Copper

Copper is a reddish-brown metallic element that is considered an essential nutrient in the human diet. It is also commonly used in brass, coins, pipes, and electrical wiring. Copper is rarely found in high concentrations in groundwater, but can find its way into drinking water through corrosion of pipes. The degree to which copper plumbing will corrode and introduce copper into drinking water depends on the corrosivity of the water. Corrosive water generally has a low pH but other factors such as temperature and conductivity also play in.

Health Effects from Copper
The US Environmental Protection Agency has set 1.3 mg/L as a drinking water standard for copper. This standard only regulates public water systems, but the health implications are relevant for private well owners. High concentrations of copper can cause vomiting, diarrhea, stomach cramps and nausea. Children under one year of age and people with Wilson’s disease are particularly vulnerable to the toxic effects of copper.

Treating for Copper
Hot water will leach more copper from plumbing than cold water, therefore avoid using water from the hot water tap for cooking or drinking. Flush the cold water line by running water through the lines for a few minutes before collecting drinking water. You can collect the flushed cold water to rinse dishes or water plants and then fill jugs for drinking water that can be stored in the fridge.

Alternative choices include:
- replacement of copper plumbing with CPVC or other alternative materials that meet local code
- water treatment with a neutralizing tank filter or caustic liquid treatment to reduce corrosivity of water
- removal of copper by installing an adsorption (i.e. carbon or charcoal), reverse osmosis, or distillation system at the drinking water tap

Additional Resources:
- USEPA Maximum Contaminant Levels and Fact Sheets
  http://www.epa.gov/safewater/mcl.html
- World Health Organization Fact Sheet
  http://www.who.int/water_sanitation_health/dwq/chemicals/coppersum.pdf
- NSF International Home Water Treatment Devices
- Water Quality Interpretation Tool
  http://region8water.colostate.edu/wqtool/index.cfm