

Effects of Cyanide and Its Medico Legal Aspects

Rimzhim Gandhar^{1*} Nidhi Rai²

¹ B.B.A.LL.B 2nd Year

² B.B.A.LL.B 5th Year

Abstract – Cyanide a name given the most deadly and sinister chemical poison known to man. It can be in gas form or solid or even liquid. Human kind has been taking cyanide in small doses in a natural way. It is found in the chemical composition of human body even in vegetables or certain gases as well. This poison is extremely deadly in a twisted sense as it cannot be detected easily due to its odorless nature. It leaves few to no traces of its presence, that is why cyanide has become a efficient tool for suicides and murders and various other crimes. The concern of this paper is to focus on the essential fundamentals of cyanide, what it is, what is its composition and the medico legal aspect of such poisoning. The following paper will deal with the certain aspects of cyanide poisoning.

-----X-----

WHAT IS CYANIDE?

Poison has its own philosophy. Every person has their own poison. The definition of poison is very vast and it can mean almost anything. But there is one such poison which is deadliest of them all and that is cyanide. Cyanide is a celebrity among all sorts of poison. In a more chemical sense it is a chemical compound referred to as cyano group. It is Carbon(C) atom triple bonded to nitrogen (N) atom.

Cyanide is the most famous poison as being used in various movies and novels sitcoms etc. mystery enthusiasts know very well about this poison. Cyanide has a reputation for causing almost immediate death and as compared to other poisons it is the fastest of them all. This poison is a lot more complicated that it seems. Cyanide is found in various forms such as hydrogen cyanide (HCN) which is a colorless gas, cyanogens chloride (CNCL), sodium cyanide (NACN) as well as potassium cyanide (KCN) both of these are in crystal form.

FOOD AND CYANIDE

[1]Cyanide can be found in small amount in nature and in the products we eat. It occurs naturally and not due to any other reason. As the amount of cyanide in food is very small, due to this is it is not harmful for the body to ingest such amount. Human body is designed to handle cyanide in small doses. When the amount reaches to 50-200mg level that things start to get complicated. [2] Foods such as;

- Spinach
- Almond

- lima beans
- Tapioca
- Millet sprouts
- Bamboo shoots
- Cassava roots
- Apple seeds
- Peach, apricots, cherry pits(fruit pits contain dangerous amount of cyanide)

Cyanide is also present in cigarette smoke, engine exhausts, burning fire etc. Smoke has high level of cyanide in it so hence it can be said that inhaling cyanide is far more dangerous than ingesting it.

ESSENTIAL FEATURES OF CYANIDE

- [3]It is colorless and can be found in various forms.
- There are various chemical bongs called cyanogens which create cyanide
- Cyanide is also odorless hence it becomes difficult to detect it.
- Hydrogen cyanide, on room temperature is pale blue or sometimes colorless liquid. And on high temperature it is a colorless gas.

- Sodium cyanide and potassium cyanide both have a bitter almond like odor and both are white powder
- Cyanogens chloride has a pungent smell to it and is a liquefied gas which is heavier than air itself.
- There are various characteristic odor to cyanides

CYANIDE AND WARS

[4]There are various spy and thriller movies where the captured person swallows a pill to escape torture and brutal questioning. These types of incidents happen in reality as well. These infamous pills were very first designed and produced for active use by British and American secret service organization during World War 2. These pills were given to soldiers who had to infiltrate into the enemy territory and when there was a high risk of capture and torture. This pill was stored in a fake tooth like container which the soldiers had to carry in their mouth and in case of capture they just had to crush the tooth container and cyanide would kill them. And in case of accidental swallowing of the container, the person would suffer no harm at all.

This cyanide pill was mostly famous among Nazi's[5]. The representative and elite people of Nazi group used it multiple times. The leader Adolf Hitler himself used it. The very first person who used it for suicide was Field Marshal Erwin Rommel, who was caught conspiring in the assassination of Adolf Hitler in his very own headquarters called as wolf's lair. But he was caught and to escape the brutal torture he committed suicide by swallowing the cyanide pill. Two more people, the Chief of the German Police Heinrich Himmler and Hermann Goring committed suicide by cyanide. Heinrich Himmler was captured by British army and then later on was presented before the medical expert and during that time to stop his suffering he chewed on the tube container and died after several minute.

The next victim Hermann Goring was held guilty for treason and was captured and held prisoner by Nazi's officers. Later he tried to escape but was unsuccessful as he was again captured by American forces. From there on he was presented before the international military tribunal and was proclaimed guilty for treason and was punished with death by hanging. He requested the tribunal that he wants to be shot to death instead of hanging but the tribunal declined his request. A day before his punishment Going chewed on a cyanide pill and died several minutes later. There is still no clarity as to how he got access to such a pill in prison and there are various theories and speculations regarding the mysterious incident.

There was another big involvement of cyanide and that was in Hitler's death although this not the sole reason he died. Hitler also shot himself in the head after ingesting cyanide and that is how he died on 30th April 1945. The reason he had to opt for such a way to perish was that Berlin was captured by Russian army and he had to hide in his bunker. Hitler got to know that his Italian ally Benito Mussolini was captured and then executed as well. Hitler thought fast and came to the conclusion to commit suicide and so he did. He also had a wife Eva Brown, although he was not able to enjoy his married life because he died the very next day. She was also given the cyanide pill and died due to it. There as another elite Nazi official who was Hitler's closest companion and also witnessed his wedding, committed suicide by cyanide poisoning. His name was Joseph Goebbels. After consuming cyanide pill Joseph shot his wife Magda and then himself too. He also instructed his soldiers to shoot him multiple times so that he is not captured alive. He finally died due to a head shot. Before his death Joseph instructed his medical specialist and injected his six children with cyanide and also morphine so that the children don't die in pain.

One more incident of cyanide was recorded after World War 2. Pilot Francis Gray Powers was flying a CIA owned U-2 in 1960, over Soviet Union was caught and he carried cyanide poison with him. But he was unable to use it as the Russian army imprisoned him. Cyanide was hidden in a fake silver dollar which he carried as a necklace with him. Later on history recorded that cyanide necklaces were found on the bodies of suicide bomber of Tamil Tigers and Sri Lankan Separatist Organization.

CYANIDE EXPOSURE

Hydrogen cyanide has been used as a chemical weapon in many wards. Cyanide containing compounds can be found in various things such as pesticides, fumigants, plastics, photo developing, electroplating, mining, various dye and drugs. It is also used in the production of iron and steel. Waste water treatment creates cyanide even during water chlorination it is produced although in relatively small amount. Human beings are exposed to cyanide on a daily basis majorly but the amount of cyanide is so low that it has no negative effect on the health of people. Daily exposure of cyanide can be through certain foods, smoking, and various other sources. There are more mediums such as breathing cyanide gas when in a enclosed space can be very harmful. The only way cyanide might be lethal is when a person is directly exposed to a high amount of it or when a person intentionally ingests or inhales cyanide.

CYANIDE AND HUMAN BODY

Cyanide when ingested or inhaled directly enters into bloodstream. Human body can handle small amount of cyanide as compared to large amount of it. When there is a small amount of cyanide in body it is converted into thiocyanate which is later on excreted through urine and doesn't stay in the body. Sometime cyanide also gets converted into vitamin B12 which is good for nerves and other red blood cells and various other things. Whereas large amount of cyanide in the body cannot be handled as the conversion of cyanide into thiocyanate becomes overloaded and then the cells get depleted of oxygen due to which eventually they die and then later on the respiratory system, heart and central nervous system shuts down and at last the person dies a horrible death. Cyanide can effect differently depending upon the route, the exposure, and the amount etc of the poison.

Various symptoms after ingestion and inhalation of cyanide in small amount through multiple routes are as following:-

- Nausea
- Weakness
- Headaches
- Difficulty in breathing
- Rapid heart rate
- Dizziness
- Restlessness
- Vomiting

Symptoms of poisoning when cyanide is ingested or inhaled in larger amounts are as following:-

- loss of consciousness
- Convulsion
- Cardiac arrest
- Low blood pressure
- Lung injury
- Respiratory failure
- Slow heart rate

Survivors of cyanide poisoning may develop a problem related their heart brain or nerve.

CYANIDE FIRST AID AND TREATMENT

• First aid

Inhaling cyanide is the quickest way to get exposed to it because breathing is a reflex. If a person has breathed cyanide gas then the safest way is to get out of that particular area. If the gas is released indoor then leave the place and go to an area where there is fresh air. If the gas is released outdoor and the person is not able to find fresh air then stay as low as possible to the ground.

If a person thinks that he is exposed to the chemical then he must immediately take off his clothes and dispose them off, then wash his body with soap and water. Later he must get medical care to see how serious the poisoning is.

The person must remove his clothing which contains cyanide chemical. And if there is any cloth which needs to be pulled over the head then such a cloth must be cut down instead of being pulled over the head as it may increase the risk of chemical inhalation and even ingestion.

If a person is helping other people to remove their clothes then he must follow with cautions and not directly touch them.

Washing is the most important part when exposed to cyanide. The person shall wash himself thoroughly with lot of soap and water.

If cyanide has entered the eye and the eyes burn then the person shall wash them too with soap and water. If the person wears eye contact then wash them too but don't use them. But if the person has spectacles then he shall wash those carefully with soap and water and can wear them again.

After all the washing the next step is to dispose of the contaminated objects and clothes so that the person and other people are safe from further issues. To dispose of the clothing they must be put inside a plastic bag but the person must make sure not to touch the contaminated areas of the clothes. The most secure way to do this is either to wear rubber gloves or use tools and tongs to pick up the objects and clothes and put them in the bag.

When the medical team arrives they must be informed about the deposition of the clothes and objects.

• Treatment

After all the self-first aid, cyanide poisoning is then treated by medical professionals. There are times when the patient is given oxygen as oxygen shortage is there. Sodium nitrite and thiosulfate, these two antidote are usually used to stop the serious effects of the poisoning. There are patients

with more aggravated form of cyanide poisoning and additional drugs are used to stop other health issue generated due to the poisoning such as seizures etc. special health care is given to people who have lost consciousness. Any delay in medical attention and the person dies.

MEDICO LEGAL ASPECT

During the investigation of cyanide poisoning cases the presence is very difficult to detect and it must be done on the crime scene itself. If the body undergoes decomposition it becomes very difficult to gather the evidences if such poisoning. While investigating the conclusion should no be done solely on the smell and livor mortis. Gastric burns and red chewy color of the blood is a sound evidence of presence of acute cyanide poisoning. Although the confirmation is drawn by the medical examiner's report and analysis. But each case is unique in its own sense.

Cyanide poisoning mainly occurs through fires and smokes or a direct exposure to the poison. It is found in many places especially hydrogen cyanide which is extremely lethal in high dose. During the investigation of the corpse mainly the bitter almond-like smell is detected or there is a pinkish lividity during the postmortem of the corpse. These two are the major indicator of cyanide poisoning. As cyanide salts are crystalline, their presence can be easily detected near the dead body's mouth or nose. Alkali burns of the gastrointestinal tract that is often found on the victim of cyanide poisoning. In cases where no detection of the substance can be found then it can be confirmed chemically using colorimetric test as well as laboratory report using GC-MS.

For further forensic examination stomach contents as well as blood and urine of the victim is collected and then analyzed in the lab to confirm the presence of cyanide in the body and the cause of death. As cyanide has a very short life span due to its high activity in body it is very difficult to detect it so the testing and analysis is done within first few hours of the exposure.

CASES

• Babu vs. State of Kerala[6]

In this case a B.Com 2nd year student died because of sodium cyanide poisoning. The appellant Babu was charged with murdering his wife. In his defense he stated that his wife was sexually abused by his friend Benny when the couple was living with them to attend Benny's wedding and resulting to which Sweety killed herself by swallowing sodium cyanide from Benny's almirah. Babu gave this statement under sec 313 of Cr.Pc. later on it was found that he has bought 1 kg of cyanide from a person called Xavier under the pretence that he had a jewelry shop and needed sodium cyanide to clean them. This was

evidence enough to make him guilty under sec 301 of IPC.

• Ramesh Kumar vs. State of Punjab[7]

In this case Ramesh Kumar and his wife were recently married but suddenly they started having quarrels and hence their married life was unhappy. One day Ramesh's wife was found dead due to poisoning. He and his mother were held guilty of killing her under sec 302 of IPC. Whereas the mother was acquitted. But there was a hitch and it was found that the cause of death was poisoning. But the contents of stomach indicated only cyanide whereas the accused could have access to potassium cyanide as he worked in a steel factory. So a case of suicide was forwarded. But there were not sufficient evidences. Although there was high suspicion on the accused, but it cannot become proof, the accusation was put aside.

• Mahavir Singh vs. State[8]

Mahavir and his brother Dhruv Singh were both on a disagreement regarding the inheritance of their father's property. Mahavir wanted Dhruv to live with him so that when Dhruv dies his part of property goes to Mahavir's children. But Dhruv was planning to adopt children and Mahavir advised that he adopts Mahavir's son. Dhruv declined that and adopted a son. Mahavir then in rage decided to kill his brother and threatened him. Due to which Dhruv fled to settle in Delhi, with fear for his life. Mahavir then conspired along with a few more people and a doctor. He then acquired potassium cyanide injection from the doctor and with the help of other two people killed Dhruv. And Mahavir was held guilty along with all the other conspirers.

• K. Maheswaran vs. State of Tamil Nadu

Thilagavathi, who was residing at Therkupattam village. She was married to Dakshinamoorthy and later on lost him in a freak motor accident and then started living in her parent's house. She got a sum of 3, 80,000 because her husband has died. And she deposited that money in the bank and used to frequently go and withdraw money from her account. Later on the appellant/accused who was a close relative of her followed her to the bank and they both never came back. Following that body of the girl was found under a bridge and her medical examination was done. It was reported that the cause of death was cyanide poisoning. The accused was charged with murder and found guilty under sec 302 of IPC and was given life imprisonment with fine.

CONCLUSION

Cyanide is the most notorious and lethal poison which is often used as a suicide device by many

people. Cyanide is a freak of nature. It is generated naturally and also by man during production of various things. There is a myth regarding cyanide that it provides instant death as it is shown in movies. Although its exposure results in a quick death even before a person says salt or sugar, but in fact the truth is that it's a horrible death and a person suffers a lot he suffocates and then dies. The myth is just a myth. There are also speculations that astronauts carry suicide pills with them. This is also just a myth. Cyanide is a terror and will always remain a hideous poison.

REFERENCE

1. Michael R. Dobbs, in Clinical Neurotoxicology, 2009
2. New York department of health, chemical terrorism.
3. New York department of health, chemical terrorism.
4. John Hopkins, centre for health security, cyanide facts 2014
5. The vintage news, usage of cyanide pill in history.
6. AIR 2008 SC 2066, 11TH august 2010
7. AIR 1994SC 945
8. 30th July 2010

Corresponding Author

Rimzhim Gandhar*

B.B.A.LL.B 2nd Year

rimzhimgandhar1@gmail.com