

CFSA News

CANADIAN FIRE SAFETY ASSOCIATION

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*Fire Safety is Everybody's
Business*

President's Message



The CFSA concluded it's 2000/2001 season with an excellent Annual Seminar in April. The seminar was entitled "Life Safety Changes".

There was a wide range of speakers and panel discussions on a number of topics, but it was interesting to note that the subject of Objective Based Codes was a frequent matter of discussion in a number of contexts throughout the day.

Our Seminar's keynote address was delivered by Mr. Yaman Uzumeri, Chief Building Official for the City of Toronto. At the time Mr. Uzumeri was engaged, we were unaware that this address would be one of his last official engagements prior to his retirement from a distinguished career in Canadian and International building codes development and enforcement. We wish him a long and happy retirement.

Objective Based Codes are due for adoption in Canada in 2003. They represent potentially significant change in the way we design and construct buildings, although I hope (and believe) that the transition from the current prescrip-

tive Codes to the Objective Based Codes will be relatively smooth and uneventful.

The CFSA will continue to monitor the development of the Objective Based Codes, and provide information to members on this important subject.

The CFSA Board of Directors will meet during the summer to commence planning of the fall schedule of events. Please contact one of the Directors if you have a suggestion for a dinner meeting or technical session topic or speaker. While the Directors strive to create a balanced and interesting program covering the many facets of fire safety, it is ultimately the membership who determine the programs through their continued attendance, support and feedback.

I would like to take this opportunity to wish all of the members a safe and enjoyable summer. I look forward to seeing you in September.

Jon Winton
President



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Achieving Compliance with Ontario Fire Code Part 4 CFSA Technical Session

On Wednesday, February 14, 2001, Dr. Joshy Kallungal of the Office of the Ontario Fire Marshal presented an interesting topic to two sold-out CFSA technical sessions. The informative topic was on achieving compliance with Part 4 of the Ontario Fire Code (OFC).

Part 4 of the OFC applies to all buildings where flammable and combustible liquids are stored, handled, processed or used. However, there are a few exceptions where the OFC would not apply, such as where:

- the Transportation Of Dangerous Goods Act (Canada), or the Transportation Act (Ontario) would apply, or
- the Dangerous Goods Transportation Act (Ontario) would apply,
- the storage, handling and use of flammable or combustible liquids occurs at Airports, Piers and Wharf's, (regulated under Federal Law),
- the storage of aerosol products which are covered under Subsection 3.2.5 of the National Fire Code,
- the storage of flammable or combustible liquids is on farms for individual farm use.

Other exceptions can be found in Sentence 4.1.1.2.(2) of the OFC.

Mr. Kallungal indicated that Part 4 of the OFC provides requirements for flammable and combustible liquids storage, handling, use and processing such as electrical classification, explosion venting, incidental use, tank storage and spill and leak control.

Keeping in mind that these safety provisions require planning and construction for upgrading, the OFC provided retrofit compliance dates ranging from one year to four years. One year retrofit compliance dates (compliance by August 21, 1998) examples

include Fire Safety Plans and spill procedures.

High life safety impact items such as ventilation measures and access for fire-fighters were required to be in compliance by August 21, 2000 (two year compliance).

Moderate life safety impact items such as fire department access and secondary containment are required to be in compliance by August 21, 2002 (four year compliance).

Mr. Kallungal indicated that an existing building may be subject to "grandfathering" conditions. Grandfathering allows existing conditions to remain until equipment is replaced, moved or modifications are made. Any changes/modifications are required to comply with the OFC. Grandfathering examples include:

- ground cover for underground tanks (OFC, 4.3.8.2),
- minimum distance between above-ground tanks (OFC, 4.3.2.2), and
- minimum distance to property lines and buildings (OFC, 4.3.2.1).

It was impossible for Mr. Kallungal to answer every question within the given time frame, however, Mr. Kallungal indicated that the Ontario Fire Marshal web site has recently prepared an OFC webpage for frequently asked questions that may be helpful.

The OFM web site address is: www.gov.on.ca/OFM.

The presentation was quite informative and appreciated by all in attendance.

Reported by Andrew MacPherson, a CFSA member and Fire Protection Technologist at Randal Brown & Associates Ltd., a Toronto based Fire Protection and Building Code Consulting Engineering Firm.

NFPA 13 – Changes & New Technologies

January 2001 Dinner Meeting

The first dinner meeting topic of the new year was presented by Mr. Kevin Maughan, a 14-year veteran in sprinkler design, currently with Central Sprinkler Co., a division of Tyco. He addressed the CFSA membership on the most recent legislative changes to the automatic sprinkler design and installation standard, commonly referred to as NFPA 13.

NFPA 13 Amalgamation

The NFPA 13 standard has been expanded to include the following previously independent standards:

- NFPA 24, Private Water Supply Piping Systems
- NFPA 231, General Storage
- NFPA 231C, Rack Storage
- NFPA 231D, Rubber Tires and,
- NFPA 231F, Roll Paper

Sprinkler Identification

Also, some of the more notable changes relating to sprinkler heads such as the new requirement for “nominal” orifice sizes to be used in calculations and for SIN Numbers to be stamped into the deflectors of all newly manufactured sprinkler heads was addressed.

One change that has particular significance is the requirement for all newly manufactured sprinkler heads, effective January 1, 2001, to be stamped with an identifying number that corresponds to its design, referred to as a “Sprinkler Identification Num-

ber”. The symbol will begin with either one or two characters to identify the manufacturer, and then up to four numbers referring to orifice size or shape, deflector characteristic, and thermal sensitivity. For example, a sprinkler head with a k-factor of 8.0, upright, with a 3mm bulb for residential use will be identified with the number “4134”.

CPVC Piping

With respect to sprinkler piping, a new exception allows CPVC piping to be used in ordinary hazard areas of light hazard occupancies no greater than 400 square feet.

According to the new edition of the NFPA 13 Standard, the CPVC pipe, which has traditionally only be permitted for light hazard use, is now permitted in Ordinary hazard rooms contained in otherwise Light hazard occupancies (like a janitor’s closet in an office) where the room itself does not exceed 500 square feet.

Design and Installation Changes

Some design and installation requirements have also changed. For example, residential sprinklers shall now be required to follow obstruction criteria of extended coverage sprinklers, as a result of a Tentative Interim Agreement issued May 22, 2000. Also, orifice sizes for various hazards are now recognized and limited by new requirements to counteract the effects of misting.

These changes arose from the need to centralize the volume of sprinkler information, which now appears in 40 different documents in the NFPA Standards series. In addition, there are multiple technical committees addressing similar topics, leading to overlap in many cases. By addressing significant technical changes and combining many existing documents, NFPA has been able to streamline the standard development process and reduce confusion in applying various sprinkler system design criteria.

Finally, also of importance, there is a new requirement in NFPA 13 for residential sprinkler systems to be designed using a minimum .1 gpm/sq. ft. density, which conflicted with the less restrictive UL requirement for .05 gpm/sq.ft. Research by Underwriters’ Laboratories has indicated that the less restrictive criteria may not be enough so they have decided to change their standard accordingly to match NFPA 13 and make their testing more difficult to pass.

As indicated by Mr. Kevin Maughan in his presentation, the new updated edition of NFPA 13 comes at a very appropriate time when new technologies have been and continue to be introduced into the market at a rapid pace. The constant pace of change will assure the NFPA Standards developers a lot of future work.

Jason Scovell

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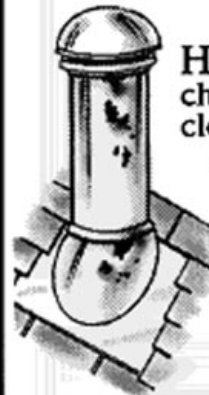


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of corrosion or
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least once a year.



Fire Research for the 21st Century

February 2001 Dinner Meeting:

On February 21, a presentation was made to the CFSA by Dr. Russell Thomas, Director of Fire Risk Management for the National Research Council. His discussion revolved around the proposed fire research testing to be conducted at the now abandoned town of Kemmano, British Columbia. Due to be demolished, the town has been donated to conduct full-scale fire research projects. Many agencies, including the IRC, will be carrying out these studies.

The overall objectives of the testing are to provide input toward the future development of the National Building Code and Fire Code, to provide industry and the fire services with cost-effective, environmentally friendly fire safety techniques and to provide methods and techniques to reduce total fire loss costs.

Known as the "Kemmano Town Site Study", the testing will involve the existing stick-built and modular building structures, which were used previously by Alcan Hydro Dam employees in Northern British Columbia. The project is being co-ordinated by the BC Fire Commissioner. The tests will be conducted from May 13 to June 8, 2001.

Testing will be performed on Smoke Detectors with the intention of researching placement, types, gas product sensitivity, audibility and smoke content. Also, fire separations between and within residences will be studied for their performance under actual fire conditions. Radiation from secondary

structures such as adjacent garages or nearby buildings will be examined, with a focus on the impact of wind direction in fire spread. Finally, attention will be paid to the performance of automatic sprinklers in these "real" fire scenarios.

For the purposes of suppression, the impact of Compressed Air Foam will be examined as a possible structural fire suppressant for buildings far away from viable water sources, in both hand held hoses and fixed foam systems.

Results will be released from this remarkable testing opportunity after analysis and processing is complete.

It was noted that the NRC has already completed testing of hand held water mist systems, atrium smoke management, mercantile fires involving high-piled storage, smoke movement in sprinklered fires, and many other areas. New projects underway include the study of cable fires in plenums, public recognition of building fire alarm signals, serial arson investigations, fire performance of floors and the combustibility of common materials. It is widely recognized that the NRC continues to make a major contribution to the professional fire services in general and to public safety in particular through its continuing and innovative efforts to test, improve and research every possible aspect of fire safety in the "real" world.

Jason Scovell



Editor: David Johnson

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- Issue #1 – May 20
- Issue #2 – Aug. 19
- Issue #3 – Nov. 19
- Issue #4 – Feb. 17

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CFSA Chapters

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50/50 DRAW

For the past several years, CFSA has held 50/50 draws at the Annual Forum. Fifty percent of the proceeds is donated to the Burn Unit at the Hospital for Sick Children in Toronto while the other fifty percent is awarded to the lucky ticket purchaser. This year, David Johnson, CFSA's First Vice President and Newsletter Editor, won the prize and graciously donated his winnings back to the HSC Burn Unit. In all \$300.00 was raised for the Hospital.

"Fire Investigation"

The Explosion of a Single Family Home

March 2001 Dinner Meeting

On March 21, Mr. Michael Stewart, a Fire Investigator with the Office of the Ontario Fire Marshal addressed the Canadian Fire Safety Association on the topic of a fire investigation he conducted involving the explosion and destruction of a single family home.

On February 11, 1999 at approximately 1:34 am, a report that an explosion had occurred in a home on Guelph Line in Milton, Ontario was made to the "911" emergency centre. The 4000 square foot single family home had been in complete darkness at the time of the incident. Built in the 1830's with 26" thick walls of concrete and stone, it had been completely destroyed and transformed into a pile of smoking and flaming debris scattered over a huge distance around the property by the power of the blast.

Upon arrival of the fire service, it was discovered that kryptonite locks had been secured to the wrought iron fence that surrounded the property. Some firefighters climbed over the fence while others tried to cut through the locks and fence itself. After a review of the scene by the police bomb expert, it was determined that a bomb was not the cause of the explosion. After further examination of the site, the representatives from the gas company indicated that there was no gas service connected to the building, thereby eliminating another possible fire/explosion cause.

Utilizing every resource available, and thanks to the exceptional co-operation offered by everyone from the on-site emergency service personnel to the Mayor's office, the investigation was able to progress to a new hypothesis. First, a piece of carpet was found to contain gasoline. Next, at day-break, a body was found of a male just outside of the southwest corner of the building. The Coroner took the body for a post-mortem. As the search for clues continued, more suspicious evidence was revealed. A BBQ lighter and its packaging were recov-

ered, as were an empty plastic vodka bottle with the cap off, a flashlight that was still on, a pour spout for a gas container, a twist cap for a gasoline can and several melted gasoline cans, both inside and outside the home. The post-mortem report from the Coroner indicated that the male victim not only had virtually fatal alcohol levels in both the heart blood and the body blood, but also traces of gasoline in the lungs. As more and more evidence was uncovered, the hypothesis of suicide began to develop.

In an adjacent building, which had survived the explosion from the main dwelling, a collection of papers, personal effects and a suicide note were found explaining what the individual had done. As it turned out, the victim was due to attend divorce court for the purpose of dividing the property, and had decided to ensure that no one would have the opportunity to possess the house. After purchasing approximately nineteen 20-litre gas cans prior to the explosion, the individual poured the gasoline throughout the

house, but predominantly in the basement. He then consumed an entire jug of vodka, which alone would have eventually caused his death by alcohol poisoning, and proceeded to ignite the gasoline fumes with the BBQ lighter.

Gasoline, which has a flashpoint of approximately -40°F, explosive limits of 1.4 to 7.6%, and a vapor density of 3 to 4 indicating that it is heavier than air, is a very volatile and dangerous liquid to handle. Given the evident destruction of the house itself, and the large quantities involved in the pre-planned explosion, it was clear that nothing less than the total destruction of the building was intended. The result was obviously a sad event. Nonetheless, everyone involved in the investigation learned very important lessons. Among them were the benefits of an intense and thorough investigation and co-operation between different agencies, and the constant search for and testing of viable hypotheses.

Jason Scovell



Life Safety Changes

CFSA Annual Seminar

Jason Scovell



Keynote speaker: Yaman Uzumeri, Objective-based Codes

As one of his final public speaking engagements before his retirement, Chief Building Official Yaman Uzumeri chose the CFSA's Annual Seminar to discuss the eagerly anticipated Objective-based Codes which will be introduced in the near future.

There are over 4000 years of history behind code development in the world. Dating from the clay tablets of the first known code of Hammurabi, which in itself was essentially the first ever objective-based building code, to today's voluminous paper and computer-based code requirements, the development of building codes has come a long way. Whereas in ancient Egypt the crime of having a building collapse was punishable to the builder in equal measure to the fatalities and/or injuries afflicted, today's codes rely on the legalities of court-recognized liability to determine fault and punishment. As objective-based codes become more widely used and understood, this is likely to become more the norm as the Building Code Commission will become very busy in its conflict resolution role.

According to Mr. Uzumeri, five elements are required in the future to make the transition to objective-based codes smoother and easier for all concerned.

First, technology issues relative to the performance of buildings will have to be addressed by applying a minimum standard of performance and the technique of repeated testing. Secondly, education will have to be disseminated as widely as possible to guide groups and individuals through the process of change. Thirdly, public policy and legislation will be a factor in that there should not be any overlap into other areas of authority, and society's objectives should be clearly developed in the established codes. Fourthly, a support framework will be needed in the form of a regulatory structure that allows for recognized solutions to play a role. Finally, process management will be needed to allow for the interdependence of issues, and to facilitate good communication between different agencies and authorities.

In the final analysis, objective-based codes will lead to safer buildings from a fire and life safety perspective.

Bernard Moyle, Reflections: The Changing Face of Fire and Life Safety in Ontario

The Fire Marshal of the Province of Ontario, Bernard Moyle, presented an overview of the evolution of Fire and Life Safety in Ontario on the past century.

In 1918 a book was published entitled *Fire Waste in Canada* by J. Grove Smith. The

book was designed as a survey for the insurance industry and discussed the growing hazard and occurrence of fire nationally. The book concluded that the annual loss of life and property in Canada was greater per capita than any other country in the world. One reason for this was that fire prevention was not being given the necessary attention. The problem in 1918 was ignorance of fire safety and carelessness. Today, the same problem exists. The question is whether anything has changed over the past one hundred years. Without a doubt, annual fire losses have decreased, building and fire codes have improved, training and equipment have improved with education and technology, and public fire education has grown in stature and visibility by leaps and bounds. But for the longest time there was too much reliance on firefighters to respond in an emergency capacity and restore order. This gave rise to what has become known as the "Respond and Rescue" or "dependency model" and represents an incomplete vision of the overall approach to fire and life safety. In the 1980's, the introduction of fire codes brought a "regulatory and enforcement" approach to the overall picture but there was still something missing. To fill the void, Public Education began to emerge as the missing component. Faced with the realization that most fires are preventable, and that in many situations fire safety devices or the fire department simply cannot help, it became very important to en-

courage and teach people to practice fire safe behaviors. With the development of such public education programs as Learn Not To Burn, and such organizations as the Fire Marshal's Public Fire Safety Council, public education moved onto the forefront of the overall fire safety promotional strategy.

Today, public educators are being certified to national standards, and many new and innovative programs have been developed and are being used across the country and around the world. As a result of this effort, fire death rates have decreased 70%, but continued work in isolation will very likely stall any further progress. A new program called "Risk Watch" will change that by creating new opportunities to build public and private partnerships in the communities where the programs are being taught, and reach a new population with an overall safety program to prevent childhood injuries in many different areas. The goal of the program is to reduce preventable and predictable childhood injuries and deaths throughout the Province of Ontario, with the result being the increasing success and growth of this program every year. With the efforts going into this program specifically, and into public education in general, it's very likely that preventable deaths in fires and elsewhere will continue to decline into the next century and beyond.

Chris Fillingham, Building Code Issues

As a Principal of the firm Dunlop Architects Inc., Chris Fillingham has spent a great deal of time analyzing, researching and exploring the issues surrounding the current building code environment and the future that awaits involving objective-based codes.

In the building code environment, the only constant is change. The trend toward globalization continues, technological change presents new challenges and expands possibilities in the construction industry, and officials have responsibilities that change with the environment on almost a daily basis.

Internationally, trade continues to be the motivating factor behind the advancement and spread of code changes to facilitate the decline of "non-tariff barriers" to business opportunities. It is important for Canada to realize that the codes and standards devel-

oped, published and utilized in this country can produce a top quality product. It would be better for Canadians not to wait for the world to sell their codes and standards to us, and instead take the initiative to spread Canadian based documents globally.

Obstacles to innovation are continually being dismantled, and questions are being asked about the whole issue of liability and the court's role in making this determination. Part of the approach in dealing with some of these issues involved a "bottom-up" analysis which asked "Why do we require what we do?". Several key themes and serious issues have been identified, some of which have been determined to be more political than technical, and raised the question about whether codes should play the role of a minimum requirement for health and safety, or a vehicle for shaping future social policy. Also, what kind of compliance mechanism will work best, the compulsion of laws or business interest based private sector cooperation? After this, it needs to be determined how far codes should go, or how 'minimum' is minimum? In order to address these issues, one needs to understand not only the codes themselves but the construction industry as a whole. This will require a "top-down" analysis in order to be sure that the code development process leading towards objective based codes actually works and will work for the Canadian industry as a whole.

Sean Tracey, NFPA International in Canada

The new Canadian Regional Manager of NFPA International, Sean Tracey spoke on the role and benefits of involvement in NFPA in Canada and throughout North America.

Founded in 1896, NFPA now has 74000 members world-wide, and 2600 in Canada alone. NFPA is not solely a United States-based standards development organization, but a global organization with regional managers in South America and Asia also. It serves to develop standards for an international environment and addresses many more areas than just fire safety. The website "www.nfpa.org" receives 40,000 hits a week and is the main source of communication for the association.

With respect to standards development,

NFPA uses balanced technical committees of expert volunteers and a consensus-based process. All standards are involved in a 3-5 year review cycle and an open democratic process. The latest project is the NFPA 5000 Building Code which will be published in July, 2002 and completes the set of consensus-based standards. It uses NFPA 101 in its structure and a performance-based design in its layout. It is likely that NFPA 101 will be eliminated as it is expected to be replaced by NFPA 5000. Canada is being encouraged to get involved in the standards development process. Canadians have shown an enormous interest in the educational programs of NFPA with Ontario leading the way in the world. As NFPA continues to grow, Canadians should take a more active part in the process in order to add influence to the resulting form and wording of future publications. With growing trends in standard harmonization between global organizations it is clear that the opportune time for this involvement is the present.

Objective based Codes Panel Discussion

Moderator: **Doug Crawford**, Deputy Fire Marshal

Participants: **Chris Fillingham**, Dunlop Farrow Architects, **Anthony Crimi**, Underwriters' Laboratories of Canada, **Lee Grant**, Peterborough Fire Department, **John Clifford Haysom**, Institute for Research in Construction

Kicking off the discussion was Chris Fillingham and he talked about particular issues of code significance. First, long term care occupancies and the movement toward making them more "home like". In order to generate this residential feeling, measures need to be taken that are in complete violation of a strict application of the current wording of the building code. This can be remedied by implementing and using an "intent" component to the codes which could facilitate discussions of alternate measures to satisfy all interests.

Travel distance to exits is also an issue. An example is the World Trade Centre in downtown Toronto. Where the maximum travel distance was exceeded in this building,

smoke control measures were applied and computer modeled for appropriate installation parameters. Again, the objective-based approach can be successful.

John Haysom followed on this with a discussion of the future format and layout of the objective based codes, which can also be retrieved on the website "www.ccbfc.org". Division A will contain the Objective, and Division B will contain the Functional Requirement and Intent. There will be no regular change to the Division A components, but frequent change to the discipline-based Division B components. The Objective based codes will be released in final form in the fourth quarter of 2003.

Tony Crimi spoke about the ULC standards development process and indicated that ULC standards will continue to be referenced in Division B of the new codes. Current acceptable solutions can be found in existing ULC standards, and alternative solutions can be derived from new standards that could be developed as the changing needs of the construction industry require. There will be an easy fit between ULC standards and the "intent" components of the new codes.

Finally, Lee Grant spoke about the Fire Service's support for the movement toward objective-based codes but highlighted concerns that could arise at the plan examination stage of building permit review. It is important that the success of the prescriptive based codes not be forgotten, and that the process unfold with accuracy and efficiency at every level. Buildings need to be classified properly from the beginning, and building structures such as fire separations need to be properly designed in order to avoid delays in the plan review.

It also needs to be borne in mind that there are still many differences between municipal fire services in terms of the staffing and training that they have at their disposal. Some municipalities have professional engineers and easy access to personal computers, whereas some have neither. The political will to give the Fire Services the tools they need to do their jobs properly needs to be found in order to assure a smooth transition and a safe implementation of the forthcoming objective based codes.

Life Safety Changes – CFSA Forum April 25, 2001

A Special Thanks to the CFSA Forum Committee for bringing us another successful seminar: Mike Strapko, Stu Evans, Leo Grellette & Doug Crawford.

We also thank our 2001 Forum Sponsors:

- ULC
- NFPA International,
- Pyrotenax
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CFSA Scholarships

The CFSA's continuing involvement in fire safety education is quite significant. CFSA recognized scholarship achievement of six Fire Protection Engineering Technology and Technician graduates from Algonquin College of Applied Arts and Technology and Seneca College of Applied Arts and Technology.

Seneca College

Scott Uren
Kelly Towers
Derek Engh

Algonquin College

Ian Glasgow
Bradley Bignucolo
Joshua Coffey



In addition to our annual Scholarship Awards, CFSA established in 1993 an award in recognition of the many contributions to fire safety by the late Peter Stainsby. Peter was an active and devoted member, a dedicated director of CFSA and an outstanding individual. Each year we appropriately recognize the top fire protection student and this year's winner is Kellie MacArthur.

We also greatly appreciate the scholarship donations from:

- Rich Morris
- Michelle Farley
 - NFPA
 - OAF, and
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DOOR PRIZE WINNERS

This year's door prizes were Smoke Alarm Kits.

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New!

Secure registration for Dinner Meetings and Technical Sessions

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You are registering for the CFSA Dinner Meeting on January 24, 2001
All fields marked with an asterisk (*) must be completed.

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Because of the server set-up, it is now also possible to join the Canadian Fire Safety Association from our website.



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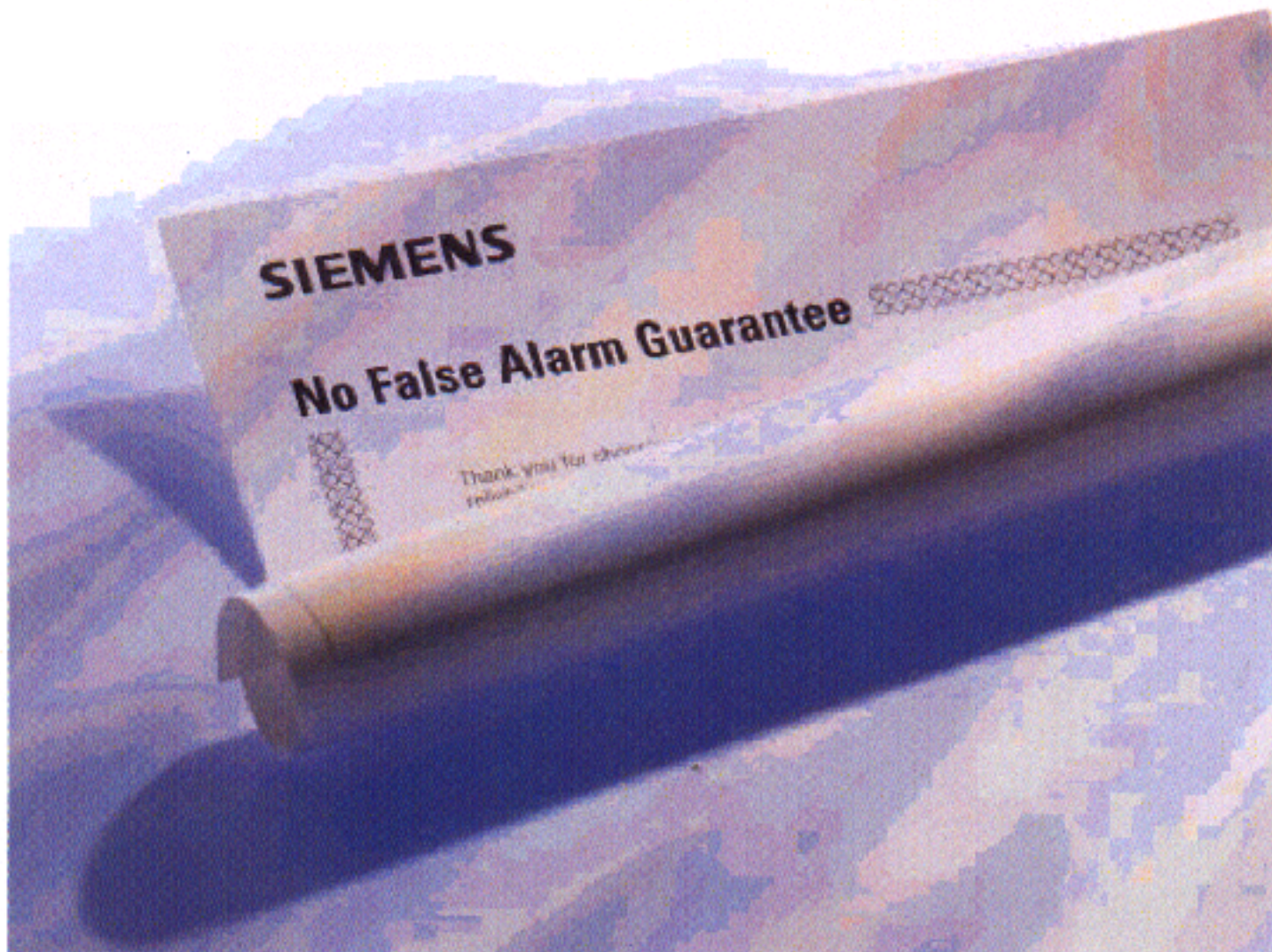
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