

## Multiple Layers of Protection

Physical barriers (6) which limit release of fission products from the fuel to the environment are:

1. **Fuel pellet** - Resists decomposition erosion (or leaking).
2. **Fuel cladding** - Forms the outer layer of fuel rods and provides a barrier preventing fission product release from the nuclear fuel to the reactor coolant. Fuel pellets are contained in fuel rods that are arranged into fuel cells, which consist of a control rod surrounded by four fuel assemblies. Control rods contains chemical elements capable of absorbing neutrons without fissioning themselves, such as boron and hafnium.
3. **Reactor coolant** - Resists migration of fission products; especially most halogen fission products that are soluble in water such as iodine.
4. **Reactor Pressure Vessel** - Measures 75 feet high and approximately 28-feet in diameter. The walls are made of 9-inch thick steel.
5. **Primary Containment** - Steel shell measures 3/4 inch thick. It is surrounded by 6 ft thick reinforced concrete.
6. **Secondary Containment** - Contains, dilutes, and holds fission products.

