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## Toxicity & Their toxicological effects

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### Short Commentary

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### INTRODUCTION

Toxicity is the adverse effect which can easily effect the environment or human being or plants. It can cause the serious adverse effects or adverse effects. Sum of adverse effects or the degree of danger posed by a substance to living organisms. It is expressed generally as a dose response relationship involving the quantity of substance to which the organism is exposed and the route of exposure skin (absorption), mouth (ingestion), or respiratory tract (inhalation). The degree to which a substance (a toxin or poison) can harm humans or animals. Acute toxicity involves harmful effects in an organism through a single or short-term exposure. Subchronic toxicity is the ability of a toxic substance to cause effects for more than one year but less than the lifetime of the exposed organism.

#### Toxicological effects

Most Of the toxic substance can be differentiated in the following ways:

**Irritants:** It is a substance which has the ability to cause the inflammation or chemical burns of the eyes, skin, nose, throat, lungs, and other tissues of the body. Irritation, in biology and physiology, is a state of inflammation or painful reaction to allergy or cell-lining damage [1-4]. A stimulus or agent which induces the state of irritation is an irritant. Irritants are typically thought of as chemical agents (for example phenol and capsaicin) but mechanical, thermal (heat), and radiative stimuli (for example ultraviolet light or ionising radiations) can also be irritants. Irritation also has non-clinical usages referring to bothersome physical or psychological pain or discomfort [4-9]. Itching or irritation anywhere on the body can cause discomfort. But when it occurs in an area as sensitive as the vagina and vulva (the labia, clitoris, and vaginal opening), it can be especially uncomfortable. Dry weather and other things can wreak havoc on your eyes. When they're bothering you, it's important to find relief quickly. Here are some things that might be bothering your eyes, plus ways to fix them [10-15]. And if these tips don't help, check with your doctor. Most genital itching and irritation isn't a major concern. But because they can be symptoms of an infection, it's always a good idea to call your health care provider.

**Systemic poisons:** A toxic substance effecting all the parts of the body and system to varying degrees. The soluble salts of inorganic lead are also strong systemic poisons [16-19]. They may accumulate within the body over a long period until toxic levels are reached and cell damage ensues.

**Carcinogens:** Carcinogens are the substance that is mainly involved in causing cancer directly. Cancer is caused by the change that occurs in the DNA's genetic material [20-26]. Some of these changes may inherit from the ancestors. Several radio-active substances are considered as carcinogens. There are many natural carcinogenic agents like aflatoxin, benzene, vinyl chloride, formaldehyde, dioxane, and acrylamide. Environmental factors can include a wide range of exposures, such as:

- Lifestyle factors (nutrition, tobacco use, physical activity, etc.)
- Naturally occurring exposures (ultraviolet light, radon gas, infectious agents, etc.)
- Medical treatments (radiation and medicines including chemotherapy, hormone drugs, drugs that suppress the immune system, etc.)
- Workplace exposures
- Household exposures
- Pollution

**Mutagens:** Mutagens are the substance that induces the change in hereditary material in cells or organisms. Mutagens are the agents which have the capability in accelerating mutation. The change in the genetic information is usually done by changing DNA [27-34]. Mutagens like ethidium bromide, formaldehyde, di-oxane and nicotine are mainly involved in mutations that cause cancer. Mutagens can be chemical, physical or biological. Chemical agents such as Aromatic amines, alkylating agents, polycyclic aromatic hydrocarbon are mainly involved in causing cancer of the bladder, liver, ear, breast and intestine [35-41]. Radiations, x-rays, gamma rays, UV rays are the physical agents which may cause DNA damage directly. Biological agents such as transposons, viruses, bacteria, all these insert into genome and disrupt genetic functions [42-46].

**Teratogenic substances:** Teratogens are the toxic substances that cause abnormal development which results with birth defects [47-52]. Teratogens are usually discovered after an increased prevalence of a particular birth defect. Teratogens found at every place either at home or work stations. Mostly 60-70% defects caused from unknown origin. Developmental toxicology is an expanding field and some of the unclassified defects may eventually be classified as teratogen-induced [53-57]. Genotoxic substances cause DNA damage in a cell. Damage causes frequently to cell leads to cell death and can cause spontaneous abortion, while DNA damage later in development can lead to malformations. Metals, Thalidomide, ethanol, cocaine and radiation are the teratogens which causes damage in birth defects [58-67].

## CONCLUSION

Toxicology is the study of the harmful actions of agents on biological mechanisms. The toxicological effects of bisphenol [68-73]. A are well understood. One of the most extensively tested materials in use today, BPA exhibits toxic effects only at very high levels of exposure. Toxicogenomic technologies provide new means to evaluate complex biologic systems and the impact of chemicals on living systems [74-78]. Specifically, toxicogenomic technologies may be applied to improve cross-species extrapolation in the analysis of chemical hazard, identify susceptible subpopulations, assess effects of early life exposures to chemicals, analyze compounds' modes of action, screen for potential toxic responses, refine exposure assessment, and analyze biologic effects of combined exposures or mixtures [79-81]. Toxicology is the study of harmful effects of chemicals on biological systems. Humans, animals, and plants are increasingly being exposed to chemicals in the environment. The ever-increasing use of chemicals in industries has also resulted in further pollution of the environment [82].

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