

**Herbicides** : chemicals are used for kill herbs (weeds) that interfere with agricultural production. Most animal health problem result from exposure to excessive quantity of herbicides due to careless used.

### **Types of herbicide:-**

1- Inorganic herbicide:- include arsenicals and chlorates.

2-Organic synthetic herbicides:-include

A- Phenoxy herbicides( chlorophenoxy herbicides).

B- dipyridyl herbicides (e.g. Paraquat, Diquat).

C- Amide herbicides (thiamide , allidochlor, diphenamide, propanil).

D- Triazine herbicides (e.g. atrazine, propazine , atriazole).

E- Dinitro herbicide (e.g. 2,4 dinitrophenol ).

**Inorganic herbicide:- include arsenicals and chlorates:-**

**-Arsenic inorganic herbicides :-**

Used as herbicide ,fungicides and as wood preservative.

### **Mechanism of action:-**

-Inactivated Co-enzyme like lipoic acid associated by pyruvate dehydrogenase and uncouples oxidative phosphorylation .it has peripheral vasodilatory effect lead to capillary fluid lost , odema and shock .

### **Clinical signs :-**

**In Acute intoxication**

-Sever abdominal pain .

-Nausea ,vomiting ,sever watery diarrhea ,Weakness ,ataxia ,tachy cardia ,rapid and weak pulse .prostration and death .

In subacute intoxication in dog seen renal , liver, and GIT damage.

### **Diagnosis :-**

Depend on case history of exposure and clinical signs.

### **Treatment :-**

1-After ingestion ,Gastric lavage and mineral oil .

2-N-Acetyl cysteine.

3-In large animal use Na –thiosulphate or thioctic acid .

4-Also can give BAL .

5-Supportive therapy and care .

### **Chlorates inorganic herbicides :-**

#### **Chlorates salt:-**

**Mechanism of action:-**Chlorates are powerful methemoglobin producer and cause hemolysis ,it has irritant effect on mucosal surfaces.

#### **Clinical signs :-**

Hypersalivation ,Vomiting ,Diarrhea ,Hematuria ,Hemoglobinurea (Hb in urine ) ,Ataxia ,Cynosis and dyspnea.

#### **Treatment :-**

1-Perform Gastric Lavage .

2-Methylen blue .

3-used Vit C in cat and dog .

**Organic synthetic herbicides:-include**

**A-Phenoxy herbicides:- (chlorophenoxy herbicides):**

**Toxicity :-neurological toxicity due to ability pass through BBB and cause damage to the CNS (depression , tremors , ataxia , weakness) .**

**In GIT (rumen stasis, anorexia , diarrhea , ulceration of oral mucosa).**

**Cardiovascular disturbance.**

**Rapidly distributed to the brain , kidney, and liver .**

**Treatment:-**

**1-Specific antidotes are not available.**

**2-Symptomatically treatment.**

**3- general and supportive treatment with diuretics.**

**B-Dipyridyl herbicides (e.g. Paraquat, Diquat).**

**Toxicity mainly due to its accumulation mainly in lung that of other tissues, . The lung is most affected ,causing respiratory damage.**

**Mechanism of toxicity : due to formation of oxidative radicals leading to tissue damage by lipid peroxidation.**

**Treatment :**

**1-general treatment , specific antidote are not available.**

**2-Give Acetylcystine ,and Vitamin C and E.**

**C-Amide herbicide : ( e.g. thiamide , allidochlor , diphenamide , propanil).**

**Mechanism of toxicity :**

**Toxicity occur due to formation of methemoglobin in blood that not capable to transport oxygen to tissue leading to hypoxia with cyanosis and hemorrhage in tissue**

**Treatment :**

**general and supportive with injection of methylene blue as antidote with oxygen therapy.**

**D-Dinitro herbicide : e.g.(2,4 dinitrophenol ).**

**Mode of toxicity :**

**by inhibit ATP synthesis due to uncouple oxidative phosphorelation , also they cause methemoglobinemia**

**Cause disturbance in GIT , CVS , cataract , skin and hair colored Highly toxic herbicide yellow –orange while urine colored yellow green.**

**Treatment :**

**generally and supportive treatment with rehydration fluid and giving Na methyl thiouracil.**

**E-Triazine : (e.g. atrazine ; propazine , atriazole).**

**Highly to moderately toxic.**

**They cause excitation to smooth muscle of GIT and respiratory cause odema and hemorrhage into different tissues.**

**Treatment : general and supportive treatment.**

## **RODENTICIDE POISONING**

Rodenticides are agents which destroy rodent pests such as black rats - (Rattus) and mice (Mus musculus).

1-Warfarine :-is an anticoagulant by acting as an antimetabolite to vitamin K, thereby inhibition the formation of prothrombin.

2- Thiourase extremely toxic to rats .

3-Sodium fluoroacetate and fluoroacetamide.

4-alkaloid strychnine.

5-Inorganic rodenticides : include(Zinc phosphide ,Thallium sulphate ,Arsenic trioxide .

**FUNGICIDE POISONING:Examples of fungicides are:-**

**Fungicides are extensively used in industries, agriculture and the home.**

**Fungicides vary enormously in their potential for causing adverse effects in humans.**

**Many fungicides have low inherent toxicity in mammals and are inefficiently absorbed.**

**1. Thiocarbamates .**

**2. Thiophthalimides :- captan and captafol.**

**3. Copper compounds :- organic and inorganic.**