

# A brief report on reproductive toxicity study

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## ABSTRACT

Based on current information on reproductive biology and toxicology, it is

clear that synthetic compounds effect on both male and female reproductive system. Reproductive toxicity alludes to primary and utilitarian change that influence in physically mature male and females. Reproductive toxicity studies shows effect on both male and female fertility.

**Keywords:** Reprotoxic; Male and female reproduction; Gonads

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## INTRODUCTION

**R**eproductive toxicity is a threat associated with some chemical substances, that they will interfere in some way with normal reproduction; such substances are called reprotoxic . It includes bad impact on sexual function and fertility in adult males and females and developmental toxicity in the offspring”.

It is divided into two major classes

- **Reproductive toxicity:** Effects on both sexual behavior and fertility in male and non-pregnant females.
- **Developmental toxicity:** abnormal structure or functional development following exposure of pregnant females.

**Principles:** The study of reproductive toxicants fertility depends on the function of three heterogeneous organ systems.

- Central nervous system ( e.g. Hypothalamus)
- Endocrine system (e.g. Pituitary, Gonads)
- The special organs of male and female reproductive tract

Among these tissue is a remarkable breadth of specialized cell types that must: Provide for the generation and delivery of haploid germ cell, Provide for the homeostasis and function of the internal and external genital, allow for the fertilization and implantation of the embryo in the womb, provide nourishment to offspring.

The general principle of pharmacology that concern routes of exposure, metabolic activation and distribution of toxicants to target tissues are all applicable in reproductive toxicology. The general principles of pharmacokinetics that dictate how toxicants may cause cellular dysfunction and death also apply in the case of reproductive toxicants. The dependency of reproductive function on the central nervous and endocrine system also make it especially vulnerable to agents that inhibit the synthesis or action of neurotransmitters and hormones.

The aim of reproduction toxicology study is to discover any effect of one and all stages of development to sexual maturity. The most probable testing strategy of study designs are: effect on fertility and early embryonic development, effect on pre and postnatal development, effect on embryo-fatal development.

Study of fertility and early embryonic development for female should spot effect on the estrous cycle, tubal transport, implantation and development of pre-implantation stages of the embryo. For males it will allow detection of functional effects that may not be detected by histological examination of male reproductive organ.

Study for effect on pre and postnatal development to spot the bad effects on development of conceptus and the offspring following exposure of the female from implantation through weaning.

Study for effect on embryo-fatal development to detect spot the bad effects on the pregnant female and the development of embryo and fetus consequent to exposure of the females from implantation to closure of hard palate.

General catagories of reproductive toxicants are three types which is Type I, Type II and Type III.

Type I reproductive toxicants are those that cause inactivity in both the gonads and reproductive organs.

Type II reproductive toxicants are those which causing in gonads but preserved health and even hyperactivity in the genital. The endocrine disrupting chemicals that acts as agonist in the sex steroid signaling pathways.

Type III reproductive toxicants cause hyperactivity among both gonads and reproductive tissues.

OECD guideline for testing of reproductive toxicology is combined repeated dose toxicity study with reproduction toxicity screening test, Two generation reproduction toxicity, One generation reproduction toxicity study, and prenatal development toxicity study.

## CONCLUSION

However, most studies of reproductive toxicity have based on occupational or environmental exposure to chemicals and their effects on reproduction. Consumption of alcohol and tobacco smoking both are known to be "toxic for reproduction". The chemicals which cause the reproduction toxicity are teratogens, lead, Biophenol A and other toxins.

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