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# THE MAIN ASPEKTS OF THE IDENTIFICATION OF TOXIC SUBSTANCES

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## ANNOTATION

Humanity coexists in the modern world with natural disasters, man-made catastrophes, labor activities, and other incidental incidents that happen in daily home life. Additionally, criminal and suicide instances with an unidentified chemical cause do occur. In these circumstances, it is important to explain and assess the events that occurred utilizing, among other sciences, the achievements of toxicological chemistry. This article will discuss the emergence, significant developments in toxicological chemistry, the physiological changes brought on by exposure to hazardous substances, the underlying causes, and the various categories of toxic substances.

**Keywords**

Toxicological chemistry, forensic chemistry, toxicology, toxic substances, dose, metabolism.

The science of toxicological chemistry investigates the properties of harmful compounds and identifies how they affect bioobjects, which in turn leads to changes in the organs that support a live organism's vital functions. The field of toxicological chemistry has evolved to meet the demands of forensic medicine, which places a high priority on issues like purposeful poisoning and suicide by poisoning. Research on the internal organs of the dead includes examination of biological fluids from a living body (such as urine, blood, and saliva) in cases of poisoning.

Up until 1965, the field of toxicological chemistry was known as forensic chemistry. The name of this field was changed to toxicological chemistry due to the growth in the scale of dangerous compounds, the diversity of methodologies used to analyze them, and the fact that it is being studied on a wide range of scales in addition to forensic medicine. Toxicological chemistry is currently responsible for locating and detecting narcotic, psychotropic, and poisonous chemicals in biological objects, as well as their metabolites.The field of toxicological chemistry is

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growing in close collaboration with other applicable fields like pharmacology, biological chemistry, pharmaceutical chemistry, chemistry, physics, and biology. The uniqueness of toxicological chemistry is that every year, new types of synthetic chemicals are being found, the nature of which is unknown, and the number of poisonous and toxic substances increases. The field of toxicological chemistry is faced with more important problems as a result of this predicament.

Toxicological chemistry is divided into 3 parts:

1. Law chemistry;

2. Determination of the remains of toxic substances in a living organism and food;

3. Determination of the remains of toxic substances in objects in the environment.

Poisoning or intoxication refers to the pathological changes that take place in the body when certain chemicals or medications are consumed, and the compounds that induce poisoning are referred to as Poisons. Toxicology is the area of medicine that deals with poisoning. These are the categories into which toxicology is divided:

1. Clinical Toxicology;
2. Pharmacology;
3. Narcology;
4. Forensic toxicologii;
5. Doping-control;
6. Biochemical toxicology;
7. Analytical Toxicology;
8. Preventive toxicology.

The following are the primary challenges that the field of toxicological chemistry is currently facing:

1) investigate the theoretical underpinnings of poisons separated from biological objects;

2) isolate toxic substances by decomposing under pressure, fully oxidizing the liquid phase, and neutralizing through combustion in oxygen;

3) study chemically toxic substances by freezing substances at low temperatures when cleaning storage objects; and develop vacuum driving techniques using inert gase.

4) using new, cutting-edge techniques for the analysis of toxic substances, such as atomic absorption, mass spectrometry, and immunological methods;

5) using radio immunological and immune luminescent analysis with high sensitivity in the detection of toxic substances;

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6) studying how toxic substances are metabolized in the body, developing techniques for the analysis of metabolites, and examining how toxic substances are absorbed, distributed, and excreted. studies on how hazardous compounds affect proteins and other endogenous materials in the body and how those things alter.

The method of systematic chemical-toxicological analysis is used to conduct research in toxicological chemistry. Systematic chemical-toxicological analysis is the culmination of systematized research methods for the identification of toxic substances with a strong effect and the metabolism of toxic substances from the end products of which their residues or derivatives are identified. It is used to detect toxic substances in biological objects.

The steps of analytical laboratory research in toxicological chemistry are as follows:

1) preparation and storage of laboratory samples;
2) preparing samples for analysis;
3) conducting analytical research;
4) recording of research results.

The level of toxicity of a substance will vary depending on its physical and chemical characteristics, dosage, concentration, route of entry into the body, and rate of entry. Additionally, characteristics like the presence of specific functional groups in a drug's composition, the chemical makeup of a material, and the atoms' magnetic properties can all affect how poisonous a substance is.=C=O, =C=C=,-NO2, -N=C= substances that maintain functional groups such as, As, Hg compounds, halogens are included in the sentence of substances with high levels of toxicity.

The most crucial element affecting the substance's dosage is how poisonous it is. The dosage of a harmful substance that enters the body orally is defined by how much of it has been absorbed, or how much has made it into the blood, intercellular fluid, or cells. The following list shows the level and quantity of toxicity-inducing compounds when the least amount of hazardous substance enters the body, in accordance with the rule established in 1975 by Hodge and Gleason:

1. The most powerful poisons are 5 mg;
2. Strong poisons 5-50 mg;
3. Substances with high toxicity 50-500 mg;
4. Relatively toxic substances 0.5-5 g/kg;
5. Low toxic substances 5-15 g / kg;
6. Almost non-toxic substances >15 g/kg.

Pharmaceutical formulations that represent several chemical groups and classes are widely employed in modern medicine. In therapeutic doses, where they

actively aid in the recovery of the body's vital processes, and in acquired levels, these medications may be harmful. In this instance, it is shown that the body's vital functions are interfered with, which can result in pathological disorders and occasionally even death. The line separating harmful compounds from drugs is nonexistent. One drug can either help the body's critical functions resume or, on the other hand, seriously harm vital organs.

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