DNA Missing Persons Index (MPI)
A Public Consultation Paper

March 2005

Foreword

This consultation paper examines the issues that would be involved in establishing an approach to creating a national DNA database to make links between persons who have been reported missing, and unidentified human remains. It has been prepared from work undertaken by a federal/provincial/territorial (FPT) working group, at the request of Federal Provincial Territorial Ministers Responsible for Justice. Responses to this consultation will be considered as FPT Ministers engage in further discussions on the creation of a Missing Persons Index to help bring certainty and relief to families of missing persons.

This paper outlines the many practical and legal issues that such a database would raise and asks a series of inter-connected questions, the answers to which will help shape future policy, legislative and practical development.

Responses to the consultation questions, and any more general comments, are welcomed from any group or individual by **June 30, 2005**. Responses can be submitted via interactive online format **(www.psepc.gc.ca)**, by electronic mail to **consultation1@psepc.gc.ca** or by postal mail to:

DNA MPI Public Consultation
Policing, Law Enforcement and Interoperability Branch
Public Safety and Emergency Preparedness Canada
340 Laurier Avenue West
Ottawa K1A 0P8
Attention: Ms. Karen Pottruff

For further information, please contact**:** Ms. Karen Pottruff at 613-990-6117

TABLE OF CONTENTS

Introduction

This paper is designed to explore whether there is a will to develop, on a national basis, a DNA missing persons index (MPI). The purpose of a DNA MPI would be to identify anonymous found human remains.

Background

To fully understand the issues involved in the creation of a DNA Missing Persons Index, it may first be useful to review background information on the issue of missing persons in Canada. A primer on DNA is also provided, as is an overview of the jurisdictions involved in investigations of missing persons in Canada and current Canadian law around DNA collection and storage.

What is a "missing person"? How many are there?

Every year, Canadian police receive about 100,000 reports of persons who have gone missing. Law enforcement agencies use the Canadian Police Information Centre (CPIC) to record and report missing persons cases nationally.

People of all ages may be missing for a number of reasons – for example, intentionally (either as a deliberate disappearance or as a runaway), as a result of mental illness or accident, parental abandonment or abduction, or as a consequence of kidnap or other foul play.

Many mechanisms already exist for providing assistance in different types of case – for example, Child Find, and the Alzheimer's Society's system for notifying police. Of the 100,000 persons reported missing each year, the overwhelming majority return or are found very quickly. Nevertheless, the RCMP estimate that, a year after being reported missing, around 4,800 people are still missing, with an average increase of around 270 new, long-term missing persons each year.

What are "unidentified human remains"? How many are there and what happens to them?

Unidentified human remains may range from complete bodies to small finds of human bone or other tissues. CPIC figures indicate that 20-30 new or partial sets of human remains are discovered each year in Canada. In some cases, these relate to the victims of crimes, but more often to victims of accidents or people who have died of natural causes. CPIC currently records a total of 286 sets or partial sets of

unidentified human remains. Given that a small number of identifications are made each year, this total has remained relatively stable for the last number of years.

Provincially-appointed coroners have jurisdiction over, and responsibility for, unidentified human remains. Provinces indicate that remains are retained indefinitely pending identification. There is no easy or uniform way to connect unidentified remains with a person who has been reported missing.

What is DNA?

DNA (deoxyribonucleic acid) is the fundamental building block of an individual's genetic make-up. It is found in virtually every tissue of the human body. DNA is very stable, meaning that useable DNA can often be found on material that is decades old. This stability, combined with the unique features of each individual's DNA and the accuracy of current DNA analysis techniques, makes DNA a powerful forensic tool for identifying individuals.

Is DNA used now in a missing persons investigation?

Currently, police and coroners use primarily non-DNA means, such as dental records and fingerprints, to identify some of the unidentified human remains described above.

In Canada, there is currently no process for systematically gathering and comparing any of these DNA samples. If this does happen, it occurs locally and on a voluntary, ad hoc basis. Currently, samples and DNA profiles are not retained or indexed, although at least one province is considering moving toward such a system.

Through the use of DNA technology, it would now be technically possible in many cases to make a positive identification of remains – either by matching the DNA profile of the remains with a DNA profile derived from the personal effects of a missing person, or by comparing the DNA profile of the remains with the DNA profile of close biological relatives of a missing person.

Current law enforcement practice varies in terms of collection of DNA relating to missing persons. For example, standard practice among the RCMP calls for the voluntary collection of a sample of the missing person's DNA (e.g. from a hairbrush or toothbrush) within two to three days of the person being reported missing. The DNA sample is not necessarily used in all cases, however it remains a useful practice when the person is missing for a long period of time. The DNA samples are not analyzed, but are retained locally unless and until a DNA profile should be required (for example to allow comparison with unknown DNA

discovered at a crime scene), or until the missing person is either located or would have reached the age of 100. However, approaches to the use of DNA in missing persons cases differ between both Canadian municipal police forces and among those provinces for which the RCMP does not serve as the provincial police force.

The creation of a DNA Missing Persons Index would allow the use of existing technology to confirm whether or not unidentified human remains are those of a missing person – and thereby provide relief for the families of missing persons.

What jurisdictions are involved in missing persons investigations?

Missing persons investigations are not necessarily a matter of criminal law, which is federal jurisdiction. While an individual case has the ***potential*** to become a criminal investigation (depending on the circumstances), missing persons investigations are generally initiated by the local police in their wider, social, community order role.

Under the Canadian Constitution, the provinces also legislate with regard to property and civil rights or matters of "merely local or private nature" – including the legislation governing the role of coroners in dealing with unidentified human remains, for example.

The federal government has general constitutional authority with respect to matters under the "peace, order and good government" umbrella and defence and international affairs. There could be linkages to federal jurisdiction to the extent that any future MPI deals with international or military matters.

Does current legislation permit a DNA MPI?

There is no provincial or territorial legislation authorizing the creation of DNA Missing Persons Indices within these jurisdictions. Nor does current federal legislation authorize the creation or holding of a DNA index of either missing persons or of unidentified human remains.

Federal legislation does, however, govern the collection and storage of DNA as part of criminal investigations. In 1998 Parliament enacted the ***DNA Identification Act***. The Act established a national DNA data bank and amended the ***Criminal Code*** to permit a judge to make a post-conviction DNA data bank order authorizing the taking of bodily substances from a person found guilty of designated ***Criminal Code*** offences, in order to include the offender's DNA profile in the national DNA data bank. In 2000, further legislation applied these provisions to the military justice system. The provisions came into force on June 30, 2000.

The National DNA Data Bank (NDDB), located at RCMP Headquarters in Ottawa, helps law enforcement identify persons alleged to have committed "designated" criminal offences. Its purpose is strictly limited to helping to solve serious crimes, by comparing the DNA profiles of certain convicted offenders with those derived from unidentified DNA found at crime scenes.

Parliamentarians took a very careful approach to the legislation which established the NDDB, with particular regard to privacy issues. A similar, measured approach would be essential in the development of any MPI legislation, whether federal or provincial/territorial.

If an MPI were to be created, an appropriate legal framework would be required, recognizing federal and provincial jurisdictions, building in protections for privacy and acknowledging the differing interests of police, coroners, families and missing persons themselves. It would have to address the form and manner for the giving of consent by family members for the collection of DNA material from the missing person's belongings, and from the relatives themselves (see further below). It would also need to set out procedures for the collection, analysis, storage and protection of DNA information. The precise form of the legal framework would depend on decisions taken in relation to the model of MPI chosen.

Consultation Question 1: Do you support the creation of a DNA Missing Persons Index in Canada?

Building an MPI system

Building an MPI would involve a number of significant challenges. For ease of review, they are presented under the following categories: operational, privacy and technological issues.

Operational issues

Various models would be possible for setting up a DNA MPI, and those listed below should not be considered exhaustive. An appropriate model, however, would need to ensure high throughput with automated assistance for rapid analysis, quality control, consistency, privacy, and security of both biological samples and derived DNA data.

Given that missing persons investigations are led by local police, and that provincial coroners have jurisdiction over unidentified human remains, one possibility would be for provinces and territories to develop their own legislation and MPI/MPIs, either individually or collectively as a network, possibly with

federal government facilitation. This would be similar to the U.S. approach to its DNA data bank: each State has its own independent DNA data bank and uploads data to a virtual national DNA data bank.

Another approach would be to house the Missing Persons Index nationally, perhaps with the RCMP as a National Police Service, and to operate it at federal expense, but to leave to provinces and territories the responsibility to carry out (directly or using RCMP forensic laboratories) or to contract out, the analysis of all biological samples. The RCMP would in effect operate as a clearing house. If provinces and territories had responsibility for sample analysis, the contribution of the RCMP would perhaps be limited to a small number of computer servers, with associated system maintenance and quality assurance oversight. Contracting out the analysis would raise issues of quality control, consistency and security.

A further possibility would be the creation of an entirely new agency to run a national MPI database, either with or without responsibility for analysis of DNA samples.

Any MPI model would need to address the analysis of the existing "backlog" of cases, of both missing persons and unidentified human remains, and the ongoing analysis costs of new cases. Different models would undoubtedly involve different costs. The issue of costs and the question of funding are not addressed in this consultation paper. This would require further analysis and discussion between governments, if it is decided to proceed with the development of an MPI.

Consultation Question 2: Should a Canadian MPI be national or a provincial/territorial network?

Consultation Question 2a: If you think an MPI should be national, should it be located in the RCMP? Or, would you support the creation of a new, independent agency to store and protect access to the biological samples and DNA profiles?

Consultation Question 3: Do you have any views on who should be responsible for carrying out the forensic DNA analysis of the MPI biological samples?

Whatever the model of delivery, certain basic operational questions would have to be addressed. The first and most important would be the adoption of a commonly accepted definition of "missing person". At a minimum, this might require that a person has been reported missing to the police, and entered as such on CPIC, in order to set the MPI process in motion. Given the high percentage of missing persons who are located within a relatively short time, it may be reasonable to

further require that the person has been continuously missing for a period of 12 months.

Additionally, any system would require the development of standard procedures for activating the MPI process in respect of both unidentified human remains and of a missing person, for the provision of informed consent by relatives, and for the communication back (and to whom) of the results of any cross-checking. It would also be necessary to agree on what legal effect a positive identification of human remains as those of a missing person would have (for example, in relation to the local coroner, vital statistics and licensing services, and insurance companies), or whether these issues would be remitted to the coroner in relation to a legal declaration of death.

Consultation Question 4: For the purposes of developing an MPI, how should "missing person" be defined?

Consultation Question 5: Should a positive identification of human remains as being those of a missing person itself have any legal effect?

Another basic operational issue pertains to the collection of information to be housed in an MPI. At a minimum, two separate collections of information would be needed:

- DNA profiles derived from unidentified human remains
- DNA profiles derived from persons reported missing, established from personal effects obtained lawfully through the consent of relatives

For fuller effectiveness, a third collection could also be included:

- DNA profiles derived from consent samples obtained from biological relatives of persons reported missing

The MPI would cross-check the collections of information it contained, in order to establish whether unidentified human remains are those of a missing person.

Backing this up would be a storage bank of these derived profiles, as well as a tracking and document system to provide a historical account for each sample/profile and to establish the probability of kinship and identity. An accredited scientific protocol would be needed to ensure the validity and reliability of DNA profile matching results, and respect for the genetic privacy of the individuals contained in the MPI.

Consultation Question 6: Do you support the inclusion of DNA profiles from volunteer biological relatives of a missing person in an MPI, in addition to the profile of the missing person?

Privacy issues

Any proposed collection, storage and use of personal and genetic information naturally raises major concerns about the privacy and security of that information, and the purposes for which it will be used.

For example, in the case of MPI, how would each information source be collected? It is assumed that there is no privacy interest in unidentified remains and thus no consent issue for collection of this information. In terms of collection of information on DNA of a missing person, who would be authorized to provide that information/material and under what terms or conditions? Similarly, with respect to collection of information from relatives of an alleged missing person, what authority would be required for the collection of this information and parameters for retention, use and destruction? Answers to these questions would need to be defined in any legislation governing MPI.

The ***DNA Identification Act*** (which created the National DNA Data Bank [NDDB] as an investigative tool for use in criminal investigations),for example, clearly defines how the collected biological samples and derived DNA data can be used, as well as the rules for the retention of the original sample. No original biological samples or DNA data can be used for anything other than the law enforcement intentions set out in the legislation.

Furthermore, the RCMP is assisted in the operation of the NDDB by the NDDB Advisory Committee, which includes a representative of the Privacy Commissioner; human rights and ethics experts; scientific and technical experts; and law enforcement and legal experts. The Advisory Committee is not an oversight body, but it provides advice and reports to the RCMP Commissioner on any issue relating to the effective and efficient operation of the NDDB, and assists in the prevention of potential misuse of DNA information.

The establishment of such an independent committee was deemed necessary by the Standing Senate Committee on Legal Constitutional Affairs, to review and advise on the implementation and ongoing administration of the NDDB.

Legislation creating an MPI would have to include careful protection of the privacy of the genetic information and bodily substances held for the purposes of an MPI.

Consultation Question 7: What are your views on collecting identifying information in terms of managing privacy, collection, storage, use and destruction?

Consultation Question 8: Would you want to see some form of advisory or oversight body for a DNA MPI, and if so, what would be its mandate?

The fundamental purpose of an MPI would be to cross-check between the collections of information it contained, in order to establish whether unidentified human remains are those of a missing person. However, it has been suggested that an MPI should go further, and that some or all of the three collections within the MPI should be cross-checked against the holdings of DNA profiles within the NDDB. This kind of cross-checking is permitted, with appropriate restrictions and consents, under some other countries' systems, for example the DNA indices maintained by the FBI.

The rationale for this suggestion has been that such cross-checking might determine whether unidentified human remains belong to a convicted offender.

Any cross-checking would be an extremely sensitive issue and would require very careful consideration by privacy experts and by Parliamentarians. Oversight would therefore be of vital importance.

Consultation Question 9: Should the possibility of cross-checking the DNA of found human remains against DNA profiles within the National DNA Data Bank be explored further?

A separate question relates to the length of time for which a relative's biological samples and DNA information should be retained. Time periods may depend upon the specific circumstances of individual cases. For example, if only partial remains are discovered, samples may need to be retained indefinitely against the possibility of further partial discoveries. Alternatively, if a person reported missing is later found, either alive or dead, and no criminal investigation follows, samples and DNA profiles could be destroyed immediately. Statutory, regulatory and laboratory practices would have to reflect these variations. In particular, relatives would need to be assured that their samples and profiles would be destroyed if and when their missing relative was located and identified. It may also be appropriate to destroy relatives' and a missing person's samples after seven years, unless an application for extension has been received from a relative. This time period

reflects provincial statutory provisions regarding an application for a declaration of death.

Consultation Question 10: How long should biological samples and DNA profiles of missing persons and relatives be retained?

Technological issues

There are two types of DNA within the human cell – mitochondrial and nuclear. They have different characteristics and require different scientific procedures for their analysis. Profiles obtained using mitochondrial DNA cannot be compared with those obtained using nuclear DNA. Mitochondrial DNA is even more enduring than nuclear DNA, though less discriminating between individuals. In some cases, where human remains are either very old or have suffered extreme degradation or environmental exposure such as fire or explosions, mitochondrial DNA may offer the only hope for identification.

The mitochondrial DNA process is not widely used in forensic laboratories in Canada. The scientific techniques required for mitochondrial DNA analysis are significantly more expensive and time-consuming than those for nuclear DNA. Experience in large mass disasters (e.g., the World Trade Center) suggests that nuclear DNA techniques are very successful in yielding useable DNA profiles, even from severely damaged biological samples, in a cost-effective manner.

Although there may be some cases in which mitochondrial DNA analysis might be crucial to identification, it can reasonably be anticipated that the number of such instances will be very small indeed. The numbers of Canadian cases of both missing persons and unidentified human remains are relatively small, and the number of cases in which mitochondrial DNA analysis might be required is very small. It is possible that a significant proportion (e.g. 80%) of unidentified human remains may yield nuclear DNA profiles. A pilot project on a sample of unidentified human remains could yield statistically significant data on the percentage of samples which would yield nuclear DNA profiles. The issue which might then arise is whether to use nuclear DNA technology for this proportion, with the remainder resting unidentified, or whether to use mitochondrial DNA at significantly greater cost with the expectation that 95% or more of the samples would then yield DNA profiles.

Although it would be necessary to conduct a pilot sample before reaching a final conclusion, it may be reasonable to assume at this stage that an MPI need not incorporate a new capacity for mitochondrial DNA analysis. This would likely be very expensive. If it were to be required exceptionally in a particular case, and if other information indicated a potential identity, it may be sufficient for the scheme

to include scope to arrange for that analysis and the analysis of comparison samples to be conducted at mitochondrial-equipped laboratories elsewhere, either in Canada or overseas. For example, both the U.S. Federal Bureau of Investigation and the U.K.'s Forensic Science Service have and use significant mitochondrial capacity.

Consultation Question 11: Should a Canadian MPI be established based on nuclear DNA technology, even though all found human remains might not yield nuclear DNA?

Consultation Question 12: Should a pilot study be carried out to determine what proportion of unidentified human remains might yield nuclear DNA, and if so, what would be an acceptable proportion for the purposes of developing an MPI?

Consultation Question 13: Should a Canadian MPI incorporate a costly capacity to carry out mitochondrial DNA analysis?

Future potential

The December 26, 2004 tsunami in Southeast Asia has focused attention on the serious challenges of victim identification following a mass disaster. If a national MPI were to be developed, a similar permanent approach might be considered for victim identification following a mass disaster. In Australia, for example, a disaster victim identification capacity was added to the functions of the national DNA data bank, following the terrorist bombings in Bali, in October 2002. Given that Canada has had the experience of developing an ad hoc mass victim identification program following the crash of SwissAir Flight 111, and again in relation to the Canadian victims of the tsunami, there could even be a case for developing both capacities at the same time, rather than going through a similar exercise twice.

There may also be potential to build on to an MPI a capacity to analyze stored DNA samples of military/peacekeeping front-line personnel, for use in the event of deaths overseas.

In addition to the missing persons entered into CPIC by Canadian police, at any given time around 3,000 persons from other countries are also listed as missing, at the request of overseas police authorities. In light of this number, there could be interest within the international community to enter into legal agreements regarding other countries' missing persons indices, to share information concerning unidentified human remains.

Consultation Question 14: Would you support consideration of the expansion of a national MPI to include capacity to deal with mass disaster victim identification, and/or a military component, or the capacity to share information with other countries – either now or in the future?

Consultation Question 15: Do you have any additional comments to make regarding the creation of a DNA MPI?

Thank you for taking the time to review this consultation paper.

You may submit your responses by June 30, 2005 either via an interactive online format at www.psepc.gc.ca, by electronic mail to consultation1@psepc.gc.ca or by postal mail to the following address:

DNA MPI Public Consultation
Policing, Law Enforcement and Interoperability Branch
Public Safety and Emergency Preparedness Canada
340 Laurier Avenue West
Ottawa K1A 0P8
Attention: Ms. Karen Pottruff

Summary of Consultation Questions

1. Do you support the creation of a DNA Missing Persons Index in Canada?

2. Should a Canadian MPI be national or a provincial/territorial network?

2a. If you think the MPI should be national, should it be located in the RCMP? Or, would you support the creation of a new, independent agency to store and protect access to the biological samples and DNA profiles?

3. Do you have any views on who should be responsible for carrying out the forensic DNA analysis of the MPI biological samples?

4. For the purposes of developing an MPI, how should "missing person" be defined?

5. Should a positive identification of human remains as being those of a missing person itself have any legal effect?

6. Do you support the inclusion of DNA profiles from volunteer biological relatives of a missing person in an MPI, in addition to the profile of the missing person?

7. What are your views on collecting identifying information in terms of managing privacy, collection, storage, use and destruction?

8. Would you want to see some form of advisory or oversight body for a DNA MPI, and if so, what would be its mandate?

9. Should the possibility of cross-checking the DNA of found human remains within the National DNA Data Bank be explored further?

10. How long should biological samples and DNA profiles of missing persons and relatives be retained?

11. Should a Canadian MPI be established based on nuclear DNA technology, even though all found human remains might not yield nuclear DNA?

12. Should a pilot study be carried out to determine what proportion of unidentified human remains might yield nuclear DNA, and if so, what would be an acceptable proportion for the purposes of developing an MPI?

13. Should a Canadian MPI incorporate a costly capacity to carry out mitochondrial DNA analysis?

14. Would you support consideration of the expansion of a national MPI to include capacity to deal with mass disaster victim identification, and/or a military component, or the capacity to share information with other countries – either now or in the future?

15. Do you have any additional comments to make regarding the creation of a DNA MPI?