Summary

On 1 November 2001, a major amendment to the rules relating to DNA testing in the Dutch Penal Code took effect. DNA testing was no longer restricted to cases in which an 'urgent need existed to bring the truth to light' in the event of very serious crimes. The amendment made it possible to do this also 'in the interest of the investigation' in the case of crimes for which pre-trial detention is allowed. Moreover, public prosecutors were given legal authority to give an instruction or an order to have a DNA test conducted. Previously, only the examining magistrate had that authority.

This amendment had huge consequences. It may be considered general knowledge that the use of DNA testing in criminal proceedings has increased enormously. Nevertheless, what those consequences actually were has never before been precisely identified. This study, conducted by IVA - Tilburg Institute for Social Policy Research and Consultancy on commission by the Research and Documentation Centre of the Ministry of Justice, is intended to meet this need by way of an evaluation of the process and effect of the aforementioned amendment. The practice of DNA testing in the period after the introduction of the Act will be compared with the period before. For this purpose, research conducted by the Seminarium voor Bewijsrecht (training and study centre for the judiciary) of Leiden University will be used, which describes the situation regarding the use of DNA testing in criminal proceedings in 1999, also referred to henceforth as 'the zero measurement'.

Definition of the object and question

The object of this research is to gain insight into the question whether the amendment has promoted the use of DNA testing in criminal cases and whether this has led to more efficiency and effectiveness in the investigation and prosecution process.

Eleven research questions were formulated to achieve this object. The questions relate to the numbers of biological traces and reference samples collected, the profiles obtained from them and the number of matches this produces. Stock is taken of when and how often an order to take reference material needs to be given and who should give that order. In addition, the effects are examined of the DNA tests conducted on the investigation, the accused's attitude towards the proceedings and on the further course of the trial. Lastly, we will examine the extent to which the Act of November 2001 has contributed to the more frequent use and greater role of DNA testing in investigation and prosecution, expanded use of the DNA database and with that a more efficient and improved investigation and prosecution of crimes.

Design of the research

In collecting its data for the zero measurement, the Seminarium voor Bewijsrecht chose at the time to start with the Netherlands Forensic Institute. By way of the applications for a DNA test received there, an attempt was made to gain insight into the corresponding criminal cases at the public prosecutors' offices. This was only partly successful. Many applications proved not to have resulted in a case, or not to have been demonstrably connected with one, for example because no DNA profile could be obtained from the trace material or because no suspect was known. Partly for this reason, a different approach was chosen for this study.

Various sources of information were used. Firstly, information was collected from the chain partners in question, namely the police, the Public Prosecution Service, the Netherlands Forensic

Institute (NFI), the Forensic Laboratory for DNA testing of the Leiden University Medical Centre and the judiciary. Talks were held with representatives of these institutes to gain an idea of the daily course of affairs and the effect and interpretation of the Act. Besides this, specific information, usually figures, was requested to gain an idea of the quantitative effects of the introduction of the Act. The research is limited, as in the zero measurement, to four police regions not mentioned by name. The reference year is 2004, long after the Act was introduced in November 2001 and before the effective date of the *Wet DNA-onderzoek bij veroordeelden* (suggestie: DNA Testing (Convicted Persons) Act), 1 February 2005.

In addition to the direct approach of the chain partners, file research was done. At the NFI, 174 criminal files and 99 case files were analysed. The criminal file research gave answers to the questions about the role of DNA testing in the preliminary investigation and the trial, about the attitude towards the trial and whether or not a countercheck was conducted on appeal. At the NFI, in 99 criminal cases, we examined the amount of trace and reference material sent in per case, exactly what was done with it and what that produced in terms of criminalistics.

Results

Discussion of the results of the research on the basis of the research questions.

1. Examination of trace evidence

How often and in which cases are biological traces secured when a crime has been committed, and from whom did the traces come (suspect, victim, person concerned)?

It is striking that the police forces show great differences in securing biological trace material from a crime scene. One of the causes of this is that the four police regions studied diverge strongly when it comes to screening a crime scene for biological traces. If a crime scene is visited, biological traces are usually sought and an express attempt is made to secure especially crime- and/or offender-related traces. Some of the biological trace material collected is presented according to the High Volume Crime procedure. The amount of traces offered as an HVC case also varies strongly per police region. We find 37.6% as the lowest rate and 78,6% as the highest. The present study does not explain the differences per region. Over three fourths of the HVC traces collected (76%) come from burglaries. In the Netherlands, a total of 10,963 applications for DNA testing were received by the NFI in 2004. In 7,918 of these, HVC was concerned. DNA testing is used *relatively* the most in vice cases, followed by homicides, bodily harm and threats (including armed robbery). The burglaries clearly lead in absolute numbers.

From whom a trace originates is often what DNA testing has to determine. It is often unclear from whom the secured traces originate, for instance if the trace is not examined because other traces from the same case have already provided enough information about the case or because it is presumed that no DNA profile can be obtained or if it has actually proved impossible to do so. A trace profile is linked to a personal profile through the DNA database. The fuller this becomes, the more identifications are possible. The answer to research question 5 – about the DNA database – concerns the number of identifications in 2004.

2. Taking reference material

How often and from whom is what kind of cell material taken to serve as a reference sample in a DNA test? How often is this done involuntarily and how often do 'strong arm tactics' have to be used?

In 2004, the NFI analysed 2,778 reference samples from suspects in total. The DNA profiles obtained from them are stored in the DNA database. Besides this, twenty reference samples from (deceased) victims were analysed (of which the DNA profiles were stored) and thirteen from witnesses/persons concerned (not stored). Many more reference samples were actually analysed, namely from surviving victims and persons concerned, but the NFI does not keep systematic records of them because these profiles are not stored in the DNA database. An

analysis of 99 non-HVC criminal cases at the NFI showed that in those cases, 224 reference samples in total were sent in, of which 110 from suspects (49.1%), 88 from victims (39.3%) and 26 from persons concerned (11.6%). Extrapolating from random sample to population, this means that in 2004 alone, the NFI analysed approximately 4,500 reference samples among the regular cases. Cheek mucus was involved in almost all cases.

With the information available only an estimate can be made of the number of samples not taken voluntarily. The number is between 5% and 25% and varies by police region. Physical coercion hardly ever has to be used. In the rare cases that this is necessary, hairs (hair roots) are preferably pulled out to obtain cell material.

3. Importance of the test

How do public prosecutors and examining magistrates interpret the statutory requirement that a DNA test to be started has to be 'in the interest of the investigation'? Has the change of the criterion from 'urgent necessity' to 'in the interest of the investigation' actually led to more frequent use of DNA testing and how does this relate to the requirement of proportionality and the criterion of 'serious objections'?

The statutory requirement that a DNA test must be 'in the interest of the investigation' is hardly an obstacle to starting such a test. If a possible (biological) trace from an offender is available, it is already 'in the interest of the investigation' to continue to examine whose trace it could be. In doing so, account is taken of the proportionality requirement. The test is not conducted if enough other evidence has been collected. A confession does not play a part in this, because confessions can be withdrawn. Public prosecutors have more difficulty in testing the criterion of 'serious objections' if an order has to be given for the involuntary taking of cell material from a suspect. Decisions are taken more easily in cases of serious offences than in cases of less serious offences.

It is clear that the change to the criterion has contributed towards a sharp increase in the use of DNA testing in criminal cases. The increase comes mainly from High Volume Crime, but can also be observed in the regular cases. The requirement of proportionality is not at issue in this regard, as the police are focusing intensely on the collection of biologic trace material, especially in HVC cases. The DNA database has become an important resource in detection. The cases arising from it (the so-called hit cases) may involve no other evidence but the hit from the DNA database and a report.

4. Competent authority

What is the ratio in terms of figures of public prosecutors to examining magistrates in issuing orders for DNA testing?

Virtually all instructions and orders to conduct a DNA test given in (and after) 2004 were given by public prosecutors. Examining magistrates sometimes give an order in exceptional cases, namely if they want to hold a preliminary judicial inquiry and deem it desirable to conduct a DNA test which has not already been started. In those cases, the examining magistrate remains in charge of the test, but often consults about it with the public prosecutor.

5. DNA database

How many profiles of the traces and reference samples sent to the Netherlands Forensic Institute in the reference year were stored in the DNA database after what period, and in how many cases did a match or a hit follow?

In 2004, the NFI processed 2,005 regular (i.e. non-HVC) criminal cases. An analysis of 99 showed that for each (regular) case, 4.3 pieces of evidence (and other trace carriers) were sent in on average which possibly contained traces. Of these, 7.6 unique traces on average were secured per case. Of these traces, an average of 3.7 profiles (again per case) were obtained and

1.2 were entered in the DNA database. Calculating back, this means that in 2004 the NFI secured approximately 15 thousand pieces of trace evidence in total from non-HVC cases, from which approximately 7,400 DNA profiles were made. About 2,300 profiles (non-HVC) were stored in the DNA database. The analysis also showed that for each criminal case, 2.2 reference samples were sent in on average, 1.1 from suspects, 0,9 from victims and 0.3 from persons concerned. In a bit less than half of the (regular) criminal cases (45.5%) no reference sample from a suspect was sent and in about one fifth of the cases, no reference sample at all was sent.

Ultimately, 8.7% of the traces (15.4% of the pieces of evidence) proved to have produced 'something' in terms of hits (a match of a trace profile with the profile of a person from the DNA database) or matches (of two trace profiles).

Of all traces processed by the NFI in the context of the High Volume Crime procedure (11,648), 6,970 DNA profiles were included in de DNA database (59.8%). This resulted in 27% matches (with traces, of the total number of traces) and 12% hits (with persons, of the total number of profiles included in the database in the reference year).

In 2004, the NFI processed a total of 2,778 reference samples from suspects, of which the DNA profiles obtained from them was stored in the DNA database.

Exact figures on the processing times of the NFI cannot be given. This concerns the period between the time the police sent in pieces of evidence and the time the NFI sent back the results of the DNA test. Precisely round the reference year, systematic records were not kept of the processing times. It is known, however, that the processing times rose sharply in 2004. It even happened that results of DNA tests did not become available until after final judgment had been passed in a case.

6. Cleaning up data from the DNA database

How many orders for deletion of a DNA profile from the DNA database and destruction of the cell material were given in the reference year, in how many cases was the order carried out and in how many cases is the NFI still waiting for an expiry notice from the Public Prosecution Service?

In 2004, 346 profiles were deleted from the DNA database by order of a public prosecutor (155 profiles from reference samples and 191 from traces). An order to delete a profile from the DNA database and destroy the cell material is almost always carried out immediately. The NFI is still waiting for expiry notices in 1,684 cases for suspects and in 7,024 cases for traces. Getting rid of this backlog has meanwhile been given high priority at the Public Prosecution Service.

7. Influence of DNA testing on the course of the trial

What influence does the accused's knowledge of the results of a DNA test have on the accused's attitude towards the trial?

The criminal file research showed that about one fifth of the accused persons fully admit all charges brought against them. Compared with national figures, this can be considered a low rate. In cases in which *no* DNA test was conducted, there seem to be more confessions than in cases in which such testing was done, in relation to both burglaries and capital crimes. The differences are nonetheless not statistically significant and the causality of the relationship is not clear for the time being. The effect of confronting the accused with incriminating evidence from a DNA test on his or her attitude towards the trial seems to be small in general. Incriminating evidence from a DNA test in the case of burglaries, however, does seem to have some effect, in the sense that a confession is more likely to result from this, a finding with which the public prosecutors interviewed concur.

8. DNA testing in the preliminary inquiry and the trial

What is the role of DNA testing in the preliminary inquiry, the trial, the finding of the truth and the judgment? How often does an expert give an explanation of the result of a DNA test during the trial?

Based on criminal file study, we have attempted to gain an idea of the role of the DNA test in the trial. The considerations on the basis of which decisions are taken on the steps of the trial, however, cannot be derived directly from the sources studied. In the present research, therefore, we have attempted to make the best possible reconstruction of the role of DNA testing in the trial, whereby several criteria have been used which are described in subsections 4.3 and 4.4. Relying on our self-developed heuristics, we have shown that in about one fifth of the cases studied in which DNA testing was conducted, its results proved to be decisive for the decision whether to prosecute or not. In over half of the cases, those results did not appear to have been decisive, and in the rest of the cases no statement can be made in that regard.

Incriminating evidence from DNA testing proved to be largely determinative or even the deciding factor in over a third of the cases for the ruling on the question of guilt. In one fifth of the cases, nothing can be said about this and in the remaining cases, it cannot be considered decisive. It emerged clearly during the interviews with the public prosecutors that the value of the evidence from DNA testing can constantly be traced back to the value of the trace, which in turn is determined by the degree to which that trace relates to the crime and the offender. Each trace should always be assessed in the context of the other evidence. If the relation of the trace to the crime and the offender has been established, there will be a good chance that the result of the DNA test was decisive with respect to the furnishing of proof and the conviction.

In none of the cases studied by us did an expert appear at the trial to give an explanation of the result of a DNA test. According to a statement by the NFI, this occurred in a few dozen cases in 2004.

9. Countercheck

How often does which party have a countercheck carried out and for what reasons?

We did not find an indication in any of the cases we studied that a countercheck had been carried out. According to data from the Forensic Laboratory for DNA Testing of the Leiden University Medical Centre, which at present is the only accredited institute in the Netherlands authorised to carry out a countercheck, in 2004, ‘at least six requests’ were made for a countercheck.

10. ‘DNA cases’ in the hopper of the trial

Does conducting a DNA test in a criminal case result in more or fewer summonses, appeals and appeals to the Supreme Court?

Exculpatory evidence from results of DNA tests proves to be a possible reason for a public prosecutor not to prosecute and to dismiss the case. Summonses are served in about six out of ten cases in which exculpatory evidence is available, whereas summonses are served in about nine out of ten cases on average. It is striking that in high profile cases in which DNA testing has been conducted, summonses are served *less often* than in high profile cases in which that has not been done. As in the relationship between the attitude towards the trial and conducting a DNA test or not, it cannot be said whether there is a causal connection and what the cause could be. In the burglary cases studied, this difference is not found. With respect to bringing appeal or not, no statistically significant effects of conducting DNA tests were found. Nevertheless, the figures point towards a decrease in the number of appeals in burglary cases in which DNA testing was done, whereas precisely the reverse holds for the high profile cases; i.e. more appeals if DNA testing has indeed been conducted. In only one of the nineteen appeal cases could it be demonstrated that the convicted person had brought an appeal to the Hoge Raad

(Netherlands Supreme Court). The registration of these cases must be considered as incomplete; some appeals may still be pending.

11. Objects achieved

To what extent did the introduction of the Act of November 2001 contribute towards more frequent use and a greater role of DNA testing in investigation and prosecution, a wider use of the DNA database and with that, a more efficient and improved investigation and prosecution of crimes?

The answer to the first part of this question is given conclusively by the answers to the first ten research questions and is clear: DNA testing is used considerably more often than before in investigation and prosecution, particularly in cases classified as High Volume Crime, but also in regular cases, usually capital crimes such as homicide and vice crimes. Thanks particularly to the advance of the High Volume Crime process, the DNA database has started playing a vital role in the investigation process of many burglaries.

This is a major difference, if not the main difference, in the practice of using DNA testing in criminal proceedings between the periods before and after introduction of the Act of 2001. The Act of 2001 makes it possible to start a DNA test, for example also in the event of a burglary. This possibility was used so enthusiastically, particularly by the police, that an explosive increase took place in the number of applications to the NFI for DNA testing. This resulted in a separate procedure for what were termed High Volume Crime cases, in which only certain pieces of evidence which had proved to have the best chance of producing a usable DNA profile, namely cigarette butts, chewing gum and blood and saliva samples, could be presented to the NFI in a batch containing a maximum of thirty traces. The DNA profiles in these HVC cases are generated and stored in the DNA database in a standardised and largely automated way.

The DNA database has gradually started to play an ever increasing role in the use of DNA testing. Before 2001, hardly any hits were produced on the basis of traces included in the DNA database. Hits on the basis of persons included in it did occur. Hits on the basis of traces, however, is a phenomenon that emerged for the first time after 2001. It also marks the changing function given to DNA testing in trials, namely from that of evidence to (also) that of a means of investigation.

The second part of the question, namely whether the greater role and more frequent use of DNA testing has also contributed towards more effective and efficient criminal proceedings cannot be answered as unequivocally as the first part. In the course of the research, it became clear that the use of DNA testing has become to some extent what could be called the ‘victim of its own success’. It became clear that in order to gain a good understanding of the consequences of the introduction of the Act, in addition to evaluating its effects, it was necessary to evaluate the process as well. This need came to light because administrative shortcomings proved to exist in relation to DNA testing. For instance, the police stated that a DNA test had been conducted in a case, whereas that proved not to have been done, or the reverse. Sometimes no results of a DNA test conducted could be found in the criminal file, or it could not be made clear whether or not the accused had been informed of such a test.

Introduction of the Act of November 2001 resulted in much additional administrative pressure of work at the Public Prosecution Service (as well as at the police), while hardly any, at any rate insufficient, additional capacity was available for the increased workload and no infrastructure existed for the necessary administrative processing, in terms of specification of duties, division of tasks, ICT applications and the like. In addition, the sharply increased demand for DNA testing resulted in peak loads and overloads at the NFI, which caused a sharp increase in the waiting times. This in turn resulted in greater pressure of work at the Public Prosecution Service, because cases had to be stayed in anticipation of the test results, or brought anyway despite the absence of such results. Much has meanwhile been improved, at the Public Prosecution Service as well as at the NFI, even though people there are still faced with the aftermath of the period

just after introduction of the Act, because the DNA database still contains many profiles that may be wrongfully included in it.

Besides practical and procedural side-effects, the introduction of the Act of November 2001, or rather, the sharp increase in the popularity of DNA testing brought about by the introduction of this Act, also resulted in substantive debates over how the results of DNA testing should be interpreted and the level of knowledge required to do so. The so-called Schiedammer Park murder and the 'Posthumus Report' resulting from it (published in 2005) have led to a broad discussion on how one should deal with the results of DNA tests. A conclusion (and recommendation) by Posthumus (relevant to this study) was that public prosecutors' knowledge of forensics was sometimes substandard and needed to be increased. So-called forensic public prosecutors have meanwhile been installed at practically all district courts, who are specialised in forensic methods (therefore including DNA testing) and whose task it is as well to supervise the process and administrative finalisation of cases in which DNA testing has been conducted and improve this where necessary. Posthumus advised the NFI to report more clearly. The NFI has taken the latter very seriously. This has resulted, among other things, in a comprehensive information brochure and a standardised manner of reporting. The processing times have been (and are being further) reduced.

The aforementioned side-effects of the implementation of the Act prevented a more efficient criminal procedure in cases in which DNA testing had been conducted, certainly in the beginning years. The broader use of DNA testing in trials, however, immediately contributed to their effectiveness. This is especially thanks to the increased additions to the DNA database, which have led to substantial improvements in investigation. Besides improved investigation, in many cases there has been an improved presentation of evidence. A match between a trace from an offender and a reference sample counts as firm evidence, which leaves a denying suspect with 'something to explain'. This characteristic of DNA testing cannot be called 'new', let alone a consequence of the introduction of the Act of November 2001. There is nevertheless an *indirect* effect, namely that through the increased use of DNA testing and the consequently increased knowledge about DNA testing of the chain partners involved – some call this 'DNA awareness', traces are being collected more effectively and efficiently which can be evaluated better than before. The relation of the traces to the offender and the crime has received more express attention than before and the terms incriminating and exculpatory evidence have gradually received clearer contours, which ultimately increases their evidentiary value in trials.

Comparison with the zero measurement

In the present study, different research methods were used from those used by the Seminarium voor Bewijsrecht of Leiden University in the zero measurement (reference year 1999). The researchers of the Seminarium attempted to follow applications for DNA testing received by the NFI in the criminal law chain. This did not succeed in many cases, usually for unclear reasons, for which the researchers are not to blame. Although they started on the basis of 155 'net cases', they were left with only 56 in which prosecution had been instituted. This random sample can be considered small, and only gives a rough estimate of the incidence of the phenomena studied. In the present study as well, it has proved difficult to determine when exactly a case should be earmarked as a 'DNA case'. As stated, this had everything to do with what we have called the side-effects of introduction of the Act. These side-effects limit the possibilities for quantitative comparison. Nevertheless, It is more important in this connection to ascertain that the nature of 'the DNA test' has changed so much through the advance of the High Volume Crime procedure, a phenomenon that did not yet exist at all in 1999, that comparison of the situation in 2004 with that of 1999 is even impossible on that point. Nevertheless, at the end of sections two, three and four, interested readers will find a comparison on points where comparison was possible between the present study and that of the Seminarium.