

# Nationwide adoption of NIST-developed test predicted to cut death toll due to cigarette-caused fires

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Examples of results of the Standard Test Method for Measuring the Ignition Strength of Cigarettes (ASTM E2187) are shown. Non-filter (top) and filter (left) cigarettes "failed," having burned the full length in the test. The cigarette that extinguished before burning its full length (right) passed. The test calls for performing 40 such determinations for each cigarette and reporting the number of full-length burns. Cigarettes are positioned on the standard ASTM E2187 test substrate. Credit: NIST

In 2003, New York became the first state requiring cigarettes sold within its borders to pass a fire safety standard based on a test developed by the National Institute of Standards and Technology (NIST) to reduce the risk of igniting upholstered furniture and bedding, a major cause of residential fires.

Last year, when Wyoming enacted a law similar to New York's, a milestone with lifesaving consequences was achieved: all 50 states had made the Standard Test Method for Measuring the Ignition Strength of Cigarettes (ASTM E2187) a regulatory requirement.

A new study\* projects that, with nationwide adoption, deaths due to fires ignited by cigarettes or other [tobacco products](#) will drop 30 percent below the total number of such fatalities in 2003, the last full year before the ASTM E2187 was first implemented in a state. The projected decrease translates into about 200 lives saved annually.

People age 50 and older may benefit the most from the state regulations, according to the National Fire Protection Association study. This age group constitutes only 31 percent of the U.S. population, but accounts for 77 percent of deaths due to residential fires caused by smoking materials.

A NIST team, sponsored by the New York State Office of Fire Prevention and Control and led by senior research scientist Richard Gann, studied how cigarettes ignite home furnishings and then developed the test method on which the fire-safety standard is based. In 2002, the private-sector standards organization ASTM International formally adopted the test as the recommended method for measuring the capability of a cigarette to continue burning and ignite bedding, upholstered furniture and related items. Gann now chairs the ASTM International Task Group that regularly reviews the standard with the aim of identifying potential improvement in light of recent research and market developments.

The path that led to the standard and its subsequent adoption across the United States spans 28 years, beginning when Congress passed the Cigarette Safety Act of 1984. The law mandated a thorough analysis of the feasibility of developing cigarettes with a reduced propensity to

ignite furnishings. A technical committee led by Gann determined that a number of already-patented cigarette design features reduced the risk of ignition.

The committee also recommended developing a valid and reliable measurement method to determine that a cigarette is less prone to ignite a fire. Congress endorsed this recommendation in the Fire Safe Cigarette Act of 1990. Gann and his team developed two test approaches, but they eventually decided to promote their "cigarette extinction method" as a proposed standard.

Over the next decade, the NIST team subjected the test method to an extensive series of trials that involved testing laboratories throughout the United States and around the world. Results confirmed the test's validity and eventually quieted the objections of critics. Momentum in the states picked up in 2006 with the formation of the Coalition for Fire-Safe Cigarettes, a national alliance of fire service organizations, consumer groups, disabled rights advocates, public health practitioners, and others. The coalition advocated for industry and state adoption of ASTM E2187.

Gann welcomes the progress achieved over the last decade, but says there's more work to be done. "While U.S. deaths from cigarette-initiated fires are projected to be reduced by 30 percent, cigarettes will continue to be the largest cause of U.S. fire deaths," he notes.

Benefits of the standard are being reaped internationally. Canada, Australia and Finland already have adopted ASTM E2187. The International Organization for Standardization (ISO) has approved a version of the ASTM standard, as prepared by a committee chaired by Gann. This standard (ISO 12863) has been adopted by the European Union.

**More information:** \* J.R. Hall, Jr., "The Smoking-Material Problem," National Fire Protection Association, March 2012. Download PDF: [www.nfpa.org/assets/files/PDF/OS.Smoking.pdf](http://www.nfpa.org/assets/files/PDF/OS.Smoking.pdf)

Provided by National Institute of Standards and Technology

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