Atomic Energy Commission (AEC)

Before the NRC was created, nuclear regulation was the responsibility of the AEC, which Congress first established in the Atomic Energy Act of 1946. Eight years later, Congress replaced that law with the Atomic Energy Act of 1954, which for the first time made the development of commercial nuclear power possible. The act assigned the AEC the functions of both encouraging the use of nuclear power and regulating its safety. The AEC's regulatory programs sought to ensure public health and safety from the hazards of nuclear power without imposing excessive requirements that would inhibit the growth of the industry. This was a difficult goal to achieve, especially in a new industry, and within a short time the AEC's programs stirred considerable controversy. An increasing number of critics during the 1960s charged that the AEC's regulations were insufficiently rigorous in several important areas, including radiation protection standards, reactor safety, plant siting, and environmental protection.

## AEC to NRC

By 1974, the AEC's regulatory programs had come under such strong attack that Congress decided to abolish the agency. Supporters and critics of nuclear power agreed that the promotional and regulatory duties of the AEC should be assigned to different agencies. The Energy Reorganization Act of 1974 created the Nuclear Regulatory Commission; it began operations on January 19, 1975.

The NRC (like the AEC before it) focused its attention on several broad issues that were essential to protecting public health and safety.

## Radiation Protection

The primary danger of the use of nuclear materials for the production of electrical power and a variety of industrial, medical, and research applications is that workers or members of the general public could be exposed to hazardous levels of radiation. The AEC and the NRC published standards that were intended to provide an ample margin of safety from radiation that was generated by the activities of its licensees. The radiation standards embodied available scientific information and the judgment of leading authorities in the field. But since the hazards of exposure to low levels of radiation remained an open and often controversial scientific question, the standards proved to be perpetual sources of debate.

## Reactor Safety

The focus of the regulatory programs of the AEC and the NRC was prevention of a major reactor accident that would threaten public health and safety. Both agencies issued a series of requirements designed to make certain that a massive release of radiation from a power reactor would not occur. As the number of plants being built and the size of those plants rapidly increased during the late 1960s and early 1970s, reactor safety became a hotly disputed and enormously complex public policy issue. Often bitter debates over the reliability of emergency core cooling systems, pressure vessel integrity, quality assurance, the probability of a major accident, and other questions received a great deal of attention from the AEC and NRC, Congress, the nuclear industry, environmentalists, and the news media.

## Three Mile Island

On March 28, 1979, the debate over nuclear power safety moved from the hypothetical to reality. An accident at Unit 2 of the Three Mile Island plant in Pennsylvania melted about half of the reactor's core and for a time generated fear that widespread radioactive contamination would result. The crisis ended without a major release of dangerous forms of radiation or a need to order a general evacuation, but it pointed out that new approaches to nuclear regulation were essential. In the aftermath of the accident, the NRC placed much greater emphasis on operator training and "human factors" in plant performance, severe accidents that could occur as a result of small equipment failures (as occurred at Three Mile Island), emergency planning, plant operating histories, and other matters. (For more information, see the [Backgrounder on the Three Mile Island Accident](http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html).)

## Regulation of Nuclear Materials

Although reactor safety issues received the lion's share of public notice, the NRC also devoted substantial resources to a variety of complex questions in the area of nuclear materials safety and safeguards. One such issue was the protection of nuclear materials from theft or diversion. This became a prominent question after the 1970s in response to growing concern that nuclear materials could be obtained by terrorists or nations seeking to build atomic weapons. The NRC also devoted a great deal of attention to the safety of managing high-level and low-level radioactive waste, which was a matter of public fear and bitter political controversy. And it sought to exercise its limited responsibilities in the field of radiation medicine by ensuring that patients received the proper doses of radiation from procedures under its authority.

## The NRC Today

Today, the NRC's regulatory activities are focused on reactor safety oversight and reactor license renewal of existing plants, materials safety oversight and materials licensing for a variety of purposes, and waste management of both high-level waste and low-level waste. In addition, the NRC is preparing to evaluate new applications for nuclear plants. Several utilities have submitted applications for licenses to build new power reactors. See our [nuclear materials](http://www.nrc.gov/materials.html), [nuclear reactors](http://www.nrc.gov/reactors.html), [nuclear security](http://www.nrc.gov/security.html), and [radioactive waste](http://www.nrc.gov/waste.html) pages for more information on NRC's current regulatory activities.

## NRC History References

Through the Commission History Program, the origins and evolution of NRC regulatory policies are documented. They are discussed in five volumes of nuclear regulatory history published by the University of California Press. These volumes are:

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| 1. Controlling the Atom: The Beginnings of Nuclear Regulation 1946-1962 (1984) (NUREG-1610). 2. Containing the Atom: Nuclear Regulation in a Changing Environment, 1963-1971 (1992) (NUREG-1933). 3. Permissible Dose: A History of Radiation Protection in the Twentieth Century (2000) 4. Three Mile Island: A Nuclear Crisis in Historical Perspective (2004) 5. The Road to Yucca Mountain:  The Development of Radioactive Waste Policy in the United States (2009)   Controlling the Atom has been reprinted by the NRC and is available from the Government Printing Office as NUREG-1610. Containing the Atom has also been reprinted by the NRC and is available as NUREG-1933. Permissible Dose, Three Mile Isand and The Road to Yucca Mountain are available from the [University of California Press](http://www.ucpress.edu/) . In addition, the NRC has published a booklet, [A Short History of Nuclear Regulation, 1946-2009](http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0175/) (NUREG/BR-0175, Rev. 2), which summarizes major issues in the NRC's history.  For more information on NRC History, contact [Thomas Wellock](mailto:Thomas.Wellock@nrc.gov), NRC Historian. |

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