

**THE SIGNIFICANCE OF BIOLOGICAL EXHIBITS IN
INVESTIGATION OF RAPE CASES**

by

SETLHOMAMARU ISAAC DINTWE

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SUPERVISOR: DR NJC OLIVIER

CO-SUPERVISOR: B BENSON

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ABSTRACT

Democratic and accountable policing is one of the hallmarks of democracy. In a healthy democracy, a police service exists to protect and support the rights of its community by successfully listening to those who are laying complaints and resolving to assist them by bringing the perpetrators to the grinding wheels of justice. Encouraging and ensuring that police officials utilise the most modern means of investigation such as the DNA technology, provides the necessary balance to the exercise of professional discretion and heightened conviction rate by the police officials. The utilisation of biological evidence in investigation of rape cases is such a modern intervention – a way of providing insulation against internal and external interference with the proper and successful investigation of rape cases.

KEY TERMS

Biological exhibits; Biological samples; Serological examinations; Forensic Investigation; Forensic Biology; Rape; Blood; Semen; Saliva; Vaginal smears; Deoxy-ribonucleic acids; Biological analysis

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DECLARATION

STUDENT NUMBER: 36897507

I, Setlhomamaru Isaac Dintwe, declare that THE SIGNIFICANCE OF BIOLOGICAL EXHIBITS IN INVESTIGATION OF RAPE CASES is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references

SETLHOMAMARU ISAAC DINTWE

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CERTIFICATE OF WORK DONE

This serves to confirm that I edited a research dissertation of Mr. Setlhomamaru Isaac Dintwe titled: The significance of biological exhibits in investigation of rape cases.

I hold a BA degree and BA Honours from the University of Potchefstroom. I also completed a Masters in Linguistic at the University of Natal. I specialize in grammatical editing and proof reading in a variety of subject matters

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EDITOR

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CHAPTER ONE

GENERAL ORIENTATION

1.1. INTRODUCTION

Rape cases are reported in alarming numbers across South Africa. The Institute for Security Studies recorded the number of rape cases that were reported over a particular period (Crime Information Analysis Centre, 2006). In this document, the following statistics were recorded:

2001/2002: 54 293 cases were reported

2002/2003: 54 425 cases were reported

2003/2004: 54 733 cases were reported

2004/2005: 55 114 cases were reported

Although such high figures are reported, very little cases end up with convictions as pointed out by Statistics South Africa (2000:24). In this report it is clear that only one out of eleven (8.9%) of all reported cases which were either prosecuted or not, ended up in the conviction of the perpetrator. The reasons leading to such a low conviction demands a scientific research. According to Adams, Cadell and Krutzinger (2004:02) cases are solved with evidence, offenders are prosecuted on the basis of evidence, and victims receive justice because of evidence. It is not enough just to have evidence. It must be collected and processed properly, lawfully and in a manner that is above reproach and proves the guilt of the accused beyond all reasonable doubts.

This research looks at the significance of biological exhibits in investigation of rape cases. This will be started by looking at the methodology used in gathering and analysing the data collected in this research. Biological exhibits will be discussed where after the researcher will look at the significance of those exhibits in investigation of rape cases. In the final analysis, the admissibility requirements of biological evidence will be unpacked. The research will be concluded by a detailed report on findings and recommendations for implementation. The following discussion concentrates on the problems that prompted this research.

1.2. PROBLEM STATEMENT

The main problem which led to this research is that there are certain cases in South Africa which show that investigators are sometimes ignorant or know little about the significance of biological exhibits in investigation of rape cases. Through observation of these cases and researcher's experience as a detective in the South African Police Services, it is further empirical that the significance of biological exhibits has been undermined. In certain instances the judges are forced to rely on circumstantial evidence when biological evidence could have been used to prove the case beyond reasonable doubt.

According to Hlatswayo (2007:6), a family of an apparently raped and murdered girl complained that the police did not conduct a complete search and scene investigation. The body of the deceased was only recovered after days through the assistance of the dog unit of the South African Police Services. On a separate incident, Fuzile (2006:2) reported that when a 74 year old Eastern Cape lady went to report a series of rape cases at the Police Station, she was told to identify the suspects before a case could be opened. This victim went back home without being examined, surely destroying any available biological exhibits, until a Newspaper journalist intervened. Rondgager (2006:6) ran a story of a Lenasia woman whose daughter was kidnapped, apparently raped and killed. The headline went "Police neglect to draw her blood to check if it matches traces found in the suspect's car". These cases are but just a tip of the iceberg. It is the researcher's submission that through an experience as a detective in the South African Police Service, experience as a Manager: Investigations at the Independent Complaints Directorate, decided cases as well as other reported cases, there is a legitimate problem which justifies a scientific research.

1.3 AIM OF THE RESEARCH

In an endeavour to address a research problem, each and every study must have an aim. The overall aims and goals of the study as they crystallised during preliminary reading and thinking about the problem must be stated as pointed out by Mouton (2001:122). The submission of Mouton is completely in agreement with Leedy and

Ormrod (2001:05), who submit that there must be a clear and unambiguous statement which sets forth clearly and in a grammatically complete sentence exactly what the ultimate goal of the research is. This research is aimed at studying the significance of biological exhibits in investigation of rape cases.

1.4 RESEARCH PURPOSE

Studies by Bynard and Hanekom (1997:1) have shown that the knowledge obtained by means of research can be used to improve decision making, especially because decision making in the public sector is based on verified data and not on intuition, tradition or mere gut feeling. That is true except for the argument that decision making only in the public sector is dynamic and systematic in exclusion of the other sectors. An alternative explanation will therefore be that, research is also important in the decision making of any formal sector being it private or public. This research was predominantly exploratory in purpose. This was so because the researcher was assumed to know nothing or little about the problem under investigation. The researcher did not fully know the significance of biological exhibits in investigation of rape cases as it was still subject to establishment of its utilisation by the police. Champion (2000:137) submitted that one of the chief merits of exploratory research is that potentially significant factors may be discovered and may be assessed and described in greater detail with a more sophisticated research design. It is therefore correct that only an insignificant part of this research was descriptive and empowering. This means that although the researcher intended to explore, there was a possibility of describing what was already known, thereby empowering those dealing with the investigation of rape cases. It can therefore be concluded, as pointed out by Welman and Kruger (1999:19) that the purpose of conducting this research was to explore with the consequence of modification.

1.5 RESEARCH QUESTIONS

The research questions are instrumental in directing the researcher's mind towards solving the problem. This is echoed by Leedy and Ormrod (2001:60) who argues that

a research question to a researcher is like a triangulation to the surveyor. This research sought to answer the following questions:

- 1.5.1. What are biological exhibits?
- 1.5.2. How should the biological exhibits be collected, packaged and preserved to be admissible in the court of law?
- 1.5.3. What is the significance of biological exhibits in investigation of rape cases?

1.6 DEFINITION OF KEY CONCEPTS

The specification of conceptual definitions does two important things. Firstly, it serves as a specific working definition we present so that readers will understand exactly what we mean by a concept. Secondly, it focuses our observational strategy (Maxfield & Babbie, 2005:120).

1.6.1 Crime investigation

Crime investigation can be seen as a process whereby the detectives uses their skills as interviewers and persuaders to obtain information regarding guilt or innocence (Gilbert, 2004:17). Marais (1992:1) defines crime investigation as a lawful tracing of people and instruments which may directly or indirectly contribute to a reconstruction of a crime situation and supply the information about the people involved in it. If simplified, crime investigation can be defined as a search for the truth about the incidence of crime.

1.6.2 Forensic investigation

Forensic investigation is when scientific methods are applied to clarify the circumstantial evidence with the intention of resolving legal disputes (Jackson & Jackson, 2004:xiii). According to Pollex (2001:93), Forensic investigation can be defined as an investigation aimed at instituting court proceedings and where some or other scientific knowledge is applied to a legal problem. Difference between forensic investigation and forensic science is well catered for in the latter definition. It means that forensic science is applied to investigation to bring about forensic investigation. The former is therefore a body of knowledge while the latter is deemed a process.

1.6.3 Rape

The criminal law definition of rape is tendered by Snyman (2006:449) who submit that rape consist of a male intentionally and unlawfully having sexual intercourse with a female without her consent. Rape is also defined by Card (2004:33) as an unlawful and intentional sexual intercourse with a female without her consent. From this definition it is clear that the most important elements of rape are penetration (sexual intercourse), with intention, unlawfully and with a female. There is new law that provide that any person irrespective of their gender can be raped. In cases where a male person has been “raped”, the South African legal system termed that as an indecent assault until the new law was passed. Rape was defined conservatively in the most recent case of *S v Zuma*. The judge referred to the Sexual Offences Amendment Bill and stated that it cannot be used because it is not enacted into an Act of Parliament. For the purposes of this study and the demarcation which was done before the enactment of the new legislation, the older definition of rape will be used. The new definition is tendered below.

1.6.4 Rape (new definition)

According to the amended legislation and the submissions of Burchell and Erasmus (2003:81), as well as the definition given in the case of *Masiya v DPP 2007 ZACC 9* the offence of rape is defined as follows:

“Any person who unlawfully and intentionally commits any act which causes penetration to any extent whatsoever by the genital organs of that person into or beyond the anus or genital organs of another person, or any act that causes penetration to any extent whatsoever by the genital organs of another person into or beyond the anus or genital organs of the person committing the act, is guilty of the offence of rape”.

The most important differences between this definition and the old definition are the gender neutrality where any person can either be a victim or a perpetrator. Secondly, the definition is not specific in terms of whether a penis will be used or not. This definition could not be used in this research since there are no dockets which fall under this definition that could be analysed. In a nutshell, this research started before the new definition and the demarcation thereof was based on the old definition.

1.6.5 Exhibits

Jackson and Jackson (2004:2) view an exhibit as an individual item of evidence which is normally recovered, goes through different stages of analysis until it is produced in the court of law. "Exhibit" is defined in the Longman Dictionary for Contemporary English (1999:323) as something brought into a court of law to prove the truth.

1.6.6 Evidence

Adams, Caddell and Krutzing (2004:03) define evidence as a personal account of witnesses and information or facts that are used to imply a reasonable conclusion. It is either direct or indirect depending on its source. When exhibits, verbal or written testimony and other facts are produced during the court proceedings, they are referred to as evidence.

1.6.7 Locard Principle

The Locard principle is a theory of transfer with a basic premise that whenever a person enters or exits a crime scene, he or she alters it in some way, however significant or insignificant it may be (Adams et al., 2004:3). These authors further claims that there is a possibility that the perpetrator left something behind at the scene and took something away from the crime scene. According to Wikipedia ("s.a":03), this principle was postulated by the 20th century scientist, Edmond Locard who said:

"Wherever he steps, whatever he touches, whatever he leaves, even unconsciously, will serve as a silent witness against him..... This is evidence that does not forget. It is not confused by the excitement of the moment. It is not absent because human witnesses are. It is factual evidence. Physical evidence cannot be wrong, it cannot perjure itself, and it cannot be wholly absent. Only human failure to find it, study and understand it, can diminish its value".

1.7 RESEARCH DESIGN

According to Jupp, Davies and Francis (2000:51), research design involves fitting research questions to data. The empirical research design was used in this research which included face to face interviews with individuals and literature survey to

investigate the research problem, as described by Mouton (2001:56). In order to substantiate the literature further, the researcher went to the field to test the theories surrounding the research questions. This is in agreement with Champion (2000:200) who successfully submitted that in order to test our theories; we must bring our terms into the empirical realm.

In addition to that, the researcher followed the advice of Leedy and Ormrod (2001:113) that an exploratory or interpretive question is more readily addressed by a qualitative design. The other advantage which is echoed by Silverman (2001:32) is that the methods used by qualitative researchers exemplify a common belief that they can provide a deeper understanding of social phenomena than would be obtained from purely quantitative data. The researcher agreed with that submission as it would have been a futile exercise to collect and analyse the statistics in order to answer the research questions at hand. Empirical research proved to be more appropriate to this research as the researcher wanted to study police practices and base conclusions on observation and experience. Empirical research is a production of knowledge based on experience or observation (Maxfield & Babbie, 2005:6).

1.8 RESEARCH APPROACH

This research was mainly of a qualitative approach. Champion (2000:135) pointed out that qualitative research is the application of observational techniques and/or the analysis of documents as the primary means of learning about persons or groups and their characteristics. The researcher preferred this approach to quantitative approach because of three reasons as stated in Denzin and Lincoln (1994:4). According to these authors, qualitative research brings about a socially constructed nature of reality, intimate relationship between the researcher and what is studied, as well as the situational constraint that shape the inquiry. This research comprised therefore of field work and was an emersion of the researcher into the lives and world of those being studied (Champion, 2000:135). Although there was no participative observation, the researcher still went to those being studied thus enhancing the relationship between the researcher and those studied. The only disadvantage of this approach was cost

related as the researcher travelled to certain destinations so as to meet with the respondents.

1.9 TARGET POPULATION

Each research topic as argued by Champion (2000:171) raises several questions. Firstly, where will data be obtained and secondly how will it be obtained. The population consisted of detectives of the South African Police Services. The population of the study is that group of people about whom we want to draw conclusions. Since it is almost impossible, as submitted by Maxfield and Babbie (2005:107), to study all members of the population that interest us, detectives from different provinces of South Africa who attended a Detective Learning Programme (DLP) at Hammanskraal Detective and Intelligence Academy, between August and November 2007, were studied. The academy is ordinarily admitting 130 detectives per a Detective Learning Programme (DLP) cycle from which a sample of ten detectives was withdrawn. The manner in which the sample was drawn is discussed fully later. The detectives at this academy represented all general detectives of the South African Police Services because they investigate the same type of crimes, have undergone the same training and are selected to become detectives through the same rules and guidelines. They are subject to the same guidelines, legislation and standing orders. A letter of permission to conduct research in the SAPS was obtained and attached as annexure 4.

In addition to the Detectives, the researcher interviewed the forensic analysts at the Biology Section of the Forensic Science laboratory in Pretoria. This sample did not include the fieldworkers from the Local Criminal Record Centre as the laboratory analysts attend serious cases in order to assist the fieldworkers when necessary. There were about 28 analysts who are working at the biology Section of the Forensic Laboratory and 10 of those were drawn as a sample. Permission was also obtained from the Research Unit of the South African Police Services.

1.10 SAMPLING METHODS

Sampling means taking the proportion of persons from the whole class of persons from which or about which we seek information (Champion, 2000:172). Due to the fact that there were lot of subjects in this research, different sampling techniques were used.

1.10.1 Systematic sampling

This method of sampling was used because the population consisted of clusters whose clusters characteristics were similar, yet whose unit characteristics were as heterogeneous as the overall population (Leedy & Ormrod, 2001:218). In this instance 130 detectives were admitted per course cycle out of three intakes a year at the academy. They were haphazardly categorised into four classes with each accommodating an average of 33 detectives. Their cluster characteristics were the same in that they are all detectives employed by the South African Police Services who attended verisimilar training interventions. However, their unit characteristics were heterogeneous as they differed in terms of age, gender, origin, beliefs and others.

The researcher drew up a list of service numbers of occupants of each class on a separate paper. This means that each class had its own list which averagely amounted to 33. These service numbers were mixed which means that they were written without following any specific order and the researcher did not know the names of each individual connected to the service number. The researcher ticked every tenth name on the list starting with the first number in all classes, as illustrated in Leedy and Ormrod (2001:218). The picking of the first number was based entirely on the researcher's decision and could not have led to bias because the numbers used were already mixed without reference to the names of the potential interviewees. The reason to choose each tenth person was purely mathematical as 33 divide by 10 is equals to 3. This was done in each class and the total sample came to 12 detectives, after which two last names were removed from the final list to come to a total of ten interviewees. The researcher depended on the granting of permission to conduct research. This is the reason why the last intake which started in September 2007 to December 2007 was used in the research. The permission to conduct research was

only granted on 17 September 2007. The danger of periodicity and bias as discussed in Maxfield and Babbie (2005:230) was avoided as the researcher did not follow any numerical order of the detectives and their names were not known at that stage.

Although the same method was used to select the forensic analysts, this was done separately. The reason for that was the number of the forensic analysts was not the same as that of the detectives. The forensic analysts who deal with biological samples were about 28 in number. They were divided into four groups, as each is headed by a laboratory supervisor, with each consisting of 7 analysts. The researcher intended to draw a sample of 10 analysts from the entire population of forensic analysts. For each group the researcher wrote a list of service numbers without referring to the names of the analysts. Each group had its own list or paper. For each group, the researcher ticked each third name on the list starting from number three in each list. Picking of the third number was solely the decision of the researcher and could not have led to bias because the numbers were mixed before selection. The reason was also mathematical. At the end, the researcher chose 3, 6 and 9 which made it three analysts from each group. The total of the sample from all groups was therefore 12 analysts. The researcher then automatically removed the last two service numbers from the final list without any considerations to come to a total of ten analysts.

The researcher chose this method as it is superior to simple random sampling in terms of convenience as argued by Maxfield and Babbie (2005:230). Another advantage as argued by Champion (2000:104) is that the systematic random sampling is easy, faster and allows for a rectification of mistakes if spotted. These ten analysts chosen from a total of twenty-eight were seen to be representative of the whole as they underwent the same training and nationally regulated by the same laws and regulations. In addition to that, the sampling was based on probability which means that the researcher could specify in advance that each segment of the population will be represented as submitted by Leedy and Ormrod (2001:211).

1.11 DATA COLLECTION METHODS

Different methods were used to gather the data in this research. This was advantageous because it is accepted that utilising more than one data collection method ensures that the problems associated with one strategy may be compensated for by the strengths of another (Jupp et al., 2000:43). Over and above that, different sources enables triangulation (Leedy & Ormrod, 2001:105) as further discussed later under methods to ensure validity.

1.11.1. Literature

Different works or publications relevant to this research were consulted. Both National and International authors on the subject matter were studied with the object of answering the research questions. These sources included the articles and publications on the website, internet articles, case law relevant to the rape cases, newspaper articles and previous researches or dissertations on the subject matter. Relevant findings to this research were searched and were used to narrate or justify the new data collected from the primary sources. The findings of previous researchers which are relevant to this research were taken into consideration and were compared with the other data which was collected during the research. The literature search did not consist only of a mere compilation of separate, isolated summaries of the individual studies of previous researchers as pointed out by Hofstee (2006:91). Instead, as suggested by this author, it was clearly shown how these studies relate to one another and how this research tied in with them. That means that a literature used is comprehensive, critical and contextualised (Hofstee, 2006:91).

Literature search is as important as any of the collection methods available. According to Bachman and Schutt (2003:A-4), searching the literature to find out what others have found in response to the research questions or what steps they have taken to solve the problems can yield substantial improvements in the current research. In this research, the sources found were evaluated against the data collected from other sources, such as people and the analysis of other documents.

The Goldfields Library at the Florida campus of the University of South Africa, the main UNISA Library at the Muckleneuk campus and the subject librarian at Florida campus were visited. Books, journals, articles and other publications were then perused after which a search for the information on the research topic was done. After an ongoing review it became apparent that there was little amount of formal literature that existed in this country and specific to the research questions or carried the same topic. In contrast there was fair amount of International sources that were relevant to this research. This on its own could not be seen as a limitation as rape and biological exhibits are an international trend. Literature was useful as it is advisable to first consult general works on the research topic in order to obtain a broader overview (Bynard & Hanekom, 1997:31).

Local authors, such as Marais (1992), Marais and Van Rooyen (1993), Van Der Westhuizen (1996), Kriel (2000), Marx, Van Rooyen, Bosch and Reynders (1998), as well as others have shared a variety of information on either crime scene management or physical evidence. On the other hand, International authors, such as Jackson and Jackson (2004), Sennewald and Tsukayama (2001) and many others have done a progressive accumulation of crime scene techniques and information on handling of evidence. All these added up to the secondary sources of this research. In contrast, this research concentrated entirely on investigation of rape cases. Unlike the other researchers in this field, only one crime was studied in line with the value of biological exhibits. Other information was found in Journals, Internet publications, and Criminal Law Reports. Internet searches also proved to be significant during the literature review. It isolated useful information in this research and an example is that of the article on the rape and murder of Baby Tshepang on Comtex (<http://.comtexnews.com>). In this article, it was clearly indicated how a proper usage of DNA analysis excluded other suspects in this case. It was however relevant because one of the suspects was positively linked to that crime. The standard used to evaluate the sources for information was based on the establishment of whether the author dealt with rape, biological exhibits or scientific investigation. This means that only three key words were used to evaluate the relevance of a particular source. These keywords are: rape, biological samples or exhibits and investigation.

1.11.2. Interviews

Structured and face-to-face interview with the interviewees included in the sample were conducted. The researcher wrote down the responses of the respondents. It was clear that this research aimed at gathering data regarding the significance of biological exhibits in investigation of rape cases hence there was an agreement between the type of the interview used and the aim of the intended research. This is true as the researcher asked the same structured and open-ended questions, with the same meaning, in the same words, same sequence, intonation and in the same interview setting. The first interview schedule was used for ten detectives identified and a different interview schedule was used for ten analysts. The reason for this was merely because certain questions were not posed to both groups depending on the extent and nature of their work. The researcher ensured that the questions asked meant the same to all respondents. The interview schedule consisted of open-ended questions as described by Miller and Whitehead (1996:181).

In order to ensure that the questions were understandable the researcher took into cognisance that it is of utmost importance to ensure that questions on the interview schedule are short, concise and unequivocal. Since this was achieved, there was no need to re-phrase questions during the interview as that could have altered the standard of the interview from one respondent to the next. This was achieved by observing the guidelines contained in Welman and Kruger (1999:172) and Leedy and Ormrod (2001:202). It is the researcher's submission that the considerations advanced by these authors are verisimilar. When summarised and integrated, these considerations are:

- Short interview schedule with short questions
- Usage of simple, clear and unambiguous questions
- Consistency and care not to offend
- Conciseness and simplification of respondent's task
- Provision of clear instructions and strive towards neutrality, etc.

According to Hofstee (2006:122), the interview is the most frequently used method of data collection where a researcher is essentially trying to elicit information from a certain group of people who are presumed to have the information the researcher is

seeking. Each method had its own disadvantages, such as the fact that certain interviews did not accommodate haphazard probing. The technique of getting deeper into the question and clarifying questions enables the researcher to probe for more information. In the interest of reliability, very little or no probing was done as there was compliance with the questions contained in the interview schedule. The second disadvantage was that this interview did not look like an ordinary conversation. These disadvantages were however, overcome by the particular skills of the interviewer. A pilot test was conducted to ensure the relevance of the questions. Same questions were asked to five colleagues who are lecturers at the University of South Africa and the other five friends who are working in the policing environment as suggested by Leedy and Ormrod (2001:204). The outcomes of the pilot study were satisfactory as the following came to the fore:

- The questions were understood equally by the pilot respondents
- The answers provided were very close to the answers that could satisfy the research questions
- At no stage did any of the pilot respondents request further clarification on any question
- Double meaning or ambiguity could not be detected during pilot

As a result of those pilot findings, the researcher did not attempt to change the interview schedule.

1.11.3. Case analysis

Finally, in order to answer the research questions, the researcher conducted a case-docket analysis as no specific method or practice can be privileged over any other, and none can be eliminated out of hand (Denzin & Lincoln, 1994:03). The analysis of case dockets proved its ability to answer the questions at hand. In practice, the analysis of biological exhibits is not done on all rape cases. The crime kit 1 is normally used to collect any evidence and when it is received by the Forensic laboratory, it is kept until an instruction is given by the Prosecutor in conjunction with the Investigating Officer to analyse such. This means that if the Prosecutor is satisfied with the eye-witnesses, or there is no dispute on sexual intercourse, such analysis may not be done. It should also be borne in mind that this kind of analysis is very

expensive hence it is done in minimal cases depending on circumstances. It was therefore imperative to establish whether there was a difference between the cases where biological exhibits or evidence was used and those that it was not used. The reason was that the chances of conviction may not have been the same with the cases where the investigation relied entirely on eye-witnesses. It was not the aim of this study to compare the two scenarios but to check the significance of biological exhibits in investigation of rape cases, however slight it may be.

The researcher obtained a list of all stations in Gauteng province. The reason for choosing Gauteng Province is that the researcher is residing and working in this province. Due to financial reasons, the researcher chose a province within which the station can be visited, docketed perused and left at the station. Gauteng was seen to be representative of the whole country as the detectives, as well as the investigation processes are regulated centrally by the same national standing orders and national legislation. The standards of the case docketed are not being decided by an individual province but uniformly by the National Head Office of the South African Police services. The simple random sampling method was used in selecting the police station from which the docketed were to be analysed. A list of police stations falling under Gauteng Provincial office was created. The name of each station was written on a separate piece of paper and all were put into a hat, mixed, after which a single paper was selected blindly (Welman & Kruger, 1999:52). The name on the selected piece of paper was that of Sebokeng Police Station. All stations stood the same chance of being selected and no bias could have resulted from this activity. After a proper permission was obtained from the research unit of the SAPS and the station management of Sebokeng in Gauteng Province, the station was visited and a docket analysis was done.

During preliminary visit to Sebokeng Police station and interview with the Branch commander, Senior Superintendent Gordon, it came clear that there were 70 docketed that fitted the following requirements of the research:

- These docketed must have been opened between January 2003 and December 2006
- They should be closed

- They should have a J88 Medical Certificate confirming that the victim was examined by Health Practitioner and samples were taken
- The Prosecutor or Investigating officer should have requested the Forensic Laboratory to test the biological samples sent
- They should contain a Section 212 Affidavit or the statement of an expert who analysed the biological exhibits
- The Section 212 Affidavit should have been used in court or the expert should have testified in the court of law.

The questions that were asked in this regard are included in the checklist which is attached as an annexure at the end of this report. These questions specify the exact data that is expected to be solicited from the analysis of the case dockets.

For reliability purposes, the researcher decided that fifty (50) dockets were to be used as a sample. The researcher wrote down the case numbers of these 70 dockets on a colourful chart. Each number was then cut off to be on its own. These 70 pieces of paper with a case number were placed in a hat. The researcher then mixed those numbers. A total of 50 pieces of paper were randomly removed from the hat. The case number appearing on each paper was used to select the dockets for analysis. This method is referred to by Welman and Kruger (1999:52) as a simple random sampling as each unit of the population has the same chance of being selected in the sample. Mouton (2001:101) deliberated on a possibility of a biased sample owing to very heterogeneous population, use of non-probability sampling techniques and too small sample sizes. In order to address the latter problem, the researcher preferred systematic sampling when the samples were too small. In contrast the researcher ensured that factors that may intervene to affect the representativeness or sample adversely or favourably were minimised (Champion, 2000:171).

1.12 DATA ANALYSIS

The researcher chose an appropriate procedure to analyse the data that was obtained as submitted by Welman and Kruger (1999:201). Creswell (1998) in Leedy and Ormrod (2001:161) illustrates a meticulous data analysis method which is more

relevant in qualitative studies. This method is called data analysis spiral and the researcher elected to use this method in analysing data. This means that various steps were followed several times until the final product was achieved. In accordance with this data-analysis method (Leedy & Ormrod, 2001:161), the following steps were followed until a final product was achieved:

- Organisation of details about the case. Here the researcher arranged the facts in a chronological order and categories were identified, after which the data was classified into smaller groups.
- Perusal of data. The researcher endeavoured to get an overall sense of data and preliminary interpretations were jotted down.
- The classification stage. The data was grouped into categories or themes and the meaning in the data was established.
- Synthesis and generalisations. Here the overall portrait of the case was constructed. Conclusions were drawn at this stage.

Since this research is mainly qualitative, these steps were followed in analysis of all data irrespective of whether it was collected through interviews, literature search or case analysis. The advantage of this method is that the researcher could follow concise steps in analysing data, thereby avoiding possible gaps in interpretation of data. The other advantage is that data could be analysed during the data collection process which saved lot of time ordinarily consumed during this stage of the research.

1.13 METHODS TO ENSURE VALIDITY

Certain aspects were taken into consideration in this research so as to ensure that the results are valid. In this research, the views of Welman and Kruger (1999:138) were observed in that the instruments used to measure the variable, measured that which it was supposed to measure. Denscombe (2002:100) view validity as the accuracy of the questions asked, the data collected and the explanation offered. The efficiency of rape investigators in using the biological exhibits, as well as their knowledge was measured thus establishing the value of biological exhibits in investigation of rape cases. Interviews, literature search and case analysis were used to gather data that was used to measure the value of biological exhibits. The researcher applied strict

attention to validity, which means the extent to which the instruments adequately reflect the concept or object that is being studied. An example is that of the use of case analysis as a means of collecting data. It is true that in order to evaluate a certain process one needs to look at what was done previously. In general terms, the researcher resorted to previously used and tested methods of data collection, as well as the analysis of the data collected. The researcher did not anticipate a situation where the respondents are seen not to be relevant to the phenomenon under investigation. The respondents in this study were detectives and forensic experts and they had already investigated the rape cases. The research was always strict on the qualitative nature and all respondents were met personally during interviews while the case dockets were physically perused for relevant data. Internal validity was also observed which means that necessary precautions were taken to ensure that any other possible explanations for the results observed were eliminated. Internal validity refers to the extent to which the research designs and data yielded allows the researcher to draw accurate conclusions about cause and effect and other relationships within the data (Leedy & Ormrod, 2005:97).

As a further insulation against invalidity, the researcher also used triangulation as described in Leedy and Ormrod (2001:105). Multiple sources of data were collected with the hope that they would all converge to support a particular theory. The researcher searched the literature, conducted interviews and conducted a docket analysis after which the common themes that appeared in the data gleaned from the three methods were looked at.

According to Maxfield and Babbie (2005:83), one of the factors that threaten the validity of results is basing conclusions on a small number of cases. In this research, a reasonable sample of case dockets and respondents was drawn. In addition to that, three categories of subjects were used in this research. These were Detectives, Forensic analysts and the case dockets. This assisted a lot on validity of conclusions as data collected from all these sources was integrated and collated against each other. In order to further validate the data collection process, the researcher conducted a pilot study of the questions contained in the interview schedule before the actual interviews were conducted. This is essential as the researcher was able to deduce a level of validity from the responses given during the pilot. In addition, it was proven

that the questions asked, data collected and the explanations offered are accurate as pointed out by Denscombe (2002:100). The submission of Welman and Kruger (1999:98) is equally true as they advise that to have confidence in the conclusions; these conclusions have to meet certain requirements. Although these requirements are not discussed in this research, the researcher observed them so as to ensure that there was validity.

1.14 METHODS TO ENSURE RELIABILITY

The accuracy and reliability of data received was enhanced by conducting interviews through the same questions contained in the interview schedule. The interview room was kept private, quiet and free from mental distractions so as to promote honest communication. The researcher focused on the consistency with which a measuring instrument yielded a certain result when the entity being measured has not changed (Leedy & Ormrod, 2001:31). It was therefore established that if the same research is undertaken in the future, the results are likely to be the same.

Although questions were clarified during the interview, the researcher did not amend the crux of the question thus ensuring that all the respondents responded to the same question. In addition, the researcher ensured reliability through faithful measure or representation of the truth, correctness and a scale showing permissible deviations from a set standard. Inductive and deductive reasoning as discussed in Leedy and Ormrod (2001:34-35) were applied throughout the research activity. Deductive conclusion means that a specific conclusion follows from a set of general premise whilst inductive reasoning is when a logical conclusion is reached through reasoning, inference or experimental evidence as put by Leedy and Ormrod (2001:35).

1.15 ETHICAL CONSIDERATION

There was an adherence to the Code of Ethics for research at University of South Africa (Technikon SA, 2000:128-134). In accordance with this code of conduct, the following aspects were observed:

- Anonymity of respondents and confidentiality of data. The identity of respondents were not shared with any other person, and a word respondent was used in the research report to protect identity of the respondents.
- Application of correct referencing techniques thereby avoiding plagiarism. In each case where the researcher made reference to any existing work, necessary credit was given through acknowledgement of sources.
- Obtaining consent from the investigators and forensic analysts identified as interviewees. The respondents were fully made aware of the purpose of interviews and asked whether they wanted to participate or not. The researcher intended to remove any respondent who did not wish to participate in the research and replace that person with the reserve numbers that were removed from the final list each time. This would be reported in the research report as and when it happens.
- Permission to interview and analyse was requested from the Research Unit of the South African Police Services. The permission was given and a letter confirming that is attached as per annexure 4.
- The language used during interviews and at any stage of the research was strictly academic and free from insults, insinuations or explicit.

In further endeavour to observe the ethics, the discussions of Leedy and Ormrod (2005:101) were studied and observed. These principles are not totally different from what is contained in the code of ethics for researcher at the University of South Africa.

- Research participants were not exposed to physical or psychological harm. Interviews were conducted in an office and at no stage were their lives exposed to any risk other than the normal day-to-day risks
- The participation in the study was completely voluntary and participants were given a chance to make an informed consent. Their right to privacy was observed and respected. A necessary permission was obtained from the National Head office and the Gauteng Provincial Head office of the SAPS
- Confidentiality was guaranteed to the respondents. Their responses were not shown to anyone or discussed with anyone except the supervisor of this research. The participants chose to participate in this research anonymously

and numbers were used instead of names both during the interview and the reporting

- There was honesty with the professional colleagues. The researcher ensured that there is no any misrepresentation of facts to deliberately mislead others with the findings. All words and ideas belonging to other people other than the researcher were acknowledged

In an endeavour to succeed in observing these ethics, the researcher developed an off-record checklist from the principles contained in the code of ethics and ticked them off throughout the research. These principles were only ticked off when achieved or observed and in general, non-compliance could not be detected.

1.16 RESEARCH STRUCTURE

The rest of this research report is demarcated into other chapters and will deal with other aspects of this research.

Chapter two looks into what are biological exhibits. This is more narrated than a mere definition of this concept as it looks into what can be classified as biological exhibits. This includes the composition of each exhibit and how it can be differentiated from the rest.

Chapter three deals with certain admissibility requirements that need to be met before any evidence can be admitted in the court of law. The chapter endeavours to answer the question of what are the admissibility requirements of biological exhibits. This means that the chapter incorporates how the person from whom the sample is taken should be treated, the laws regulating obtaining of biological exhibits, how these exhibits must be stored without compromising the integrity and how evidence resulting from all these should be produced in the court of law.

Chapter four takes that discussion to the next dimension by looking into the significance of each exhibit in investigation of rape cases. This means the possible results after the analysis of each exhibit and the manner in which that can be deduced

into evidence in the court of law. No evaluation is done in this chapter as the researcher only intends to look at significance of each exhibit. This means that no statistics are tendered nor weight of each exhibit as far as the exhibits are concerned. The critical question under this chapter is, can the analysis of any of these exhibits bring about change to the investigation process? The answer to that question does not recognise the numerical quota attached to the evaluation studies.

In chapter five, the findings are recorded and recommendations are made thus concluding the research report. For each finding which in the opinion of the researcher, need rectification, few recommendations are made to address the identified problem. In this chapter, the researcher endeavours to list reasonable recommendations. This means that the recommendations are deemed to be feasible to implement, and clearly useful (Hofstee, 2006:159).

CHAPTER 2

BIOLOGICAL EXHIBITS

2.1. INTRODUCTION

Rape is one of the contact crimes where the victim and the perpetrator will surely touch each other. Due to the contact, there are usually a lot of traces that can be found in the scene of rape. These exhibits may be barely visible or may be minute in nature. Due to this nature, most of these can be cross-transferred easily from one surface or substrate to another without detection by the criminal (Houck, 2004:1). Generally speaking, cigarette butts, knives, clothes, hair fibers, nails and a lot of other exhibits can be found on a scene of crime. It is difficult therefore to discuss all these exhibits or address them in a single research. This is the reason why this research will only deal with biological exhibits. For the purpose of this research, the biological exhibits as described in Savino and Turvey (2005:166) mean those exhibits that can be collected from a human being and can be analysed through the use of deoxyribonucleic acid analysis (DNA). These exhibits as pointed out by Savino and Turvey (2005:166) are the results of the fact that since every living cell contains DNA, any biological material left at the crime scene can potentially be valuable in the DNA test. This does not mean that other exhibits are useless in the investigative process, but only a researcher's informed choice to look specifically into this category.

This chapter aims to discuss semen, blood, saliva, vaginal smears and also look into what is the scene of rape like. A process whereby these are transferred from one object/person to the next will also be looked into. In addition to the literature explaining these exhibits, the discussion of these will also be supplemented by the responses of the respondents

2.2. BIOLOGICAL EXHIBITS

Due to the use of spiral data analysis method in this research, certain themes emerged from the interviews. These themes are presented in table 2.2 below and will be later

discussed in detail under each sub-topic. This tabulation of themes serves as a starting point for this chapter as later discussions and arguments will make reference to it.

Table 2.2: Overview of emergent themes per chapter 2

THEME	THEMATICAL QUESTION	THEMES	SOURCES
THEME 1	What are the biological exhibits?	Those that can be analysed through the DNA analysis, viz, blood, semen, vaginal fluids, saliva and pollen	<ul style="list-style-type: none"> • Respondents • Literature
THEME 2	Who identifies these exhibits and establish their origin	<ul style="list-style-type: none"> • Preliminarily by detectives • Accurately by the Forensic Science Laboratory analysts 	<ul style="list-style-type: none"> • Respondents • Literature • Case dockets
THEME 3	What is a scene of rape	The place where it took place and where traces may be found	<ul style="list-style-type: none"> • Respondents • Literature
THEME 4	Which places are those?	<ul style="list-style-type: none"> • The body of the perpetrator • The body of the victim • The vessel or actual place where it took place 	<ul style="list-style-type: none"> • Respondents • Literature • Case dockets
THEME 5	Its relevance?	Harbours crucial traces	<ul style="list-style-type: none"> • Respondents • Literature
THEME 6	What is Locard principle	A theory of transfer of traces	<ul style="list-style-type: none"> • Respondents • Literature
THEME 7	Its relevance	Rape is a contact crime	<ul style="list-style-type: none"> • Respondents • Literature

2.2.1. Blood

Depending on the facts of any given case, blood can become a major evidence substance in sexual assault investigation (Hazelwood & Burgess, 2001:308). Blood is defined by Eckert (1997:168) as a fluid consisting of cellular components and plasma, which circulates under pressure through arterial and venous systems of the body. It is

common cause that some and most of the rape cases are accompanied by violence. If the rape case was accompanied by violence it is apparent that blood may be present at the crime scene. In this research, the focus is on the significance of blood should it be present at the scene of a rape case. At this stage, it is immaterial as to from which part of the body did that blood come from. The crux of the matter is that blood is one of the biological traces that can be found and can be analysed in the forensic laboratories to trace its origin thereby making individualisation possible.

In general, through a study of blood, its shapes, sizes and locations of blood patterns and stains, the analysts can determine the physical events which gave rise to their origin. According to Hazelwood and Burgess (2001:321), the following questions can be answered through the analysis of blood:

- What events occurred?
- When and in what sequence did they occur?
- Who was there during the event?
- Who was not there during the event?
- What did not occur?

The answers to above questions are not necessarily answering the research questions at hand. However, if analysed and compared with the outcomes of the interviews and case analysis in this research, meaningful conclusions can be made. These answers or questions as summarised by these authors are only a yardstick which was used later in this research to establish the specific capabilities and or/limitations of blood samples collected during investigation of rape cases. It should also be borne in mind that, unlike in other researches, the researcher does not intend to look at the significance of blood in isolation, but rather as part of a collective.

During the interviews, wherein both samples means ten detectives and ten analysts, it became apparent that there is an absolute agreement between the respondents and the definition tendered by Eckert (1997:198) on what is blood. The following responses were recorded when the respondents, which mean ten detectives and ten analysts collectively, were asked what they understand by blood:

- 16 from both sets of respondents or ten detectives and ten analysts, described blood as red liquid which may change colours depending on exposure which flows in the muscles of humans and animals
- 2 from both sets of respondents described the blood as liquid which flows in the arteries of living species
- 2 respondent from both samples (ten detectives and ten analysts) referred to blood as a plasma which will differ from one living species to the next, excluding plants, which can best identified by the laboratories and differentiating between animal and human blood

The responses of the respondents are in agreement with literature in that they all recognise that blood will differ from one individual to the next as echoed by Hazelwood and Burgess (2001:321). DNA is the genetic material found in all human cells and carries the coded messages of heredity unique to each Individual as submitted by Riley (1998:1). DNA governs the inheritance of eye colour, hair, stature, bone density and many other human and animal traits (Riley 1998:1). This therefore means that DNA is the fundamental building block for an individual's entire genetic makeup. DNA can be referred to as our genetic fingerprint. Each of the approximately 100 trillion cells in a human body contains twenty-three pairs of chromosomes – one of each pair coming from one's father, the other from the mother-which contains DNA molecules. Our body's cells each contain a complete sample of our DNA (Riley, 1998:2). A person's DNA is the same in every cell. For example, the DNA in a man's blood is the same as the DNA in his skin cells, semen and saliva.

The other point of agreement between literature and the respondents is that forensic laboratories must initially establish that an unknown substance is definitely blood and must differentiate between animal and human blood (Hazelwood & Burgess, 2001:308). This is common because 16 respondents from ten detectives and ten analysts or both samples mentioned that blood normally flows in the muscles of humans and animals.

In the website static.dna.gov/lab-manual/.../Protocols/pdi_lab_pro_2.17.pdf it is made clear that the South African analysts are no longer using acid phosphatase as a

presumptive test for blood. Instead, Hemastix and Hexagon OBTI are used to check if the blood is that of a human or an animal. Hemastix are reagent strips originally designed for use in testing for blood in urine. This quick and easy test has been found to be applicable as a presumptive test for the presence of blood. The test strips contain diisopropylbenzene dihydroperoxide and 3, 3', 5, 5'-tetramethylbenzidine. The test is based on the peroxidase-like activity of haemoglobin which has the ability to cleave oxygen molecules from H₂O₂ and catalyzes the reaction from the reduced colourless form of 3,3',5,5'-tetramethylbenzidine to the oxidized colored form. The resulting colour ranges from orange to green. Very high concentrations of blood may cause the colour development to continue to blue (static.dna.gov/lab-manual/.../Protocols/pdi_lab_pro_2.17.pdf).

Human haemoglobin (hHb) in the sample reacts with a reagent consisting of blue colored particles and monoclonal anti-human Hb antibodies. The immunocomplex migrates to the test zone where it is captured by an immobilized second antibody directed against hHb forming a blue test line to indicate a positive result. Unreacted reagents migrate further and are bound in a second line by immobilized anti-mouse IgC antibodies. This control line indicates proper function and correct handling of the test. The test detects whole blood up to a dilution of 1: 1,000,000. As little as 500 red cells are required for a positive result (static.dna.gov/lab-manual/.../Protocols/pdi_lab_pro_2.17.pdf).

HEXAGON OBTI is the perfect complement to BLUESTAR® FORENSIC. This rapid screening test presumes that a bloodstain is of human origin. This helps the investigator to choose to collect or not a sample as evidence. A positive result indicates a strong likelihood for the presence of human blood. A lab analysis will later confirm or infirm this presumption.

HEXAGON OBTI is a two-part test: a collection tube for the blood sample, and a test bar. A sample of the presumed human blood trace is transferred into the tube with transport medium. This mixture is added drop by drop to the test. A positive sample is typically detected within 2-3 minutes. According to static.dna.gov/lab-manual/.../Protocols/pdi_lab_pro_2.17.pdf, a single blue line means the testing

liquid is working fine but no human blood has been detected, two blue lines mean the test has detected human blood.

2.2.1.1. Identification of blood

The preceding discussion focused mainly on what is blood. Investigation is normally calling for accuracy as the state is expected to prove its case beyond any reasonable doubts. It is therefore crucial that the investigators must be able to identify the blood even if it is affected by environmental factors, such as temperature and wind. If correctly identified, it then becomes easier for investigators to know what need to be collected and what may not be collected. This is evident from the statement of Hazelwood and Burgess (2001:312) who submit that there are certain dilemmas facing those who have to deal with blood. Firstly, blood is often mixed with contaminants and other body fluids which may have an impact on the blood identification. Secondly, most blood evidence may be dried and may have been dried for extended periods of time.

Detectives were asked whether they should be able to superficially identify blood and the following responses emerged:

- Six detectives eluded that although it can be easy to tell that a certain liquid is blood, that observation should not be encouraged
- Two detectives felt that investigators could dangerously make conclusions about their observation
- The other two detectives saw nothing wrong on making assumptions as long as they can be verified at a later stage

Literature suggests that there is nothing wrong with the investigator's ability to make preliminary observation because if there were one rule or maxim for criminal investigators to follow, particularly when forensic evidence is involved, it would be this: follow the evidence trail carefully and completely (Savino & Turvey, 2005:178). A conflict exists between two detectives and Savino and Turvey (2005:178) as the detectives submitted that the detectives could make wrong conclusions about their observation. This means that investigators may make conclusions that will not help in the investigation of rape cases. On the other hand a detail is paramount to forensic

evidence and investigators must follow the evidence trail wherever it goes (Savino & Turvey, 2005:178). Literature holds more water in this regard as in practice, there is nothing new in suggesting that the police, crime prevention partners, community groups or any other agency with an interest should work hand in hand with science in dealing with crime (Smith & Tilley, 2005:25).

The identification of blood is completed by Vander, Sherman and Luciano (1998:376) who submit that blood is composed of cells and liquid called plasma. According to them, these cells are erythrocytes and the leukocytes, which refer to red and white cells respectively. It is empirical that although blood may take a form of different colours, it can still be identified as it carries certain cells and this then will require a certain skill which is ordinarily possessed by forensic analysts.

The forensic analysts were not asked to answer this question as it relates mainly to the people who are working on the field and further that a different interview schedule was developed for each sample.

During the case analysis, the photos on the docket showed that blood can be seen on different surfaces and in different forms.

- On three dockets, blood was photographed on its liquid form
- On four dockets, blood was seen as smears on the clothing of the victim
- On eight dockets, blood was photographed on the walls, carpet and furniture
- The rest of the dockets did not bear any picture of blood

This observation is not different from the summary of blood forms tendered by Van der Westhuizen (1996:121) which are as follows:

- Blood on and around the body of the victim
- Blood spots and splashes on walls and furniture
- Smears or trails of blood on floors

2.2.1.2.Origin of blood

According to Hazelwood and Burgess (2001:308), forensic laboratories must initially establish that an unknown substance is definitely blood and must differentiate

between animal and human blood. This is supported by Fisher (2004:210) who submit that to give meaning to blood collected at a crime scene, blood samples from victims and suspects must be routinely submitted to the crime laboratory along with the evidence. Other avenues must be explored in the meantime in order to avoid surprises. The origin of blood deals with whether it comes out of a human being or an animal. That is, species origin is simply a test to determine the species of animal from which a blood sample came (Fisher, 2004:211). Although in practice, the difference cannot be detected superficially, it is crucial that the investigator keep both possibilities in mind.

Both sets of respondents were asked why the origin of blood should be established and the following answers were given:

- Nine from both sets of detectives and analysts submitted that measures should be taken to ensure that the criminals did not plant the animal blood so as to foul the investigators
- Six from both sets of respondents have had an experience of collecting wrong blood and being under the pretext of success until the laboratory results proved otherwise
- One detective said that one day he thought that he will link the suspect to the case, only to find that the blood analysed was that of a chicken
- Four respondents from the total of both sets of respondents did not respond to this question. The reason provided by these respondents for inability to answer this question was that they never experienced a situation where the origin of blood had to be contested. According to them, each time they collected blood and sent for analysis, it came back as that of the human beings especially when they were dealing with cases of rape other than bestiality or cruelty to animals. From the researcher's point of view, it is submitted that in certain instances, the investigators are not as vigilant and observant as they are supposed to be.

The general feeling of the respondents was therefore that the blood should always be distinguished in the laboratory. They felt that there should be a specific test geared towards establishing this difference. These responses are comparable to literature. According to Fisher (2004:211), approximately two dozen different animal antisera

are commercially available for use in the species origin test...For criminal cases, the most often used antisera are human and domestic animal antisera such as dog, cat, cow horse and others. If one looks at the responses of the respondents and the submissions of Fisher (2004) one can conclude that there are lot of challenges relating to failure to establish the origin of blood. The failure to do that is not a sole problem, but made complex by the possibility of deciding to wait for the results of blood analysis and harbouring behind the belief that blood sent to the laboratory is really human blood. The myriad of court-imposed rules can limit police procedures concerning the collection and analysis of evidence and lead to exclusion of crucial evidence from the trial (Adams et al., 2004:1)

2.2.2. Semen

The presence of seminal fluids, and in particular spermatozoa, as argued by Horswell (2004:315), is of maximum importance because it is irrefutable evidence of sexual activity. According to him, the rich source of DNA contained in any spermatozoa heads can provide evidence of identification. This statement is echoed by Gilbert (2004:354) who submit that semen is the male reproductive fluid that normally contains spermatozoa, the male reproduction germ cells. According to Gilbert (2004:354) the presence and appearance of spermatozoa is highly important to the value of semen as a tracing clue, they are long structures with a rounded head giving the cells the appearance of a tadpole, cannot be seen without the aid of a microscope and are normally numerous in a fresh sample. Although some may see semen as a colourless liquid, it is difficult to conclude which colour it is as it contains a number of different chemical substances, including nutrients, buffers for protecting the sperm against the acidic vaginal secretions and prostaglandis (Vander et al., 1998:640). The submission of the previous authors is supported by Kobilinsky, Liotti and Oeser-Sweat (2005:36) who further submit that semen contains spermatozoa in a liquid medium known as seminal plasma. This fluid contains a variety of substances but is especially rich in acid phosphate, phosphorylcholine, and spermine.

Detectives were asked about what they understand by semen. The same question was repeated to the analysts and the following responses were recorded:

- Six detectives described semen as the male sperm cells which are commonly produced during sexual intercourse

- Two detectives said it is a mixture of sperms and pre-ejaculation fluid produced by males before, during or after sexual intercourse
- Two detectives said it is a colourless substance produced by male genitalia during sexual intercourse
- Seven analysts described it as male fluids which are produced as a result of sexual intercourse
- Three analysts mentioned the point that semen is just a fluid that can be produced by males even when there is no real sexual intercourse. These respondents further submit that semen may be produced during masturbation or hallucinations.

Most of the respondents submitted that semen is a fluid that is produced during sexual intercourse. Most of the respondents connected semen to sexual activity which may suggest that semen cannot be present when there was no sexual intercourse. Based on triangulation or comparison of responses from the respondents and literature, the most accurate response will be that of the last three respondents who recognise that semen may still be defined or described without reference to sexual activity. From the physiological point of view, and in support of these respondents, the prostate gland and seminal vesicles secrete the bulk of a fluid in which ejaculated sperms are suspended... This fluid plus the sperm cells constitute semen, the sperm contributing only a few percent of the total volume (Vander et al., 1998:640). The literature simply describes semen as a fluid which contains sperms. There is a clear agreement between the literature and the responses on the last bullet point above. The responses of the other respondents who connect the description of semen to the sexual activity stand to challenge as a person who is just dreaming and not really involved in sexual activity may still produce semen.

Both sets of respondents consisting of ten detectives and ten analysts were asked as to where can semen be deposited during the investigation of rape cases and the following responses were recorded:

- Fourteen from both sets mentioned that it can be deposited inside the victim's vagina

- Five from both sets mentioned that it can be deposited on the victim's and sometimes perpetrator's clothing
- One from both sets of respondents said that it may be deposited on different surfaces including the beds, carpets, seats and others

During the case docket analysis and specifically the analysis of J88 medical certificates, certain observations were made with regard to the deposits of semen:

- That in 33 dockets, the semen was found deposited in the victim's vagina
- In eight dockets, under the condition of the victim's clothing, it was recorded that the semen was found on the victim's clothing
- In nine dockets it was impossible to tell whether any semen was found, except that it could have been recorded inside the crime kit

Observations of the case dockets did not derogate completely from the submissions of respondents to the effect that semen may be deposited in the vagina as well as the clothing of those involved. In nine dockets, it was established that there will be cases where no deposit of semen may be found anywhere. Although the respondents did not necessarily mention that semen may be absent in certain instances, the vacuum created by nine dockets during case analysis may be valid as certain rapes can be committed through the use of condom and depending on whether the condom is taken away or not, one cannot conclude that semen will be available at every or most of the rape scenes. This is evident in the statement of Fisher (2004:330) who summarises reasons for absence of semen as follows:

- The time period between the rape and medical examination was too long
- The suspect wore a condom, or he penetrated but did not ejaculate in the vagina
- The doctor did not take an adequate sample

In addition to that Gilbert (2004:354) lists other factors which may lead to the absence of spermatozoa as follows:

- Improper handling may destroy spermatozoa due to their fragile nature
- Some suspects may have an aspermia condition- a lack of spermatozoa in their semen

- Spermatozoa may also be lacking as a result of venereal diseases that cause the germ cell to be eliminated

2.2.2.1. Identification of semen

Both sets of respondents were asked as to whose responsibility is it to identify semen and the following responses were recorded:

- Six detectives said that investigators on the scene of rape case are primarily responsible for securing the scene and give guidance as to what need to be collected and not to try to identify semen
- Four detectives felt that investigators must be able to make an assumption of whether a particular fluid is semen or not. This kind of assumption may not be accurate as it can only be confirmed through a scientific analysis
- Six analysts affirmed that the investigators must leave the identification of semen to the experts
- Two analysts felt that the detectives must possess a skill of superficially telling whether a particular deposit is semen or not as this can help in directing the person who will be collecting the samples
- Two analysts said that the identification of semen is solely the responsibility of analysts. According to them, allowing the investigators to do that will lead to many mistakes being committed in the process

There is confusion in terms of whose responsibility it is to preliminarily identify semen. In order to clarify this confusion, the researcher had to analyse the literature further in order to establish the rules when the identification of any evidence is concerned. According to Bell (2004:8) identification does not need comparison but it is a mere placing of an object within a particular class. It requires both visual examination and chemical tests (Bell, 2004:8). Out of these submissions, it becomes clear that there are two things involved in identification, namely the visual, as well as chemical examination. Since this statement is not clear on who should do what between the investigators and the analysts, the Policy on Crime Scene Management (2005:9-16) may be instrumental in clarifying this dilemma. The following is a summary of guidelines contained in that policy:

- The first officer at the crime scene must take control, protect and evaluate the crime scene
- The crime scene technician must identify, note and protect the possible physical evidence
- The crime scene processing team must record all physical evidence before it is collected
- The investigating officer must complete all necessary documentation for opening a case, manage the investigation team to gather information and maintain the investigation diary of the case docket.

In all these guidelines, it is not mentioned that it is the responsibility of the investigators to identify physical evidence. Although it is surprising that almost all the respondents did not refer to this policy, the policy goes a long way in addressing the discords of responsibilities of different individuals on the crime scene. It sounds as if it is difficult to identify semen with naked eyes on the scene of crime, especially since it is not colour specific. This and other factors emphasise the importance of the presence of other experts other than the investigator in the investigation of rape cases. The ideal will be that investigators must ensure that anything is collected from the scene of rape or from the victim to avoid the replication of mistakes. This is summarised in what is called ‘the cardinal rule for investigators who attend the crime scene’ as provided by Burns (2000:11). The cardinal rule goes “eyes open, mouth shut, hands in the pocket”. The conclusion is therefore that if the investigators are not charged with collection (hands in the pocket), they may not worry themselves with the identification of semen. This conclusion is frequent with the last bullet of responses as the respondents argued that identification of semen must be left to the forensic technicians.

The analysts were asked how semen can be identified in the scene of rape cases and the following responses were given:

- Seven analysts said that they use the laser light to detect it on the surfaces
- Three analysts mentioned that semen consists of lot of protein and that it is easier to use a serological method called P30.

This question was not posed to the detectives as it is established earlier that in fact, the identification of semen is not their responsibility. Jackson and Jackson (2004:126) give detailed explanation of the tests that can be used for the detection of semen. According to these authors, the scene can be searched using the ultra violet light and this may reveal the presence of semen. This test is called presumptive test as many materials, such as urine may produce the same effect. The second test is called P30 test which is more definitive as it uses serological methods to detect the presence of P30, a protein produced by the prostate gland (Jackson & Jackson, 2004:126). The submissions of these authors suggest that the identification of semen and spermatozoa should be left for the forensic analysts to deal with. The way in which semen is detected is universal across many countries including South Africa. The use of a laser light or an alternative forensic light may be very helpful in searching for semen-like evidence at the crime scene, since the fluorescent light makes it possible for semen to be detected as semen usually display a pale blue-white or orange fluorescence (Ogle, 2004:210). There is an agreement between the submissions of the analysts and the literature.

The dockets were perused in order to check whether semen was identified at the scene by the detectives and whether it was sent to the laboratory for identification. During the case analysis, the only information that could be solicited from the dockets was that in each case semen was collected from the scene of rape, it was sent to the laboratory for analysis. In 41 case dockets, semen formed part of the evidence collected by the Medical Practitioners and recorded as such in the Medical Certificates. It is only in 4 dockets where semen was collected from the place where rape took place and not from the body of the victim as with other cases.

- In 41 dockets, it was clear that samples, in the crime kit for sexual assaults were sent to the laboratory. There was no record of whether the investigators had attempted to identify any samples
- In 4 case dockets, it was indicated that semen was collected from the place where rape took place and was sent to the laboratory
- In five dockets the researcher could not even establish whether any samples were collected or sent to the laboratory

- None of the dockets had information regarding what type of test was used in identification of semen. The only information contained in the Section 212 certificate only confirmed the availability of semen and any other information except the test used

Detectives were also asked to give a superficial description of semen and different answers were uttered:

- Four detectives described it as a yellowish liquid
- Two detectives said it is a mucus-like liquid which is colourless
- Four detectives did not respond to this question

The same question was posed to the analysts and they provided few answers:

- Six analysts said it is impossible to superficially describe semen as its colour may change depending on the environment
- Two analysts said it is a colourless mucus-like liquid which will turn yellowish because of its protein content
- Two analysts said instead of superficially identifying semen, it can have a characteristic smell which can assist in preliminary identification

Although different answers were tendered there is no concrete difference between the two samples as far as the superficial description of semen is concerned. It is noteworthy that there was disagreement amongst each sample as to whether the colour of semen is always the same or not. The descriptions given in the second bullet under the detectives is in line with the description given by Gilbert (2004:354) who does not commit in terms of colour and rather give a description of spermatozoa instead of semen which is only described as a fluid. This line of argument is also found in the second and third bullet of the analyst's responses which do not attach a specific colour to semen. Although certain respondents gave colour, this is not supported by any available literature.

There is a total confusion as far as the identification of semen is concerned. This may be aggravated by the fact that there is no any specific colour connected to semen. The submissions of Vander et al. (1998:640) and Kobilinsky et al. (2005:36) confirms this

confusion as these authors do not provide any colour specification as far as semen is concerned. An alternative submission will therefore be that there is no specific colour given to the semen as it may differ depending on whether it is wet, dry or the type of surface where it was deposited. This is supported by the first bullet of the analyst's response which says the colour will depend entirely on a variety of factors. A good example is that a dry stain of semen on a piece of cloth will be white as observed by the researcher whilst a wet deposit will be completely different in colour.

2.2.2.2. Origin of semen

Just like blood and other biological exhibits found on the scene of rape cases, it is crucial to establish the origin of semen. Criminals are sometimes thinking ahead and this may have a ripple effect on our investigation if the investigators do not think alike. A good example of this is found in the Putten murder case as discussed in Newburn, Williamson and Wright (2007:307). In this case, a semen stain found on the thigh of the raped and strangled woman did not match the DNA profiles of the two suspects who had confessed to that crime. It was only fortunate that the court still convicted the accused amid the fact that the semen found was not incriminating them. It is therefore important to establish whether this semen came from a human being or an animal. The lesson from this example is that strange semen can be deposited to the victim or the crime scene in order to misdirect the investigation. It further provides caution that even if a reasonable deposit of presumed semen can be found, that does not conclude on all aspects surrounding the rape case under investigation.

Both sets of respondents were asked the importance of establishing the origin (whether it comes from humans or animals) of semen and answers were provided to that effect:

- Eleven of both sets of respondents felt that criminals will always be manipulative and will do anything to mislead the investigations
- Three of both sets said that investigators must always be vigilant when dealing with the samples obtained from the scenes of rape cases
- Three of both sets emphasized that the use of the serological tests mentioned earlier will need to be extended in such a way that the investigation is not

mislead by also failing to establish the origin of semen found at the crime scene or the victim

- Three respondents did not provide any answers to this question. The reason provided by them for declining to respond was that in their careers they were never deceived by the semen that was found on the scene of rape. This did not surprise because under demographic information, they had an average service of five to ten years of which only two was spent at the detectives.

The submissions of all respondent are common in that there is an agreement that the criminals will do anything to mislead the investigation and that the determination of the origin of semen remains vital in investigation of rape cases. This is in agreement with Gilbert (2004:354) who argues that semen located on the suspect is of the least value to the investigator, for its presence cannot document the criminal offence. However, it is the submission of the researcher that with the advent of DNA typing a decade ago which replaced the serological typing methods, the question of whether semen comes from a human being or an animal is of less relevance. It will be adequate just to prove that a deposit was a male genetic material from the suspect which will then prove sexual activity and subsequently individualisation.

2.2.3. Vaginal fluids and swabs

Both sets of the respondents were asked what they understood by vaginal swabs or fluids and the following responses became apparent

- Thirteen of both sets of respondent said it can be equated to semen as it is produced by females during the sexual activity
- Four of both sets described vaginal fluids as cells suspended in a liquid which are produced before, during or after the sexual activity or at a mere thought of sexual intercourse
- Three respondents from both sets said it is that fluid from a woman during the sexual activity which may harbour lots of clues such as strange hair, seminal fluid of the perpetrator and other clues that are very instrumental in investigation of rape cases. According to them this fluid or vaginal genetic material may be found on the body or the genitals of the perpetrator as a result of forced coitus interaction with the victim

It was interesting to note that all respondents attributed and linked the vaginal fluids and swabs to the victims of rape and women in particular. This submission confirms that rape is still defined to identify the woman as a victim and not anyone else. In addition to that these submissions are not far different from Kobilinsky et al. (2005:39) who confirm that vaginal fluids are somehow similar to seminal fluids as they also contain acid phosphates which can also be found in the faecal stains but in lower concentration.

The female reaction to sexual intercourse is characterized by marked vasocongestion and muscular contraction in many areas of the body as put by Vander et al. (1998:661). According to these authors, during intercourse, the vaginal epithelium becomes highly congested and secretes a mucus-like lubricant. The question of what can be found in the vaginal fluids is answered by Vander et al. (1998:663) who submit that after a minute or so after intercourse, some sperm can be detected in the uterus. Further than that, passage through the cervical mucus by the swimming sperm is dependent on the estrogen induced changes in consistency of the vaginal fluids. This successfully depicts the fact that the vaginal fluid is likely to be a carrier of “strange” clues that may be exchanged during rape therefore supporting the answer of the last set of respondents who attributed the importance of vaginal fluids mainly to the fact that they carry lots of other clues.

The last bullet of respondents raised an important point as they submit that during examination of the perpetrator, some vaginal genetic material may be found on the body or the penis of the perpetrator. This is due to the Locard principle and the fact that there was a forced penetration. It therefore means that there will be a cross-transfer of genetic material such as semen and vaginal fluids especially when vasocongestion and muscular contraction occur in the woman’s body (Vander et al. 1998:661).

2.2.3.1. Collection of vaginal fluids

The previous discussion proved that vaginal fluids will contain very instrumental clues that can assist in investigation of rape cases. This emphasise that it is very important to collect the vaginal fluid samples in such a way that these harbouring

clues remains intact. This statement is supported by Van der Westhuizen (1996:209) who submit that vaginal secretions can contain vibrissae and pubic hair which in turn offer possibility of hair examination.

The analysts were asked if they knew how the vaginal fluids or swabs were collected and the following answers were recorded:

- Three analysts said that the traditional way of using cotton tipped swabs was still used as the crime kits provided still contain those swabs
- Three analysts also confirmed the usage of cotton tipped applicators although they alluded that these applicators has been improved over time
- Four analysts submitted that the traditional swabs are still being used but that in addition, a vaginal aspirate is taken to supplement the carriage of a swab

The responses of analysts are in line with the submissions of Fisher (2004:329) who summarises the way in which the vaginal specimen should be taken. According to him a vaginal specimen is collected with two cotton-tipped applicators and a portion is smeared onto two microscope slides. This is similar to the responses of the first and the second three respondents. Since vaginal fluids looks like and contains water, it should be placed on a slide protector and not alcohol as this may deform the specimen (Fisher, 2004:329). He further mentions that vaginal aspirates are taken and that three to five cubic centimetres of sterile saline are used. This explanation of how the vaginal fluids are collected may sound outdated but it is not and is in line with the submission of the last two respondents. The main difference is that there is always a continuous improvement on theses collection methods and any completely new method is possible in an undetermined time period. It is worth noting that in South Africa; only post-coital swabs are taken from the victim. These swabs are no longer turned into smears as the contemporary DNA typing does not require that.

The detectives were not asked this question as in practice they are not allowed to be present during medical examination especially when they are of the opposite sex. The second reason why there are no responses from the detectives is that this question was deliberately not included in their specific interview schedule. The question did not deal with the significance of biological exhibits directly but on how the vaginal

smears are collected. This means that this research could not be jeopardised by this deliberate omission.

The analysis of case dockets could not provide any information on almost all of these samples and the reason for that is that the crime kits are used and this process is still seen as a doctor's process only. Apart from that, the crime kits are opened by medical doctors and closed by them to ensure the chain of possession. This means that it is difficult to access the information contained in the crime kits except when questions are posed to the forensic analysts.

2.2.4. Saliva

Saliva is a mucus-like liquid produced by the salivary glands into the mouth of the human being (Vander et al., 1998:552). According to these authors, saliva is concentrated with enzymes called amylase which can be assumed to be compatible with a particular blood group. This explanation is in agreement with Kobilinsky et al. (2005:39) who submit that saliva is detected chemically by the presence of one of its components called amylase. The strength of the usage of saliva in investigation of rape cases is that, it is always present. Locating saliva can be done more easily by interviewing the victims and witnesses in order to establish the course of events and the possible location of saliva. For instance, the witnesses may give a statement to the effect that a victim managed to bite or was bitten by the perpetrator. The information given by the witnesses may be further corroborated by observation of the crime scene and an eventual search of the crime scene. The reason for its omnipresence stems from its functions in the human system. Firstly, as asserted by Jackson and Jackson (2004:124) saliva cleanses the mouth and provides necessary lubrication. Secondly, it enables partly broken food to be formed into a ball in preparation for the swallowing. Thirdly, the enzymes found in the saliva helps in breaking down starch into maltose and dextrin. These functions bears evidence of the fact that each and everything, such as chewing gums, cigarette butts, handkerchiefs and others, which come into contact with mouth are likely to contain saliva. In addition, saliva is normally a carrier of epithelial cells which can provide adequate discriminatory evidence.

Both the analysts and the detectives were asked to give a superficial description of saliva and they provided different answers as follows:

- Four detectives and three forensic analysts said that saliva is a mucus-like liquid which is always found in the mouth of the human beings
- Three detectives and five analysts felt that it is easy to assume that a certain liquid is saliva because it is mucus-like and normally colourless. They said this was easier when the saliva was fresh and not yet dry
- Eight from both the samples of detectives and analysts described it as a watery substance found and produced in the mouth of the human beings
- Five from both the analysts and the detectives felt that it is dangerous to give a superficial description of saliva as it is common to many other excretions such as mucus, nasal discharges and even semen in certain instances

These responses are comparable to literature in the following way: although submissions by all respondents are somehow similar, the most convincing response is that of the last group who feel that the detectives on the crime scene should not take any chance. If anyone will make assumptions about the description of saliva they make themselves prone to confusion as saliva may not be completely different from other secretions. This argument is echoed by Kobilinsky et al. (2005:39) who attest to the fact that other amylase activity exists in semen, vaginal secretions, pancreatic secretions and faecal matter. It is the researcher's argument that although saliva can be similar to other secretions, identifying it is of no consequence as it is only required that the exhibit material should be identified and subsequently individualised.

2.2.4.1. Identification of saliva

In order to avoid mistakes during the scene investigation the forensic analysis is the only instrument which can identify saliva accurately. Saliva is liquid and this suggests that it may not be readily visible when it fell on certain surfaces such as loose soil, clothes, bedding and other materials with an absorbing capacity. However, it can be seen as a mucus-like liquid when it fell on hard surfaces such as cement floors, tiles, wooden, steel and other surfaces. The fact that saliva is watery is echoed by Jackson and Jackson (2004:124) who submit that saliva is 99% water and has a pH of between 6.8 and 7.0.

Both sets of respondents were asked as to whose responsibility it is to identify saliva and the following answers became apparent:

- Twelve from both sets of respondents said this task solely belong to the forensic analysts
- Three from both sets said that if the forensic field worker is called out to the scene he must do the preliminary identification which will then be confirmed by the analysts in the forensic laboratory
- Two detectives still felt that due to experience that they have acquired over time, they will be able to identify saliva. They said this is more possible when the saliva fell on a hard surface
- Three respondents did not respond to this question. In the analysis of the demographic information of these respondents, it became clear that their experience in the detectives was an average of two years. Two of them could not even remember that saliva was ever collected from a scene of rape that was ever assigned to them

These responses pose both similarities and differences with the literature. As with other exhibits, saliva forms part of the crime scene which its investigation is an inherent task of most criminal investigators (Gardner, 2005:1). Crime scene investigation is again as argued by Lee, Palmbach and Miller (2001:4), an investigation aimed at the crime scene, where the investigator seeks to discover all the aspects of the criminal activities at the crime scene, it is a process to locate and gather physical evidence from the crime scene. The statement of Lee et al. (2001:4) means differentiate between location and gathering of physical evidence. It therefore means that a good investigator will be able to preliminarily locate these exhibits and guide the forensic fieldworker on what is available and what can be collected. The respondents did not really differ on this aspect except that their responses did not state distinctively who will locate the exhibits and who will collect these exhibits.

The response of the two detectives, who submitted that they can preliminarily tell that a substance is saliva, shows that they do understand what identification is in this context. To them, identification in this context is looking at something and being able to tell what it is or name it. Fifteen respondents who want this to be left to the forensic

workers confused this question with identification as an investigative principle whereas it should be confined to a description of what has been shown or seen by an individual.

During the analysis of the case dockets there was no indication of situation where the investigators identified any secretion as saliva. All that was available was the letters written to the laboratory staff to analyse the secretion and check whether it is saliva, and if so, whether it could be individualized to anyone. The breakdown of dockets could not be made because although not all of them had a letter requesting the analysis of saliva, there was none wherein the investigators identified saliva themselves.

2.2.4.2. Origin of saliva

The detectives were asked why it is important to identify the origin of saliva and they provided the following answers:

- Four of the detectives declared that like any other biological exhibit discussed earlier, it is important to establish whether the saliva is that of the human being or not
- Three detectives said that the main reason for this establishment is that in all rape cases, perpetrators are human beings
- Three detectives said that criminals may place saliva from an animal on the scene of crime so as to escape successful prosecution or to mislead the investigation of rape cases

Literature suggests that biological fluids must be collected in a very careful and prescribed manner in order to ensure maximum benefit (Fisher, 2004:208). This statement is the same sentiments with the respondents as they all feel that with little care, the saliva in the scenes of rape may not yield benefits. The identification of the origin of saliva will ensure that saliva is collected before other exhibits and is kept accordingly before final usage since it falls within the category of evidence that is too fragile and can be lost easily (Horswell, 2004:27). There is therefore an agreement between the respondents and literature that the origin of saliva need to be identified to achieve maximum benefit (Fisher, 2004:208).

In contrast and since separate interview schedules were used, the analysts were asked if any DNA was detected from the saliva samples that they have analysed and the following responses were recorded:

- Six analysts said that the presence of DNA is very common in saliva samples
- Four analysts agreed that DNA is mostly present but the challenges are imminent because of the small quantities of saliva that are sometimes recovered from the scenes of rape or from the victims

The general feeling of the respondents is that the saliva collected from the scene of rape cases can be useful if DNA can be recovered from it and this is not different from the literature. DNA can be recovered from the nucleated buccal cells that are sloughed off the cheek and other parts of the mouth and shed in saliva, although the quantity of these cells contained in particular saliva deposit is unpredictable (Newburn, Williamson & Wright, 2007:366). This explanation is not in conflict with Jackson and Jackson (2004:124) who discuss the presumptive test for saliva. According to the presumptive test, a sample of the suspect stain is added to a soluble starch solution. The reagent iodine which reacts to the presence of starch is then added to the mixture. The colour reaction of the sample can then confirm or deny the presence of saliva.

The explanation of Jackson and Jackson (2004:124) is not sufficient as it does not include any challenges or successes relating to these tests. On the other hand, Newburn et al. (2007:366) submit that there are certain challenges in so far as test for saliva is concerned. In continuation, oral bacteria can degrade the DNA present in such cellular materials. This means that recovered items have to be analysed as soon as possible. DNA on partly chewed food has different degrees of success of extraction depending on the chemical content of the food. In the case of the chewing gum, there is a great dependence on the type of the chewing gum. In addition to the items that may carry saliva, saliva may also be found on beer or soft drink cans.

At this stage the purpose is not to look at what is the purpose of any of the biological exhibits. The discussion on identification and individualization will follow at the later chapters where the exact significance of biological exhibits is analysed.

2.3. SCENE OF RAPE

Both sets of respondents were asked what do they understand by the crime scene and both gave answers to that:

- Thirteen from both sets said that all crimes have place where they take place and this is known as a crime scene
- Four from both sets said it is a vessel where the crime took place which normally contain clues that will assist in investigation of the crime under investigation
- Two respondents from both samples said that a crime scene is that space where crime has presumably took place and which is officially declared the same as the first officer to arrive
- One respondent from a combination of both samples said that it is a perimeter determined by the first officer with the assumption that there will be useful clues which must be secured and protected against damage and destruction

Although put differently all answers of the respondents conform to definition of a crime scene as provided by Horswell (2004:2), who submit that a crime scene is the location or 'locus' of an incident. According to him, it may be readily apparent that the crime has indeed been committed whilst; in many situations one of the initial and primary tasks of the crime scene investigator is to determine whether or not a crime has been committed. The other definition of a crime scene is tendered by Gardner (2005:67) and Lee et al. (2001:2) who commonly agree that a crime scene is a place or area where an incident occurred and where the majority or a high concentration of evidence proving the majority of the elements of the crime under investigation may be found. The further understanding of crime scene as a concept is further contained in Gardner (2005:67-68) who classifies the scene of crime into primary and secondary crime scenes. A primary scene will be where there is a concentration of physical

evidence (Gardner, 2005:67) whereas a secondary scene refers to a place where the clues may be found without any emphasis on concentration (Horswell,2004:3).

It therefore means that the respondents who just said it is a place where crime took place are not accurate or in line with literature. It does not matter whether a primary scene is a place where the crime took place or where crime did not take place. The reality is that any place where there is a concentration of clues can be referred to as a primary crime scene. There is a little consistency between this response and the explanation given by literature. The critical question will be what if it is still unknown that crime has been committed? An alternative argument will therefore be that a place becomes a crime scene after a necessary determination has been made as put correctly by other sets of respondents as well as Gardner (2005:67) and Horswell (2004:3).

In rape cases, there are also certain places that can be seen as a scene. The reason for searching the crime scene is that the investigators expect to find evidence that can help in investigation of rape cases as argued by Adams, Caddell and Krutzing (2004:3). There is an exception to that expectation though. It is not always that the scene will provide all the answers to the questions that the investigators are asking themselves, but as suggested by these authors, the best place to start an investigation will always be the crime scene. In order for the investigators in rape cases to locate crucial biological exhibits, it will always be imperative to identify the scene of rape cases and search that as objective as possible.

Both sets of respondents were asked to tell at least one place where rape can take place and the following answers were given:

- Six from both sets mentioned ‘any vessel’
- Four from both sets mentioned the actual place such as the bedroom
- Two from both sets said the motor-vehicle is one of those scenes
- Two respondents from both samples said restrooms or toilets are also used in rape cases
- Three respondents from both sets mentioned the body of the victim
- One respondent from a combination of both samples said public places can be a rape scene

- Two respondents mentioned the body of the perpetrator

For the purposes of this research and in regard to the above answers and literature, particularly Horswell (2004:314) who instead of discussing scenes describe what need to be done during investigation, the scenes of rape will be classified into the actual place where rape took place, the body of the suspect and the body of the victim. This classification is based on the submissions of different authors. In any rape investigation, there are two scenes of crime, namely the location of the occurrence and secondly, the victims body (Carney, 2004:37). In contrast to the views of Carney (2004:37), Horswell (2004:37) extends the list by mentioning the body of the perpetrator as a crime scene in investigation of rape cases. According to Horswell (2004:314) there must be examination of the victim, perpetrator, as well as the collection and examination of physical evidence from the place where the incident of rape took place. This explanation coupled with the responses of the respondents, justify three types of scenes that will be discussed below. The reason for that is that whether it is a place or vessel, motor vehicle, toilet or public place, they can all be classified as a place where the rape crime took place.

During the docket analysis, different places were also established:

- In 16 case dockets, rape took place in the bedroom
- In 11 case dockets, it took place in the motor vehicle
- Two rapes were allegedly committed in the public toilets in the bars
- One case was committed in a public toilet of a filling station
- One was committed in the store room of a supermarket
- In four cases the victims did not know the place as the usage of drugs was suspected
- 15 cases happened on an open veld

Through triangulation one is able to establish that all three sources of data in this research mentioned same places as possible crime scenes in investigation of rape cases. That is, during interviews, different places were mentioned which were then confirmed by the analysis of the case dockets as well as Horswell (2004:37) and Carney (2004:37).

2.3.1. The place

According to Gardner (2005:87), the initial officers should clearly define the scope of the scene, identifying specific boundaries and reasons why areas were included or excluded in the initial perimeter.

Respondents from both samples were asked whether they considered a place where rape took place as a scene of rape and the following responses were recorded.

- 20 from both sets of respondents agreed that the place was a crime scene in investigation of rape cases

All respondents felt that this was more common as the victim will normally point out the place where the rape took place. These responses and the literature especially Lee et al. (2001:2) and Gardner (2005:67) conclude that it is critical for the investigator to establish as to where and under which circumstances did the rape take place. This list is added to by Horswell (2004:314) who asserts that many rape cases occur in dwellings, public places, such as halls, parks, or public transport facilities. It is therefore complicated to exclude innocent person who had had a legitimate access to the scene and might have had that access for a considerable time (Horswell, 2004:314). This emphasise the care that need to be taken, as well as securing when such scenes are searched for biological exhibits.

Both sets of respondents were asked to mention at least one exhibit that can be found at a place where rape took place that may be instrumental in investigation of rape cases and the following were responses:

- beer bottles were mentioned by nine respondents from both sets
- condom wrappers were mentioned by four respondents from both sets
- Three respondents from both sets mentioned used condoms
- Two respondents from both sets mentioned towels
- bedding was mentioned by one respondent from a combination of both samples
- Cigarette butts were mentioned by one respondent from the combination of both samples as well

From literature, the following items mentioned as a possibility in any place where rape took place:

- Blood (Fisher, 2004:208)
- Biological fluids such as blood and semen (Fisher, 2004:208)
- Hair, fibres, dirt, imprint, glasses and firearms (Newburn et al., 2007:208-310)

The researcher's interest and the significance if biological exhibits could not focus on whether there are similarities between what is mentioned by the respondents and what is in the literature but rather to establish whether a place where a crime took place can bear anything which may be of evidential value. There is therefore an agreement between literature and respondents to the fact that a place where crime took place will most probably have something that can be used in investigation.

During case analysis it became apparent that all cases had a place where rape took place except for five dockets where the usage of drugs was suspected and the victims could not tell the place where the alleged rape took place. The respondents and the case dockets further proved that there is also a touch DNA or epithelial cells where the DNA can be solicited. Since only a few cells are needed for a useful DNA sample, the table below illustrates where different epithelial cells can be located (<http://www.ncjrs.org/nij/DNAbro/what.html>).

Evidence	Possible location of DNA evidence	Source of DNA
baseball bat or similar weapon	Handle end	sweat, skin, blood, tissue
hat, bandanna, mask or balaclava	inside	sweat, hair, dandruff
eyeglasses	nose or ear pieces, lens	Sweat, skin, hair
facial tissue, cotton swab	Surface area	mucus, blood, sweat, semen, ear wax
dirty laundry	surface area	blood, sweat, semen

toothpick	tips	saliva
used cigarette	cigarette butt	saliva
stamp or envelop	licked area	saliva
tape or ligature	inside/outside surface	skin, sweat
bottle, can, or glass	sides, mouthpiece	saliva, sweat
used condom	inside/outside surface	semen, vaginal or rectal cells
blanket, pillow, sheet	surface area	sweat, hair, semen, urine, saliva
“through and through” bullet	outside surface	blood, tissue
bite mark	person’s skin or clothing	saliva
finger nail, partial finger nail	scrapings	blood, sweat, tissue

Table 2.3 (adopted from What Every Law Enforcement Officer Should Know About DNA: 1)

2.3.2. The body of the victim

Both sets of respondents were asked if the body of the victim can be considered a scene of crime in rape cases and the following responses came to the fore:

- 16 from both sets of respondents agreed that it was a scene of crime
- Four respondents from both sets agreed with the same statement but also mentioned that the body of the victim should not be seen as a sole scene.

Investigators must still visit the actual places where rape took place

In practice the victim of rape is taken to the district surgeon for examination. This examination is tantamount to the searching of the scene as the respondents earlier mentioned the body of the victim as a crime scene. Genge (2002:149), Savino and Turvey (2005:120) as well as Carney (2004:37) acknowledge in their studies that the body of a victim is a scene of crime in rape cases since it is believed that it is almost impossible for clues not to transfer from one body to the next during sexual intercourse. From the South African point of view, which may be classical, the act of rape consists of the penetration of the woman’s genital (vagina) by the male’s genital (penis) (Snyman, 2006:449). Although it is not necessary that the intercourse be

completed-and that the slightest penetration is sufficient (Snyman, 2006:449), rape is still a contact crime which makes the transfer of clues from one person to the next inevitable. The only difference is that the searching is done by the person of certain skills, qualifications and acumen. The remark of Horswell (2004:314) that a competent medical examination with suitable protocols will maximize the potential of any laboratory analysis through a collection of specific and crucial samples is true. The samples that can be collected from the body of the victim often include high vaginal, low vaginal, vulval, rectal swabs and smears.

There are few challenges with the victim's body as a scene of rape that the investigators must be aware of. The victims may be traumatized or psychologically deformed. According to Jackson and Jackson (2004:41), a crime scene is a changing environment and in order to ensure that maximum information is retrieved, the crime scene must be processed without any delay and taking into consideration the emotional status of the victims. Some of the victims may wash, clean their clothes, or comb their hair thereby destroying crucial evidential traces. In the final analysis, the clothes of the victim must also be collected, preserved and sent to the forensic laboratory.

Out of 50 dockets that were analysed the following breakdown was made:

- In 43 dockets, the victims were taken to the doctor for examination
- In seven dockets, it was clear that the investigators could not take the victims to the doctor as the cases were reported after a considerable time had lapsed between the commission of rape and the time it was reported
- The researcher could not establish whether any person was not sent for medical examination on the basis that they were under the influence of liquor

There is consistency between the results of the case dockets in this regard, literature and the responses of the respondents. The moment a victim is taken to the medical doctor for examination, one may assume that this will be done for the purposes of gathering evidence and not only for the treatment of the victim.

2.3.3. The body of the perpetrator

According to Horswell (2004:314), in addition to the samples taken from the victim, the samples must also be taken from the suspect if possible. This can be supplemented by items that have possibly been handled or otherwise handled by a suspect who must be swabbed for DNA analysis or fingerprinted. Both sets of respondents were asked whether they considered the body of the perpetrator as a scene of rape and the following answers were recorded:

- Four from both sets of respondents did not consider the body of the perpetrator as a scene of rape. This was exacerbated by the challenges associated with this scene
- Six from both sets said although it can be considered as a scene of rape, it is very rare to utilize as the suspect may deliberately clean all necessary exhibits in order to escape prosecution
- Ten from both sets of respondents said that the body of a perpetrator is indeed a scene of crime in investigation of rape cases

Since there were disagreements between the respondents, the researcher started to compare their responses with the literature so as to establish both consistencies and inconsistencies. Semen located and other fluids located on the perpetrator's body cannot on their own document a criminal offence (Gilbert, 2004:354). This statement does not actually say that the body of the perpetrator is not a rape scene but only pose some challenges as far as that scene is concerned. Horswell (2004:3) classifies the body of a perpetrator as a secondary scene of rape cases. Although there is a discord between Horswell (2004:3) and Hazelwood and Burgess (2001:262) who argue that the suspect body cannot be classified as a scene of crime of rape, since it is not the place where the crime has been committed, the researcher share the same sentiments with Horswell (2004:3) who classifies the body of a perpetrator as a secondary scene of rape cases. The researcher further disagrees with Hazelwood and Burgess (2001:262) who submit that the body of a perpetrator cannot be classified as a scene of rape cases. An alternative argument will therefore be that rape is a contact crime and there is a likelihood that the two persons will come into contact. Due to the Locard principle, which will be discussed later, and the definition of crime scene

which defines it as a place where clues may be found, it is the conclusion of this research that the body of a perpetrator is a crime scene in investigation of rape cases.

Analysts were asked whether they have ever analysed samples from the rape perpetrators in their daily duties and the following answers were provided:

- Six have analysed those samples but in a very rare cases. They equated these samples to one perpetrator sample to ten victim samples
- Two said they have only done it twice since they worked at the laboratory with an average service period of two years
- Two said they have never done any of those samples but said this does not mean that these samples are never received

The responses of the analysts may be true but may not give a clear picture of what conclusion to make. Since, the body of the perpetrator is a crime scene in rape cases, the responses may be affected by the fact that very few perpetrators may be arrested after committing rape. Secondly, another barrier to the accuracy of these responses may be that the investigators did not take the perpetrators to the doctor for medical examination. It means therefore that even if there is less experience of these analyses by the analysts, this does not change that a body of a perpetrator is a scene of rape case.

During the analysis of case docket it was clear that only seven perpetrators out of fifty dockets were taken to the doctor for examination. In terms of the documentation in the dockets, it became clear that five perpetrators were taken to the Medical Practitioners for the collection of reference samples for DNA comparison. This was clarified by the fact that these suspected perpetrators were only examined after a period of three months had lapsed since the rape case was opened. It was only in two cases where the perpetrator was arrested immediately and taken to the Medical Practitioner for general examination including searching for forensic genetic material. This number should not be misleading nor seen as minimal as not in all cases that an arrest was effected will a perpetrator be taken to court. In certain case dockets, the perpetrator was only arrested days after the commission of rape. This cannot exclude the body of the perpetrator as a scene but only means that the investigators must move

swiftly towards arresting the perpetrator of rape and take them to the district surgeon for examination (Jackson & Jackson, 2004:41). Samples that can commonly be found on the perpetrators include their clothing, smears, hair fibres and many other more Horswell (2004:3).

2.4. THE LOCARD PRINCIPLE

Both sets of respondents were asked what they understand by the concept “Locard principle” and the following responses were provided:

- Seven analysts said that rape is one of the contact crimes. This means that every time this crime is committed, two or more objects come into contact and transfer traces from one host to the next
- Three analysts said that commonly in rape cases, the suspect and the victim come into contact with each other and with different surfaces such as bed, carpets, bedding, car seats and others. During this contact, traces may be transferred from one person to the next and that this process is called Locard principle
- Eight detectives described Locard principle as a process whereby two objects exchange traces during contact, whether it is during rape, murder or any other crime
- Two detectives defined Locard Principle as movement of traces from one host to the next

The responses of the respondents are the same and echoed by Adams et al. (2004:3) who argues that it is possible that the perpetrator left something behind at the scene and took something away from the crime scene. According to Houck (2004:1) a French scientist Edmund Locard (1877-1966) believed that every criminal could be linked to the crime scene by the examination of transferred trace materials. He postulated his famous exchange principle which has been characterized by “every contact leaves a trace” (Houck, 2004:1). The discussion of Locard principle is successfully seconded by Fisher (2004:30) who comment that it is not possible for anyone to enter a place without changing it in some way, either by bringing something to it, or removing something from it. Sometimes the changes made to the

scene may be exceptionally small, but the course of an investigation may well hinge on their detection. The following statement from Newburn et al. (2007:320) compares and fits accurately with the responses of the respondents:

“No one can act with the intensity that the criminal act presupposes without leaving numerous marks in his wake; either the criminal will have left traces of his activity at the scene or, by an inverse action, he would have carried indication of his stay or his action in his body or on his clothing” (Locard 1923 translated in Newburn et al., 2007:320)

Both sets of respondents were asked about the relevance of Locard principle in investigation of rape cases and the following responses were recorded:

- Eleven of both sets of respondents felt that Locard principle makes the scene of rape cases very important in any investigation. Through the understanding of Locard principle, the investigators can reasonably expect to solicit necessary biological exhibits from the scenes of rape discussed earlier
- Nine from both sets said that rape is a contact crime and investigators can expect to find certain traces transferred from one host to the next

In literature it is clear that there is agreement with the respondents as far as the relevance of Locard principle is concerned. Although what Locard had in mind was presumably the transfer of microscopic traces such as dust, dirt, nail debris, fibres left or collected during the commission of crime, transfer principle, as is known today, is equally applicable to the things that can be seen by the naked eyes (Newburn et al., 2007:320). In addition to that, as the quotation from Locard suggests, transference may go either way (Newburn et al., 2007:320) which shows the relevance of Locard principle in trying to trace the perpetrators of rape.

Although one could sense that traces were transferred from one object to the next during the case analysis, it was impossible to solicit accurate data from the analysis of case dockets. The reason for that is that the statements from the forensic analysts did not specifically state that a certain item was originally from which host. All what was contained in the statements was that a particular item was received and analysed and

that it was linked to the other sample or control sample. The researcher was therefore unable to solicit any data from the case analysis in this regard.

This means that the first officer's action or inaction may affect the future of the investigation. In the context of rape investigation, the above argument is true. There are a lot of many small traces that can assist the investigators in investigation of rape cases. One can imagine hair fibres, seminal or vaginal smears, saliva and other biological exhibits that can assist in investigation of rape cases.

2.5. SUMMARY

Biological exhibits such as blood, semen, saliva and vaginal secretions are more likely to be present at the scene of rape cases. It is important for the investigators to be aware of the identification and origin of these biological exhibits. It is imperative however, that the investigator's awareness of these biological exhibits is only preliminary and that the later forensic laboratory tests override their preliminary observation in accuracy. Biological exhibits or evidence is normally found and collected from the scene of rape. In certain instances, biological evidence is collected from other objects found at the crime scene such as baseball bats, hats, cigarette butts, cool drink cans and others which normally carry epithelial cells or what is called touch DNA. For the purposes of this research, the scene of rape consists of the body of the victim, the body of the perpetrator, and the actual place where rape took place. The connection between biological evidence and the scene of rape is created by legitimate expectation that evidential clues are transferred from one object to the next during contact as advocated for by the Locard principle. These facts were gathered from the interviews, literature as well as the author's experience in the investigation field.

CHAPTER 3
ADMISSIBILITY OF EVIDENCE DERIVED FROM THE ANALYSIS OF
BIOLOGICAL EXHIBITS

3.1. INTRODUCTION

Due to the current legal development, especially the Constitution of the Republic of South Africa (Act 108 of 1996) in South Africa, it is of utmost importance to observe legislation when investigating any crime. This includes the manner in which the complainants, witnesses and suspected persons are handled. The observation of relevant legislation becomes more important when dealing with crimes against the person, such as rape. The victims of rape are normally vulnerable, bitter and should be handled in a particular manner. On the other hand Act 108 of 1996 deals with the rights of arrested; detained and accused persons. Reflections on the ideal relationship between the state and the individual concern the composition, powers and functioning of the organs of the state, as well as the balance that should exist between the common interests and the individual interests (Rautenbach & Malherbe, 1999:9). Since the Constitution is the supreme law of the land, any law or action which is inconsistent with the constitution will be null and void. The supremacy of the constitution means that evidence collected for the purposes of investigation must be done justly, fairly and within the ambit of the law.

It is against this background that this chapter looks at the admissibility requirements of evidence derived from the analysis of biological exhibits. This discussion will be more specific as it will not look at other evidence but biological evidence. The discussion starts of by looking at the chain of custody and collection of biological evidence within the applicable law. The rights of suspected, arrested and accused persons will be discussed and this will be followed by an extensive discussion of the relevance and cleanliness of biological exhibits. In the final analysis, the research looks at the processing of the crime scene which includes the collection, preservation and packaging of biological exhibits.

3.2. ADMISSIBILITY OF BIOLOGICAL EVIDENCE

Before any evidence can be presented in the court of law, there must be efforts to ensure that it is admissible (Bell, 2004:6). A clear description of what is admissible evidence is given by Van Rooyen (2004:244) who submit that admissible evidence is competent, relevant, of credible substance and significant to the case at hand.

Both sets of respondents which consist of ten detectives and ten analysts were asked to mention at least one factor that need to be considered in order to ensure that evidence is admitted in the court of law and the following responses were recorded:

- Seven analysts mentioned that the chain of custody must be maintained
- Three analysts submitted that evidence must be constitutionally obtained
- Four detectives submitted that evidence must be relevant
- Four detectives mentioned the fact that evidence must not be contaminated and its integrity must be intact
- Two detectives submitted that the evidence must be conditionally admissible in that it should be repairable during the trial

The researcher deduced the fact that analysts are more concerned with the integrity of samples while detective's interest is more on how the samples should be obtained from the people involved in investigation of rape cases. This is not surprising as compliance to rules is important from the beginning of the sampling process until the samples are analysed and presented in the court of law as evidence. The literature supported some of the submissions of the respondents. In the decided cases of *S v Baleka* (1) 1986 (4) SA 192 (T) and *DPP v Kilbourne* 1973 AC 729, the issue of relevance of evidence was emphasised and it was held that evidence is relevant if it is logically probative or not probative of some matters, which require proof. The respondents whose responses are recorded on bullets two and three were echoed by Section 210 of the CPA which state that no evidence as to any fact, matter or thing shall be admissible which is irrelevant and immaterial and which cannot be used to prove or disprove any point in issue at the court proceedings. Due to the submissions of the respondents coupled with the literature the following admissibility requirements will be discussed:

- Chain of custody
- Constitutionally obtained evidence
- Relevance of evidence
- Uncontaminated evidence

3.2.1. Chain of custody

Chain of custody is an admissibility requirement for all types of evidence and particularly the biological evidence. Van der Westhuizen (1996:3) submits that the relevant information must be collected and preserved in such a way that its legal integrity is maintained. According to him, maintenance of continuity of possession is of vital importance in the evidential process and this simply means the continuous safekeeping and identification of physical evidence. Chain of custody is an account of changes in evidence, noting, for an example, if any portion had been used for laboratory analysis and this begins as soon as the evidence has been found at the scene until it is produced as evidence or proof in court (Swanson, Chamelin & Territo 2003:33). From the moment that an item is collected from a crime scene to the moment it is introduced in the court room as evidence, a lengthy period of time may elapse. The possession, time and date of transfer and location of physical evidence from the time it is obtained to the time it is presented in court are all encapsulated in the chain of custody (Kobilinsky, Liotti & Oeser-Sweat 2005:43).

Both sets of respondents were asked to mention at least one guideline on how to maintain the chain of custody and the following responses were recorded:

- Ten respondents from both sets mentioned that the number of people coming into contact with the biological exhibits must be limited
- Six from both sets submitted that there must be a clear record keeping of all those who come into contact with the samples
- Four from both sets said that anyone who comes into contact with the biological samples must make a statement to that effect. According to them, investigators must use the seal bags provided

by the Supply Chain Management of the Police in order to facilitate the chain of custody

These responses were compared with literature and it became clear that they touched on most of the guidelines as contained in the literature. According to Van Rooyen (2004:12), the following guidelines can ensure the maintenance of a chain of custody:

- Any changes to the evidence must be recorded and later reported in the courts
- Once evidence leaves a possession of an individual, a recording must be made
- Obtain a signed receipt from anyone accepting the sample
- Limit the number of people who handle the evidence
- All people who handle the evidence must affix their names and assignment to the package
- When evidence is returned establish any changes to the evidence

Although the respondents mentioned only few guidelines, all of them are in line with literature except for the one who said that the statements must be obtained. That submission is an ideal and not wrong. Statements must be always obtained although in a case of a Client Service Centre, administrative burden may be experienced. But still, those statements must be obtained in spite of the possible problems. The only exclusion to obtaining of statements exists where samples have been properly marked and sealed but are handled by a variety of people such as post or courier officials. There is no requirement that the details of these people should be recorded. This is reasonable; as such requirement could have caused a serious administrative burden. It is the view of the researcher that this exclusion cannot compromise the chain of custody as proper marking and sealing are overemphasised.

Both sets of respondents were asked why it is important to maintain the chain of custody when investigating the rape cases. The following answers were given:

- Five from both sets said it ensures the authenticity of evidence produced in court

- Four from both sets felt that the chain of custody is important for administrative purposes and to ensure that the whereabouts of the samples are always known.
- Three from both sets said that the chain of custody ensures that the material admitted in court is indeed the one that was retrieved from the crime scene. It ensures that evidence was not tampered with
- Two from both sets said that the chain of custody proves that the third party or any other person who come into contact with the sample declare how it was stored and handled during transportation
- Two analysts attested that the chain of custody will assist in differentiating the environmental impact and mishandling of samples. According to them, one will be able to tell if other factors such as temperature and light may have degraded the sample.
- The last four from the sets of detectives and analysts submitted that the integrity of samples must not be deliberately compromised and that the chain of custody ensures that integrity remains intact

The responses of the respondents are comparable to the lessons that can be solicited from the case of *S v Kaptein* 1984 (3) SA 316 (CPD). These lessons are:

- All exhibits must be handled with care
- An accurate record to be made each time these exhibits are moved, handled or come into contact with other person
- Exhibits should be properly marked and have sufficient and accurate record of measurements of quantity and weight
- Few people must be allowed to handle any exhibit

In this case the court held that the chain of custody was compromised after the pharmacist who was giving an expert testimony measured the weight of dagga to 738 grams instead of the original recorded mass of 745, 5 grams. In this case further confusion was caused by flawed marking of the exhibit and lack of accountability by the members of the South African Police Services. The findings of this case also indicate that the guidelines provided by Van Rooyen (2004:12) were not adhered to.

During the case docket analysis the following breakdown was made:

- 43 out of 50 analysed contained statements which indicate the route of the samples. Majority of those dockets had statements indicating how the crime kits were handled, stored and sent to the laboratory. Equally, the correspondence from the laboratory also indicated whether the samples were analysed immediately or whether they were kept behind lock and key.
- The remaining seven dockets did not portray such statements but the reason was that the victims were not taken to the doctor and the suspects were also not taken to the doctor for the taking of samples.

Most of the submissions are in agreement with Kobilinsky et al. (2005:43) who made an example of the argument made in the case of OJ Simpson (California v O J Simpson BA097211). In this case, although not South African, there were issues raised by the defence with respect to the quantity of blood collected from the suspect and the quantity of blood that remained in the tube when it was admitted into evidence. Due to the discrepancy, the defence argued that the missing blood was used to plant evidence. It is therefore clear that if the chain of custody is not clearly maintained, the court is likely to dismiss such evidence.

3.2.2. Constitutionally and legally obtained evidence

The most important facets that surfaced during the interviews are that there must be consent given in each case where biological samples are collected from any person. In addition to that, the task of collecting biological samples from any person must be performed by a Medical Practitioner or a registered nurse. Consent by the person from whom the samples are to be taken is of utmost importance. This is clearly recorded in a form called SAPS 308 which accompanies the J88 Medical Certificate. The SAPS 308 can prove to the attending Medical Practitioner that the person consented to the taking of the sample. Consent is also encapsulated in the decision of *S v R and Others* 2000 (1) SACR 33 (W) where it was held that the fundamental test for the admissibility of evidence was its relevance and that the evidence must be obtained constitutionally. Evidence would not have been obtained constitutionally if the involved person was not given a chance to give consent. This is true as there is a need

to strike a balance between the rights of those suspected of committing a particular crime and those who are the victims. In *S v Makwanyane* 1995 6 BCLR 665 (CC), Madala J said that the task of the court call for the balancing of the interest of the society against those of the individual, for the maintenance of law and order, but not for dehumanising and degrading of the individual. The statement of the judge in this case is also echoed by Rautenbach and Malherbe (1999:9), who submit that the question of fairness also deals with the substantive balancing of state and individual rights by a particular rule of law. The spirit of these arguments is that although a person can be suspected of rape, no one will be justified to treat that suspect inhumanely when collecting the biological exhibits. It must be borne in mind that these samples may be collected from surfaces, but these arguments refer to a scenario where these samples are collected from the human beings.

Both sets of respondents were asked to mention any legal consideration as far as obtaining of biological exhibits is concerned and the following responses were recorded:

- ten respondents from both sets said that the evidence must be taken in a humane way and in accordance with Section 37 of the CPA
- Six respondents from both sets of the respondents submitted that those from whom the samples are to be taken must be informed of the reasons and information about the charges against them
- Four respondents from both sets of respondents mentioned that everyone shall have a right against illegally obtained evidence in accordance with Section 35 of the constitution, which include a fair trial

The first response which refers to Section 37 of the CPA which provides for the ascertainment of the bodily features of an accused person is in line with the submission of Steytler (1998:97) who submit that this section must be observed in order to ascertain a certain condition or for evidential purposes. According to Steytler (1998:76) the police may use force in effecting a number of investigative procedures, such as taking fingerprints and taking of blood samples. The question that remains is whether taking blood would not infringe upon the general right to 'be free from all

forms of violence'. This question was answered in the case of *S v Huma* (2) 1995 2 SACR 411 (W) where it was held that although taking of blood involves the rapture of the skin and accompanied by a small element of pain, that is done in pursuance of a legitimate objective of evidence gathering and does not amount to violation. The case of *S v Huma* laid down very important guidelines as far as Section 37 of the CPA is concerned. These guidelines are summarised as follows in Steytler (1998:76):

“The taking of blood is by its very nature a physical intrusion, as the imposition of such pain is neither subjectively or objectively intended to be cruel, inhumane or degrading but is done in pursuance of the legitimate objective of evidence gathering, there would be no violation of Section 12(1)(e) of the 1996 constitution”

The second bullet of respondents submitted that those from whom the samples are to be obtained shall have a right to be informed of the charge. This submission is echoed by Joubert (2001a:86) who argue that the law jealously protects the personality and rights of individuals such as body, freedom, honour and others. Section 35(3) of the 1996 Constitution provide that every accused person has a right to a fair trial which include the right (a) to be informed of the charge with sufficient details to answer to. The whole rationale behind this provision is that the accused persons must make an informed consent.

When the case dockets were perused, it was found that only six dockets out of fifty had the consent forms signed by the suspects. This number cannot be seen as minimal as in other dockets; the suspects were not taken to the doctor for obtaining the samples. This means that one cannot conclude that detectives do not allow the suspects to consent, as the suspects are not always taken to the doctor.

The responses given by the respondents conclude that the suspects have a right to sufficient information about the allegations and in this case, rape against them. The emphasis of this right is found in a statement by Steytler (1998:225) that Section 35(3) (a) should be read with Section 35(4) which provides that whenever Section 35 requires information to be given to a person, “that information must be given in the language that the person understands”.

The third bullet of respondents mentioned that the individual have a right against illegally obtained evidence. The requirements of a fair trial can only be achieved if the evidence was obtained legally during investigation as submitted by the third category of the respondents. This includes the collection of biological samples, such as blood, saliva, semen and others. In the case of *S v Mvelase* 1996 8 BCLR 1055 (N), the court held that an infringement of any of the rights enumerated in Section 25(3) of the interim Constitution, which correspond to Section 35(3) of the 1996 Constitution, which sets out the rights for a fair trial, has the same effect as a fatal irregularity which derails the criminal proceedings as a whole. This legal implication means that it is envisaged that the evidence obtained in an unconstitutional manner should be excluded (Devenish, 1999:536).

The dockets were not perused in this regard. The reason for that is that most of the dockets did not carry the court report. It could not be established therefore whether any evidence in those dockets was dismissed on the ground of unconstitutionality.

Section 35(5) of the 1996 constitution provides that evidence obtained in a manner that violates any right in the bill of rights must be excluded if admission of that evidence will render the trial unfair or otherwise be detrimental to the administration of justice. The responses of the respondents are accurately in line with the provisions of this section. This is conclusive in spite of the fact that certain respondents did not refer to the bill of rights but to the constitution in its totality. There is nothing wrong with that as the constitution and its spirit must be upheld at all times. In *S v Soci* 1998 (3) BCLR 376 (E), it was held that the two criteria for the exclusion of evidence are fairness and maintenance of standards of the administration of criminal justice.

3.2.3. Relevant evidence

According to Schwikkard and Van Der Merwe (2002:20) evidence must be relevant before it can be admissible. Both sets of respondents were asked what do they understand by relevant evidence and the following responses were recorded:

- Eleven from both sets of respondents submitted that relevant evidence is that evidence that addresses what it ought to address in investigation of a particular case

- Nine respondents from both sets described relevant evidence as that evidence which is significant in proving or disproving a particular case

These responses are comparable to literature and most importantly to legislation as well. According to Bell (2004:6) admissible evidence is relevant and reliable. This further echoed by Joubert (1999:332) who argues that evidence can be irrelevant if its evidential value is too insignificant to make a contribution to proving or refuting any of the facts in issue. Section 210 of the CPA deals specifically with the relevance of evidence. Relevance is an admissibility issue as Van Rooyen (2004:245) submit that for any evidence to be admissible, it must be relevant. In *S v Baleka (1) 1986 (4) SA 192 (T)* the court held that the primary test used for admissibility has to do with relevance of evidence tendered in any court of law. The above comments of the court were actually a repetition of another case of *DPP v Kilbourne 1973 AC 729* wherein the court remarked that relevant evidence is probative or not probative of some matters which require proof. In a day to day investigation of rape cases, it is conclusive of this research that the investigators cannot collect a totally irrelevant piece of evidence and attempt to use it in proving that rape took place. Such evidence will be inadmissible and will not assist in investigation of rape cases.

3.2.4. Uncontaminated evidence

The crime scene investigation is characterised by three essential conditions for success and these are: organisation, thoroughness and caution (Fisher, 2000:53). The fact that those who handle the exhibits must do so with caution also means that the integrity of exhibits must not be compromised or contaminated. Both sets of respondents were asked what they understand with the contamination of exhibits and the following responses were provided:

- Seven respondents from both sets said this is when the investigators mishandle the evidence and having their own traces transferred to the samples in the process
- Six respondents said that contamination normally happen when those handling the samples fail to wear protective gloves

- Four respondents from both sets said that contamination is when the investigators delays to get to the scenes of crime until the weather conditions such as winds and rain affect the original state of the exhibits. According to them, these factors may include degradation by means of high temperatures and moisture on the exhibits
- Three respondents from both sets submitted that contamination means a change to the exhibits as a result of uncontrolled and uncoordinated activities at the crime scene

These responses are echoed by Gardner (2005:347) who argues that during the interpretation phase the analyst expect to analyse evidence that is clean, separate and specific. This means that physical evidence must be handled in such a way that it reaches the Forensic Science Laboratory undamaged and uncontaminated. Gardner (2005:75) argues that the investigators are not exempted from the Locard principle which means that their actions can also have an impact on the scene and on the integrity of biological exhibits. The investigators must therefore minimise the handling of possible exhibits. The conclusion will be that contaminated evidence cannot be admissible in court as also summarised by Pepper (2005:13) who submit that considering the ever-increasing importance of physical evidence in the detection and prosecution of crime, the skills and abilities of the investigators are crucial to any investigation. The respondents recorded on the third bullet raised an important point as they submit that degradation may also be a result of high temperatures and moisture. This means that the investigators must not transport exhibits in the boot of vehicles over long distances or during a hot day. Contamination may therefore occur at any stage of the handling of exhibits. This includes exposure to moisture or packaging exhibits whilst still wet or not dried where required. Due to the importance of ensuring cleanliness of exhibits there are certain guidelines provided by Horswell (2004:19) that can prevent contamination. These guidelines are:

- Gloves must be worn when collecting biological exhibits as this will prevent perspiration from the collector's hands from contaminating the samples
- All collection equipment must be clean when collecting the exhibits
- In addition, Ogle (2004:270) submit that access to the crime scene must be limited to the crime scene personnel only and,

- Evidence must be protected from any possible contamination by weather condition

3.3. PROCESSING OF THE CRIME SCENE

Processing of the crime scene is having a serious bearing on whether the biological exhibits collected from that scene and the evidence thereof will be admissible or not in the court of law. According to Gardner (2005:1), the purpose of processing the crime scene is the express recovery of physical evidence and documenting such which is an inherent task associated with investigation. This processing must be done methodically, systematically and most importantly with due consideration to the legal and scientific aspects of investigation (Fisher, 2004:75). There is no doubt, whatsoever that failure to observe legal and scientific requirements of scene processing will render evidence inadmissible.

Both sets of respondents were asked to give a description of what is processing of a crime scene and the following responses were recorded:

- Fourteen respondents from both sets of the respondents said it is the total actions of the investigators in the crime scene
- Four respondents from both sets said it deals with searching of the scene for important clues
- Two respondents described it as steps of investigation once one get to the crime scene

The researcher could not establish differences between the responses of different respondents. In comparison with literature, Jackson and Jackson (2004:12-13) describe the processing of scene as the sum total of activities performed at the crime scene. Regardless of who processes the scene, the goals are the same: protect, document, preserve and collect and furthermore, those charged with that duty must endeavour to protect it from contamination and damage until the collection begins (Savino & Turvey, 2005:65). From the description of the respondents and the submissions of the authors especially Savino and Turvey (2005:66), it is clear that the processing of the rape crime scene consist of the following:

- Collection of biological exhibits and other exhibits
- Observation of guidelines on how to collect evidence
- Packaging of evidence or preservation

3.3.1. Collection of biological exhibits

According to Horswell (2004:27), the collection of exhibits encapsulates assessment of the scene, documentation as well as searching for the exhibits. This process is very difficult because there are many considerations that must be taken in order to ensure that the evidence collected still satisfy the admissibility requirements as pointed out by Lee et al., (2001:132). Apart from that difficulty, it is at this stage where the scene of crime, or in this instance, of rape will be changed forever because as the clues are being collected from the scene, that scene will not be the same again as put by Gardner (2005:77). It is against this background that the collection of exhibits can build or break the case as it will determine the admissibility of evidence collected. Both sets of respondents were requested to give a brief description of collection of biological exhibits and different responses were tendered:

- Eleven respondents from both sets of respondents saw collection as removal of exhibits from their original position in preparation to send them to the laboratory for analysis
- Five respondents from both sets described collection of exhibits as identification, documentation and removal of exhibits from the scene of crime
- Four respondents from both sets of respondents described collection of biological exhibits merely as taking the samples from the scene of rape, by starting with the fragile ones such as blood and semen to avoid possible damage

These responses were compared with literature and it became obvious that investigators do possess enough knowledge about the collection of biological exhibits. Majority of the respondents, particularly those whose responses are recorded on the first bullet recognised that physical collection must be preceded by assessment and adequate recording as argued by Van Rooyen (2001:56). On the other hand, the third bullet of respondents touched on the methodical manner in which collection must be

done to ensure sequence and prevent destruction of exhibits as alluded to by Fisher (2004:208). According to Savino and Turvey (2005:80) biological material such as blood, semen, saliva and other excretions may be found on any surface of the crime scene until proven otherwise scientifically. The responses of all respondents were satisfactory in terms of the brief description of what is the collection of biological exhibits. Due to this state of affairs, the next section deals with the guidelines on how the biological exhibits should be collected.

3.3.2. Guidelines when collecting evidence

Fisher (2004:208) agree that the biological exhibits such as blood and semen are very fragile and can be easily destroyed hence it is advisable that it is collected first before other physical evidence can be collected. Horswell (2004:27) add to that statement by submitting that fragile evidence is collected first in order to prevent damage and contamination. All these statements conclude that there is a need to follow certain guidelines in order to maximise the evidential benefit of biological exhibits. Both sets of respondents of respondents were asked to mention at least one guideline as far as collecting of evidence is concerned and these are the responses:

- Seven respondents from both sets said that the first responding officer must cordon off the scene
- Six respondents from both sets of respondents submit that movement in the rape crime scene must be controlled
- Five respondents said that wet samples must be dried before packaging
- Two respondents from both sets said that collection must be done in a sequence starting with the most fragile

Although sufficient consistencies cannot be established between the respondents and literature, the researcher was attracted by the submissions of Savino and Turvey (2005:83) that highlight the following as guidelines when collecting biological exhibits in rape cases:

- Victims and suspects alike must be examined in a hospital or a physician's office using standardised sexual assault evidence collection protocols

- Items of suspected biological transfer evidence must be collected through the use of hand gloves to prevent contamination
- These items should not be collected as an aggregate and thrown into a single plastic
- Change gloves before collecting each item of evidence
- Endeavour to collect an entire object if possible
- When collecting wet or only partially dry items, roll or wrap them first in clean paper

It is worth noting that all these guidelines are not the ‘nice to have’ but are absolutely needed to prevent miscarriage of justice and will ensure the achievement of this quotation: “truth is always in harmony with herself, and is not concerned chiefly to reveal the justice that may consist with wrong-doing” by Herman Melville in Savino and Turvey (2005:65).

The Management of Exhibits (2005:7-8, 11-12) summarises the A-Z steps of how the biological exhibits should be collected on the scene of crime. These steps are:

- Wear the latex or other gloves each time during the collection of exhibits
- All exhibits in the crime scene must be treated with care to avoid trampling upon or destruction thereof
- The position of exhibits must be marked properly and this can be done through the use of cones
- Exhibits must then be photographed on the original position before they are lifted
- After photographing, the exhibits can be lifted up one by one
- Start with the most fragile exhibits such as blood, semen, saliva and others finishing off with hard pieces of evidence
- Each and every exhibit must be placed separately in an appropriate packet. For instance, the wet ones into the plastics after being dried

These steps are not different from other literature as each step could be found in the submissions of Pepper (2005:102); Nickell and Fisher (1999:32); Fisher (2004:328); Gilbert (2004:336) and Ogle (2004:212).

In the investigation of rape cases, the collection of biological exhibits will not be complete if no reference is made to the body of the perpetrator and that of the victim. Literature summarises the collection of biological exhibits from the bodies (Fisher, 2004:329; Hazelwood & Burgess, 2001:375). The following points are crucial as far as the collection of exhibits from the human bodies is concerned:

- Medical personnel are the ones who can collect these exhibits
- The medical personnel will use the Sexual Assault Evidence Collection Kit (SAECK) as alluded by Hazelwood and Burgess (1999:63)
- Smears and swabs will be obtained from the person and this should preferably be done within 72 hours (Savino & Turvey, 2005:120)
- These swabs will be taken mostly from the vaginal area and any other area where the suspect may have ejaculated
- The medical personnel may decide to include the victim's panties in the SAECK as the clothing may contain evidential traces (Ogle, 2004:147)
- When the medical personnel are done with the collection they will then seal the SAECK as per the instruction provided on that kit

Since most of the sources used are of International standing, the researcher opened a SAECK and looked at the instructions provided for the medical personnel inside the kit. It became clear after this perusal that the steps provided by those authors are accurately similar to how the collection is done in South Africa.

3.3.3. Packaging and preservation of exhibits

Packaging of samples is very important in admissibility as it have a direct impact on the integrity of the samples. For instance, Savino and Turvey (2005:83-84) submit that the packaging should be done in such a way that the exhibits are able to 'breathe'. These authors argue that plastic enclosures will cause condensation of moisture and promote bacterial and fungal growth when packaging wet exhibits. It is empirical that the results from a sample affected by bacteria and fungi will be challengeable in any court of law.

Both sets of respondents were asked how they think the samples should be packaged and the following responses were recorded:

- Seven respondents from both sets submitted that separation of samples during packaging is an absolute must
- Six respondents from both samples felt that packaging of wet material must be different and separated from the dry samples
- Four respondents from both samples suggested that where possible, the whole surface where a biological material may be deposited should be packaged and sent as it is to the laboratory
- Three respondents from both sets felt that packaging should be done in such a way that the samples are properly sealed and cannot be accessed illegitimately during transportation or anytime between collection and analysis

The responses of the respondents are in line with the submission of Fisher (2004:89) who elaborates that a proper packaging of samples will prevent breakage, spoilage or contamination. These sentiments are shared by Erzinqliouglu (2000:41) who believe that when packaging the sample there must be no doubt as to the history of it and that a chain of custody should be maintained by keeping a record of signatures on the package. The question remaining is how packaging is relevant to the admissibility of biological evidence? This question is adequately answered by Van Rooyen (2004:106) who state categorically that correct packaging and sealing of physical evidence largely determine the integrity of that evidence.

In the final analysis, Savino and Turvey (2005:83-85) give a clear guideline on how different samples of biological exhibits should be packaged in order to withstand the admissibility challenges. The pointers are the following:

- When collecting wet or only partially dry items, roll or wrap them first in clean paper, and then use paper bag to package them so as to allow ventilation
- Dry items containing biological deposits must be wrapped in a clean paper and then placed in a paper bag
- Biological deposits on a pliable surface such as cloth, rubber or paper can be folded in some way but not across the deposit for the purposes of packaging

- Scrapping can be used to remove dried, crusted stains from smooth surfaces, putting it on a paper which will be folded and can be placed in an evidence envelope (Savino & Turvey, 2005:83-85)

The integrity of exhibits will not be complete if the exhibits are not adequately preserved. The next step after packaging, and probably throughout the processing of the crime scene, will be preservation of those exhibits.

Both sets of respondents were to explain how the exhibits can be preserved and the following respondents were recorded:

- Seven respondents from both sets said that the chain of custody must not be broken in order to preserve biological exhibits
- Eight respondents said that all biological exhibits must be sealed in such a way that no one can tamper with the collected exhibits
- Three respondents contended that any changes to the exhibits must be explained
- Two respondents from both sets submitted that preservation means that the exhibits are cared for so much that there is no difference between the evidence presented in court and the one collected at the crime scene

From the literature study, it was established that a satisfactory maintenance of chain of custody is automatically equivalent to preservation of exhibits. This statement can only be correct if the investigators took all the precautions necessary to keep the exhibits intact. The researcher does not ignore the fact that the chain of custody may be maintained but factors such as high temperatures and exposure to moisture may still degrade the exhibits. This therefore means that if an investigator is aware of all factors necessary for the handling of exhibits, the chain of custody is likely to be achieved simultaneously with a good preservation of exhibits. It will not be beneficial to investigation if investigators maintain the chain of custody but still deliver exhibits under degrading conditions such as high temperatures or exposing exhibits to moisture. Therefore, the researcher incorporated preservation with the chain of custody. This means that there must be a clear record of handling of exhibits from the time they are identified at the crime scene until they are kept behind the lock and key

at the laboratory or analysed. However, the guidelines for preservation of exhibits as submitted by Van Rooyen (2004:12) are worth mentioning:

- Evidence presented at court must be the same as it was found at the crime scene
- There should not be any opportunity to replace or improperly alter the evidence
- Any changes in the condition of exhibits such as destruction through laboratory analysis must be explained

The responses of the respondents and literature are crucial in ensuring that the biological evidence to be used in courts of law will be able to withstand any challenges posed by the defence. The integrity of the samples will always be intact and this can create a certainty as far as the validity of the forensic evidence is concerned.

3.4. SUMMARY

Like any other evidence, the biological evidence must meet certain admissibility requirements before it can be admitted in court. The primary requirement is that the integrity of the samples must be kept intact through the maintenance of the chain of custody. Secondly, the rights of the suspected persons such as the right to be informed about the charge, and right against illegally obtained evidence must be observed. Failure to observe those rights will certainly render the evidence inadmissible when produced in court at a later stage.

In addition to the observation of the suspect's rights, there are requirements that aim to protect the suspect and ensure that investigation is done within the parameters of the law. This will ensure that the biological exhibits are not mishandled, degraded or even planted to wrongly accuse the innocent. Finally, the processing of the crime scene must be done in such a way that the integrity of the collected biological exhibits remains intact. This deals with how the samples should be collected and packaged and preserved.

CHAPTER 4

THE SIGNIFICANCE OF BIOLOGICAL EXHIBITS IN THE INVESTIGATION OF RAPE CASES

4.1. INTRODUCTION

Successful investigation of many crimes depends entirely on the methods applied by the investigators during investigation. Crime is growing and criminals are refining their modus operandi to beat the current investigative methods. It is therefore empirical that investigators must also keep on updating the methods and procedures that they follow in investigations. In rape cases, different methods can also be used. In certain instances, rape happens in the absence of other people; hence, the investigators may have to rely on the information provided by the victim alone. On the extreme, the victim may be psychologically affected and their account of the course of events may not be accurate. Carney (2004:1) submit that anyone new to the field of sex crimes will quickly learn that keeping an open mind to new and creative methods of investigation is vital to success. This is true as rape can sometimes be extraordinary. These extraordinary situations are brought by delays in reporting, lack of evidence, guilt and shame felt by the victims, prior victim-perpetrator relationship and much more (Carney, 2004:1). It is against this background that this chapter endeavours to establish the significance of biological exhibits in investigation of rape cases.

In this chapter, rape is discussed in line with what are the elements. Biological exhibits are then looked at as the source of Deoxy ribonucleic acid (DNA). This will be done through an interrogation of DNA, the availability of DNA databases and the challenges facing the use of DNA in investigation of rape cases. In the final part of this chapter, the significance of the results obtained from the analysis of biological exhibits will also be discussed. These significances include, but not limited to, individualisation of perpetrators, confirmation of the incidence of rape, linkage of perpetrator to the scene of rape and the supplementation of the eyewitness testimony.

4.2. RAPE

In order to prove any crime including rape, the investigation must be conducted in such a way that the elements of that crime are proved. In this section, the elements of rape are looked at and these elements are compared in accordance with both the new and the old definitions of rape.

4.2.1. The old definition (Prior 2007)

In the crime of rape, the act consists in the penetration of the woman's genital (vagina) by a man's genital (penis), and it is not necessary that there should be full penetration - the slightest penetration is sufficient, without the woman's consent (Snyman, 2006:449). This definition is also called as the common law definition of rape and simplified by Snyman (2006:449) as a sexual intercourse by a male with a female without her consent. The most important elements of this definition are:

- An act
- Intentional
- unlawful
- Absence of the woman's consent
- Perpetrated by a male
- On a female
- Penetration, however slight it may be (Snyman, 2006:449) and (Joubert, 2001a:116).

4.2.2. The new definition (Post 2007)

According to Section 3 of the Sexual Offences and Related Matters Amendment Act, 32 of 2007, rape is defined as follows: "Any person ("A") who unlawfully and intentionally commits an act of penetration with a complainant ("B"), without the consent of B is guilty of an offence of rape. The most important elements from that definition are the following:

- An act
- Intentional

- Unlawful
- Without the complainant's consent (any complainant)
- Penetration by anyone (not gender specific)
- On any person of any gender
- Penetration (no instrument specific)

The differences between the two definitions are the fact that an instrument of penetration is not specified in the new definition. Apart from instruments of penetration the new definition include the term "any orifice" which means that rape can occur if the penetration took place in the anus, mouth, nose, ears and other hole in the human body. Secondly, the new definition is gender neutral as one cannot say it can be perpetrated by only males and only females can be victims. It the researcher's submission that the results of this research will still remain relevant under both definitions. The biological exhibits researched in this research are: blood, semen, vaginal smears and saliva which will still be analysed and render beneficial evidence under any of the definitions. The field study was done prior to the amendment of the old legislation and most of the responses of the respondents will be more based on the old definition.

4.3. BIOLOGICAL EXHIBITS AS A SOURCE OF DNA

According to Ogle (2004:2008) semen, saliva, hair, footwear impressions, soil, blood, fingerprints, clothing or articles from the victim and the perpetrator are most likely to be found on a scene of rape. This long list is rectified by Newburn et al. (2007:365-366) in terms of those exhibits from which the DNA can be extracted. Since DNA is found in almost any cell of the body, there is a variety of sources of material for DNA testing potentially available for recovery at crime scenes and these are:

- Blood which is the most promising type of source
- Nucleated buccal cells contained in any saliva
- Human secretions, including vaginal smears in the case of rape
- Semen from males which contains spermatozoa (Newburn et al., 2007:365-367)

In addition to this list, there are different substrates on which body fluids are deposited. A full list of those substrates is discussed in the previous chapter and these are substrates such as the baseball bats, cool drink cans, and others. The epithelial cells (skin cells) may originate from the lips, touching or the buccal cells found in saliva. This means that the investigators may also use the cigarette butts found on the scene of rape.

Both sets of respondents were asked to mention at least one possible host of DNA potentially present in a scene of rape cases and the following responses came to the fore:

- Six from both sets mentioned semen
- Five from both sets of respondents mentioned vaginal secretions or swabs
- Four from both sets mentioned saliva obtainable from cigarette butts and glasses or cups found on the scene, or a mere deposit thereof
- Four from both samples mentioned blood
- One respondents from the combination of both sets mentioned hair

If the respondents' answers are compared with the submissions of Newburn et al. (2007:365-367), there is no great difference between them. An exception is only with the last respondent who mentioned hair. That answer is correct except for the fact that it will be covered in this research as part of vaginal swabs. The significance of hair is not undermined but the author acknowledges that in most cases hair evidence can only be linked to class characteristics and not to individualisation, if the root material of the hair is lost or damaged, since the DNA is only found in the root material of the hair (Gilbert, 2004:316). It is against this background that in this research, only blood, semen, vaginal swabs and saliva are discussed as sources of DNA most likely to be found on the scene of rape cases.

4.3.1. DNA and the investigation process

DNA contains the genetic code for all living cells and with the exception of identical twins is different to all individuals (Carney, 2004:52). The recently developed techniques that permit human identification by analysis of specific regions of DNA,

within the human genome, has emerged as powerful evidentiary tools for the criminal justice. The realisation that a person can be individualised by analysing his or her DNA has been heralded as the greatest revelations of the twentieth century (Kobilinsky et al., 2005:xiii).

Both sets of respondents were asked what do they understand by DNA and their responses were as follows:

- Six from both sets of respondents said it is when a blood group is used to identify an individual
- Eight from both sets said it is the process whereby the genes of a person are used to gather specific information about the individual
- Three respondents from both sets described DNA as genetic information about an individual species
- Three respondents from both sets said it is the information obtained from the living cells about an individual

In comparison to the available literature, it came to the fore that these responses are not completely different from the submission of Carney (2004:52) that the DNA is the genetic code. This may also include blood groups as the understanding thereof may also include the genetic information of a specific human being. The responses of the respondents are also in line with Newburn et al. (2007:365) who submit that more than any technological development in human identification the practice of DNA profiling has rendered the human body available to a system of standardised and repeatable techniques. The common key words between the respondents and the literature are genetic information and human identification on the other hand.

Both sets of respondents were further asked about the possible significance of DNA in investigation of rape cases and their responses were recorded as such:

- Seventeen from both sets said this is the most commonly used analysis method for biological exhibits
- Two respondents from both sets further attested to the fact that most of the cases in South Africa have been solved through the use of DNA technology.

- One respondent also provided verisimilar answers except to the submission that DNA can also be used in investigation of other cases other than rape. This respondents wanted to emphasise that the usage of DNA should not be understated but should be seen as a possibility in investigation of all cases.

The response of the second category of respondents who attested that most of the cases were solved through this technology did not qualify their response with statistics. This is however, not in conflict with the aim of the research as the research revolved around the significance other than the value. This means that it is immaterial in this research as to how many cases were solved through this technology. The interest is whether there is a single case in evidence where the technology proved to be successful. The response recorded in the first bullet brought about an interesting issue as it indicates the connection between the biological exhibits and the DNA. According to them, one can easily conclude that the biological exhibits are sources of DNA. That is, through DNA, the investigation process is able to benefit from the biological exhibits as supported by Newburn et al. (2007:365) who argues that DNA goes under the skin to capture the very essence of the body itself, bypassing the need to measure any external surface or to engage with the outward aspects of human corporeality.

These responses were also compared with Carney (2004:52) who submitted that the significance of DNA analysis is multi folded. According to him, the recent development in DNA technology has led to a completely new way of collecting evidence. Secondly, DNA has helped the investigators to identify the suspects positively, often without the need for eyewitness identification. Thirdly, the DNA technology has assisted the investigators and prosecutors in exonerating innocent people from conviction. This statement is also echoed by Kobilinsky et al., (2005:1) who submit that when the eyewitnesses are lacking, physical evidence may be the only way to solve a crime. These authors further argue convincingly that materials found at a crime scene can be used to link or associate a suspect to it, and the information derived from the analysis of evidence can be used to exonerate or convict a suspect.

The submission of the above author is convincing and in agreement with other sources of data in this research. As argued by Fisher (2004:327), the mental status of the victim is often volatile and questionable. This is factual as it is accepted that rape is an ordeal that normally leave the victim scared, embarrassed and sometimes angry. Some of those victims are sometimes bitter and just want to see the investigation of their cases completed. It is against this background that no contrasting argument could be rendered (Fisher, 2004:327).

Both sets of respondents were asked as to where the DNA samples can be drawn from and they responded as follows:

- Fourteen from both sets of respondents mentioned the victim and the perpetrator
- Three respondents mentioned victims of rape. In their experience they always took the victim to the doctor for medical examination and acknowledged the difficulty as far as collecting samples from the suspects is concerned
- Three respondents said the DNA could be collected from a variety of hosts. Amongst those, they mentioned the blood found on the scene (floors and walls), as well as other deposits that may be freed from the persons involved. They also mentioned clothing of both the victim and the suspect.

The responses mentioned in the third bullet sound more constructive in that they recognise that even when the suspect and the victim are not available, useful samples can still be collected. Their responses are in line with the submission of Horswell (2004:5) that physical evidence is tangible and includes all physical things. Items considered as potential physical evidence may exist in the form of macroscopic, microscopic, living, inanimate, solid, liquid and gas (Horswell, 2004:5).

The respondents whose response is recorded under the second bullet who did not mention the perpetrator touched on the difficulty of drawing the samples from the perpetrator. This is true because in practice, the taking of blood and other samples requires the suspect to consent to that procedure and to sign a necessary consent form (Carney, 2004:55). This procedure is also relevant to South Africa and became clear during the case analysis. The following data came to the fore during case analysis:

- Out of 50 dockets analysed, only seven suspects were taken to the doctor for medical examination. In five dockets, the medical practitioner collected the samples from the perpetrator in order to take reference sample. This was further clarified by the fact that the perpetrator was only taken to the medical practitioner after an average period of three months had lapsed. It is only in two dockets where the perpetrator was arrested immediately and taken to the Medical Practitioner. In this case the medical practitioner conducted a full examination with the view of locating foreign genetic material
- All seven dockets where the suspect was taken to the doctor, a form titled SAP 308: Consent for medical examination was completed
- The suspect's signature was attached in legibly in five forms in the dockets
- The suspect's thumbprint was visible on the form in two forms attached to the dockets

The researcher was satisfied that the investigators followed the correct procedure each time the samples had to be obtained from the suspects. It can also be concluded that the few number of cases where exhibits were obtained from the suspect, may be indicative of challenges pertinent to obtaining exhibits from the suspects. There is however an alternative to this predicament. That alternative is contained in Section 37 of the Criminal Procedure Act, which is discussed fully later in this research. The common answer among all the sources of data is that DNA samples can be drawn from the victims of rape. White (1999:56) who attested that the collection of DNA samples is easily done when the crime involved clothes, bedding, car seats and others supported the fact that samples may also be taken from clothing. In South Africa, a noticeable development can be traced back to 2004 when the SAPS introduced the body fluids detection dogs which can assist in the locating of these biological materials (De Beer, 2006:41).

During the case study, it was established that:

- 44 out of 50 dockets that were analysed had victims sent to the doctor. This means that all medical certificates were issued for the victims other than anyone else.

- There were only seven dockets wherein the perpetrator was sent to the doctor and their medical certificate attached as such. The rest of the dockets did not have this attachment

The latter data may sound as if very little DNA is being solicited from the perpetrators of crime but that is not a difference as far as other sources of data are concerned. It does not matter in how many cases the DNA was solicited from the perpetrator, but more about whether it is possible to get such from the perpetrator. There is sufficient consistency between the respondents, literature and the case docket analysis to the effect that DNA can be located from a variety of hosts in investigation of rape cases.

4.3.2. DNA databases

Although this research does not intend to pre-empt all details surrounding the DNA analysis, this discussion will not be complete without the inclusion of the database. The analysts only were asked, as this question was not on the other interview schedule used for detectives, as to against what are the DNA samples compared and this is what surfaced:

- Seven analysts said that there is a database against which they compare the samples
- Two analysts said that after each sample is analysed, a particular profile is put into a specific programme in the computer for further reference. It becomes very easy especially in the case of habitual perpetrators that each time their DNA is sent it can be matched with the existing records
- One analyst said that they used a system called DNA Criminal Intelligence Database

The responses of the analysts confirm the report of the South African literature on the issue of databases. According to De Beer (2006:78) during 2005-2006, a number of 50 969 DNA exhibits were analysed and 44 467 were finalised. In 256 instances, suspects were linked to another case not related to one of the initial arrests through a system called DNA Criminal Intelligence Database (DCID) (De Beer, 2006:78). DCID is comparable to a system discussed by Carney (2004:54) called Combined

DNA Index System (CODIS). According to this system, the DNA profiles of convicted offenders are collected, identified and kept on a national basis. The theory behind the system is that the more the DNA profiles exist, the more likely it become that a match will be found. Once the match is found, it becomes more possible to convict the suspects. These responses emphasise that there is always a possibility of success with the DNA technology. This statement is echoed by Lee and Tirnady (2003:viii) who submit that the achievement of DNA analysis have been impressive as it solved crimes otherwise considered unsolvable, abbreviated the careers of serial rapists and serial killers, identified remains of soldiers missing in action, established paternity in many instances, assisted medical detectives in tracking of diseases and illuminated countless other controversies involving biological exhibits.

4.3.3. Challenges facing the usage of DNA

Both sets of respondents were asked whether there were any challenges associated with the DNA analysis. Their responses were mainly to the affirmative:

- Fourteen respondents blamed delays associated with analysis
- Two respondents out of both sets believed that suspects were becoming aware of the DNA and sometimes destroyed evidence
- Two respondents mentioned shortage of skills and staff as a challenge
- One respondent submitted the problems associated with the DNA but felt that these problems can be dealt with
- One respondent blamed the inadequacy of Section 37 of the CPA especially as far as the creation of DNA databases is concerned

According to Lee and Tirnady (2003: xvii), police have for years seen a rash of cases where criminals have attempted to foil DNA detectives by, for an example, wearing gloves and condoms during rape; forcing victims to bath or otherwise destroy biological evidence; scattering the blood or semen of other people across the scenes and sending impostors to take their own DNA tests. It should be noted that while some of these efforts surely succeeded in hopelessly frustrating investigators, one should be able to legally present evidence collected, and must be able to show through documentation and testimony that there was a constant chain of custody from the time

it was first discovered until it is presented in court (Adams et al., 2004:77). The response on the respondent recorded in the last bullet raises the lack of databases. This is supported by Lynch (2009:4) who argues that the existing DNA Database in SA, has through default, evolved under the governance of the Criminal Procedure Act of 1977, which act was promulgated long before the advent of DNA Profiling was discovered and thereafter used as a Criminal Intelligence Tool. Section 37 of the CPA is a wholly inadequate tool for regulating the use and retention of DNA profiles on a National DNA Database and equates to the notion of trying to regulate a new process with the old legislation. This means that there is a need for new legislation which will make the creation of databases a possibility. This will make sure that there are comparisons made with the records which exist in the databases. This will increase the number of “hits” and the pace at which the DNA comparison is done. The evidential value of biological exhibits is discussed fully in the following section.

4.4. THE SIGNIFICANCE OF BIOLOGICAL EXHIBITS IN INVESTIGATION OF RAPE CASES

The crux of this research is the establishment of the significance of biological exhibits in investigation of rape cases. The results and the manner in which they are documented need further discussion. The exact role played by the results of biological exhibits stems directly from the crime scene and in the laboratory but of importance is that all these efforts must accumulatively bring about the desired results in investigation of rape cases. Both sets of respondents were asked to mention at least a single significance of biological exhibits in investigation of rape cases and the following responses were recorded:

- Seven respondents from both sets mentioned the individualisation of the perpetrator through DNA typing
- Eight respondents from both sets mentioned the linking of the perpetrator to the crime and the crime scene
- Three respondents from both sets mentioned that through the analysis of biological exhibits the investigators will be able to confirm that rape really took place

- One respondent from both sets said one of the significances of biological exhibits is identification in its broader sense
- The last respondent from the combination of both sets said that the biological exhibits can be used to supplement the subjective testimony of eye witnesses, and can ensure that expert testimony is available through certificates or personal appearance of experts in the court of law

In order to ensure that the list on significances of biological exhibits is exhausted, the researcher compared the responses of the respondents with literature. From the submissions of White (1999:9), as well as Le Beau and Mozayani (2001:228), it became clear that biological exhibits serve various purposes. From these submissions, the following significances will be discussed:

- i. identification
- ii. individualisation of the perpetrator
- iii. linkage of the perpetrator to the scene of rape
- iv. supplementation of eye witness or victim testimony
- v. availability of expert testimony

4.4.1. Identification

According to Erzinliouglu (2004:83), the first attempt to identify people on a rational, scientific basis was developed during the second half of the 19th century by the French forensic scientist named Alphonse Bertillon. Horswell (2004:6) submits that the process of identification of any object is one of establishing the fact that it belongs to a large group or class. Further that the determination of identity of an item depends on establishing that it is the only one of its kind within its class. This explanation is further simplified by Fisher (2000:7) and Gardner (2005:23) who commonly submit that identification means that items with the same properties share a common source and can be classified or placed into groups. Identification therefore means that if semen is found on the scene of rape, it is not individualised to any particular person but it is analysed and tracked back to a specific group or class of material (Gardner, 2005:23). In identification, it does not matter how much testing is done on that piece of material, the conclusion will always be the same: the results

cannot be attributed to one unique source, but rather to a group or a class with similar characteristics (Fisher, 2004:9). A difference between identification and individualisation will be discussed in detail later in this chapter.

Both sets of respondents were asked as to what do they understand by identification and the following responses were recorded from both sets:

- Fourteen of both sets described it as an ability to single out a particular thing out of a larger pool through the comparison of characteristics
- Two defined identification as being able to put a particular thing to a class of those with the same characteristics
- Four viewed identification as the ability to track the class of origin of a particular material

During comparison with the other sources of data it became clear that the responses uttered are not different from Gardner (2005:24) who also view identification as placing an object with others of the same characteristics. Not only that, but the characteristics meaning the intentional or design features that would be common to a particular group or family of items. The first fourteen's response is of concern because it sound as if the respondents are confusing identification with individualisation. This should not be a serious concern as in reality the two are too close to each other. This argument cannot be pre-empted here because individualisation will be discussed later and a comparison between the two concepts will also be done. The moment they talked about 'singling out' from the pool, a doubt was created in terms of their understanding. This response is in conflict with the presumption that everything is unique and distinctive in that it has certain individual and class characteristics (Marais, 1992:19). The researcher sides with the literature because the primary objective of any investigation is to locate evidence, which can be individualised later (Fisher, 2004:93)

There is a long list of types of identification and the following are the examples (Van der Westhuizen, 1996:4; Newburn et al., 2007:303):

- Situation identification which deals with the unlawful nature of the crime

- Imprint identification which deals with identification of the imprint of an alleged object by comparing it to a disputed object
- Witness identification which deals with the investigator obtaining information about the suspect and the role he played in the commission of crime
- Victim identification which is mostly related to murder investigation and deals with the establishment of the identity of an unknown deceased
- Culprit identification which deals with the positive identification of the suspect
- Action identification which refers to the modus operandi, or the methods used by the suspects to commit crime
- Origin identification which deals with whether organic samples have the same origin as the disputed sample. This is where the interest of this research lies and this will be discussed further later

Both sets of respondents were asked why identification is a significance of biological exhibits in investigation of rape cases and the following responses were tendered:

- Fourteen respondents from both sets submitted that in order to know the individual from whom a biological exhibit comes from, there must be a general determination of what is the class characteristics of that exhibit
- Four respondents from both sets said that identification can be done if one is able to say this is semen or this is hair, after which the analysts can determine the specific host
- Two respondents from both sets of respondents submitted that you need a biological exhibit in order to do an origin identification

These responses are relevant to the significance of biological exhibits in investigation of rape cases and in line with Newburn et al. (2007:303) who submit that the determination of the origin of a material is also called inference of identity of source which can be done either in terms of physical or biological material such as blood, saliva, semen, urine and hair. The examination of biological matter is undertaken with the view of answering the two questions as argued by Newburn et al. (2007:205) and these questions are: What is the relationship between the trace and the incident under

investigation? The second question is what is the origin of that trace? The answers to these two questions can then summarise the significance of biological exhibits in investigation of rape cases. The reason for that is, once those questions are answered then one can realise how dearly biological exhibits are needed in order to identify or do the origin identification. An example of a statement that can be produced from those questions will be: this is semen, which is indicative of a rape case and it belongs to the male secretions category. Through the responses of respondents and literature so far, it is possible to conclude that biological exhibits enable identification, especially origin identification which deals with the class origin of a particular material. This conclusion is echoed Newburn et al. (2007:308) who submit that the biggest question that the forensic analysis of material evidence attempt to answer is, the origin of material under investigation.

4.4.2. Individualisation of the perpetrator

Once the samples or biological exhibits are identified, the next stage will be individualisation. Individualisation is completed when the object in dispute and the standard of comparison have the same origin (Van Rooyen, 2001:58). This is evident in the statement of Horswell (2004:6) that individuality or uniqueness are those attributes that make one thing different from all others that are similar to it while the process of identification of any object is one of establishing the fact that it belongs to a large group or class. According to Jackson and Jackson (2004:133), DNA profiling attempts to examine the DNA of an individual to produce a unique, unalterable pattern that will be a characteristic of any tissue or body fluid that originate from that individual. Individualisation means that the examination of individual characteristics is a primary goal of forensics and a powerful evidence to conclusively state that this blood, this fingerprint, this hair came from this individual (Gardner, 2005:25). In some rape cases, the perpetrator is unknown. If that is the case, the comparison of transferred clues may not be of an absolute usage.

Both sets of respondents were asked what they understand by individualisation and the following answers were tendered:

- Fourteen from both sets of respondents said that it means singling out an individual from amongst others by linking them to a particular biological trace

- Two described it as pointing out one person from a pool of potential perpetrators
- Four individualisation as an art of establishing a link between a trace and a host which normally follows identification

These comments, especially the respondents who said that there should be a linkage to a particular trace, are in line with the submission of Houck (2001:49) who submit that trace evidence may also be used to provide valuable evidence that could assist the investigators in locating the person or persons responsible for the crimes. Although put differently, this author is pointing to the same direction by suggesting that one of the significances of biological exhibits is individualisation. Indeed the forensic scientist hopes that a biological trace or exhibit found on and identified will ultimately lead to a single individual or a single object, to the exclusion of all other possible sources (Newburn et al., 2007:308).

Both sets of respondents were asked if they thought that individualisation is a significance of biological exhibits in investigation of rape cases and the researcher recorded the following responses:

- Ten respondents from both sets said yes, individualisation is the significance of biological exhibits in investigation of rape cases
- Four respondents said the statement is true although biological exhibits are not the sole determinant of individualisation
- Three respondents said that the biological exhibits are well suited to individualise culprits due to its DNA content
- Three respondents only said yes they thought that individualisation is the significance of biological exhibits but also of any material or objects that can be found on a scene of any crime

In comparing the responses with the literature the link between biological exhibits and individualisation became clear. Both the respondents and Gardner (2005:24) agree that individualisation adds significant value to investigation because one can individualise a person or an object and can therefore identify the origin or donor of the evidence found. The link becomes clearer especially when one look at the fact

discussed earlier that biological exhibits are the sources of DNA. Further than that, if the DNA is the human genetic blueprint of an individual (Gilbert, 2004:313) then the biological exhibits are significant in individualisation as further argued and supported by the third category of respondents. This statement is further clarified by Genge (2002:144) who argue that DNA is the building block for the human body which we inherit from our parents and virtually each and every cell in the human body contains DNA. From the submissions of respondents and literature, the conclusion can be made that individualisation is a significance of biological exhibits as biological exhibits contain DNA which differs from one being to the next.

4.4.2.1. Challenges relating to individualisation

Biological evidence is factual evidence, it cannot be wrong, it cannot perjure itself, and it cannot be wholly absent. Only in its interpretation can there be error and human failure to find it, study and understand it can diminish its value (Horswell, 2004:7). This statement means that there can be certain challenges when attempting to individualise the perpetrators. Both sets of respondents were asked to name any challenges associated with individualisation and the following responses were recorded:

- Seven from both sets of respondents said there is always a possibility of collecting many clues, which may not point the investigation to the right perpetrator. A good example is when rape took place in a public place where many people enter for various reasons. The analysis of biological exhibit should be able to exclude innocent people who entered those premises for a valid reason
- Three from both sets of respondent said that the problem might arise if wrong samples were collected from the scene of rape cases
- Two respondents said that sometimes the quantity of samples is a challenge as it is sometimes very small that no conclusions can be drawn
- Eight respondents submitted that forensic fieldworkers may not visit all scenes of rape cases and this lead to destruction of important biological exhibits even before collection

The submissions of the respondents are comparable to Newburn et al. (2007:304) who argue that contrary to the image created in the TV shows such as CSI or forensic detectives', forensic science especially forensic identification and criminalistics have come under fierce attack. Some of the graver miscarriages of justice which have come to light over years were at least partly associated with inadequate standards of forensic expertise or erroneous interpretation of otherwise correct findings (Newburn et al., 2007:304). Although the challenges highlighted in literature are not verisimilar to those listed by the respondents, the bone of contention between the two is that there are sometimes problems about individualisation

4.4.2.2. Biological exhibits relevant to individualisation

Both sets of respondents were asked as to what are the biological exhibits that are likely to individualise the rape perpetrator in rape cases. Different responses were tendered and this is the summary:

- Twelve of both sets mentioned semen, vaginal smears and saliva
- Eight from both sets mentioned blood and hair fibres

When perusing dockets, the following information became apparent:

- In 34 case dockets hair fibres, saliva, vaginal fluids and seminal fluids were mentioned in the Section 212 certificates
- In 16 case dockets it was recorded that the samples were not sufficient to solicit the DNA typing

Both categories of respondents are in fact correct and in agreement with Gardner (2005:24) who also mentions fingerprints in addition. Generally, the mentioning of origin identification (Van der Westhuizen, 1996:6) is a meaning of the fact that all those categories mentioned by the respondents are prone to possible individualisation. This addition is justified by the fact that the discussion of Gardner (2005:24) was generally based on class and individual characteristics and specifically rape as is with this research. As to the biological exhibits discussed earlier, it is clear that semen, saliva and vaginal smears as well as blood can be typified through the DNA analysis. The fact that the DNA make-up of an individual differs from one individual to the

next, except for identical twins means that the DNA analysis has a potential of individualising a perpetrator. If that is the cases, it can be safely said that the significance of biological exhibits is, amongst others, individualisation of the perpetrator.

4.4.2.3. Difference between individualisation and identification

In identification a person should only be able to say that semen is semen. It is a mere declaration of a particular object (Van Heerden, 1985:12) while individualisation concerns itself with comparison of objects found at the crime scene with those with known origin (Van der Westhuizen, 1996:6). This statements means that individualisation goes well beyond identification. The reason behind that is that individualisation will say this exhibits comes from this source, and this source only amongst a variety of sources. In other words, according to Fisher (2004:5), the trace can be attributed to one individual after a series of identifications.

4.4.3. Linkage of the perpetrator to the scene

A perpetrator in rape case may be individualised but this will not be complete until this individual is placed at the crime scene. According to Fisher (2004:330), the suspect's identity may be established by the usual means such as eye witnesses and fingerprint identification, but in rape cases there is more bias towards the use of DNA typing by analysing biological evidence such as blood, semen and others. The most common defence mechanism in criminal cases is alibi. In rape cases, it also remains a possibility that the suspect will deny that he was never at the scene of rape. Criminal investigation is the process that is undertaken to establish whether an act, intention to act or omission may be labelled a crime and, if it is so labelled, the collection of evidence to determine those responsible (Newburn et al., 2007:303). The latter part of this statement forms the crux of this discussion. This means that the suspect is individualised but the investigators want to place the suspect at the scene of crime to prove to court that the perpetrator has anything to do with the crime under investigation.

Both sets of respondents were asked what they understand by linkage of the suspect to the crime scene and the following responses were recorded:

- Nine from both sets of respondents said this means finding common traces from the suspect and that found on the scene of rape
- Five respondents from both sets said it is the ability to place the suspect on the scene of rape through the use of scientific results
- Four from both sets of respondents said this linkage means analysis aimed at counter acting the alibi of the suspect. According to them, the suspect will have to explain the presence of certain things such as semen, saliva and blood at the crime scene.
- Two respondents from both sets described linking the suspect to the crime scene as a reconstruction of what may have happened with the intention of providing a picture that the suspect will have to contest

There are commonalities between the responses of the respondents and literature. The starting point is that it is often difficult to prosecute rape cases due to lack of evidence (Brown, 2001:11) which means that there is a need to look for substance and evidence that can prove sexual contact between victim and the suspect (Adams et al., 2004:126). From this statement and the responses from the respondent, it becomes conclusive that the linkage of the suspect to the scene of rape is a one step further than individualisation. In individualisation, the conclusion will be this semen belongs to person B, period, whilst under linkage the conclusion will be this evidence suggests that B was at place C at a specific time.

During the case study, 50 dockets were analysed and the following information was collected:

- In 37 dockets it became apparent that a Section 212 certificate would conclude that the blood found at a particular scene belongs to a particular individual.
- In seven dockets, the Section 212 certificate reported that through the use of database, it was established that a semen analysed matched the DNA typing of a particular person
- Six dockets could not render any information as far as this is concerned

Through an effective statement taking and writing, it can be established in court that certain samples found on the scene of crime belongs to a suspect. This is unlike individualisation where the primary objective is only to link a particular person to a sample taken. Here a linkage is extended to link the sample to a person and to a place where it was collected.

Both sets of respondents were further asked to explain why they thought that linking the suspect to crime and the crime scene is the significance of biological exhibits. The following responses were then recorded

- Thirteen of both sets said biological exhibits are best placed to link a suspect to a crime scene due to DNA typing
- Six from both sets of respondents submitted that biological exhibits are likely to be found on any rape crime scene due to the principle of 'Locard'
- One respondent from the combination of both sets submitted that rape is a contact rape and few biological exhibits will either be left or taken away from the scenes of rape cases

The comparison between these responses and the literature can only conclude that a successful investigation will be the one, which lead to the conviction of the guilty and exoneration of the innocent. This statement is consistent with the submission of McCartney (2006:1) that there is no denying the power of fingerprints and forensic DNA evidence to exculpate innocent suspects and incriminate the guilty, however the side effects associated with investigation must be avoided. Linking the suspects to the crime under investigation and the scene of rape cases is such avoidance. The examples of side effects given by McCartney (2006:1) are wrongful arrests and miscarriage of justice. Other commonalities are found in different sources although they deal with individual biological exhibits in proving that the linkage of suspect to the crime is a significance of biological exhibits. According to Carney (2004:47), semen is the primary bodily fluid left behind by the rapist and can be found wherever the rapist ejaculates, assuming that no condom was used. This statement is supported by Ogle (2004:146) and Fisher (2004:331) who state that semen may be used as evidence in other crimes but its usage as evidence is more common in rape cases. Saliva evidence can also be found in the scene of rape in the form of ashtrays,

cigarettes butts, toothpicks, chewed matches and chewing gum (Fisher, 2004:167). According to Butler (2005:33), blood is the most commonly tested substances in the forensic laboratories and is very common in the scenes of rape as submitted by Ogle (2004:131).

When perusing the cases dockets and reading the phrases on the Section 212 certificates, it became clear that the information in that certificates will still have to be clarified in court. The following is the breakdown of the dockets perused:

- In 37 dockets the certificate left a space to the suspect to further argue in court and perhaps justify his presence at the time of crime at that particular scene.
- In seven dockets the contents of this certificate were clear in terms of placing a particular individual at the crime scene.
- Six dockets could not be used in the analysis as the researcher could not locate the Section 212 Certificate

It must be remembered that the main question that seek to be answered is as to whether the biological exhibits can link the suspect to the scene of crime. It can be argued that the responses of the respondents and the contents of the certificate in the dockets sample answer that question to the affirmative. In addition to that the literature is very clear in concluding that the linkage of the suspect to the crime of rape or the crime scene is the significance of biological exhibits. Put differently, biological exhibits play a critical role in linking the suspect to the rape case or to the scene of rape cases. Through triangulation and certainty of validity, it is the conclusion of this research that the linkage of the suspect to the crime or scene of rape cases is a significance of biological exhibits.

4.4.4. Supplementation of eye witness/victim testimony

The fear of sexual assault, particularly when committed by strangers, has had wide implications for our society that extend beyond the physical and emotional trauma of the victim to impacting entire communities (Carney, 2004:7). This statement is just a tip of the ice berg in terms of the challenges facing the investigation processes. This is

evident from the submission of Adams et al (2004:1) that other limiting factors are a lack of sufficient reliable evidence to sustain a conviction, and the reluctance of victims and witnesses to come forth and testify in court. These two authors indicate that it is very dangerous to rely on a single source of evidence. For the purposes of this research it becomes evident that it will be dangerous to rely on the evidence of the rape victim and or/ the witness testimony.

Both sets of respondents were asked what they understood by the concept of supplementing the victim or witness's testimony. These were the responses:

- Eight from both sets of respondents said that this means bringing in other evidence that is not based on a personal account of events
- Seven out of both sets believed that the supplementation means using other mute evidence derived from other sources than those who witnessed it
- Five from both sets said that the victims of rape are known for their vulnerability, bitterness and sometimes anger. Their evidence should be coupled with someone's account who was not involved in that crime and presumed not to have an interest in the outcome

Although put differently by different sources of data in this research, the common theme is that supplementation means addition to the existing evidence by other evidence not originally coming from any of the eyewitness. According to Fisher (2004:21), the experts should not care whether the case results in guilty or not guilty verdict and instead of getting involved they will only play a role of an advocate of their own opinions.

Both sets of respondents were asked why they thought that biological exhibits can be used to supplement the witness testimony and the researcher recorded the following responses:

- Eleven respondents from both sets submitted that biological exhibits are like mute witnesses which will say things that cannot otherwise be said by the witnesses

- Seven respondents from both sets said that biological exhibits will not be changed with the trauma that the victim of rape may experience
- Two respondents from both sets said that the supplementation of testimony is the significance of biological exhibits because the evidence from biological exhibits is given by somebody else other than the person directly affected by the rape under investigation

The responses of respondents all confirmed that one of the significances of biological exhibits is to add to the evidence given by the witnesses or the victims of rape cases. Their responses are in line with the submissions of Fisher (2004:330) who also touches on important aspects of the investigation of rape cases. Firstly, a biological exhibit such as the presence of semen in the vaginal area is suggestive of vaginal penetration (Fisher, 2004:330). Although the court made an interesting ruling about penetration in the case of *R v Theron* 1924 EDL 204 so many years back, the ruling that an absence of penetration means no rape took place is still relevant because penetration is an important element of rape in terms of both the old and the new definition. Of interest is that the biological exhibit will say this information in addition to the oral testimony of the victim or even in the absence of such information from the side of the victim or the witnesses. Secondly biological exhibits as argued by Ogle (2004:147) may second the testimony to the effect that the sexual intercourse was non-consensual. This information may have been provided by the witness or victim but can be verified by the fact that there were bite marks and bruises on the victim's body which may indicate that the sexual intercourse was not consensual (Fisher, 2004:330). This also goes with the availability of blood and the identification thereof. Through the responses of the respondents and literature, it is conclusive that biological exhibits play an important role in adding and verifying the testimony of the witnesses or victims of rape. Put differently, the supplementation of testimony is the significance of biological exhibits.

4.4.5. Availability of expert testimony

After the biological exhibits are collected and analysed, there will be expert testimony available that can be used in the court of law at any time. Although the general rule is that all evidence must be given *viva voce*, this type of evidence may be given by means of affidavits in terms of Section 212 of the CPA (Joubert 2001a:239).

Two sets of respondents were asked what they understand by expert testimony and several responses were tendered:

- Eight from both sets of respondents described it as evidence given by the members of the forensic laboratory, or somebody described in terms of Section 212 of the CPA
- Seven respondents from both sets described expert testimony as an account of what happened given by an expert on a particular field
- Five respondents from both sets said that expert testimony refers to that verbal evidence given in the court of law by somebody who is an expert or possesses a particular skill in his field. An example is that in rape cases an expert from the biological unit of the forensic laboratory may be called to give evidence

According to Steytler (1998:353), the court may in its discretion subpoena a person who can give evidence in accordance with Section 212 of the Criminal Procedure Act. This means that in this case the court may rely on affidavits such as pathological reports, fingerprints reports and the DNA reports as submitted by Joubert (2001:239). However, in this instance the court will consider the rights of the opposing party as was the case in the decision of *Nzusa 1963 (3) SA 631 (A)*. In this case the court squashed a conviction on the basis that the accused could not consent to an invalid procedure. Another manner in which the results of the forensic analysis can be tendered is through the leading of evidence of the expert in the court of law. The other duties of the forensic experts are also listed by White (1999:9) as the examination of collected material to provide information previously unknown or to corroborate information already available. Most critically, another duty of the forensic experts is to present verbal evidence to court to assist in resolution of the issue as charged.

Both sets of respondents were asked to why they thought that expert testimony was the significance of biological exhibits. The following were the responses:

- Eleven of both sets respondents said that expert testimony is scientific and normally derived from laboratory examination of biological exhibits
- Eight from both respondents submitted that expert testimony is objective and based on scientific findings after the study of biological exhibits sent to the laboratory
- One respondent from both sets of respondents said that the availability of expert evidence is the significance of biological exhibits as the experts were not available when the crime was committed but had to rely on biological exhibits

These responses are beyond any challenge as they can be seen to be within the description provided for by Section 212 of the CPA. Expert evidence can only be provided by people who hold certain qualifications on a particular field. This factor makes it more significant as there will be corroboration provided by somebody who did not witness the incidence of rape.

During case study, no difference between the two could be established except that in few dockets, one could see the subpoena sent out to the experts to attend the courts.

The responses compares to literature as they cover both the nature and the purpose of expert testimony. In further endeavour to unpack this type of evidence, Marais (1992:198) differentiates between evidence and proof. According to him, evidence includes individual facts, which are presented in court for consideration whilst proof refers to the sum total of all the facts presented during evidence. It becomes clear then that the two concepts are interchangeable in the judicial process and this goes for expert and eyewitness testimony as well. According to Houck (2001:xxix) there will always be an element of subjectivity in how evidence is used and what weight should be attached to the different aspects and this where the judgement and expertise of the expert witness comes in.

In practice, the expert's report is the scientific findings of the analysis which took place under controlled circumstances (Horswell, 2004:7). This means that the experts may not have been exposed to the degree of violence and humiliation, as is frequently the case with victims. Other witnesses may be somehow related to the victim and this normally brings in the subjective element. This contrast is further supported by Gilbert (2004:334) who believes that victims of rape typically experience shame, guilt and anger as the result of offence. Their emotional status may be volatile and this may happen in the court of law as the victims may be expected to recollect the details of what happened. In the extreme, certain victims may not be able to face the perpetrator during the trial (Gilbert, 2004:334). According to Adams et al (2004:5), the amount and type of lighting available during the commission of crime and subsequent identification may distort the view, the use of disguises such as simple as baseball caps and eyeglasses, and the fact that many people look the same to an emotionally traumatised witness, can easily lead to misidentification. These factors alluded to by different authors and the responses of the respondent just confirm how important expert testimony or evidence is and also indicate that it is better to have such evidence available in case it is needed. The argument of this research is that the biological exhibits enable the availability of expert testimony in investigation of rape cases. The availability means that although it may not be always used, it will still be available should a need for such arise. It can therefore be concluded that the availability of expert testimony is the significance of biological exhibits.

4.5. SUMMARY

The focus of this chapter has been devoted to establishing the real significance of biological exhibits in investigation of rape cases. The starting point was to look at different biological exhibits as sources of DNA. The reason for that analogue is that the DNA is the genetic code which can be used to identify and individualise object thereby answering questions regarding who may be involved in different cases of rape.

Through deduction from the responses of the respondents, case study and the literature the five significances of biological exhibits in investigation of rape cases were established. These are identification, individualisation of the perpetrator,

Linkage of the perpetrator to the scene of rape, the supplementation of the eyewitness testimony and the availability of expert testimony

CHAPTER 5

RESEARCH FINDINGS AND RECOMMENDATIONS

5.1. INTRODUCTION

Any research is intended at arriving at certain conclusions and findings. These findings are directly derived from the data tendered by sources of data in that particular research. Research is a systematic process of collecting and analyzing data in order to increase an understanding of the phenomenon under question, and communicating that which is discovered to the larger scientific community (Leedy & Ormrod, 2001:4). This communication is also done in a systematic manner by encapsulating the discoveries into the findings.

This chapter summarises the findings that are deduced from the data that was collected from various sources. This will be done through an accurate reference to the research questions which forms the basis of this research. The chapter will also reflect on recommendations or the application of the research findings with the view of alleviating the problems highlighted earlier in the problem statement.

5.2. FINDINGS

5.2.1 Research question 1: What are the biological exhibits

Biological exhibits refer to those materials that can be collected from the human beings and can be analysed through the DNA analysis technology. Although these materials may be collected from different surfaces on the crime scene, they originate from human beings. These are blood, saliva, semen and vaginal smears.

- The concept of biological exhibits only concentrated on or was limited to the investigation of rape cases
- Certain authors used the word ‘serological’ material but this concept could not be used in this research as it includes the analysis of insects and hair fibres. The analysis of insects could not be researched as

experience suggest that it is rarely, if not at all, used in investigation of rape cases

- Both detectives and the forensic analysts were familiar with what are the biological exhibits
- Different terminology was used in the case dockets to refer to biological exhibits. Terms such as DNA samples, laboratory samples and sexual assault samples were also used to denote biological exhibits

5.2.1.1. Secondary findings

Apart from the main findings of this research, the analysis of collected data brought about other findings which are referred to as secondary findings. Biological exhibits refer to those traces that can be collected from the body of the person and can be analysed through the DNA. The following were established along the main findings:

- In this research, the biological exhibits are blood, semen, saliva and vaginal secretions or smears
- Useful evidence can also be found from different substrates such the objects or the areas that the perpetrator may have touched. Epithelial cells (skin cells) may originate from the lips, touching or the buccal cells found in saliva. There is a long list of areas where evidence can be found and where DNA can be found, collected and typed.
- The collection of semen and other biological exhibits is the responsibility of the forensic fieldworkers as well as Medical Practitioners. For instance, the fieldworkers will normally collect the exhibits found at the crime scene while Medical Practitioners will collect exhibits from the human beings such as the victim or the perpetrator. These exhibits are normally fragile and can be easily damaged. They also require the skills, expertise and equipment that the investigators do not possess. Laser light and P30 tests are normally used as aids in identifying semen. The latter is best used when the protein content of semen is sufficient.
- Identification is best done in the laboratory and an attempt by the investigators to identify biological exhibits can lead to many mistakes. In order to limit the number of useless samples being sent to the laboratory, there are certain

presumptive tests that can be done in the scene of crime to preliminarily establish whether a substance is indeed semen or not.

- It was established in this research that the crime scenes in any rape case are the body of the perpetrator, the body of the victim and the place where rape took place. Since the body of the perpetrator is also a scene of crime, a person may be forced to render samples and this is done in accordance with Section 37 of the CPA
- Locard principle is relevant in rape cases because rape is a contact rape where people come into contact with each other and the objects in the environs. It is therefore empirical that during rape cases the traces are likely to be transferred from one person to the next or the between objects and people

5.2.2. Research question 2: What are the admissibility requirements of biological exhibits in the court of law?

Biological exhibits or samples must be collected in a decent manner which takes into consideration the rights of suspected persons and admissibility requirements as laid down by our law. Section 37 of the CPA is such a law and lay down pivotal guidelines on how samples must be collected:

- Rights of the suspects include right to be informed of the charge and right against illegally obtained evidence
- The information regarding the charge against the suspect must be sufficient and this will ensure that when suspects consent to the obtaining of samples, they know what they are consenting to and what are the implications of that submission
- The right against illegally obtained evidence ensures that the investigation of rape cases is done according to the book thus ensuring successful conviction. It avoid a situation where investigators assault the suspects, or promise them certain things in order to make them submissive or sometimes even render to untruthful confessions and admissions
- The admissibility requirements of biological exhibits is that the chain of custody must be maintained, biological exhibits must be collected

constitutionally and the evidence derived from the biological exhibits must be relevant

- The chain of evidence must always be maintained and failure to do so will open biological evidence to adverse scrutiny or sometimes render it inadmissible in the courts of law. Chain of evidence means that the integrity of biological evidence must be intact as from the point of collection until presented in the court of law
- Obtaining of samples from the suspect impact on their constitutional rights and these rights must be limited in accordance with Section 36 of the constitution which ensures that the limitation is done by a law of general application which is fair and open in the eyes of a fair and democratic society

5.2.2.1. Secondary findings

The manner in which the biological exhibits are collected, packaged and processed has a serious bearing on the integrity of those samples. It is therefore crucial that a record of everyone who comes into contact with the samples is kept and correct utensils are used when touching or packaging the biological exhibits. The following secondary findings came to the fore during the analysis of collected data:

- In order to maintain the chain of custody, statements must be obtained from each and every person who comes into contact with the biological exhibits. Any changes to the integrity of the biological exhibits must be explained and the causes thereof made known
- A new pair of latex gloves must be worn each time a biological exhibit is collected in order to avoid contamination. The first respondent at the scene of rape must protect the biological exhibits against any contamination. It is advisable that biological evidence must be collected as soon as possible and must be collected before other physical evidence
- Biological exhibits must preferably be packaged individually and must be dried first to avoid environmental changes

5.2.3. Research question 3: What is the significance of biological exhibits in investigation of rape cases

Since rape is a non-consensual sexual intercourse where the suspects may not be known, biological exhibits are known to be a source of DNA. DNA plays an important role in the investigation process in that many crimes have been solved through DNA and new ways of collecting biological exhibits have been provided for by the DNA technology. In addition to that, the suspects have been identified through the DNA technology and the innocent have been exonerated. Due to this linkage between DNA and the investigation process, it is the finding of this research that the significances of biological exhibits are identification, individualisation of the perpetrator, linkage of the perpetrator to the scene of rape, supplementation of eye witness or victim testimony as well as the availability of expert testimony.

5.2.3.1. Secondary findings

The new definition of rape is not totally different from the old definition as it does not really affect the usual way of investigation of rape cases. The same crime kit is still used for both male and female victims and the scenes of rape cases remain the same in cases where the males and the females are victims. The following secondary findings were established:

- The old definition of rape was gender specific in that it could only be committed by males on females. The new definition means that rape can be committed by anyone and the penetration can include by means of penis or any other object. The elements of the rape of crime still remain the same in both definitions and the means of collection of biological exhibits is still done by means of SAECK in both males and female victims
- Biological exhibits in rape cases can be collected from different scenes of rape which are body of the perpetrator, body of the victim and any place where the rape may have taken place or a deposit of a biological exhibit took place
- Biological exhibits lead to identification in that the analysts can tell that this particular deposit is blood, semen, saliva or smears thereby placing it under a specific group
- Biological exhibits lead to individualisation in that the analysts can tell after DNA typing or comparison with the database that this blood, semen, saliva or smears belong to this specific person. By so doing the perpetrators of rape may

be made known through the biological exhibits hence this research found that one of the significances of biological exhibits is individualisation

- Biological exhibits link the perpetrators to the crime scenes. Availability of biological exhibits deposited at a particular place concludes that there is a connection between the perpetrator and the scene of rape. This is more viable after individualisation and will require a full explanation of the presence of the perpetrator at that scene
- Biological exhibits supplements the eye witness's account in that it acts as a mute witness. they confirm the presence of the perpetrator at a particular scene of rape, bring about identification as well as individualisation of those suspected of committing the crimes of rape
- Biological exhibits bring about the expert testimony. This is the evidence of those who were not initially present during the commission of rape but are able to assist in terms of what happened, when and how it happened

To conclude, it was established that the biological exhibits have significance in investigation of rape cases.

5.3. RECOMMENDATIONS

The main intention of any research is to identify a particular problem, investigate this problem and establish the possible remedial measures. According to Hofstee (2007:159) these recommendations are also called suggestions for the application of research and must be feasible to implement and clearly useful. Recommendations made on the basis of the facts that were discovered during the course of the research are the following:

5.3.1. Research question 1: what are the biological exhibits?

- It is recommended that a common term 'biological exhibits' be used for all samples that originate from the human beings, can be analysed through the DNA technology and are instrumental in investigation of rape cases. This should be declared a new category other than serological exhibits which include the analysis of pollen, larvae and insects which are more relevant in

other investigations other than the rape investigation. The term biological exhibits must be used to denote DNA samples, biological laboratory samples and sexual assault samples to avoid confusion

- This recommendation should be implemented at different training interventions of detectives such as Detective Learning Programme and the Detective Commanders Learning Programme, as well as during curriculum development of universities and other training institutions
- It is recommended that a standing order be developed and included in the guidelines on how to collect biological exhibits that collection of biological exhibits must be done by the forensic fieldworkers only. The guidelines must clarify that identification and individualisation of biological exhibits is the responsibility of the analysts and not the investigators

5.3.2. Research question 2: What are the admissibility requirements of biological evidence in the court of law?

- It is recommended that the detectives sign a code of conduct relating to how the victims of rape, suspects and any interested parties must be handled. This should include the process whereby the parties are informed about the process, the obtaining of samples and the legal implications of submitting or not submitting to these processes.
- It is further recommended that each detective carry a pocket book containing guidelines on how the biological exhibits must be collected. This should include the provisions of section 37 of the CPA and the bill of rights which need to be observed when collecting biological exhibits from the human beings. This pocket should also include how the packaging of biological exhibits should be done without exposing them to environmental effects
- In order to maintain a chain of custody, it is recommended that a register be developed where the details of those who come into contact with the biological exhibits can be recorded. This register can then be used when obtaining chain statements and will ensure that critical role players are not omitted in those statements thereby ensuring that the integrity of those samples remain intact

5.3.3. Research question 3: What is the significance of biological exhibits in investigation of rape cases?

- It is recommended that investigators move away from the traditional investigation methods when investigating rape cases. DNA technology must be used more frequently in order to realise the significances of biological exhibits. Each and every biological exhibit found at the scene of rape case must be seen as a potential source of DNA but must be scrutinised by the fieldworker or crime scene examiner. This scrutiny coupled with presumptive tests will minimise the collection of unnecessary samples from the crime scenes thereby overloading the Forensic Science Laboratory. If the screening is done properly by the fieldworkers or examiners, the FSL will not conduct unnecessary tests in order to eliminate DNA samples with no evidential value.
- It is recommended that the comparison of the old and new definition of rape out of this research be disseminated to the investigators to ensure the smooth transition of the significance of biological exhibits from the old definition to the new one without compromising the quality of rape investigations. There should be an endeavour by the investigators to use biological exhibits in identifying, individualising, supplementing the eye witness or victim testimony and availing the expert testimony when needed by the courts of law

5.3.4. Further research

- It is recommended that a further research be conducted on the possibility of the creation of DNA databases. This research established that biological exhibits can be useful in investigation of rape cases but this is not without problems. Further research will seek to compare the success of DNA in South Africa with other countries where the databases are used. The comparison should look at the pace of analysis as well as the possibility of matching the collected samples with profiles already in the database. Further research will have to establish whether the creation of databases will mitigate the problems associated with DNA analysis as established by this research.

5.4. CONCLUSION

It is evident that the biological exhibits and biological evidence is seldom used in the courts of law to prove the cases of rape. Even in cases where it is used, it is clear that it is normally open to vicious attacks by the defence counsel. These challenges are brought by the fact that those who are responsible for the mammoth task of investigating rape cases are often less conversant or ignorant of applicable legislation. The unfortunate part is that all these challenges impact adversely on the outcome of rape cases thereby discouraging the victims to report rape cases. Most of the rape cases stand to be thrown out of court, or arrive at a not guilty verdict merely because of legal technicalities. The results of this research looks promising but can still be improved and validated by further research not only on investigation of rape cases, but also on investigation of other cases such as murder but with strong emphasis on the usage of biological evidence in investigation and prosecution as a whole.

The 1996 constitution has brought a number of legal developments which in most cases, when not observed can have a crippling effect on the modern investigation practices. Gone are those days that evidence was extracted from the suspects through use of illegal means such as assaults, electrocution and illegitimate promises. It is against this background that it remains mandatory for crime investigators involved in investigation of rape to conduct investigation that will stand the test of time, cross-examination or even malicious manipulation by the defence. In the final analysis, the outcomes of this research are also relevant to the investigation of other cases but the focus remains on the rape cases which form the crux of the research problem.

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CASE LAW

DPP v Kilbourne 1973 AC 729

Masiya vs DPP 2007 ZACC 9

S v Baleka (1) 1986 (4) SA 192 (T)

R v K 1958 3 SA 420 (A)

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S v J 1998 (2) SA 948 (SCA)

S v Kaptein 1984 (3) SA 316 (CPD)

S v Makwanyane 1995 6 BCLR 665 (CC)

S v Mvelase 1996 8 BCLR 1055 (N)

S v Nzusa 1963 (3) SA 631 (A)

S v Soci 1998 (3) BCLR 376 (E)

S v Van der Sandt 1997 2 SACR 116 (W)

S v Zuma 2006 (2) SACR 191 (WLD)

ANNEXURE 1: INTERVIEW SCHEDULE

DETECTIVES: DETECTIVE LEARNING PROGRAMME: HAMMANSKRAAL
DETECTIVE AND INTELLIGENCE ACADEMY: SOUTH AFRICAN POLICE
SERVICES

UNISA

The significance of biological exhibits in investigation of rape cases

Respondent identity number

Date of the interview

SECTION 1: DEMOGRAPHIC DATA

1. What is your rank?
2. How long are you working for the police service?
3. In which unit of the police service are you attached?
4. Do you ever investigate rape cases?
5. Do you possess any certificates on courses offered by the police service?
6. Did you receive any training on the investigation of sexual assault cases?
7. Did you complete your Detective Learning Programme or still attending it?

SECTION 2: BIOLOGICAL EXHIBITS

8. How can you describe blood?
9. Can you identify blood superficially on a scene of rape?
10. Why should the origin of blood be established?
11. What is semen?
12. Give a superficial description of semen
13. Why is it important to establish the origin of semen?

14. What do you understand by vaginal smears?
15. Give a superficial description of saliva
16. Whose responsibility is it to identify saliva?
17. Why is it important to identify the origin of saliva?
18. What do you understand by the crime scene?
19. Name at least one place where rape can take place
20. Do you consider a place where rape took place, a scene of rape?
21. Mention at least one biological exhibit that can be found at the place where rape took place
22. Do you consider the body of a victim as a scene of rape?
23. Do you consider the body of a perpetrator as a scene of rape?
24. What do you understand by the Locard Principle?
25. What is the relevance of the Locard Principle in investigation of rape cases?

SECTION 3: ADMISSIBILITY OF BIOLOGICAL EXHIBITS

26. Mention at least one factor to be considered in order to ensure admissibility of biological evidence?
27. Mention at least one guideline aimed at ensuring the maintenance of chain of custody
28. What is the importance of the chain of custody in investigation of rape cases?
29. Mention at least one legal consideration when obtaining biological exhibits from human beings
30. What do you understand by the relevance of biological evidence?
31. What do you understand by the contamination of biological evidence?
32. Give a description of a processing of a crime scene
33. What do you understand by the collection of biological exhibits?
34. Mention at least one guideline in relation to collection of biological exhibits
35. How should the samples be packaged

SECTION 4: SIGNIFICANCE OF BIOLOGICAL EXHIBITS

36. What is rape?
37. Mention at least one DNA host potentially present at the scene of rape

38. What do you understand by the DNA?
39. What is the possible significance of DNA in investigation of rape cases?
40. Where can the DNA samples be drawn from?
41. Are there any challenges associated with the DNA analysis?
42. Mention at least one significance of biological exhibits in investigation of rape cases
43. What do you understand by identification?
44. Why is identification regarded as a significance of biological exhibits?
45. What do you understand by individualisation?
46. Why is individualisation regarded as a significance of biological exhibits?
47. Are there any challenges associated with individualisation?
48. Which biological exhibits are likely to individualise a rape perpetrator?
49. What do you understand by the linkage of the suspect to the crime scene?
50. Why is the linkage of the suspect regarded as a significance of biological exhibits?
51. What do you understand by the supplementation of the victim's testimony?
52. Why is that regarded as a significance of biological exhibits?
53. What do you understand by expert testimony?
54. Why is that regarded as a significance of biological exhibits?

ANNEXURE 2: INTERVIEW SCHEDULE

FORENSIC ANALYSTS: FORENSIC SCIENCE LABORATORY:
BIOLOGICAL UNIT: SOUTH AFRICAN POLICE SERVICES

UNISA

The significance of biological exhibits in investigation of rape cases

Respondent identity number

Date of the interview

SECTION 1: DEMOGRAPHIC DATA

1. What is your rank?
2. How long are you working for the police service?
3. In which unit of the police service are you attached?
4. Do you ever analyse biological exhibits in relation to rape cases?
5. Do you possess any certificates on courses offered by the police service?
6. Did you receive any training on the analysis of sexual assault cases' evidence?
7. Did you complete your analytical chemistry programme?

SECTION 2: BIOLOGICAL EXHIBITS

8. What do you understand by blood?
9. Why should the origin of blood be established?
10. What do you understand by semen?
11. Give a superficial description of semen
12. How can semen be identified in the scene of rape cases?
13. Why is it important to establish the origin of semen (whether it is from humans or animals)?
14. What do you understand by vaginal smears?

15. How are the vaginal smears collected?
16. Give a superficial description of saliva
17. Whose responsibility is it to identify saliva?
18. Was any DNA detected from the saliva that you ever analysed?
19. What do you understand by the crime scene?
20. Name at least one place where rape can take place
21. Do you consider a place where rape took place, a scene of rape?
22. Mention at least one biological exhibit that can be found at the place where rape took place
23. Do you consider the body of a victim as a scene of rape?
24. Do you consider the body of a perpetrator as a scene of rape?
25. Have you ever analysed any samples from the alleged rape perpetrator?
26. What do you understand by the Locard Principle?
27. What is the relevance of the Locard Principle in investigation of rape cases?

SECTION 3: ADMISSIBILITY OF BIOLOGICAL EXHIBITS

28. Mention at least one factor to be considered in order to ensure admissibility of biological evidence?
29. Mention at least one guideline aimed at ensuring the maintenance of chain of custody
30. What is the importance of the chain of custody in investigation of rape cases?
31. Mention at least one legal consideration when obtaining biological exhibits from human beings
32. What do you understand by the relevance of biological evidence?
33. What do you understand by the contamination of biological evidence?
34. Give a description of a processing of a crime scene
35. What do you understand by the collection of biological exhibits?
36. Mention at least one guideline in relation to collection of biological exhibits
37. How should the samples be packaged
38. Explain how samples should be preserved

SECTION 4: SIGNIFICANCE OF BIOLOGICAL EXHIBITS

39. What is rape?
40. Mention at least one DNA host potentially present at the scene of rape
41. What do you understand by the DNA?
42. What is the possible significance of DNA in investigation of rape cases?
43. Where can the DNA samples be drawn from?
44. Against what are the biological exhibits compared during analysis?
45. Are there any challenges associated with the DNA analysis?
46. Mention at least one significance of biological exhibits in investigation of rape cases
47. What do you understand by identification?
48. Why is identification regarded as a significance of biological exhibits?
49. What do you understand by individualisation?
50. Why is individualisation regarded as a significance of biological exhibits?
51. Are there any challenges associated with individualisation?
52. Which biological exhibits are likely to individualise a rape perpetrator?
53. What do you understand by the linkage of the suspect to the crime scene?
54. Why is the linkage of the suspect regarded as a significance of biological exhibits?
55. What do you understand by the supplementation of the victim's testimony?
56. Why is that regarded as a significance of biological exhibits?
57. What do you understand by expert testimony?
58. Why is that regarded as a significance of biological exhibits?

ANNEXURE 3: DOCKET ANALYSIS CHECKLIST

DOCKET IDENTITY NUMBER

DATE OF ANALYSIS

DATA FEATURE	FINDINGS
Surfaces where blood can be deposited or found	
Surfaces where semen can be deposited and found	
Who analyses the semen found on the scene of rape cases	
Did the detectives identify any secretions as saliva	
Places where rape took place	
Was the victim's body examined for biological exhibits	
Was the perpetrator's body examined for biological exhibits	
Statements indicating the chain of custody	
Any consent forms signed for obtaining biological exhibits	
Who are the victims of rape	
Who are the perpetrators of rape	
Are the victims sent to the Doctor for examination	
Are the perpetrators sent to the Doctor for examination	
Biological exhibits used for individualisation	
Does Section 212 certificates link suspects to the crime/scene	
Does the expert testimony need further clarification	

ANNEXURE 4: LETTER OF PERMISSION TO CONDUCT RESEARCH

INFORMATION NOTE

Ref: 3/34/2(12)

The Provincial Commissioner

SA Police Services

GAUTENG

**APPLICATION TO CONDUCT RESEARCH IN THE SOUTH AFRICAN
POLICE SERVICES: GAUTENG: POST GRADUATE STUDY :
MR.SI DINTWE**

1. MR Dintwe is a lecturer in the Faculty of Forensic Investigation at the Police Practice Department of the University of South Africa in Florida.
2. The subject of the study is, The Value of Biological Exhibits in the Investigation of Rape Cases.
3. The researcher intends to interview approximately 30 detectives who will be attending a Detective Learning Programme (DLP) at the Hammanskraal Detective and Intelligence Academy. He also intends to interview approximately ten(10) Forensic Science laboratory Analysts who are employed by the SAPS Biological Unit and lastly he wants to do a case analysis of all closed rape dockets that had been opened between January 2003 and December 2006 at the Sebokeng police station in Gauteng.
4. The study will be confined to the Hammanskraal Detective Service, the Intelligence Academy and Sebokeng SAPS. An interview will also be conducted with the Station Commissioner of Sebokeng, where the researcher will conduct the research.

5. The police will benefit from the research in that the results will appear in the form of a dissertation that will be placed on record at the UNISA Library. Prospective students in the field of Forensic Investigations can use it as a reference to substantiate further research. In the final analysis the research will contain recommendations that can be used by Police management to revisit certain policies or make the necessary amendments.

6. The researcher will require access to and from the SAPS premises for the duration of two weeks.

7. The following documents from the researcher are attached :
 - 7.1 Mr SI Dintwe's application.
 - 7.2 Research proposal.

8. The application is recommended provided that the research is confined to the Hammanskraal Detective Service, the Intelligence Academy and Sebokeng Police Station in Gauteng.
 - 8.1 In order to ensure the integrity of the case dockets, to protect the identities of complainants and witnesses, to prevent the unlawful disclosure of information that may have a negative impact on the functions of the Service, and to prevent unacceptable demands being placed on the time of employees/ the resources of the Service, the researcher will be assisted by a member/members at the specific stations.

COMMENTS

RECOMMENDED / ~~NOT RECOMMENDED~~

~~-----SIGNED AND FILED-----~~ : **DIRECTOR**
PROVINCIAL HEAD: MANAGEMENT SERVICES: GAUTENG
WA VENTER.

APPROVED / ~~NOT APPROVED~~

~~-----SIGNED AND FILED-----~~: **DEP. PROV. COMM**
F/PROVINCIAL COMMISSIONER : GAUTENG
GH BESTER

Information Note Compiled by SAC. D. Mathule

011- 274 7611 (office)

011- 274 7565 (fax)

083 396 8866 (cell)

Information Note Verified by Snr Supt. PS. Naicker

011- 274 7566 (office)

011- 274 7565 (fax)

082 455 5373 (cell)