



DNA database and the necessity for establishing DNA database in Thailand

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Abstract

Nowadays, Thailand has not yet established a DNA database at the national level. However, only the DNA database stored by the Central Institute of Forensic Science in which the accumulated individual DNA data can benefit solving crimes, verifying missing persons, and certifying parenthood. Meanwhile, several ASEAN member countries have set up DNA databases at the national level and have legislation concerning guidelines in establishing the DNA databases, for instance, Malaysia, Singapore, the Philippines, and Brunei.

The primary purposes of researching DNA database in Thailand are as follows: 1. To become guidelines in setting up the DNA Database in Thailand; 2. To study management on human rights and individual rights concerning the establishment of DNA Database; 3. To become guidelines in promoting cooperation within the ASEAN Community to deal with organized crimes and increasing crimes. These would reduce problems concerning lack of data in searching for the perpetrators in criminal cases in the ASEAN Community. This is a qualitative research using mainly literature review since Thailand has not yet set up the national DNA Database. Therefore, it is necessary to study the format, procedures, problems, and obstacles from the prototype countries that have established and succeeded in setting up the DNA Database, such as the United Kingdom and the United States, compared with the ASEAN countries. The format of this research is set to explore information on the ASEAN Community countries, ASEAN +3 and ASEAN +6 that have established DNA databases at the national level, including the United Kingdom, the United States, New Zealand, Australia, Brunei, Malaysia, the Philippines, Singapore, China, Japan, South Korea, and India.

Due to the social environment along with the free flow of people and rapid spread of news, Thailand should expedite its adaptation in dealing with social problems resulted from free flow movement, for instance, cross-border labor, immigration labor, cross-border organized crimes along with domestic crimes in neighborhood countries. Without preparation and arrangement, it could lead to increasing problems of national security within the ASEAN countries. Consequently, Thailand as a potential state to be a regional logistic hub, it is essential to establish the National DNA Database. Furthermore, as for the ASEAN Community, National DNA Databases should provide similar operations to connect and exchange data, in the same manner, proceeded in the European Union (E.U.). With the new databases, ASEAN countries will have and capabilities to contend with possible crimes and threats from other countries.

Keywords: DNA Database, Forensic Science

Introduction

Thailand is a country with relatively high crime rates due to inequality in society. According to the report on Crime Statistics Data Survey in Thailand: Suggestions for Modern Day Justice System Development by Associate Professor Dr. Jutharat Uaamnoey, it states that in the modern-day justice system organizational development, it is highly crucial to have a support system on data as well as an accurate and reliable foundation in order to help in policy implementation, resource allocation in the agencies of the Ministry of Justice effectively and beneficially. The author had explored three groups of critical criminal cases all over Thailand between 2015 to 2018 from the Royal Thai Police and discovered that the tendency of the cases that the state was a plaintiff is continually increasing with the high rate of arrests. Along with free trade in 2015, it results in a free labor movement to Thailand. The Institute of Forensic Medicine of the Police General Hospital has proposed the use of DNA storing of foreign workers currently working in Thailand to set up a DNA database for the benefit of identity verification in the future.

Nevertheless, this proposal criticizes various aspects, ranging from the concerns that employers need to be

responsible for higher expenses to human rights issues. In 2013, the suggestion proposed by the Institute of Forensic Medicine to the employers was to have employers pay for the DNA storing fee at the rate of 5,000 baht per person and deduct that money from a salary that the employees have to pay them. Another method is setting up the Institute of Forensic Medicine in the South (Region 9), which could store DNA from crime scenes to promote counterterrorism and have entirely established the Institute of Forensic Medicine in all ten country regions facilitate nationwide investigations.

Concerning the human rights aspect, the National Human Rights Commission stated that DNA storage is considered a human rights violation since some of the immigrant laborers do not commit any crime in which that action is considered unfairly selective, and human rights must be well-respected. Even though opening free trade in 2015 would impact that matter, guidelines should not set to aim merely to gain economic benefits from foreign workers and treat them as the inferior in society. Furthermore, scholars on the National Fisheries Committee on fisheries outside of Thai waters expressed their view that ethical concepts that usually come with high prices are often not useful in practice, forcing the

practice of storing an individual's DNA could not be approved if one does not give consent. The storing of DNA would also allow fishers who promote fishing nets to hire their employees with lower wages and certainly would confront resistance from the International Labor Organization. Additionally, the International Labor Organization might argue that the same method should apply to Thai workers.

According to the Central Institute of Forensic Science data, it found that over the past ten years, the means of committing criminal actions have been developed in terms of complexity and become more challenging to prove the perpetrators. DNA verification recognizes as the most accurate and useful forensic evidence in identifying the perpetrators. Thus it is crucial to develop a DNA database to advocate investigations and connect all types of cases in the same way as developed countries proceed with and enact laws to support this matter. Also, Thailand has developed and established a DNA fingerprint database from those who are the accused, suspects, and prisoners in different prisons worldwide to search to set up a National DNA Database in the future. That also proceeds with setting up a system that can connect the DNA database from evidence for cases at the crime scene with the DNA fingerprint database from the accused, suspects, inmates, and prisoners to help find perpetrators and prevent repeating any future offenses. In 2012, the Institute of Forensic Science arranged the memorandum of agreement with the United States Federal Bureau of Investigation (FBI) to use a shared database through the Combined DNA Index System (CODIS) by installing and adopting CODIS since 2013. Nowadays, the Forensic Science Institute has stored DNA profiles within the Forensic Science DNA database for approximately 159,930 items. Moreover, DNA matching uses successfully in estimated 2,036 items, which can be useful for solving court cases, leading to the accused serving with legal sentences according to the judicial process.

The author views that as Thailand is a member state of ASEAN Community as well as ASEAN +3; in this case, it could lead to potential social problems due to free flow movement such as cross-border workers, immigrant labor, cross-border organized crimes along with domestic crimes in other countries in association with other ASEAN member countries. Without suitable preparation and arrangement, it could cause a threat to national security within the ASEAN Communities themselves. Consequently, as a country with potential development to become a regional logistics hub, Thailand finds it necessary to have the National DNA Database. Moreover, as part of the ASEAN Community, setting up the National DNA Fingerprint Database is considered to be equivalently crucial as well in order to be able to connect and exchange information among themselves in the same way that is proceeded within the European Union. That would lead countries in the ASEAN Community to own an up-to-date database and be capable of dealing with criminal problems and various kinds of threats that may occur in the future.

Literature review

Data analysis found that to establish a DNA database in each country, it all requires the law to support the setup by collecting data from a suspect or a person convicted by the court. DNA storage purposes are primarily for benefits in investigating criminal cases by collecting DNA samples

with the data owner's consent, except for serious criminal charges that the DNA storage can do without prior consent. The detailed summary of each country are as follows:

1. The United Kingdom has related laws concerning the forensic science process as follows:
 1. Criminal Justice and Public Order Act 1994 (CJPOA)
 2. Criminal Procedure and Investigations Act 1996
 3. Criminal Evidence (Amendment) Act of 1997
 4. Criminal Justice and Police Act 2001 (CJPA)
 5. Criminal Justice and Police Act 2003 /2004/2005/2008
 6. Crime and Security Act 2010
 7. Protection of Freedoms Act 2012 (POFA)

It has regulated that DNA storage must collect in the National DNA Database (NDNAD) from the perpetrators, captives, and crime scenes. The purpose of the storage is to benefit criminal investigations for police officers. In terms of guidelines concerning human rights and individual rights, data must automatic deleted after investigations finish in misdemeanor cases. For serious criminal offenses, data permit to be stored indefinitely. For petty offenses, data is to store for five years, and for serious criminal offenses, data is to be stored for three years and allowed for a two-year extension.

2. The United States has related laws concerning forensic science process as follows:
 1. The DNA Identification Act, 1994
 2. The Justice for All Act, 2014
 3. The Violence Against Women Act, 2005

The collecting of DNA samples has stored in each state's DNA database by storing from the convicted perpetrators, the accused charged or associated with crimes, and other people who willingly have their DNA sample stored under associated legal agencies. The purpose of DNA storage is to benefit law enforcement and to facilitate database development. In terms of storage, personal information of the convicted, captives, and suspects would not be stored in CODIS aside from DNA data converted to numerical order. For guidelines regarding human rights and individual rights, 38 states have laws regulated for the DNA elimination process in which DNA samples and stored data would be eliminated out of the system when it appears that a person is not guilty. Moreover, 33 states do not have an automatic elimination process in which a person acquitted has to file a request for their data elimination process, and additionally, if the stored data not use, it is to be stored for 35 years maximum. The ability to access data determined by the federal law in which each state must sign an MOU with the FBI laboratory to conform in the same manners. Most importantly, the Federal DNA Identification Act must uphold in practice.

3. New Zealand is the second country to establish a DNA database, following the United Kingdom. The Criminal Investigations (Bodily Samples) Act 1995 regulates a framework of personal DNA sample storage in the DNA Profile Databank (DPD) (C.N. Maguire, 2014) ^[11] and determines regulations and constraints in using the DNA. The DNA database consists of the National DNA Database and Crime Samples Database. In terms of guidelines regarding human rights and individual rights, data will store for ten years at a minimum, and it shall remove out of the system, along with the DNA samples destroy at the specified period.

4. Australia has in total of 3 related acts concerning the creation of DNA storage and guidelines for collecting DNA to assist with the judicial process as follows:
 1. The Commonwealth Crimes Act 1914 (Cth) (Crimes Act)
 2. The Crimes (Forensic Procedures) Act of 2000 No 59 (NSW)
 3. The Criminal Law (Forensic Procedures) Act 2007 (S.A.)

Australia established the National Criminal Investigation DNA Database (NCIDD System) in June of 2001 to facilitate police officers in criminal investigations by comparing DNA profiles stored in the system. The Australian Criminal Intelligence Commission proceeds with collecting samples in crime scenes from the criminal convicted, the suspects, and the victims and unidentifiable bodies under the Crim Trac Agency's supervision, an administrative agency that enacts law at the national level. The guidelines on human rights and individual rights determine that data must be removed from the system and DNA samples must be destroyed within 12 months after storing dates.

5. Brunei has a law concerning establishing a DNA database called Laws of Brunei Chapter 202 Criminals Registration as part of the Criminal Procedure Code of Brunei, in which this law regulates requirements for criminal registration preparation. Part four of the law clearly states DNA storage, which allows storing from the arrested, perpetrators, and inmates. The data in the database must be used in forensic comparison to assist in investigations or according to the objectives set. The data stored is considered as evidence in criminal cases. The agency that is responsible for legal proceedings is the commissioner, as an authorized registrar. Concerning guidelines on human rights and individual rights, the data is set to be removed from the system as the data owner dies following the Registration of Births and Deaths Act.
6. Malaysia has a law related to establishing the DNA database; Deoxyribonucleic Acid (DNA) Identification Act 2009 sets the creation of a DNA Databank titled "the Forensic DNA Databank Malaysia." It determines the DNA storage to investigate, inquire, and identify people in a natural disaster, miss, or in unidentifiable appearance. The agency that authorizes legal proceedings is the Chemistry Department of Malaysia or the Forensic Laboratory of the Royal Malaysia Police. For guidelines concerning human rights and individual rights, in the cases that are unable to prove guilty within one year after the storing date, the head of the DNA Databank must report facts to the Officer in Charge of a Police District within six months in order to remove individual DNA and data from the system.
7. The Philippines has in total two bills related to the creation of the DNA database that is in the process of presenting: the Deoxyribonucleic Acid (DNA) Identification Act and the Philippine DNA Database Act of 2019. Individual DNA samples are determined to be retrieved from the crime scene, suspects, perpetrators, inmates, people with medication usage, missing persons, volunteers, state officers, and civil servants. The purpose of storing DNA is for forensic comparison to utilize in investigations or according to

the specific objectives established regarding guidelines on human rights and individual rights. DNA samples are regulated to be eliminated when data analysis is complete or within six months from the date of storage, depending on which date arrives first unless the court orders otherwise.

8. Singapore has a law relevant to this matter. The Criminal Act 2009 is obligated to collect individual DNA samples from the arrested, perpetrators, and inmates in which the storing of blood samples must be consensual by the person collecting. The purpose of retaining DNA is for forensic comparison, to benefit in investigations, or following the specific objectives set up. Concerning guidelines on human rights and individual rights, DNA samples are required to be removed from the system when they are proven innocent or have no association with wrongdoing.
9. Hong Kong Special Administrative Region of the People's Republic of China has related laws as follows:
 1. Dangerous Drugs, Independent Commission Against Corruption and Police Force (Amendment) Ordinance
 2. Police Force Ordinance (Cap. 232)
 3. Independent Commission Against Corruption Ordinance

The practice of retaining individual DNA samples is determined to be collected from crime scenes in violent criminal cases, perpetrators, suspects, accused, inmates, victims, and volunteers. The agencies are responsible for legal proceedings operated by the Hong Kong Police Force and Government Laboratory (Department of Health) under the commissioner's supervision. For guidelines on human rights and individual rights, data must be taken out of the system when the DNA analysis process is complete or when a person is proven innocent.

10. Japan has two relevant laws, including the DNA Handling and Recording Regulations and the Police Instructions on DNA. Collecting individual DNA begins when investigations start, and consent from the person collected is not required. In case of resistance, officers permit to use force for collecting. The purpose of DNA storage determines the storing under this law to be utilized merely in court proceedings. As stated by this law, the agency that is in charge of legal proceedings is the Public Prosecutor's Office, taking responsibility for the collecting. As for guidelines associated with human rights and individual rights, it allows the DNA storage to be from 3-50 years, depending on the degree of seriousness of the cases, and data must be removed from the system after a person is free of charges; a prosecution ceases; a suspect not prosecuted; when it becomes aware that the data or evidence is unlawful; and when an owner of the data dies during the data storing period.
11. South Korea has the Act on Use and Protection of DNA Identification Information 2010, which regulates the storing of DNA samples of perpetrators in criminal cases from the crime scene and from granted consent for collecting when a person is arrested and a completely stored database has verified data. The purpose of data storage is to utilize DNA data for identification. As for guidelines concerning human rights and individual rights, it states the storage to retain until a person is

proven innocent, and in the events that the court rules a person unconvicted, free of charges, or dismissed, the person whose data store can file a request for data removal.

- India has a relevant bill presented under the parliament's consideration: DNA Technology (Use and Application) Regulation Bill 2018. The bill determines the storing of DNA samples from a person or crime scene in which samples will be analyzed in a laboratory to substitute with a number representing data. When the data create, it takes to store in the DNA database in an electronic form. DNA sample collecting takes from the suspects' cheek cells; however, if the collecting is refusing, or the law requires consent for storing, it can collect from hair. It can also retrieve from crime scenes, such as bloodstain, and it can be analyzed using the same method. The purpose of storing is to benefit the forensic process. Guidelines regarding human rights and individual rights state the storage must be maintained until a court order arrives or until a data request removal is filing. The data from the crime scene and missing persons shall be deleted from the system when filing a data removal request. The suspects' data will eliminate when the police officers have completed case reports; or following a court order; and during the court's proceeding, data removal proceed accordingly to the court order.

Objectives

This research aims to answer whether Thailand should establish a DNA Database at the national level or not and if it was established, whether data connection and data exchange between ASEAN countries could proceed. The objectives of this research are as follows:

- To become guidelines in considering the setting up of the DNA Database in Thailand
- To study about management on human rights and individual rights concerning the establishment of DNA

Database

- To become guidelines in promoting cooperation within the ASEAN Community to deal with recently organized crimes and increasing criminal tendency, which would reduce problems concerning lack of data in searching for the perpetrators in criminal cases in the ASEAN Community.

Methodology

The author uses quality research by studying and analyzing various forms together include

- Determining the scope of the study and data analysis by using literature review primarily. Since Thailand has not yet established a DNA database, it is necessary to study the format, process as well as related problems and obstacles from the prototype countries that have previously created DNA databases and proceeded successfully, such as the United Kingdom and the United States in comparison with the ASEAN Community by researching for data on ASEAN member countries (AC), ASEAN +3 and ASEAN +6, specifically the countries that have set up DNA databases in the national level.
- Data processing and systematic analysis by adopting theories, social concepts, and critical synthesis on the following matters:
 - Analyzing related legislative acts along with agencies that are in charge of establishing a DNA database in each country
 - Analyzing guidelines associated with human rights and individual rights in setting up a DNA database in each country
 - Analyzing objectives and guidelines of DNA storage in each country

Results

Table 1

Country	Law	Taking sample	Retain sample
1. United Kingdom	1. Criminal Justice and Public Order Act 1994 (CJPOA) 2. Criminal Procedure and Investigations Act 1996 3. Criminal Evidence (Amendment) Act 1997 4. Criminal Justice and Police Act 2001 (CJPA) 5. Criminal Justice and Police Act 2003 /2004/2005/2008 6. Crime and Security Act of 2010 7. Protection of Freedoms Act 2012 (POFA)	1. person of having committed an offense 2. arrested 3. crime scene	- un limit for Felony - Minor offense for five years - person reasonably suspected in felony offense for three years extend to 2 years
2. United State of America	1. The DNA Identification Act,1994 2. The Justice for All Act,2014 3. The Violence Against Woman Act,2005	1. convicted 2. alleged offender 3. voluntary	35 years
3. New Zealand	1. Criminal Investigations (Bodily Samples) Act 1995 2. Criminal Investigations (Bodily Samples) Amendment Act 2009	1. alleged offender 2. court order 3. detainee	Ten years
4. Australia	1. The Commonwealth Crimes Act 1914 (Cth) (Crimes Act) 2.The Crimes (Forensic Procedures) Act of 2000 No 59 (NSW) 3. The Criminal Law (Forensic Procedures) Act 2007 (S.A.)	1. suspect 2. felony offense 3. voluntary 4. death 5. missing person 6. court order	12 onths
5. Brunei	Laws of Brunei chapter 202 criminals registration	1. arrested and accused of an offense 2. convicted 3. serving a term of imprisonment	Until death

6. Malaysia	Deoxyribonucleic Acid (DNA) Identification Act of 2009	1. crime scene 2. suspected 3. convicted 4. detainee 5. drug dependant 6. missing persons 7. voluntary	- not involved in the commission of any offense - the charge withdrawn
7. Philippine	1. Deoxyribonucleic Acid (DNA) Identification Act 2. Philippine DNA Database Act of 2019	1. crime scene 2. suspected 3. convicted 4. detainee 5. drug dependant 6. missing persons 7. voluntary 8. uniformed personnel 9. government personnel	Six months
8. Singapore	CRIMINALS ACT 2009	1. arrested 2. convicted 3. detainee	- not involved in the commission of any offense - the charge withdrawn
9. Hong Kong	1. Dangerous Drugs, Independent Commission Against Corruption and Police Force (Amendment) Ordinance 2. Police Force Ordinance (Cap. 232) 3. Independent Commission Against Corruption Ordinance	1. crime scene 2. convicted 3. suspected 4. accused 5. arrested 6. victim 7. voluntary	- not involved in the commission of any offense - the charge withdrawn
10. Japan	1. DNA Handling and Recording Regulations 2. Police Instructions on DNA	1. crime scene 2.unnatural Death 3. suspected	3-50 years
11. South Korea	Act on use and protection of DNA Identification information 2010	1. convicted 2. crime scene 3. arrested	- not involved in the commission of any offense - the charge withdrawn
12. India	DNA Technology (Use and Application) Regulation Bill, 2018	1. crime scene 2. suspected 3. convicted 4. missing persons 5. dead body	court order

Discussion and Conclusion

From analyzing data concerning DNA databases in 12 various countries in total, including the United Kingdom, the United States, New Zealand, Australia, Brunei, Malaysia, the Philippines, Singapore, Hong Kong, Japan, South Korea, and India, it has discovered that the Philippines and India are under the process of presenting bills to be legislated for the creation of DNA databases. For ASEAN countries such as Brunei, Malaysia, the Philippines, and Singapore, law enactment and bills share similarity with some detailed alterations following each country's context. Granting agencies responsibility in operating DNA databases in each country, mostly, the responsibility falls to the Royal Police and related biotechnological institutions of each country. As for guidelines on human rights and individual rights, each country requires data owners' consent before collecting DNA samples to analyze. Concerning DNA data storage, it states a period of storing following the seriousness of commitment, except the United Kingdom, which allows an indefinite period of storage. The United States regulates the storage for 35 years, and Brunei sets the storing period until data owners die. As for the purposes and guidelines in DNA storing practices, the practice is to be used in forensic comparison and utilized primarily in investigating wrongdoing.

As for Thailand, it has not yet established the National DNA Database, and there has not been a law associated with

setting up regulations and guidelines to proceed with forensic science specifically. Thai Criminal Procedure Code, which requires scientific evidence to prove the truth of wrongdoing, The Provision of Forensic Science Services Act, B.E. 2559 (2016) stipulates the authority of the Institute of Forensic Science, the storing of DNA samples from a person; retrieved from the crime scene, volunteers collected for identification, family relations: father, mother, child and relatives from shared ancestry; along with storing from inmates as part of the database in case of repetitive offenses. The objective of storing is to be utilized primarily in judicial proceedings. Also, the storing is to benefit in identification. Agencies in Thailand that in charge of detection and DNA storage, which are the Institute of Forensic Science, Department of Provincial Administration, Ministry of Interior (DNA Detection for Solving Status Problems and the Rights of Thai Citizens from Missing Registration Project), the Memorandum of Cooperation in Database of Perpetrators and Inmates in Connection with Forensic Data for Increasing Effectiveness of Operation in 2017 between the Royal Thai Police and the Department of Corrections; and the Memorandum of Agreement on Cooperation in establishing the DNA database of the offenders especially the inmates in 2020 between the Institute of Forensic Science and the Department of Corrections for Utility of Tracking People that Passed Over the Punishment. As for guidelines regarding human rights

and individual rights, it states in the Constitution of the Kingdom of Thailand that all persons are equal before the law and shall have rights and liberties and be protected equally under the law.

With social surrounding as well as the rapid spread of people and news at present, Thailand should expedite its adaptation in dealing with social problems that may occur from free flow movement, for instance, cross-border labor, immigration labor, cross-border organized crimes, along with domestic crimes in other countries with shared connections. Without preparation and arrangement, it could lead to increasing problems of national security within the ASEAN countries. Consequently, Thailand as a potential state to develop as a regional logistic hub, it is essential to establish the National DNA Database. Furthermore, as for the ASEAN Community themselves, National DNA Databases should provide similar operations in order to connect and exchange data, in the same manner, proceeded in the European Union, resulting in the ASEAN countries to have new databases and capabilities to contend with crimes as well as threats from other countries that may occur in the future.

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