

Hunters and Gatherers: From Research Practice to Records Practice

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The article is about a project undertaken by Records Services at the University of Melbourne where the staff profiled the recordkeeping practices of three academic departments focusing on the creation, management and storage of research records.

The authors present background details and an analysis of the project, focusing on the methodology, and provide a summary of the most important issues to emerge. The article includes selected extracts from the University of Melbourne Guidelines for the Management of Research Data and Records which resulted from the project.

This is a refereed article.

Background

The University of Melbourne Research Records Project began in 1996 and concluded in early 1997. Records Services undertook the project in consultation with the Office of the Deputy Vice Chancellor (Research) with initial assistance provided by the Australian Science Archives Project for the survey of the School of Chemistry. Records Services received an allocation of Quality funds from the University of Melbourne to conduct the project.

In its request for funding, Records Services emphasised the project's significance to the University community. Once guidelines were developed, they could be implemented across the University in all areas of research, including medical research, the humanities and engineering. The fact that the University of Melbourne was the only university that we were aware of at the time developing such guidelines meant that it had the opportunity to develop best practice in this area.

The project was initiated in response to requests from academic departments for assistance in the development of procedures for the storage of research data as required of them by the University of Melbourne *Code of Conduct for Research*. The fact that the guidelines would complement and expand on the provisions within the *Code of Conduct* regarding data collection and management further emphasised the project's importance to the University.

The project initially involved the School of Chemistry, School of Behavioural Sciences and Office of the Deputy Vice Chancellor (Research). As the project progressed the Faculty of Education was invited to participate. This saw the involvement of the Departments of Early Childhood Studies, Education Policy and Management, and Learning Assessment and Special Education. A steering group was established to oversee the project. This group met quarterly to review progress and address specific issues arising from the management of research records and data. The membership of the steering committee comprised representatives from each academic department involved and staff from Records Services, the School of Graduate Studies, the Office of the Deputy Vice Chancellor (Research) and the Research Contracts Unit.

It was envisaged that the outcome of the project would be a set of principles for the management of research records and data. These would be supported by guideline(s) covering generic areas common to all academic departments. These non-prescriptive guidelines would cover issues such as recordkeeping, storage, identification and control. A set of specific guidelines for areas such as laboratory notebooks, records and data created during human research, electronic records and audio-visual records would also be developed. The guidelines would also deal with the retention, destruction and storage of records.

In what follows we explain how we captured information relating to the research processes and records practices of the University of Melbourne's researchers – the latter-day hunters and gatherers of the tertiary education sector.

Methodology

The methodology adopted by Records Services involved detailed background research into the context of the creation of the records, as well as the functions, practices and research interests of the creators, and their relationship to the records; and identification of which records provided the best evidence of the research process. It was agreed by Records Services that a traditional records survey would be time-consuming and labour-intensive, and would not yield the desired information.

The initial stage involved a search and review of the available literature, specifically dealing with strategies for the management of scientific records and data, scientific misconduct, science method, research method, research ethics, research integrity, research administration, patent and intellectual property laws and science documentation (see Sources below). The small amount of literature uncovered dealt predominantly with the management of purely scientific and clinical records and data – there was little regarding generic research practices or records which fall outside of the conventional parameters of ‘hard’ research.

Interviews were then conducted with a broad range of staff and students, including technical staff, academics and post-doctoral researchers, with the aim of determining:

- what types of research records and data were created and used;
- what recordkeeping practices were adopted for their management;
- what functions and activities were undertaken by research staff and students;
- what was the relationship between those activities and the records that they produced; and
- which records provided the best evidence of the research process.

The selection of suitable academic and student participants was left to the head of each department. It was fortunate that the head of each department demonstrated a willingness to be involved in the project by placing themselves at the top of the list of participants.

The first phase of the Research Records Project was conducted from February to May 1996 by Records Services, the Australian Science Archives Project and the School of Chemistry. Preliminary planning commenced in February. The interview stage of the project was conducted in March and April. It involved meetings with academics, technical/workshop and research staff from each of the scientific disciplines represented in the School of Chemistry. The breakdown of staff interviewed was nine academics, two students, one research fellow, two members of the School’s workshop staff (Mechanical Workshop and Glassblower’s Workshop), one

member of the Technical Staff and the School's Executive Manager. The disciplines included Inorganic Chemistry, Polymer Chemistry and Physical Chemistry.

Preliminary planning for the survey of the School of Behavioural Science commenced in June, with interviews with staff and students from all the major disciplines taking place in July and August. The breakdown of staff interviewed was twelve academic staff members, six students and one technical staff member. The disciplines included Clinical Psychology, Industrial and Applied Psychology and Biological Psychology.

Precursory planning for the Education interviews took place in August and September of 1996. Interviews were conducted from September to November. A total number of fifteen researchers were interviewed, eleven academics, three students and one research assistant. The researchers were from the Department of Early Childhood Studies, the Department of Education Policy and Management, and the Department of Learning Assessment and Special Education.

The same basic interview questionnaire was used for each phase of the project, to ensure standardisation and continuity. There was a small amount of alteration between each department and school to take their individual research differences into account. For example, in the School of Chemistry there was no issue of consent or the management of consent forms, as research did not involve human subjects.

The basic structure of the questionnaires did not vary. The first set of questions related to positions, functions, responsibilities and nature of research. After establishing this essential provenance information, the major areas covered were records creation management and disposal; record format; collaborative research projects; research funding; and students. Below is a sample of key questions asked relating to those major subject areas.

Records creation, management and disposal

- What sorts of records or data do you create and use in the course of your daily business?

- Where do you keep your research records? Does any data (such as confidential data) need to be stored separately? What security exists? Who has access? Who is responsible for access and security?
- Which records do you feel best document the research process?
- Are you aware of any policies/regulations/legal requirements governing the records that you create and use?
- Which records do you feel should be kept?
- Which records do you believe can be destroyed and don't need to be retained?
- What thoughts do you have regarding the ownership of research records and primary research data?

Record format

- Do you maintain a laboratory notebook?
- How are notebooks stored and maintained?
- Do you create, use and maintain electronic records of any type (including raw data, word processing documents, electronic mail, and databases)?
- Are your electronic records backed up or networked?

Collaborative research projects

- Are you involved in any collaborative projects?
- How are the records of the collaborative research projects in which you are/have been involved managed and controlled?
- Do you have access to documentation/records/data produced by other participants in collaborative research projects?

Research funding

- Is the research in which you are involved funded or unfunded?

- Does the funding body require any specific documentation to be created/retained?
- Are there any record creation/keeping requirements for unfunded research projects?

Students

- Do students receive any instructions on the keeping of research records?
- What do supervisors expect of students in relation to the keeping of research records?

We clarified our terminology prior to using it in each interview. Words that the researchers may not be fully conversant with such as 'disposal' and 'recordkeeping' were explained before answers were elicited.

It is important also to add a note here regarding the addition of the word 'data' in the first question under *Records creation, management and disposal*. Records Services used, as a starting point, the following definition which provides the basis for the formulation of records management policies at the University:

A record comprises recorded information in any form, including data in computer systems, created, received and maintained by the University in the transaction of business activities or the conduct of affairs and retained as evidence of such activity.

The word 'data' was added alongside 'records' at the suggestion of members of the Research Records Steering Group. It was believed that the interviewees would interpret the word 'records' as meaning only paper documents despite the University's definition or any other explanations Records Services might have offered to the contrary.

These differences in interpretation would arise again between Records Services and members of the Research Records Steering Group in the discussions leading up to the final draft of the *Guidelines*. This led to the archivally unorthodox option of splitting the definition of 'research records'

into the two sub-categories of 'research records' and 'research data' in the final *Guidelines*. This was viewed by Records Services as a necessary compromise in order to gain acceptance and approval of the *Guidelines* by the very people they would serve.

Throughout the *Guidelines*, reference is made to research records and data in all cases. Although in discriminating between 'records' and 'data', the transactional or evidential nature of records is only emphasised in relation to the former, all requirements in the *Guidelines* cover what are defined as 'research records' and 'research data' – there are no lesser recordkeeping requirements for research data.

The use of the words 'records' and 'data' in this article are in keeping with the following definitions from the final *Guidelines*:

2.4 *Research Data*

Data are facts, observations or experiences on which an argument, theory or test is based. Data may be numerical, descriptive or visual. Data may be raw or analysed, experimental or observational.

Data includes : laboratory notebooks; field notebooks; primary research data (including research data in hardcopy or in computer readable form); questionnaires; audiotapes; videotapes; models; photographs; films; test responses.

Research collections may include slides; artefacts; specimens; samples.

2.5 *Research Records*

Records are documents containing data or information of any kind and in any form (including both paper-based and electronic format) created or received by an organisation or person for use in the course of their work and subsequently kept by that organisation or individual as evidence of that work, or because of the informational value of the data that such documents contain. Records associated with the research process include correspondence (including electronic mail as well as paper-based correspondence); project files; grant applications; technical reports; research reports; master lists; signed consent forms; and information sheets for research subjects.

Outcomes and Issues

Creation and use

There appeared to be two main types of research records created and maintained in the School of Chemistry. These were laboratory notebooks and what the researchers referred to as 'associated primary research data'. The view of most people interviewed was that such records represented the most important source of evidence and documentation of their research process. Records of primary research data other than those included in the laboratory notebook (ie the associated primary research data) were stored in both hard-copy and electronic format. Associated primary research data that could be stored in electronic format included all data generated on any one of the School's scientific instruments with a computer interface.

The information recorded in laboratory notebooks was always specific to the experiment and included: instruments used; instrument settings; materials used; concentration of solutions used; system being studied; how glassware is cleaned; concentration of various solutions used; observations made at the time of the experiment; and cross references to associated research data too bulky to include in the laboratory notebook. It was generally expected that entries into the laboratory notebook should be made in a logical sequence (ie in the sequence that observations were made and events transpired) *during* the conduct of an experiment. The sequence in which the information was recorded and the notebook's contents were of profound importance in the matter of future patentability. The issue of standards for laboratory notebook keeping led to the formulation of specific instructions on this record form for inclusion in the final *Guidelines*.

Associated primary research data, such as NMR (Nuclear Magnetic Resonance), UV-VIS (Ultra Violet Visible), Infra-Red, and Mass Spectrometer data (collectively known as 'spectra'), as well as Crystallographic data were either pasted in the laboratory notebook or, if too bulky, cross referenced from the laboratory notebook to folders containing paper based print-outs of the data. Crystallographic data were almost always too bulky to paste into the laboratory notebook.

The examination of research processes in the social sciences revealed that

records and data were created and used in a variety of ways. There was the raw data taken from recorded interviews, questionnaires, laboratory experiments, computer simulations, scaling booklets, consent forms and clinical trials. And along with this, there were what researchers referred to as *associated* data or *summary* data, namely the information extracted once the raw data had been analysed. This included paper-based transcripts of audio and video tapes, written reports, statistics, summary tables, digitised files, analyses of voice tapes and administrative records. Other records distinctive to human research included blood samples, children's drawings, saliva samples, photographs and hospital case files. When asked if they used a laboratory notebook, several researchers said 'yes', but qualified their responses by emphasising that the notebooks were more of a memory-aid or a place in which they could record informal observations, rather than as a direct record of the research process.

The distinctions between qualitative and quantitative research were reflected in the methods of data collection and in the records created. It is also worth noting the frequent use of questionnaires in all the disciplines, often as a research tool to elicit data from the subjects but also as a way of screening and selecting subjects for research.

Most of the researchers employed some method or system for controlling their records and data at the level of creation, use, access, retention and destruction. In some cases the system depended on the nature of the research as well as certain institutional guidelines or the individual needs of the researcher.

In the School of Chemistry, one academic had developed a coding system to cross-reference pieces of data and samples of compounds to entries in laboratory notebooks. This system included the use of student's initials and notebook volume and page number. For example, the first notebook of John Smith would have the code 1JS. Each page in the notebook was then numbered with this coding system (eg page 1 = 1JS01, page 2 = 1JS02). Any spectra of compounds produced during the experiment were cross-referenced to the notebook by labelling them with the relevant code and page number as well as the date they were generated.

In the School of Behavioural Science, one researcher had a simple but

effective system for managing research records and data. Files, which might include questionnaires and scaling booklets, were labelled with a unique identifier which comprised the project name, date, granting body and the researcher's own initials. Corresponding computer files were assigned the same identifier to provide a link between the electronic and paper record.

One of the major records management problems across all the departments was the lack of storage space for research records, especially given the volume of records and data produced.

Electronic data

Researchers at the School of Chemistry create and maintain both paper and electronic copies of research data, including primary research data generated by scientific instruments interfaced with computers. The paper copy of experimental and analytical data was generally viewed as representing the final 'record' copy. However, researchers also relied heavily upon electronic versions of such primary research data for the processing, analysis and representation of research results. In this sense the various electronic copies of primary research data stored on computers, floppy disks, magnetic tapes and file servers are a valuable resource. Should the need arise for a researcher to reprocess data, or to use data to produce various diagrammatic representations of research results (eg talks and research papers), an electronic copy of the data is easier to use than a paper copy. Data held in a paper format have to be re-entered by hand before they can be used.

Information elicited regarding electronic data revealed that there was a heavy dependence on floppy disks for long-term storage by a number of researchers, while others saved to their hard disks or to the networked drives. Few of those interviewed had considered the long-term readability of electronic data while some worked in consultation with IT staff investigating CD Rom as a long-term storage option.

The issue of electronic data migratability and readability over time was, and is, crucial when considering the volume of machine-readable data produced. Although researchers in the School of Chemistry believed that the paper copy of experimental data was the final 'record' copy, it was

interesting to note that in the social sciences, most researchers said that, when faced with the decision to destroy, the electronic data would invariably be preserved over the paper record.

It was clear that the creation and implementation of guidelines for the management of electronic data were going to be a challenge given the disparity in the practices of researchers. This difference was largely due to the fact that research was often conducted in a distributed working environment where researchers operated independently and according to the dictates of their individual projects. Some of the issues raised by Records Services in the discussions which preceded the drafting of the *Guidelines* were:

- loss of data due to accidental deletion, hard disk crash, deterioration of storage media such as floppy disk or magnetic tape; and
- the need for responsible and active data management for long-term useability and accessibility, taking into consideration potential technical obsolescence and media degradation.

Disposal

Prior to eliciting answers from interviewees on this topic, we explained that 'disposal' could mean either retention or destruction. Despite this, the researchers tended to equate 'disposal' with destruction rather than retention. Most of those interviewed preferred to retain their research records and data indefinitely. Many academics felt that they could not destroy their research records or data as they never knew when they would need evidence to support their research results. In addition to this, some researchers did not want to destroy their data because they believed their data had what they referred to as 'secondary' value for themselves and other researchers. One researcher in Behavioural Science believed that statistical data were often under-analysed. This same person conducted research based almost exclusively on the secondary use of data collected by others.

Another important issue for researchers when contemplating the destruction of their records was their ethical responsibility in the case of human research. For one researcher, patient files relating to sensitive

research with children had to be shredded immediately after completion of the project upon instructions by the Department of Health and Community Services.

The University of Melbourne *Code of Conduct for Research* states that: 'Data must be retained for a period of at least five years from the date of any publication which is based upon it'. In almost all of the cases examined, the researchers were aware of this rule, though the following question did arise: Did this mean it was *permissible* to destroy data after five years? Or was it a *requirement* that data be destroyed after five years? The guidelines would need to explicitly state that this was a recommended minimum retention period so that there would be no ambiguity or potential for misinterpretation of the rule.

Students

Records Services considered some of the issues for recordkeeping to be distinctively different for students and therefore warranted a separate set of questions. Our interest stemmed from the fact that students play subordinate roles, in that they are always under the direction of a supervisor, and so potentially are likely to follow the recordkeeping culture displayed by their supervisors. Records Services tried to gauge what types of instructions were given to students regarding the creation and maintenance of research records and data. We found that:

- students tended to learn recordkeeping through hearsay, by observing their research peers, and through trial and error;
- there was almost universal consensus that students should be provided with guidelines regarding recordkeeping; and
- the provision of guidelines for students was considered highly desirable, particularly in the matter of records and data ownership and removal, and it was suggested that such guidelines be included in the research methodology program for graduate students.

Ownership and removal

The question of ownership of research records and data and procedures

for their removal from the University garnered a wide variety of opinions. A subtle but nonetheless important distinction emerged between the notions of 'ownership' and 'custodianship'. It was admitted by most of the researchers that ownership was shared by the participants as well as the funding body or the University, though some saw themselves as being ultimately responsible for the fate of the records and data. Others saw the University as the only participant with the resources to store and secure research records and data at the completion of the project, while one researcher noted that different rules may apply to research records and data with commercial value to the University.

In the event of a researcher leaving the University to pursue research elsewhere, it was agreed by most that the removal of records and data could be negotiated with the department. Students could negotiate the removal of records and data with their supervisors. It was felt by some that the researchers should be able to retain copies or originals of their records in order to continue their research even after they have left the institution.

Consent forms

The management of confidential records and data, particularly consent forms, was also an important issue. The practices of some researchers revealed that the management of consent forms, particularly their destruction or retention, depended on the nature of the study undertaken. For example, some original questionnaires might be shredded to conceal the identity of the subjects immediately after completion of the project, while other confidential matter might be retained indefinitely in the case of a longitudinal study. In such instances, the records and data would need to be de-identified.

Additional considerations

— Videotapes and audiotapes —

Uniformly, all researchers responsible for creating videos and audio cassettes were not aware of the potential for deterioration of such material and the necessity for copying at regular intervals for preservation.

— Special requirements associated with Koori research —

The storage of information resulting from such research has to meet both Western and Aboriginal cultural requirements. Whilst Western conventions place an onus on access issues like confidentiality and security of research records and data, Aboriginal peoples are also concerned about spiritual cleansing of storage areas to render them suitable for the records and data gathered.

Photographs are only to be taken with the subject's permission. Additional permission has to be gained to attach the subject's name to the photograph, and also for display purposes. Should the subject die, a mask is required to be placed over the subject's face in the photograph. The mask can only be removed if the Medicine Man of the rightful community has cleansed the spirit of the deceased person. Aboriginal people have their own coding systems for the dead, which involve never directly referring to the dead person by the name which they were known by when living.

An interviewee drew our attention to the fact that this type of research needed to adhere to the NHMRC *Guidelines for Health Research and Aboriginal and Torres Strait Communities 1991*, in conjunction with any specific University or funding body's rules and regulations regarding research.

The Guidelines

The complete and final draft of the University of Melbourne's *Guidelines for the Management of Research Data and Records* was written by Records Services in consultation with the Office of the Deputy Vice-Chancellor (Research), Research Records Steering Committee and a representative from the Human Research Ethics Committee. The *Guidelines* were sent to the Human Research Ethics Committee for endorsement in June after which they were sent to its sub-committees in July and August. Final approval was given at the Research and Graduate Studies Committee meeting in August. Below is a brief outline of their scope and purpose.

The *Guidelines* specify that a minimum requirement is that research data and records are:

- accurate, complete, authentic and reliable;
- identifiable, retrievable and available when needed;
- secure; and
- retained for a minimum of five years after publication, or public release, of the work of research.

The responsibilities of researchers, student researchers, heads of department, and departments are defined. Advice is provided on such issues as:

- data and records ownership;
- consent forms;
- patent requirements;
- retention and storage (including requirements of funding bodies and disciplinary practices or codes);
- electronic data;
- audio-visual material;
- access and privacy; and
- destruction of records and data.

The *Guidelines* take into account the information extracted from the interviews and consider the guidelines and research requirements of other organisations, among them the National Health and Medical Research Council and the Therapeutic Goods Administration. They are also the product of extensive consultation with members of the Research Records Steering Group, the Office of the Deputy Vice-Chancellor (Research), the University Solicitor, the Research Contracts Unit and the Registrar. The process, while often long and protracted, has resulted in guidelines that are comprehensive and relevant and, more importantly, ones that were not conceived in isolation. Issues were discussed, dissenting views listened to, hypothetical questions posed and (it is to be hoped) answered. Some issues proved more contentious than others, often giving rise to larger questions of research ethics and responsibility such as the management of confidential and sensitive records and data.

Some important issues to emerge in the course of discussions were:

- the definitions of and distinctions between research data and records;
- patent requirements and the maintenance of laboratory notebooks;
- the management of consent forms in human research; and
- the evidential requirements in cases of possible misconduct or where research integrity is called into question.

Definition of research data and records

During the interviews, the words 'data' and 'records' were used interchangeably by researchers. Comments made by some researchers revealed that research data and records were seen as one and the same, while others saw data as meaning strictly the raw, un-distilled results of experiments. The original definition of 'research records' drafted by Records Services was:

Research Records consist of recorded information, in any form, that provides evidence of the research process.

Such records may include: laboratory notebooks; associated primary research data (including research data in hard-copy or in computer-readable form); project files; models; slides; artefacts; specimens; correspondence (including email as well as paper-based correspondence); correspondence files; samples; grant applications; technical reports; research reports; photographs; films and digitised images.

As cited earlier in this article, this definition was revised and broken down into two separate definitions of records and data to take into account any variations in interpretation of the term 'research records' by future users of the *Guidelines*. These definitions were agreed upon by Records Services, the Office of the Deputy Vice Chancellor (Research) and the Research Records Project Steering Group.

Patent requirements

As also mentioned earlier, the survey of the School of Chemistry revealed

experimental results were recorded in laboratory notebooks in a variety of ways. In order to support a patent application and to prevent future patent infringement actions, there needs to be a standard of proof to demonstrate 'first to invent'. This is particularly the case when filing a patent application in the United States which has specific recordkeeping requirements. Unimelb Ltd, in consultation with Records Services, prepared a list of instructions for keeping experimental laboratory notebooks (Appendix 1). These instructions were included in the *Guidelines*.

Consent forms

The issue of retention of consent forms was the subject of extensive debate between Records Services, members of the Human Research Ethics Committee, the Registrar and the University Solicitor. Thought had to be given to both the ethical and legal implications of retaining or destroying consent forms which provide proof of 'informed consent freely given by the subject' – the central principle in the conduct of research involving humans. Who was responsible for the maintenance and retention of consent forms? For how long should they be retained?

In the discussions, Records Services drew attention to the nature of the relationship between the researcher and the subject. The interviews revealed that this relationship was characterised by mutual trust and confidentiality, with most researchers believing that the responsibility for ensuring confidentiality rested with them. Records Services foresaw difficulty in persuading researchers to relinquish control over the management of consent forms. This, coupled with the fact that consent forms could be used as evidence in litigation, resulted in the following guideline:

7.8 In the event of a dispute arising between the researcher and the subject during or after the completion of the project, for example claims that the consent was not informed or freely given or claims of personal injury (physical, psychological or social) as a result of participation in the project, the signed consent form and the information sheet together will be evidence of the process of informed consent. Like all research data and records they may be discoverable in the event of litigation.

The responsibility for maintaining, and retaining for an appropriate period, consent forms and the information sheet rests with the researchers. As a general rule if it is important enough to retain the research data it is important enough to retain the records of informed consent. Consent forms for a project therefore should be retained for the same period of time as all other research records for the project.

In the *Guidelines*, it was explicitly stated for the first time that the responsibility for consent forms was an individual one resting exclusively with the researcher.

Evidence in the event of misconduct

The following example illustrates the need for rules regarding the retention of records and data in the event that the integrity of the research is questioned and the records and data need to be re-analysed:

A PhD student submits his/her thesis. In examination of the thesis questions arise concerning the integrity of the research data. A re-analysis and verification of the research data plus the original questionnaire are required. The student has left the country taking all data with him/her.

Variations on this situation exist, serving to highlight the importance of retaining the records and data and making them accessible. In order to prevent such a situation, it was decided that:

7.6 In the event of a researcher leaving the University and leaving research data and records they should be boxed and labelled with the name of the researcher, name of the project, year of publication (in the case of no publication the year the researcher left the University), number of boxes.

7.7 At the point of thesis submission student researchers should deposit research data and records with the department. The retention of a copy of research data and records by student researchers should be negotiated with the supervising staff member. When

submitting a thesis for examination the student researcher should be required to make a declaration that the research data and records have been deposited with the department. Research data and records collected, used and maintained by student researchers should be retained for five years from the point of thesis submission unless publication, or public release of the work of research subsequently occurs, in which case the research data and records should then be retained for five years after publication, or public release, of the work of research.

Conclusion

Distribution of the *Guidelines* (in hard copy and electronic format) and the development of a workshop for their implementation are planned for this year. While the examples within the *Guidelines* are meant to be viewed as guidance and not specific compliance requirements, it is hoped that with time, the *Guidelines* will be incorporated into the University's research culture.

A copy of the *Guidelines* is available from the Manager, Records Services at the University of Melbourne.

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APPENDIX 1: INSTRUCTIONS FOR KEEPING EXPERIMENTAL LABORATORY NOTEBOOKS

(This draft guideline was developed in October 1996 by Unimelb Limited.)

Purpose

This notebook is used as a record of experimental data and ideas. It provides a complete record of laboratory work which can be understood and repeated by yourself and others. If used appropriately it will afford maximum patent right protection.

Procedure

Research records should be kept as if each project will be patented. In the event probably few projects will be patented but the observance of these practices will provide a clear record for reports and publications and for future reference.

1. The notebook must be bound so that pages cannot be added or removed.
2. Each page of the notebook must be numbered in sequence.
3. Each page must include a space for signatures by the inventor and at least one witness and the date on which the witness signed the page. The witness must be someone who is competent to understand the work but does not claim to be a co-inventor.
4. The entries in the notebook must be written in permanent ink. Erasures are not permitted. Do not use 'white-out'. To delete an entry draw a line through it so that the original entry is still legible. If any entry is modified, make a new entry which is signed, dated and witnessed. Changes made after the page has been witnessed should be initialled by both researcher and witness and dated the current date.
5. Additional items such as photographs, chromatographs, spectral data etc. may either be stapled or taped to the notebook and witnessed as

above, or put in a separate file. The identification and location of the separate file should be referred to in the notebook along with cross-referenced numbers (eg experiment numbers, compound numbers, page numbers etc.). These objects should be witnessed in the same manner as the notebook pages.

6. Do not skip pages. If a page is left blank, rule a diagonal line across the page and indicate that the page is intentionally left blank. Sign and witness in the usual way.
7. The notebook serves as a complete and continuous day-by-day running record of the activities of the researcher. Record sufficient information. All procedures, reagents, equipment, references, conditions must be recorded as the work is being done, as should be the reasons serving as a basis for decisions. Abandoned approaches or unsuccessful attempts should be included.
8. Record the date and sign your name at the bottom of each page.
9. The notebook and its contents are to be considered as a confidential document and of great value. Every care should be exercised in looking after it.
10. Reserve a page or two at the beginning of the notebook for a table of contents. Return the book to the authority responsible for its safekeeping when it is filled and is of no further day-to-day use by the researcher.

New ideas must be recorded and witnessed as soon as they occur to establish priority of inventions.