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## **A Medical And Scientific Analysis Of Murder By Hydrogen Cyanide (prussic Acid)- Lizzie Borden's Preferred Method**

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# A Medical And Scientific Analysis Of Murder By Hydrogen Cyanide (prussic Acid)- Lizzie Borden's Preferred Method

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## Introduction

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The 1892 murder of Andrew and Abby Borden has been immortalized through the generation in rhyme and verse. The savage murders have become part of the fabric of American folklore. Would-be mystery sleuths have expounded numerous theories as to who actually carried out the murders. Most theories have pointed To Andrew's daughter, Lizzie, as being the primary subject. While others have pointed the guilty finger towards other less likely individuals. The key to the mystery can be found in the contents of a bottle which remained undisturbed on the shelf of a Fall River, MA pharmacy. Lizzie Borden had attempted to purchase prussic acid-hydrogen cyanide- the day before the murders. She was unsuccessful in this attempt and was thus driven to seek out a more reliable mode of murder.

## The Borden Murders

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On June 15, 1893 the New York Times reported that the question of interest at the Borden trial was whether prussic acid could be used, except scientifically and medicinally, for any but a deadly purpose (1). The use of prussic acid was known by the prosecutors to hold the key to the Borden murders. Today, more than a century later, it still shows Lizzie's intent to murder Andrew and Abby Borden.

On August 2, 1892, two days before the murder, Andrew and Abby Borden awoken with a stomach ailment. Abby visits Dr. Bowen and suggests to him that she might have been poisoned while Dr. Bowen remained very skeptical. Why would an individual, upon awakening with stomach pains, jump to the conclusion that she was poisoned rather than suspect a more likely and less sinister cause? Obviously, Abby Borden had some reason to suspect that she might have been poisoned.

It would be reasonable to hypothesize that Lizzie, either alone or with accomplices, placed poison in the food of Andrew and Abby Borden on the evening of August 1, 1892. Upon seeing that the dose of the unknown poison did not have the desired effect, Lizzie

proceeded to D.R. Smith's drug store on the morning of August 3, 1892 and asked for 10 cents worth of prussic acid with which she told the clerk, Eli Bense, that she would clean a sealskin sack (2). When refused, Lizzie's thoughts turned to a more easily attainable and most reliable murder weapon.

## Hydrogen Cyanide (Prussic Acid)

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Hydrogen cyanide is a chemical compound with a chemical formula of HCN. Its historical common name is Prussic acid. Hydrogen cyanide (HCN) is a rapidly acting pale blue or colorless liquid at room temperature. It becomes a colorless gas at higher temperatures (3). HCN was used as a genocidal agent, under the name Zyklon B, by the Germans in World War II (4). HCN binds irreversibly to the iron atom in hemoglobin. The hemoglobin would then be unable to transport oxygen to the body's cells and tissues. It also interferes with adenosine triphosphate resulting in death (5). Prussic acid is absorbed rapidly into the blood from the intestines and other mucous membranes (6). Therefore, it would be very easy to add such a poison to a victim's food thus resulting in a rapid death.

Symptoms of HCN poisoning is rapid heartbeat, headache, and drowsiness followed by coma, convulsions, and death (5). As prussic acid has the slight smell of almonds, the stomach contents of such a poisoning victim might have such a smell if the autopsy is performed in a very timely fashion.

It has been thought since the early nineteenth century that farm animals were being poisoned because they were eating certain plants which contained prussic acid. This theory was confirmed in the early twentieth century (7). On August 17, 1835 Dexter H. Chamberlain of Boston, Massachusetts was granted a United States patent for a harpoon which contained a vial of prussic acid which was intended to be used by the whaling industry (8). A contemporary article described the prussic acid in Chamberlain's invention as being "the most deadly of all the known poisons, inasmuch as the vital energies seem to be overthrown very soon after this horrible liquid is brought in contact

with the blood (9). Prussic acid harpoons were carried on the whaling ships 'Susan' of Nantucket, 'Fame' of Nantucket and 'America' of New Bedford, MA (8). It would be safe to assume that during Lizzie's lifetime, she might have garnered the knowledge of the deadly power of prussic acid from the old seamen of her hometown.

## Conclusion

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Whether Lizzie actually wielded the implement of death into the skulls of her father and stepmother will continue to be a matter of speculation for many generations into the future. Historians have searched for any remaining clue which might definitively answer this question. I don't believe that question will ever be answered to everyone's complete satisfaction. However, Lizzie's desire to purchase the deadly poison, hydrogen cyanide, prior to the murders proves that she was, by no means, innocent. At very least, Lizzie was an accomplice to premeditated double homicide physically carried out by one of the usual suspects such as Bridget Sullivan the maid, Emma, William Borden, Uncle John Morse or, maybe even someone who has skillfully and surreptitiously escaped history's suspicion for more than a century.

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