Toxic agents

Thanks to advances in forensic toxicology and pathology, poison is too easily detected in the body to be the convenient murder weapon it once was. Rather than the crime-thriller cliché of the impatient heir, today's poisoners are more likely to be terrorists causing urban mayhem, or disturbed doctors with a lust for killing.

DEATH IN A BOTTLE
Morbid symbols on these 19th-century bottles warned of the danger of their contents. A complete lack of regulation made it easy to buy even the deadliest poisons.

In the bedroom of a palatial hotel in Luxor, Egypt, British industrial chemist John Allan slyly slips a pinch of white powder into his rich girlfriend's gin and tonic. She doesn't notice the faint smell of almonds, but on finishing the drink she immediately suffers a blinding headache and heart palpitations. Her boyfriend watches her agonizing death for ten minutes before calling for help. A tour guide who rushes to the room becomes suspicious when Allan refuses to give mouth-to-mouth resuscitation to his loved one, and a postmortem reveals cyanide in the dead woman's stomach.

It was a classic case of homicide by poisoning: a year earlier the murderer had changed his victim's will in his favor. But Allan's conviction in 2000 made "Death on the Nile" headlines around the world precisely because the crime was so unusually similar to an Agatha Christie plot, and because the murderer was naïve enough to imagine that he could escape justice.

Unusual weapons

This cynical killing was an aberration: as a weapon of murder, poison is now so rarely used that it hardly features in homicide statistics. Stricter control of poisons is partly responsible, as is the improved sensitivity of postmortem detection.

A century ago, though, it was not difficult for poisoners to escape the hangman. Assassins used toxic plants, metals, and chemicals to end the lives of inconvenient lovers or business partners. Unlike other weapons, poisons require neither strength nor courage. With a slight knowledge of toxins, and careful attention to dose, murderers could simulate natural death. In the absence of forensic tests, only the careless were convicted. Most murderers now use other methods. Medics and terrorists are the conspicuous exceptions.

Medical murder

While it is very rare for members of the medical professions to harm their patients, for those that do, poison can be easily administered and often goes unsuspected.

TOKYO SUBWAY ATTACK

1. *Nearly 5,000 people were affected by the sarin gas released on the Tokyo subway.*
2. *Coincidentally, Tokyo police had taken delivery of special chemical protection suits the previous week.*
3. *Paramedics who did not have proper protection also needed treatment for poisoning by the nerve agent.*

VICTIMS OF SARIN GAS
Commuters overcome by sarin fumes await ambulances outside a Tokyo subway station in March 1995.

The culprits have access to poison and professional competence in its use. They are trusted with life—yet they are also intimate with death. Medical poisoners also have frequent opportunities to kill. They favor large doses of drugs that are routinely administered therapeutically. Their motives are diverse. Some simply get a buzz out of killing, or enjoy the sense of power it gives them. Some do it because they will profit from the crime, perhaps through a will. Others may believe that what they are doing is merciful.

Driven by dogma

Terrorist poisoners, by contrast, are united by their motive. All are fanatical believers in a cause they consider so important that its propagation justifies anything—even mass murder. Some also have a major advantage over the traditional assassin: they are willing to risk sacrificing their own life.

Instead of focusing on a single target, terrorists aim to kill as many as possible; and the only reason for stealth is to give the poison time to spread or take effect.

Terrorists also choose quite different toxins, favoring biological or chemical weapons from the darker side of the military spectrum. Often such toxins are surprisingly easy to make. A chemistry graduate has enough knowledge to synthesize the sarin nerve gas that the Aum Shinrikyo religious sect released on the subway in Tokyo, Japan, in 1995. Fortunately, effective dispersal of chemical and biological weapons is not easy. The Tokyo incident led to only 12 deaths. Fewer still died in the 2001 releases of anthrax in the United States.

Adapting to terrorism

To limit the impact of similar incidents in the future, the role of forensic science has had to adapt. Toxicologists are developing portable field instruments for rapidly identifying chemical and biological weapons at the crime scene. And in the aftermath of the US anthrax attacks, they are using DNA sequencing to identify the strain of the biological agents involved, in order to trace their source.

CASE STUDY

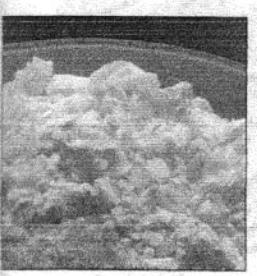
To the people of Hyde, near Manchester, England, Harold Shipman was a kindly family doctor. But his benign manner concealed a deadly passion. Shipman was one of the world's most prolific mass poisoners, killing more than 200 elderly women and a handful of men by injecting them with morphine or diamorphine. The doctor himself certified death, giving a variety of apparently innocent causes. For 15 years none of the killings aroused enough suspicion to trigger a police investigation. One of his motives was greed—he was caught in 2000 when he forged the will of a victim—but he was also addicted to killing, and enjoyed playing "God"—the giver of life or death.

CASE STUDY

POISONER'S FAVORITES

Until chemical analysis made toxins simple to detect in a corpse, poisoners would use a range of chemical, metal, and plant poisons. Many of these were easy to obtain, acted quickly, and caused symptoms that would not arouse suspicion.

ARSENIC ▶
Almost flavorless white powder popular with Victorian poisoners
SYMPTOMS
Include vomiting, weak pulse, blue-green extremities
AFFECTS
Stomach and gut



◀ CYANIDE
Found in garden laurel leaves; extract can kill in five minutes
SYMPTOMS
Dizziness, convulsions, unconsciousness, asphyxiation
AFFECTS
Blood: cannot carry oxygen

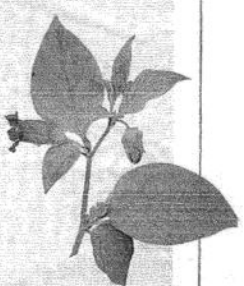
◀ ANTIMONY
Strong metallic flavor, so often administered in small doses over a long period
SYMPTOMS
Vomiting, cramps, sweating, depression, shallow pulse
AFFECTS
Heart: causes heart failure

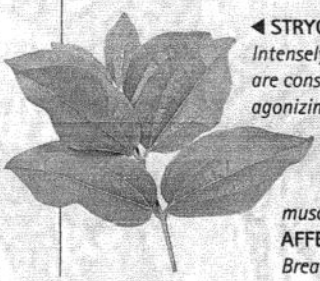
LEAD ▶
Used as sugar of lead (lead acetate). A fifth of a sugar lump is enough to kill
SYMPTOMS
Stomach pain, vomiting, diarrhea, coma
AFFECTS
Brain, circulation, and liver

◀ THALLIUM
As a compound it dissolves invisibly and tastelessly in water
SYMPTOMS
Similar to flu; uniquely, thallium causes hair loss
AFFECTS
Nerves and cells

◀ DEATH CAP MUSHROOM
Used to poison Roman emperor Claudius. Symptoms subside after a day, but recur fatally
SYMPTOMS
Stomach cramps, vomiting, diarrhea, delirium, coma
AFFECTS
Gut, then causes liver failure

DEADLY NIGHTSHADE ▶
As belladonna, one of the favorite poisons of the Borgias in Renaissance Italy
SYMPTOMS
Dry mouth, fever, enlarged pupils, hallucinations, coma
AFFECTS
Lungs and heart: paralyzes them





◀ STRYCHNINE
Intensely bitter-tasting; victims are conscious as they suffer agonizing convulsions
SYMPTOMS
Restlessness, then spasms that tear muscle from ligament
AFFECTS
Breathing: lung paralysis