

## EXCRETION

Excretion is the removal of the waste products of metabolism from the body. Some of these products of excretion are poisonous when allowed to accumulate in the body cells.

### Excretory products

Animals secrete a wide range of chemical compounds. The excretory organs include;

ORGAN	PRODUCT	EXCRETORY SUBSTANCE
kidney	urine	Urea, excess salts and excess water
Skin	sweat	Excess salts, water and urea
lungs	Exhaled breath	Carbon dioxide and water

Excretory products are under two categories

1. Nitrogenous compounds; these contains nitrogen and include urea, ammonia and uric acid
2. Non nitrogenous; these include salts like sodium, chloride, water, carbon dioxide.

### Nitrogenous compounds and how they are removed from the body

ANIMAL	EXCRETORY ORGAN	NITROGENOUS WASTE	HABITAT
INSECTS	Malpighian tubule	Uric acid	terrestria
Bony fish	kidney	ammonia	Fresh water
Cartilaginous fish	kidney	urea	Sea water
Reptiles and birds	kidney	Uric acid crystals	Terrestrial
Amphibians	gills	ammonia	Fresh water
Tadpole	kidney	Urea on land and ammonia in water	Aquatic and terrestrial
adult			
mammals	kidney	urea	terrestrial

Urea is less toxic than ammonia and it requires less water to be excreted. Some organisms transform ammonia into urea and uric acid which are less toxic. Terrestrial animals need to conserve water since they can easily dry up.

Uric acid is almost insoluble in water and non toxic. For this reason, it requires very little water for its removal from the body. Uric acid is therefore very suitable for animals living in dry areas like insects, birds and terrestrial reptiles.