Editorial

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Editorial Note on Regulatory Toxicology

Yakubu OE*

Department of Toxicology, Federal University, Wukari, PMB 1020, Katsina Ala Rd, Nigeria

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***Corresponding author:**
Dr. Ojochenemi Ejeh Yakubu

oj4real_2007@yahoo.co.uk

Department of Toxicology, Federal University, Wukari, PMB 1020, Katsina Ala Rd, Nigeria.

Tel: +234800000000

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Editorial

Toxicology is a scientific discipline, overlapping with biology, chemistry, pharmacology, and medicine, that involves the study of the adverse effects of chemical substances on living organisms and the practice of diagnosing and treating exposures to toxins and toxicants. Toxicology supports the development of standard protocols and new testing methods in order to continuously improve the scientific basis for decision-making processes. The relationship between dose and its effects on the exposed organism is of high significance in toxicology. Factors that influence chemical toxicity include the dosage, duration of exposure (whether it is acute or chronic), route of exposure, species, age, sex, and environment protection of health against harmful effects of chemical substances.

Regulatory toxicology is a scientific discipline, overlapping with biology, chemistry, pharmacology, and medicine that involve the study of the adverse effects of chemical substances on living organisms and the practice of diagnosing and treating exposures to toxins and toxicants. The relationship between dose and its effects on the exposed organism is of high significance in toxicology. Factors that influence chemical toxicity include the dosage, duration of exposure (whether it is acute or chronic), route of exposure, species, age, sex, and environment. It encompasses the collection, processing and evaluation of epidemiological as well as experimental toxicology data to permit toxicologically based decisions directed towards the protection of health against harmful effects of chemical substances

It is the branch of toxicology (the study of adverse effects of chemicals) that uses scientific knowledge to develop regulations and other strategies for reducing and controlling exposure to dangerous chemicals. Furthermore, regulatory toxicology supports the development of standard protocols and new testing methods in order to continuously improve the scientific basis for decision-making process. Considerable attention has been given in many countries, since the 1980s, to developing objective methods for utilizing toxicological information in regulatory decision-making. Formal methods, frequently referred to as risk assessment, have been proposed and utilized in these countries by both governmental and non-governmental entities. Risk assessment has been varyingly defined; fundamentally it is an evaluative process that incorporates toxicology, epidemiology and exposure information to identify and estimate the probability of adverse effects associated with exposures to hazardous substances or conditions. Risk assessment may be qualitative in nature, indicating the nature of an adverse effect and a general estimate of likelihood, or it may be quantitative, with estimates of numbers of affected persons at specific levels of exposure.

In many regulatory systems, risk assessment is undertaken in four stages: hazard identification, the description of the nature of the toxic effect; dose-response evaluation, a semi-quantitative or quantitative analysis of the relationship between exposure (or dose) and severity or likelihood of toxic effect; exposure assessment, the evaluation of information on the range of exposures likely to occur for populations in general or for subgroups within populations; risk characterization, the compilation of all the above information into an expression of the magnitude of risk expected to occur under specified exposure condition. An important component of exposure assessment for reproductive risk assessment relates to information on the timing and duration of exposures.

