ANALYSIS OF DRUGS AND POISONS

A **Drug** is considered to be any substance used as a medicine internally or externally. It can have an effect on the function or structure of living tissue through various chemical reactions. Some drugs are habit-forming and are classified as **Narcotics.** These drugs usually relieve pain, induce sleep and can cause death when taken in excess. Consequently, they are regulated by Federal law. All drugs that are covered by law and are restricted in some manner are called "controlled drugs." Whenever a drug of any type is taken in excessive amounts and causes illness or death, it exhibits toxic properties and is then classified as a **Poison.**

An apparent deliberate poisoning, a homicide, an accidental death or suicide can all involve drug consumption. If a victim is found unconscious at the scene of an incident, it is important to determine as quickly as possible if a drug or poison was administered to the victim and what that substance was. Thus, the crime scene needs to be carefully searched for evidence: empty glasses, a beverage, or medicine containers; traces of powder or liquids on the victim's body, clothes or possessions or on the carpet or floor nearby; suspicious material in the trash. It is easier to determine what poisoned a victim by examining an empty container than to have to examine the victim's body parts.

When a person is arrested for possession or sale of illegal drugs, analysis is needed to determine whether the confiscated material is a controlled drug, not just an over-the-counter drug. Forensic chemists must continuously develop new methods for analyzing drugs and poisons to keep up with the modern drug industry and with the criminals who make and sell their own drugs. As soon as a pharmaceutical company produces a new drug, it sends a sample to the FBI Crime Lab. Tests are developed to identify both large and minute quantities of the substance and results are placed on file for use as a reference when unknown samples are analyzed. Many techniques are used to test drugs and poisons, including chromatography (gas, paper and thin layer), spectrophotometry (ultraviolet and infrared), mass spectrometry, and spot tests using certain chemical reagents. The last method is the one we will employ in this kit.

An unknown sample may be one of over a thousand or more common over-the-counter drugs or it may be nothing at all. It may also be a powerful illegal narcotic. The first step of the investigation must be one of screening these possibilities in order to gain a small and manageable number of possibilities to confirm.

If a drug is a tablet, capsule or caplet, the identification process begins with the use of the **Physicians Desk Reference.** A powder might necessitate spot test or implementation of the microscope for observation of plant bits or crystalline precipitates. Once limiting procedures have approximated the drug type, specific analysis techniques, often involving thin layer chromatography (TLC), or other sophisticated laboratory apparatus, are undertaken.

Often drugs sold illicitly are not pure. They are often "cut" with other inert materials known as additives – e.g. sugar, starch and quinine. At times, other poisonous substitutes are incorporated within these illicit drug samples. This "filler" material also must be identified, in that, it is used to dilute the drug's potency and stretch its value when sold on the illicit market.

A complete analysis must leave no error. The sample examined is either a drug or it is not. If it is found to be a drug, it then must be determined whether it is of the legal, over-the-counter type, or illegal. Depending upon the accuracy of the forensic evidence, legal charges might be brought against a drug pusher or a charge of first-degree murder might be brought against someone charged in poisoning of a victim.

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