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**Department of Science 2018 - 2019**  
**Second Term: Worksheet 4**  
**L-1.9 The Excretory System and the kidneys**

Grade 6.....

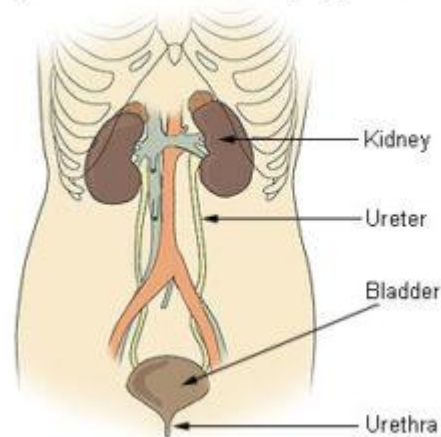
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## Parts of the Human Excretory System

Every living organism generates waste in its body and has a mechanism to expel it. In humans, waste generation and disposal are taken care of by the human excretory system. The human excretory system comprises of the following structures:

**Components of the Urinary System**



- 2 Kidneys
- 2 Ureters
- 1 Urinary bladder
- 1 Urethra

### Kidneys

Kidneys are the **main organs** of the human excretory system. The kidneys are paired, bean-shaped organs in each individual. They are the **primary excretory organ** in humans and are located one on each side of the spine at the level of the liver. They filter waste called urea from the blood.

### Ureters

There is one ureter that comes out of each kidney. The ureter is a thin muscular tube that carries urine from the kidneys to the bladder.

## Urinary Bladder

It is a sac-like structure that is lined with smooth muscle layer and is responsible for storage of urine till it is expelled from the body. The bladder receives urine from the ureters, one from each kidney.

## Urethra

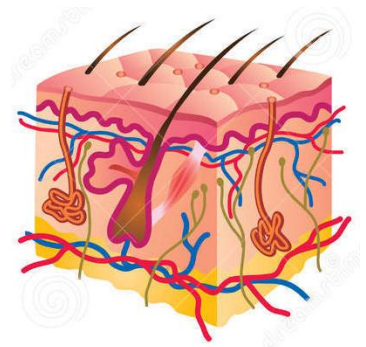
This is a tube that arises from the urinary bladder and functions to expel urine to the outside by micturition. **Micturition** is the act of expelling urine from the body.

## Other Excretory Organs

Apart from the above mentioned excretory organs, there are other organs that also perform some form of excretion.

### Skin

The skin is the largest organ in the body. Its primary function is to protect the different organs of the body. However, the skin helps in excretion by the way of **sweat**, through sweating or perspiration. The skin eliminates compounds like salt (NaCl), some amount of urea etc.



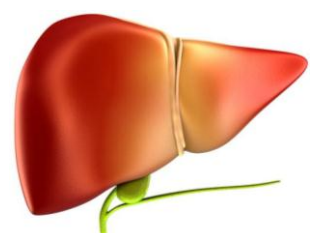
### Lungs

Lungs, the primary organs of respiration, help take in oxygen and expel a waste gas called **carbon dioxide**. But, in this process, they also function to eliminate some amount of water in the form of water vapour.

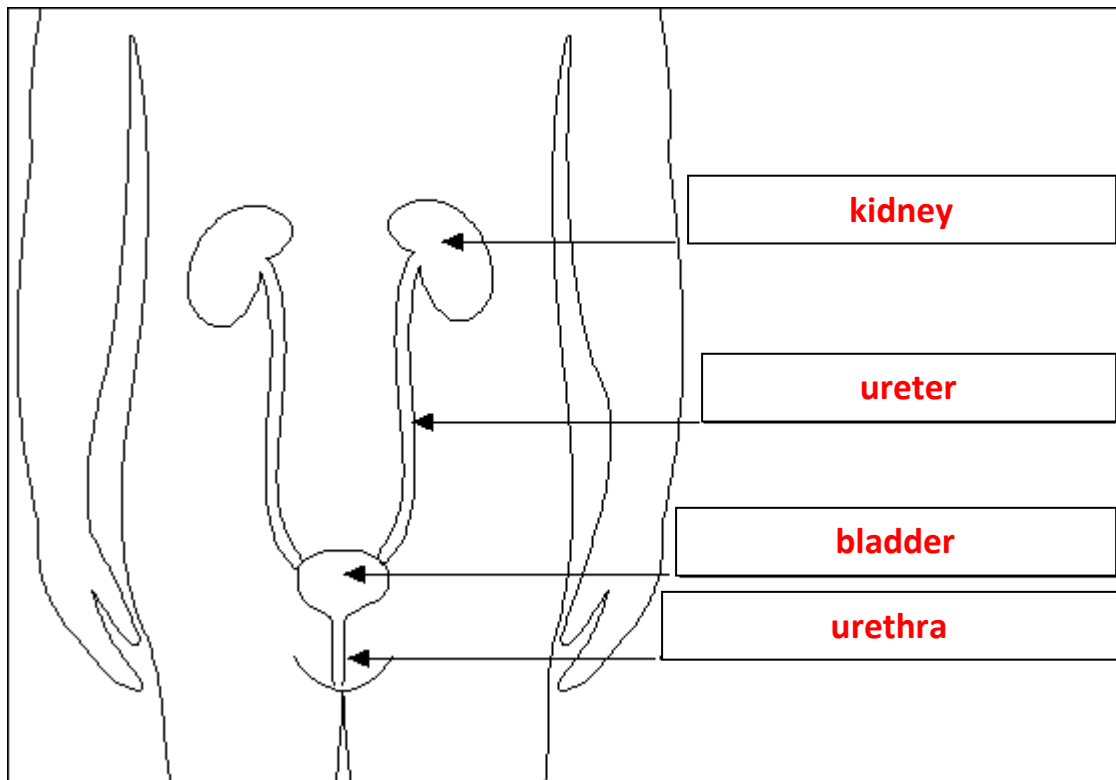


### Liver

The liver has an important function in excretion. It metabolises (breaks down) fats, alcohol, drugs, excess amino acids and toxins in the blood. It changes the nitrogenous wastes (such as ammonia) into **urea**. Removal of toxins from the blood is called detoxification. [The kidneys then filter this urea out of the blood and mix it with water to form urine.]



### Q.1. Label the urinary system.



### Q.2. Complete the sentences about the excretory system.

Blood is filtered by the liver which turns nitrogenous waste into a chemical called urea. Then the kidneys filter the urea out of the blood and mix it with water to form urine. The urine then travels through the ureters to the muscular bag called the bladder. The urine leaves the body through the urethra. Other excretory organs include the skin which produces sweat and the lungs which give out carbon dioxide and water vapour.

### Q.3. Match these definitions.

- |                   |   |
|-------------------|---|
| 1- Excretion      | <b>3</b> process of removing toxic substances           |
| 2- Micturition    | <b>5</b> taking in oxygen and giving out carbon dioxide |
| 3- Detoxification | <b>4</b> the act of secreting sweat from the skin       |
| 4- Perspiration   | <b>2</b> the act of expelling urine from the body       |
| 5- Respiration    | <b>1</b> the process of expelling waste products        |

**Q.4. Name the following.**

- a. The waste that is removed from the blood by the kidneys:           **urea**
- b. Pair of bean-shaped organs in the abdominal cavity which remove waste from the blood and excrete it as urine:           **kidneys**
- c. Pair of ducts which transport urine from the kidneys to the bladder:           **ureters**
- d. Muscular sac in which urine is collected for excretion:           **bladder**
- e. Duct through which urine passes out of the body:           **urethra**

**Q.5. Complete the table about the excretory organs.**

| Organ          | Main Function  |
|----------------|--|
| <b>Kidneys</b> | <b>Filters waste (urea) from the blood and produces urine</b>      |
| <b>Liver</b>   | <b>Coverts nitrogenous wastes such as ammonia into urea</b>        |
| <b>Skin</b>    | <b>Produces sweat which contains wastes- urea, salts and water</b> |
| <b>Lungs</b>   | <b>Get rid of waste gas called carbon dioxide and water vapour</b> |

**Q.6. Answer the following questions.**

a- What would happen if the liver did not convert ammonia into urea?

**..Ammonia is highly toxic in the body. If the liver did not convert ammonia into urea .....**  
**...the level of ammonia would increase which could be fatal.....**  
**..(toxic = poisonous), (fatal = causing death).....**

b- Why is the skin considered as an excretory organ?

**...Skin is considered an excretory organ because it excretes wastes such as urea, .....**  
**...water and salts from the body through sweat or perspiration.....**

c- What would happen if the lungs did not expel carbon dioxide from the body?

**...If carbon dioxide is not removed by the lungs, its level will increase in the blood .....**  
**...making it acidic. This can be life threatening.....**

d- How does the urinary system excrete waste?

**...The kidneys filter urea from the blood and mix it with water to produce urine.....**  
**...The urine is transported by the ureters to the bladder where it is temporarily stored.....**  
**...Urine is then passed out of the body through the urethra.....**