# CHAPTER VI
# 6. SUMMARY

**Effect of Trichloroethylene (TCE) on the Embryonic Development of the Albino Mice:**

The present work is concerned with the effect of trichloroethylene **(TCE)** on the prenatal mice ($20^{th}$ day of gestation). **TCE** is a halogenated hydrocarbon solvent primary used as a metal degreasing agent as an intermediate in the production of fluorochemicals and polyvinyl chloride , it is used in a variety of industrial and commercial applications such as wood stains, varnishes, finishes, lubricants, adhesives, typewriter correction fluid, pain removers and cleaners that contain **TCE**.

The used mice in the present work were arranged into four groups and the dose used **1/10 LD50** (0.24 mg/kg body weight) of **TCE** was diluted in distilled water and orally administrated by stomach intubation.

**C**-The control animals **"C"** were of the same inberd strain of the treated animals. The control animals were treated under the same condition with the dose solvent.

**G1**-Experimental males were treated daily for three weeks with trichloroethylene **(TCE)**, at the end of treatment period, the animals were allowed to mate with control females.

**G2**-Experimental females were treated daily for three weeks with **(TCE)**, at the end of treatment period, the animals were allowed to mate with control males.

**G3**-Experimental females were treated daily for three weeks with **(TCE)**, at the end of treatment period, the animals were allowed to mate with experimental males were treated daily for three weeks with **(TCE)**.

**6.1. The present investigation includes the following items morphologically; after treatment with TCE in all groups:**

- Increase death rate in mice.
- Decrease in the percentage of mating.
- Decrease in the rate values of body weight in mice.
- Increase in the percent of abortion.
- Increase in the percentage of foetal mortality; (resorptions and stillbirths) at the $20^{th}$ day of gestation.
- Decrease in lengths and weights of foetuses at the $20^{th}$ day of gestation.
- Produce some deformed prenatal foetuses at $20^{th}$ day of gestation.

**6.2. The skeletal system of the parentally treated foetuses with TCE at the $20^{th}$ day of gestation showed:**

- Growth retardation of some bones represents by shortness and decrease in their length.
- Lack ossification in most bones; bones of the skull, pectoral, pelvic girdle and fore & hind limbs and their phalanges.

**6.3. Histological observation of the parents:**

The ovaries & uterus and testis of females and males treated with **TCE** (for 21 days before mating) in the case of no detection implantation site and also in the case of abortion (uterus) showed histopathological effects:

- The ovaries showed congestion blood vessels, hemorrhage, degeneration of some follicles and reduction in the number of the Graafian follicles.
- The uterus exhibited a considerable degeneration of endometrial glands. Their epithelial lining attained a considerable thinning. The

stromal cells were denser and hyaline degenerated. The luminal epithelial cells were hyperplastic and damaged.

- The testis showed cellular debris inside the lumen of some seminiferous tubules and undifferentiation between various types of spermatogenic cells.

**6.4. The foetuses at the 20$^{th}$ day of gestation maternally & parentally treated with TCE showed pronounced histopathological effects in the liver, kidney, heart, and lung:**

- The liver showed venous congestion, hydropic degeneration, necrosis and fatty infiltration.
- The kidney is manifested by shrinkage of the Malpighian corpuscles, cloudy swelling, hydropic degeneration, venous congestion and necrosis.
- The heart exhibited massive myocardial degeneration of muscle fibers with widely spread vacuolated spaces and leukocytic infiltration. Many of the cardiomyocyte nuclei showed apoptic cell death.
- The lung showed congestion blood vessels, pulmonary oedema, cell detachment at the terminal and respiratory bronchioles and alveolar ducts, cell infiltration, hemorrhage and hyperplasia of the alveolar cells.