

# **Where There is Smoke...There Doesn't Have to be Fire: Fire-Safety and ASTM E2187**

## **Background**

Cigarette-generated fires devastate families and communities every year destroying property and killing not only the smoker but also nearby adults and children. The National Fire Protection Association (NFPA), ASTM, and the National Institute of Standards and Technology (NIST) developed a standard testing method that determines a cigarette's ability to ignite bedding and upholstered furniture. As a result, tobacco companies can now use this standard to develop cigarettes less likely to ignite a fire, and state and international governments can pass regulations to mandate their sale.

## **Problem**

The NFPA reports that smoking material causes 14,000 fires each year resulting in 700-900 fatalities, over 1000 injuries, and more than \$350 million in property damage. In fact, US Consumer Product Safety Commission statistics show that a cigarette falling onto a bed or upholstered furniture caused 20 percent of the estimated US fire deaths from 1992 to 1996. Clearly a more fire-safe cigarette would benefit both smokers and their communities.

While the search for cigarettes that self-extinguish may go back to the 1850s, Edith Nourse Rogers, one of the first US Congresswomen, initiated the first serious attempt to develop a safer cigarette in 1929. Following a well-publicized cigarette-ignited fire in her district, Ms. Rogers sponsored a bill that directed the National Bureau of Standards, now NIST, to develop a cigarette less prone to ignite fires. Well ahead of its time, the resulting cigarette was introduced in 1932, but was never fully adopted by the tobacco industry.

Since the late 1970s, serious interest in reducing the destruction from cigarette-related fires has spurred the effort to create a safer cigarette and make it the industry standard.

## **Approach**

Over the years, the cigarette industry has used several techniques to cause an unattended cigarette to stop burning. Currently, the most common method involves wrapping the cigarette with two or three bands of less porous paper creating several 'firewalls' or 'speed bumps' that extinguish the flame before it can burn through the cigarette and ignite other material. The challenge involves driving government and the manufacturers to make these cigarettes the industry standard.

For years, Dr. Richard Gann, Ph.D., led a team at NIST who worked on developing a method for testing a cigarette's ability, when positioned on one of three standard substrates, to generate sufficient heat to continue burning on its own and then to ignite bedding or upholstery. "A cigarette that goes out more readily in the test is less likely to

have enough energy to start a chair or bed burning,” said Dr. Gann, a senior research scientist with NIST’s Building and Fire Research Laboratory.

Dr. Gann worked for over ten years to convince cigarette manufacturers to cooperate and agree to the type of cigarette that would pass his test. He then took his method to ASTM Committee E05 on Fire Standards. The cigarette companies who participated on Committee E05 helped to further develop the method and its documentation, which was approved and became known as E2187 in 2002. New York became the first state to approve and adopt E2187, making it part of a landmark regulation the next year.

Because cigarettes that conform to E2187 are much less likely to ignite fires, the industry branded them ‘fire-safe.’ While all lit cigarettes, especially when unattended, can start a fire, cigarettes that conform to E2187 have a reduced ignition tendency making them less fire prone. But even these ‘fire-safe’ cigarettes pose a threat and should not be left to burn unattended.

In 2006, the National Fire Protection Association established the Coalition for Fire-Safe Cigarettes (CFSC), a large, diverse group of national and local organizations, including fire-service personnel, consumer and disabled rights advocates, medical and public health practitioners, and ASTM. CFSC calls on manufacturers to produce and market cigarettes that comply with E2187. CFSC also encourages state governments to pass legislation mandating their sale.

Working at the state level has succeeded in expanding the use of these cigarettes across the US. While E2187 represents a voluntary consensus standard developed through ASTM, once it becomes part of state law, manufacturers who market cigarettes in that state must comply with the standard. The process of establishing voluntary consensus standards proceeds faster than the regulatory process. Then the voluntary standard can become a requirement when it becomes part of legislation.

## **Outcome**

More than 40 states have passed or filed legislation requiring that cigarettes conform to E2187. In addition, R.J. Reynolds Tobacco Co. announced that it will manufacture all its cigarette brands using fire-standards compliant technology by the end of 2009, and the Liggett Group LLC announced that it will voluntarily convert production of all domestic cigarette brands to comply with state cigarette fire safety standards starting in January 2009.

Jeff Grove, ASTM vice president, global policy and industry standards, believes that “By building grass roots support and by making legislative progress state-by-state, a tipping point may soon be reached where all cigarettes sold in North America will comply with the ASTM standard.” As distribution of multiple cigarette types becomes fragmented, inefficient, and costly, the tobacco industry may convert to the one (fire-standards compliant) cigarette type demanded by law.

The E2187 standard also serves as the basis of the reduced ignition propensity cigarette law now adopted throughout Canada. Other governments throughout the world are considering legislation that employs E2187 as well.

Reports from New York, which has the longest history of using these cigarettes, indicate that E2187-compliant cigarettes are having a positive effect on home fire numbers and fatalities. As organizations like NFPA continue to support states with E2187-based legislation and promote data collection, more statistics should reveal additional benefits to E2187-compliant cigarettes.