

REVIEW OF THE IMPACT OF LIP REGULATION IN RELATION TO PUBLISHED FIRE STATISTICS

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INTRODUCTION

It is well established that cigarette-related fires can lead to property losses, injuries and fatalities [1]. US Congress, through the Cigarette Fire Safety Act of 1984, initiated research aimed at determining the feasibility of developing a more fire safe cigarette. New York State was the first state to enact legislation in 2004, which required all cigarettes on sale to pass an ignition propensity performance test as stipulated by the ASTM E2187 standard.

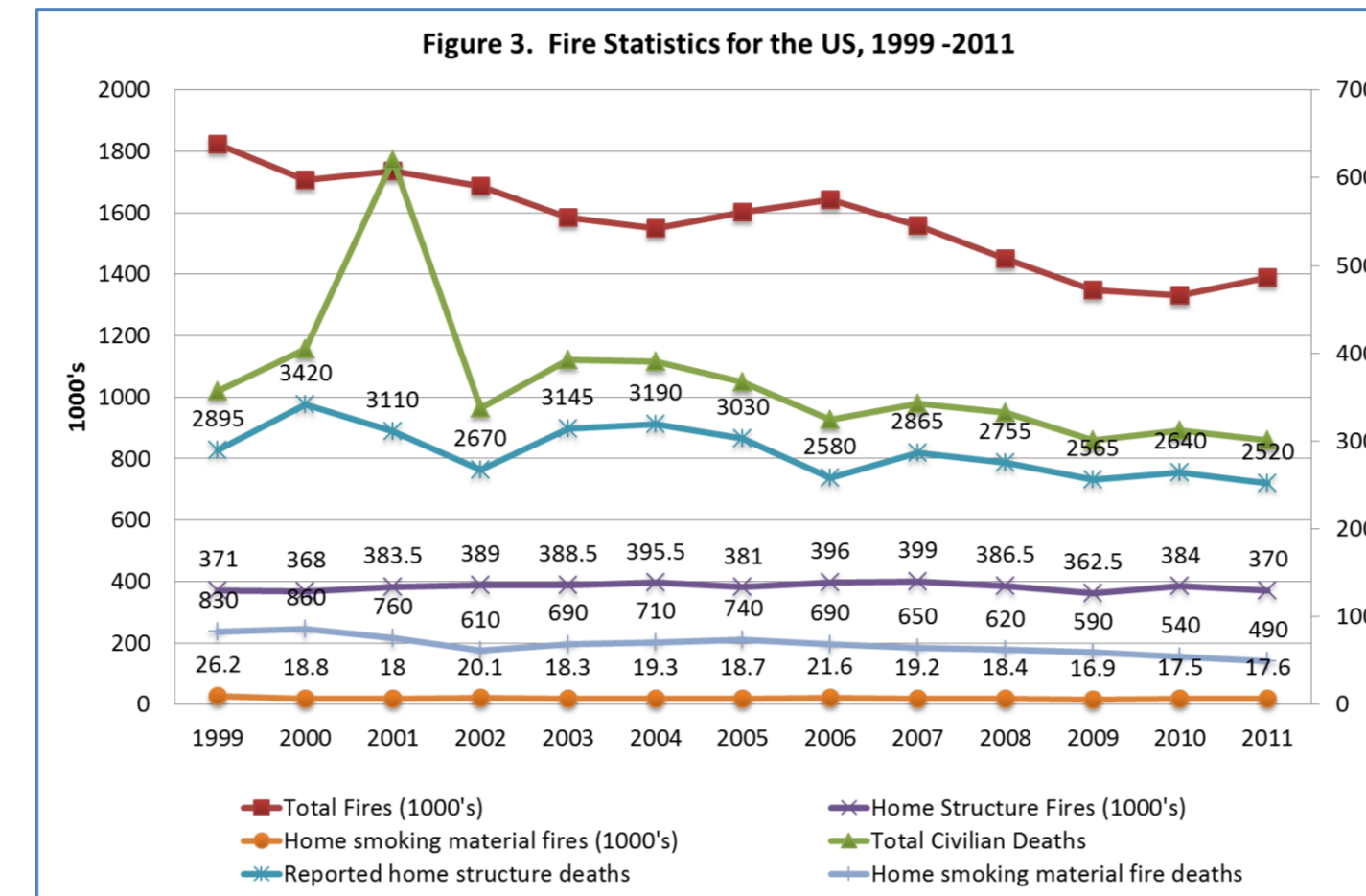
Canada introduced its Cigarette Ignition Propensity Regulations on 1st October 2005. In Australia, where discarded cigarettes are viewed as a major cause of bush fires [2], Standards Australia adopted the ASTM method on 9 March 2007. Similarly New Zealand and South Africa also adopted in the ASTM method in 2009 and 2011 respectively.

Within the European Union (EU), Finland was the first country to amend its tobacco legislation regarding the fire safety of cigarettes which entered into force on 1st April 2010. The issue of cigarette ignition propensity for the other EU countries was first considered under the General Product Safety Directive in 2008. The European Committee for Standardisation (CEN) was subsequently asked to develop the relevant standards, which national authorities could use to measure compliance with fire safety rules. The result is the ISO 12863: Standard Test Method for Assessing the Ignition Propensity of Cigarettes. The ISO standard was adopted by the European Commission on 9th August 2011 in all its official languages. Tobacco companies had until 17 November 2011 to ensure that cigarettes sold in EU complied with the new standard.

The World Health Organization (WHO)'s scientific advisory group on tobacco products (Study Group on Tobacco Product Regulation, or TobReg) published its report on reduced ignition propensity cigarettes in 2008 [3]. At the 5th session of the Conference of the Parties (COP5) of the Framework Convention on Tobacco Control (FCTC) in Seoul (Republic of Korea, November 2012), reduced ignition propensity was formally adopted by the Partial Guidelines for Implementation of Articles 9 & 10 under "Product Characterization in Relation to Fire-Risk". The Partial Guidelines cited the available standard test methods (e.g., ISO 12863 and ASTM E2187) and suggested a performance standard "As of 2012, international practice is to require a not-burn-through rate of no less than 75% by testing on 10 layers of filter paper" [4].

DISCUSSION

Since these enactments of RIP regulations there have been few comprehensive evaluations of the fire statistics and the impact of these regulations on the incidence of fires. A post-RIP impact assessment conducted by TriData Division of System Planning Corporation [5], which was commissioned by Philip Morris International, examined fire loss trend, per capita fire incidence and fire incidence per tobacco consumption based on data from Alberta and Ontario (two Canadian provinces with robust fire incident collection systems before and after the implementation of reduced ignition propensity legislation), and New York State. The report concluded that the "implementation of reduced ignition propensity cigarettes did not result in the predicted decrease of smoking material related fires and deaths" (Figures 1 and 2).

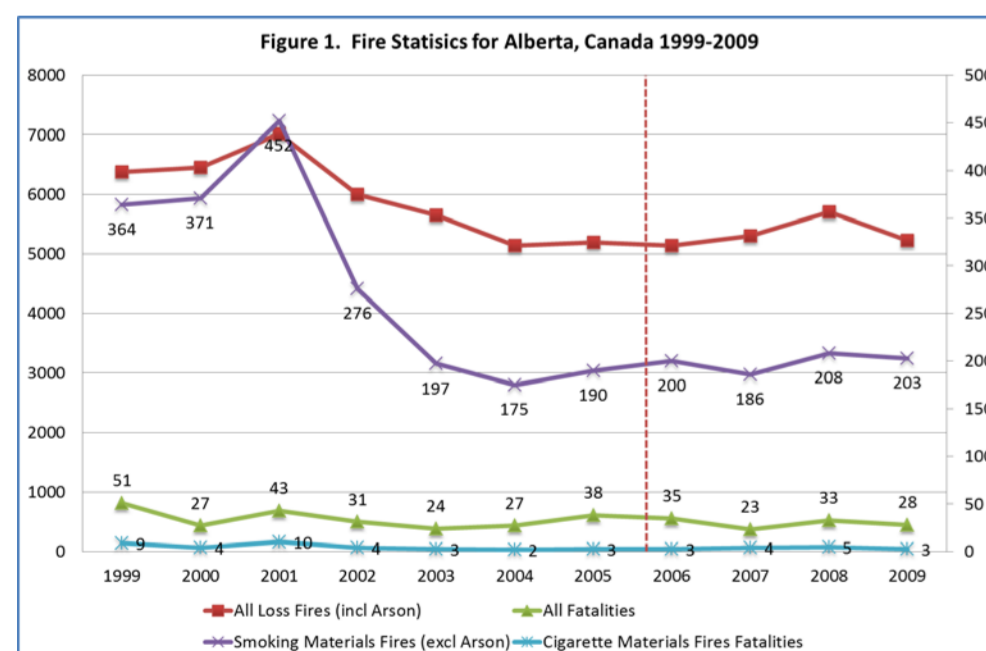


Source: Frazier P, Schaenman P, Jones E. Initial evaluation of the effectiveness of reduced ignition propensity cigarettes in reducing cigarette-ignited fires: case studies of the North American experience, TriData Division, System Planning Corporation, April 2011; Ahrens M. Home structure fires. National Fire Protection Association, 2013

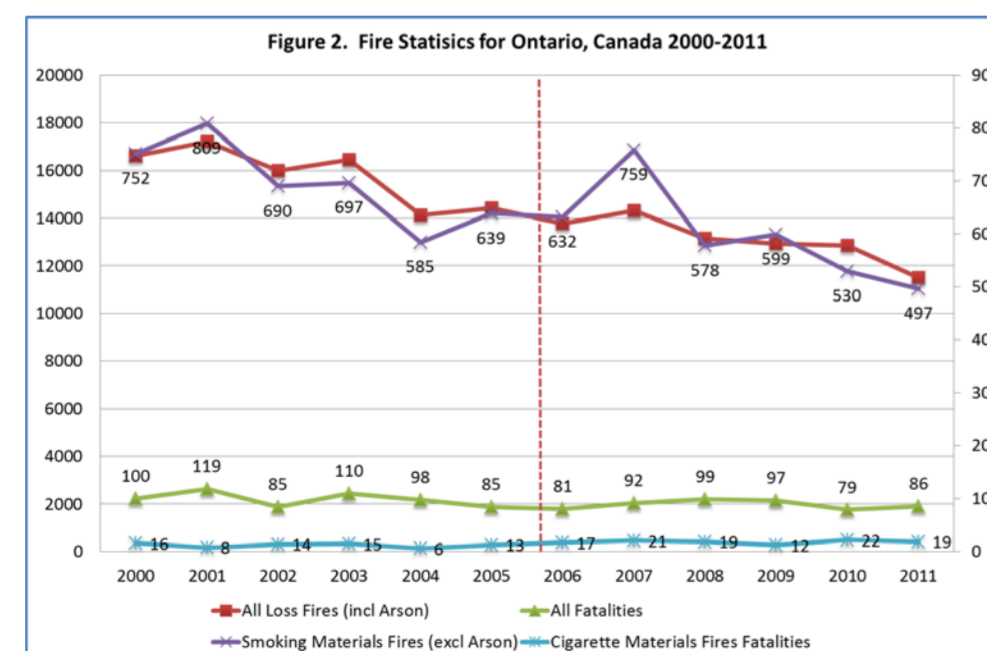
The development stages of the ASTM E2187-based test methodology have, through necessity, resulted in a simplification of real world fire scenarios involving smoking materials (Figure 4). Each simplification represents a significant departure from reality which would need to be validated by real fire statistics over a period of time. It is also important to note the ATSM E2187-based tests are an evaluation of the extinction potential of the cigarette under carefully controlled laboratory conditions, rather than the ignition potential, as the latter would be highly dependent upon many other factors in real world situations.

It is therefore recognised that multiple means are needed to reduce cigarette-related fires and assessment of the probable impact of any one approach is challenging as many of these factors interact to affect fire safety [6,7]. For example, fires in which a soft furnishing product has been identified as the item of ignition accounts for about 5% of all the residential fires in the US and similar for other countries, but are responsible for a disproportionately high proportion of fire deaths and losses [1,8] (Figure 5).

Figure 4. Study of potential causes of a fire in real world situations

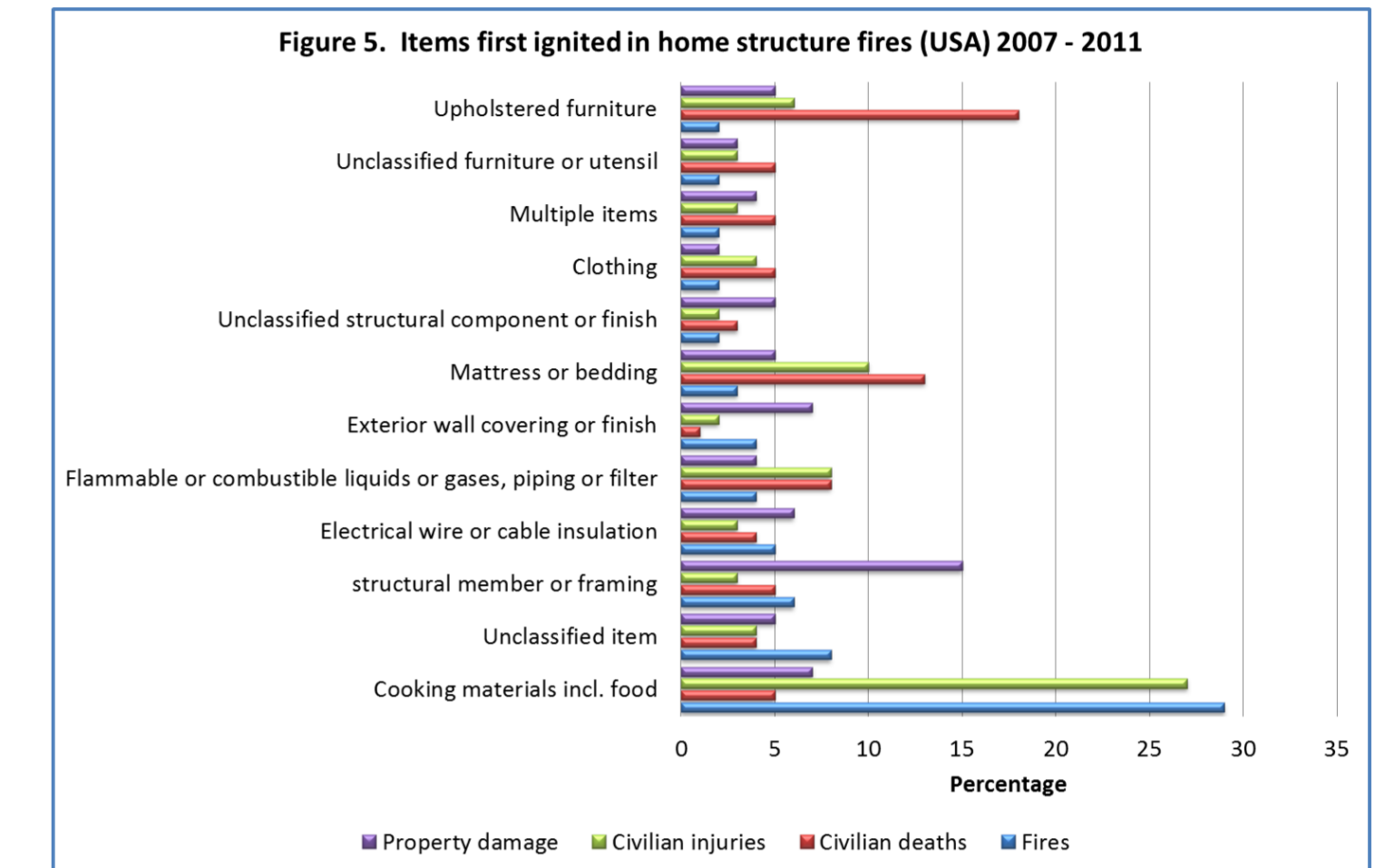


Source: Alberta Fire Commissioner's Statistical Report 2009, Alberta Emergency Management Agency



Source: http://www.mcscs.ius.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/fire_stats.html (accessed 16th August 2013)

There is even less effect when cigarette fires are adjusted for changes in cigarette consumption. The data show no substantive decrease attributable to reduced ignition propensity cigarettes. The study highlights the general uncertainties associated with some of the reported short-term (often based on one or two years of statistics) fire risk evaluations post RIP implementation. Fire statistics for domestic properties from the United States show similar trends to those for Alberta and Ontario [7] (Figure 3).



Source: Ahrens M. Home structure fires. National Fire Protection Association, 2013

Fire death and fire loss, which is an important matrix as they record the total impact of fires, should not be looked at in isolation for the evaluation of fire causes. A fire initiated by a lit cigarette, regardless of its outcome on fire death or property losses, should be recorded as a fire initiation event. The fire incident or fatality trends from other jurisdictions such as Australia and the EU are yet to emerge. Despite some of the known limitations in gathering reliable fire statistics for a longer period of time pre- and post-RIP regulation [5], it is crucial to use mechanistically based relationships for RIP post implementation assessment so that this regulatory intervention has a valid scientific basis.

CONCLUSION

The main mechanisms involved in the ignition of upholstered furniture by lit cigarettes are complex and remain not fully understood. However, significant technological progress has been made to ensure that commercial cigarettes sold in the jurisdictions with implemented RIP regulation can pass the ASTM E2187-based regulations. Cigarette manufacturers and their paper suppliers continue to conduct research into alternative materials and technologies to meet the regulatory demand. Robust fire incidence and fire death data pre- and post-RIP regulations are needed to allow the post-implementation impact assessment to be performed, which also has to take into account the specific population/demographic data, smoking prevalence trend and tobacco consumption patterns. Preference should be given for trend analysis based on valid fire incidence statistics because of its causality-link with the fire initiation mechanism [9], which is the intended target of the RIP regulation. For effective and comprehensive fire reduction for cigarette-related or all other causes, fire hazard awareness and education, effective preventive measures (fire alarm systems) and building designs should continue to be improved. Scientific evidence in countries that have implemented more fire-resistant soft furnishing regulations should also be evaluated for effective control of cigarette-related fire risks.

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