



How Your Kidneys Clean Your Blood Every Day

KS4 BIOLOGY

HUMAN BODY SYSTEMS

Ages 11-14



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What Are Your Kidneys?

You have **two kidneys**, each about the size of a **computer mouse**. They sit on either side of your spine, tucked behind your ribs. Your kidneys have one very important job: they keep your blood clean by removing waste that your body doesn't need.

Every single day, your kidneys filter about **120-150 litres of blood!** That's roughly **50 toilet flushes** worth of liquid. But don't worry — most of that water gets reabsorbed back into your bloodstream.

How Does Blood Filtering Work?

Inside each kidney are about **1 million tiny units called nephrons**. Each nephron works like a miniature filtration factory. Here's how the process happens:

Step 1: Ultra-filtration is when blood enters a special knot of blood vessels called the **glomerulus**. Water, glucose, urea (a waste product), and other small molecules are squeezed out under pressure — like squeezing juice through a sieve. The larger molecules, like proteins and blood cells, stay inside the blood vessels.

Think of it like a coffee filter: the liquid passes through, but the grounds stay behind.

Step 2: Selective reabsorption happens next. The filtered liquid passes through a long tube called the **renal tubule**. Here, useful substances like **glucose, salts, and water** are reabsorbed back into the bloodstream. Your body needs these things to survive. Only the real waste stays behind.

Think of it like sorting through your rubbish: you pull out anything useful and put it back, then throw away the rest.

Making Urine

After all that filtering and reabsorption, what's left is **urine** — a yellow liquid made mostly of water and waste products like **urea**. This urine drains down tubes called

ureters into your **bladder**, where it's stored until you need to go to the toilet.

Why This Matters

Without your kidneys, waste would build up in your blood and poison your body. They also help control how much water your body keeps, and they regulate important **salts and minerals** like potassium and sodium. This is why healthy kidneys are absolutely crucial for survival — and why doctors always check kidney function during health check-ups.