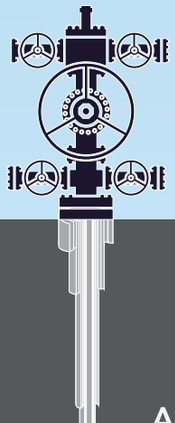
CEMENTING: A Seal for Safety

Oil and natural gas well construction relies on multiple layers of steel and cement barriers to isolate energy production from groundwater.

While steel casing serves as the primary shield to groundwater, specialized cement is used to create a pressure-tested seal between each layer of casing. Proper well cementing ensures safety.



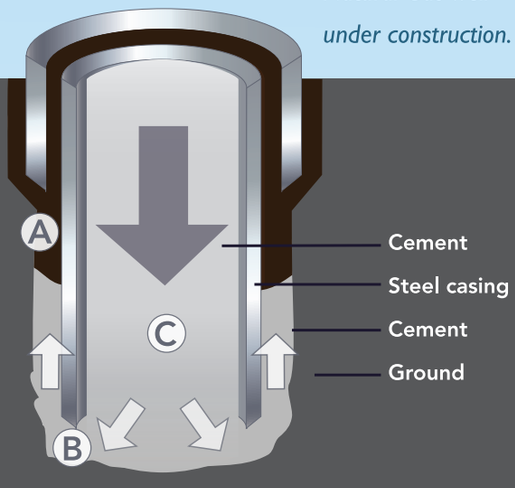
CEMENTING

A In between each layer of steel casing is a space that must be filled to hold the casing in place and create a solid, sealed barrier between the well and groundwater.

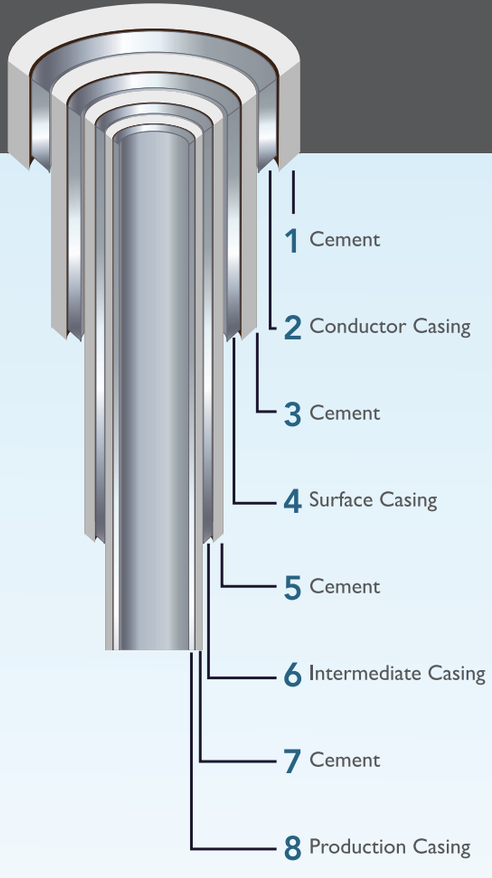
B Specialized cement, developed in laboratories for the unique conditions found in oil and gas development, is used as the glue to seal layers of casing together.

C During well construction, cement is pumped down the interior of casing forcing the cement up from the bottom of the well so that it completely fills the space between the outside walls of the drilled hole and the casing inside of it.

Natural Gas well under construction.

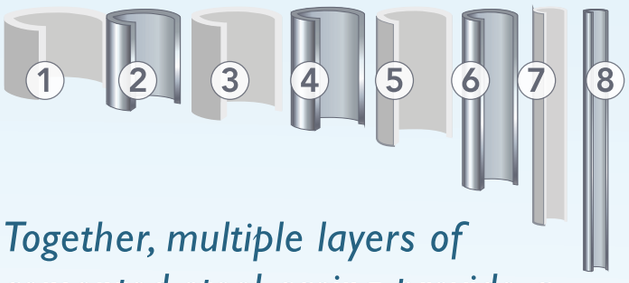


Completed well with four layers of cemented casing.



TESTING

Drillers use multiple, high-tech tools, including measuring the travel times of sound waves, to verify that cement has created a solid bond with the casing. These tools are used to verify the strength of seals in the well before energy production begins.



Together, multiple layers of cemented steel casing provide a redundant barrier to isolate energy production from groundwater.

Sources:
"Well Construction and Groundwater Protection," Fracfocus.org.
"Isolating Potential Flow Zones During Well Construction: API Standard 65—Part 2, Second Edition Part 2." American Petroleum Institute.