interested in a forthcoming public hearing by means of newspaper advertising or the planing of notices in the Canada Gazette or Ontario Gazette, the common-law would add a duty to notify particular parties whom the tribunal knows are especially interested or will be particularly affected by a decision. For example, a group of ratepayers had a zoning decision set aside on the basis that they were not specifically notified of the public hearing. This was based on their special interest in the application and their history of previous interventions before the same body on similar matters (See Re. Harvie, a decision of the Alberta Court of Appeal reported in (1979) 94 D.L.R. (3d) 49). Once a person has been given standing to be a party, or has rights that are affected by a public hearing, and the tribunal becomes aware of these rights, he has the right to be given notice of any steps which may be taken which may affect his interests.

Where a statute specifies certain notice provisions, the notice must be given, or the ensuing hearing may be a nullity.

ii) Evidence

Although a tribunal is allowed to apply its own expert wisdom and judgement to the evidence it receives, it is not permitted to make a decision based on no evidence whatsoever, or on "secret" evidence withheld from any of the parties. While it need not apply the strict rules of evidence as found in courts of law, neither should it refuse to admit evidence which is relevant to the case of any party, nor rely on worthless evidence which can have no probative value. Of course, a tribunal may exercise its discretion as to which evidence to admit and how much weight to attach to it, as long as it does not exercise this discretion in a grossly unreasonable manner.

As part of the notion of hearing the other side, every party must, within reasonable limits, be given an opportunity to prepare and present its own case. Sometimes the evidence with which to do so is not within its possession, but is uniquely within the possession of the other side. In such cases, the lawyer for such a party will usually make some form of motion for disclosure. Where the Board's rules permit, this may involve a formal written application with a list of questions sought to be answered, called interrogatories. Alternatively, there may be a motion for the production and inspection of documents. In the absence of established interrogatory or production and inspection procedures, there may simply be an application to be given access to certain documents or to have the party with the information conduct certain further studies and present their outcome. Additionally, the lawyer may request an opportunity to cross-examine opposing witnesses in order to extract this evidence, if it has not been made available in any other form.

Depending on the circumstances, the court may take a very serious view of a tribunal's failure to order disclosure. For example, the Canadian Radio - Television and Telecommunications Commission hearing a rate increase application by a cable TV company refused to order disclosure of the financial statements of that company to a consumers' group when the company requested that they be treated as confidential. When the consumers' group appealed this decision to the Federal Court of Appeal, the court held that the Commission had failed to conduct a meaningful public hearing as required by the Act and therefore, that the hearing was a nullity. The decision was rendered void, and the rate increase deemed to have been held in trust for the subscribers, and therefore repayable to them (See CRTC and London Cable T.V. Ltd., (1976) 2 F.C. 621, 13 N.R. 292, 67 D.L.R. (3d) 267).

Normally, evidence must be subject to cross-examination to see how it withstands scrutiny. Evidence sought to be presented in confidence (i.e. without the opportunity for the other side to attack it) should not normally be received by a tribunal. In rare cases, if there are important reasons why the evidence should not be heard in public, an in camera hearing may be held. At such a hearing the general public is excluded, but all of the parties are permitted to perform as usual. Thus their interests are protected. However, they must undertake to the court not to disclose the information they have learned at the in camera hearing. Motions for confidentiality will rarely succeed, but may be granted when information, if made public, would be so damaging to the party giving it that would considerably outweigh the need of the other party to be able to criticize it.

E. THE EMERGING FAIRNESS DOCTRINE

The landmark Nicholson decision released by the Supreme Court of Canada in early 1979 (and reported in (1979) 1 S.C.R. 311, 23 N.R. 410, 88 D.L.R. (3d) 781) held that even where the rules of natural justice don't apply, there is nevertheless a duty on anyone who decides anything to reach his decision through a procedure that is "fair". Although the facts of the particular case involved a police constable dismissed during his probationary period without being given the reasons why, the principle of the case has been subsequently interpreted by the courts to apply to a whole variety of situations, and could presumably apply as well to the Environmental Assessment Board. Although there were already seven or eight reported cases before the end of 1979 which relied on the judgement in Nicholson, it is still far too soon to tell where the new fairness doctrine is going.

In theory, fairness is supposed to be less than natural justice because it applies when the rules of natural justice do not. In practice, however, since the courts are accustomed to applying the standards of natural justice and no other standards, it is most probable that fairness will eventually very closely resemble natural justice, and perhaps in some respects even go beyond it. It may be important for a regular participant in hearings, be he a witness or lawyer, to follow

the development of the fairness doctrine so that he may understand and be sensitive to the opportunities it presents to him and to those employed by parties adverse in interest.

APPENDIX II

THE LAW OF EVIDENCE

A. INTRODUCTION

Evidence is defined as the testimony of witnesses and the production of physical things (including documents, charts and photographs as well as actual objects) which are presented to a court or tribunal for the purposes of proving a fact or supporting an argument. The rules of evidence stipulate the type of proof that may be admitted before a court or tribunal, and the manner in which it is to be presented. Once the evidence has been properly introduced, it is up to the court or tribunal to consider what value or weight to give to it.

Boards and tribunals are not confined strictly to the rules of evidence that were evolved with a jury in mind, and are applied in a court of law. They are given greater latitude in the type of evidence which they may receive and the manner in which it can be presented. Nevertheless, the common law rules of evidence have been developed over the course of centuries, and they usually serve as a helpful guide for a tribunal in deciding how to treat materials or testimony offered as evidence. Because of the relatively informal atmosphere of a tribunal hearing, the tribunal may be inclined to treat most things sought to be introduced as "admissible", but may use analogies to the rules of evidence to determine what weight they will assign to evidence that would not ordinarily be admissible in court. This does not mean that a tribunal's attitude towards evidence can be that "anything goes". The tribunal can only rely on evidence which has some cogency; a decision based on no evidence, or evidence that no reasonable person would possibly have entertained, could be subject to being set aside by a court. The expert witness must have some familiarity with the rules of evidence, both to decide what evidence he may introduce, and to be able to judge the weight that may be assigned to it by the tribunal. The more closely he can comply with the rules of evidence, the more professional he will appear to a knowledgeable board or tribunal.

B TYPES OF EVIDENCE

1. Direct Evidence

Direct evidence is defined as testimony relating to things or events which the witness has perceived by the use of one of his five senses. While this is the most common form of evidence given in civil and criminal trials, there is far less use of it made in the course of quasi-judicial hearings such as those before the Environmental Assessment Board. Nevertheless, there may still be instances where the expert witness is required to give an account of an experiment or a natural occurrence which he observed. The important point that must be

established is that the witness did, in fact, personally observe the event. All other considerations, such as the character of the witness' memory and perceptual abilities, and any external factors affecting observation, go to the weight given to the evidence. If a witness has made a personal visit to a site as well as read laboratory reports prepared by others, both should be mentioned. Other things being equal, the greater the "direct" component of a witness' evidence, the more weight is likely to be assigned to it.

2. Real Evidence

Real evidence is defined as the presentation of physical objects as proof. These objects must be identified, substantiated and explained by a witness. Thus the witness must not only describe the evidence and outline what it purports to represent, but he must also indicate its origin, and in the case of a physical model, diagram, photograph or other such representation, the method and theory behind its production. The manner in which real evidence is verified by a witness can best be illustrated by examples relating to the sort of real evidence that is usually sought to be introduced before the Environmental Assessment Board:

a) Documents

Usually when a document is introduced in court, it is necessary to present the original, following "The Best Evidence Rule". Exceptions to this rule include judicial documents bearing official seals and copies of original documents certified to be true by their original custodians. In the case of administrative tribunals, copies of documents are made admissible where the board is satisfied as to their authenticity, but it is always tidier to file the original of a document, if it is available. If there is some doubt as to the potential admissibility of a document, the expert witness should consult with his counsel.

b) Photographs

A photograph must be substantiated by a person who can verify its accuracy and fairness. The witness should be prepared to provide information relating to the time, date, and place of the photograph, the camera type, its height, angle and setting, the type of film, the physical conditions under which the picture was taken, the method of film processing, and so. Motion pictures and videotapes are similarly admissible, provided that they can be shown to be actual reproductions of the events as they occurred. The courts have held that tapes which have been edited are not admissible; tribunals may be less stringent in their rulings, however if anything important could hinge on it, they will have to be satisfied as to the reason for the editing.

c) Diagrams and Tabulated Charts

Any diagrams or tabulated charts that are sought to be introduced as evidence must be verified with respect to the theory (ies) or method(s) that underlie their production. Also, any numbers that are used must be identified either as hypothetical figures if they are such, or

if they represent actual evidence, must be substantiated some time in the course of the hearing. If the chart is a large one, placed on an easel and discussed by a witness during his oral testimony, a copy of this chart on ordinary paper must be filed with the Board and provided to each of the parties. Otherwise, the transcript reporting the witness' description or explanation of the chart would be incomprehensible to the reader.

3. Hearsay

Hearsay evidence is testimony of a witness as to the truth of an out-of-court statement of another person and is inadmissible in court. Thus, while a witness may, if it is relevant, be permitted to testify that he hear another person state "I shot the sheriff", he cannot say that the statement itself is true on the basis of having so heard it. In order to establish the truth of the statement, the original speaker must give that testimony. Where there is a danger that the jury might be misled to infer that if the witness heard it there must be some truth to it, and where what the witness heard has no other relevance to the case, a judge would probably regard the statement as inadmissible. The danger is not that the wrong evidence will be admitted, but that a potentially inaccurate or self-serving second-hand account may be believed.

Administrative tribunals do not usually apply this rule; hearsay is often admitted; however they will often exclude evidence where the nature of the evidence demands direct personal knowledge of the event. Or, they may employ the rationale of the hearsay rule to reduce the weight given to hearsay testimony that is admitted. As a witness, the less hearsay evidence you use, the better.

4. Opinion Evidence

Evidence by laypersons in form of an opinion is usually not admissible unless it can be shown that the opinion is in relation to a matter an ordinary person with average knowledge and experience could ordinarily comment upon. The important exception to the general rule is for a person qualified as an expert in the area, on the basis of some special skill, training, education and experience. The opinion is only admissible once such qualifications have been established. Considerations relating to credibility and the depth and breadth of the expert's qualifications contribute to the weight given to his testimony.

C ADMISSIBILITY

Once the nature of the evidence has been established, and the ability or qualifications of the witness to render that testimony adduced, there can still remain certain questions relating to the admissibility. Broadly, the categories that should be considered are (1) relevance, and (2) privileged communications and information.

1. Relevance

The relevance of a given piece of evidence is established by showing that the testimony is of significant and demonstrable probative value to the issue before the Board. Evidence that is not relevant is of no value and is not admissible; similarly, evidence that tends unduly to prejudice or embarrass a witness or a party before the Board, and which is of highly dubious probative value, may be held to be inadmissible.

2. Privileged Communications

The law in some instances recognizes the existence of certain special relationships whose confidential bonds the law declines to disturb. The only relevant one of these that has an unchallenged legal recognition is that of the solicitor-client relationship. The law holds that a person is not required to answer questions relating to the substance of a communication between himself and his lawyer.

The privilege rests with the client, and without his waiver of that privilege the client cannot be required, nor will the lawyer be allowed to divulge the contents of any communication made in the course of their professional relationship, be it oral or written, in anticipation of litigation or not.

3. Privileged Information

Information in the possession of the Crown which may be ordered to be withheld in the name of some public interest can thus be privileged. The law in this area is not entirely clear, and with recent pronouncements both by the Canadian and Ontario Governments with respect to freedom of information legislation, is liable to be changed rather soon.

The categories of information attracting Crown privilege are generally considered the following: (1) affairs of state, including matters relating to national security and/or international relations; (2) information relating to the detection of crime; (3) information held by judges or jurors relating to proceedings before them; (4) certain Parliamentary proceedings, especially matters relating to the Cabinet.

In addition, certain cases have stood for the proposition that some routine documents of the public service may be covered by this privilege if it can be shown that withholding these documents is necessary for the proper functioning of the public service.

As this area is both rapidly evolving and of great legal complexity, it would be wise to consult with legal counsel if a question arises or can be anticipated.

D. JUDICIAL NOTICE

Judicial "notice" may be taken of facts that are so well-known and indisputable among reasonable persons, or which are capable of immediate and easy verification that the decision-maker can waive the submission of evidence therein. Judicial notice, in the ordinary sense of the

phrase, may not be taken of matters which are within the personal knowledge of the decision-maker; rather, these must be matters that are notorious to the population as a whole.

Judicial notice is a term which applies to courts; in administrative tribunals it is sometimes called "official notice".