

A clear look at vaccine ingredients

As we talk about vaccine ingredients, it is important to remember that most chemical names may sound alarming. While everything in the world is a chemical or comprised of chemicals – from water to air to our own bodies – the formal chemical names are unfamiliar to most people. Many of the foods we eat contain chemicals whose formal names may sound scary, but in truth, are naturally occurring and harmless.

What are vaccines made of?

The primary component of vaccines are antigens. **Antigens** are harmless parts of a virus or bacteria that train your child's immune system to recognize and fight disease. Think of an antigen like a “wanted poster” – it shows your child's immune system what the germ looks like so it knows to stop the real germ if it ever shows up.

In addition, very small amounts of other ingredients are added to vaccines to help improve immune response, prevent contamination or assure vaccine quality. Below is a list of the different vaccine ingredients and their purpose.

- **Adjuvants** help boost the body's immune response telling it, “Hey, look over here!” so it can teach the body more effectively. An example of this is aluminum salts.
- **Stabilizers** are ingredients like sugars or gelatin that help the vaccine stay effective while it moves from the manufacturer to the clinic where stored.
- **Preservatives** keep unwanted germs from entering vaccine vials, specifically the ones that contain multiple doses. Today, all childhood vaccines are available as single-doses and do not contain preservatives. All vaccines at Texas Children's Pediatrics are preservative-free.
- **Trace ingredients** are small leftover ingredients used during the manufacturing process. They are removed, leaving only tiny, harmless amounts in the final vaccine. Examples include:
 - Egg protein, used to help grow antigens in some flu vaccines
 - Inactivating ingredients, like formaldehyde, used to inactivate toxins or kill viruses
 - Antibiotics, like neomycin, are used to keep unwanted bacteria from growing when vaccines are made

How do we know vaccine ingredients are safe?

Children are naturally exposed to many of the ingredients found in vaccines through their environment, food, water, and even their own metabolic processes. Decades of research demonstrate that the tiny and carefully controlled amounts of each vaccine ingredient are safe and do not cause harm. Vaccines go through extensive testing before they're approved for use. Even after they're licensed, vaccines continue to be closely monitored to ensure they remain safe.

If you have more questions about vaccine ingredients or vaccines in general, talk to your child's pediatrician – they are your best source for trusted, up-to-date information.

We know that hearing the chemical names in vaccine ingredients can be confusing – or even a little alarming – but they're well-studied and used in very small, safe amounts. The extensive team of experts at Texas Children's Hospital, many of whom are parents, want the best for your child. You can feel confident knowing that the science is clear – vaccines are a safe and effective choice to protect your child.

