

# Three Mile Island accident

NUCLEAR ACCIDENT, PENNSYLVANIA, UNITED STATES [1979]

**Three Mile Island accident**, accident in 1979 at the Three Mile Island nuclear power station that was the most serious in the history of the American nuclear power industry. The Three Mile Island power station was named after the island on which it was situated in the Susquehanna River near Harrisburg, Pa. At 4:00 AM on March 28, an automatically operated valve in the Unit 2 reactor mistakenly closed, shutting off the water supply to the main feedwater system (the system that transfers heat from the water actually circulating in the reactor core). This caused the reactor core to shut down automatically, but a series of equipment and instrument malfunctions, human errors in operating procedures, and mistaken decisions in the ensuing hours led to a serious loss of water coolant from the reactor core. As a result, the core was partially exposed, and the zirconium cladding of its fuel reacted with the surrounding superheated steam to form a large accumulation of hydrogen gas, some of which escaped from the core into the containment vessel of the reactor building. Very little of this and other radioactive gases actually escaped into the atmosphere, and they did not constitute a threat to the health of the surrounding population. In the following days adequate coolant water circulation in the core was restored.



Aerial view of Three Mile Island near Harrisburg, Pennsylvania. *Phil Degginger—Animals Animals/age fotostock*

The accident at Three Mile Island, though minuscule in its health consequences, had widespread and profound effects on the American nuclear power industry. It resulted in the immediate (though temporary) closing of seven operating reactors like those at Three Mile Island. A moratorium on the licensing of all new reactors was also temporarily imposed, and the whole process of approval for new plants by the Nuclear Regulatory Commission was significantly slowed for years after the accident. No new reactors were ordered by utility companies in the United States from 1979 through the mid-1980s. The accident increased public fears about the safety of nuclear reactors and strengthened public opposition to the construction of new plants. The unharmed Unit 1 reactor at Three Mile Island did not resume operation until 1985. The cleanup of Unit 2 continued until 1990; damage to the unit was so severe, however (52 percent of the core melted down), that it remained unusable.