



EUROPE IS PLAYING WITH FIRE

A call to action
on fire safety in buildings





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THE FIRE ALARM IS SOUNDING



In recent years, the European Union (EU) has made important strides in enacting and modernizing regulations to promote the health and safety of Europeans. Unfortunately, those strides have sidestepped one of the oldest and most menacing threats to daily life: fire.

IN NUMBERS:

70,000
people

are hospitalised in Europe each year due to severe injuries caused by fire

€126bn

equivalent to 1% of European GDP is eaten up by fire damage each year

What is the result? More than 4,000 deaths and 70,000 hospitalizations every year due to fire and smoke-related injuries - that's nearly 200 people every day. Over 126 billion euros in related costs incurred annually across the EU.

Europeans spend about 90% of their lives inside buildings. We want buildings to be comfortable, and we need them to be safe - especially those with public access such as the schools where our children go to

learn and play and the hospitals that house the infirm and vulnerable.

Across the EU many fire-related building standards are seriously inadequate and inconsistent from country to country, and construction material testing protocols are out of date.

It's time for the sidestepping to end and for an EU-wide fire safety effort to begin - especially in this era when climate and energy security concerns are prompting extensive building renovation programs. The effort should be robust and should ensure that construction products and practices consistently meet appropriate and rigorously enforced fire safety standards. And it should get underway without delay.

EUROPE IS PUTTING CITIZENS AT RISK - HOW?

Fire is consistently dangerous but fire safety regulations are dangerously diverse

Europeans are justifiably proud of their diverse cultures and traditions. But when it comes to fire safety regulations they have one thing in common: everywhere the rules and standards are far below of what they need to be to protect EU citizens when they are at home or abroad. Yet, fires are the same across Europe.

Much of fire safety depends on basic aspects of building design such as the number of floors, provisions for evacuation routes and exits, active and passive fire mitigation elements, and the proximity of the building to rescue and emergency services. And, buildings of a given type - such as schools, offices, homes, or hospitals - can be subject to significantly different requirements in terms of fire safety in different

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countries. Often these requirements are managed by different levels of government. Amazingly many European countries ascribe minimal importance to fire safety and even in the best cases most regulations applied at the national or local level have significant room for improvement. All these aspects can be improved within local stylistic and cultural frameworks.

Likewise, it should be possible to put in place uniform building-material testing protocols across the EU without injuring local cultural differences. Why? Because even though buildings don't travel, the building materials and elements needed to construct them do. A level playing field is needed not just for safety reasons but to foster a single market. But the current system only covers a part of the building-materials on the market and cannot handle complex composite products. An update is urgently needed.



[CASE IN POINT]

Same buildings, strikingly disparate safety levels

Fire Safe Europe recently looked at national regulations related to fire safety in an average school building in ten countries from all four corners of Europe. The differences were alarming.

Fire exits

In some EU Member States, children have to run six times further to reach the nearest fire exit - 10 meters in Germany compared to 60 meters in Italy! Does it mean that children in Italy run faster than children in Germany?

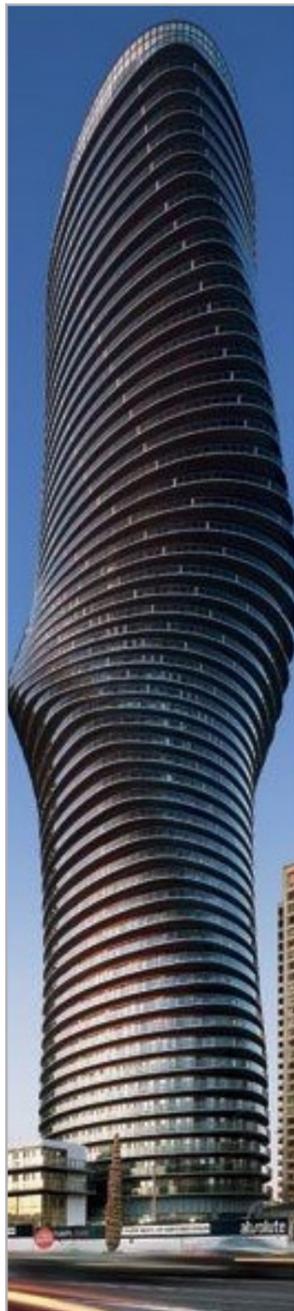
Ensuring fires are contained

Almost half the countries surveyed do not regulate

the combustibility of fire compartment walls (a compartment is an area within a building which is supposed to contain a fire if it breaks out). Out of 10 surveyed countries, only Germany and Czech Republic require that compartment walls have to be made of non-combustible materials. In most other countries, they can be made of highly combustible products.

Enabling buildings to bear the load of a fire

Only Slovakia and the Czech Republic require non-combustible load bearing structures (the construction product used to carry the weight of the building) on each floor level. Five countries, including Sweden and Spain do not regulate this at all!



Regulation lags innovation and is falling further behind

Fire safety regulations and standards for buildings and construction products seem to have failed to keep pace with the innovations that regularly revolutionize the industry. This is the sad fact in Europe today, at all level of government. Some standards are simply out of date, and others were inadequate to begin with.

In the EU, construction products are governed by the Construction Products Regulation (CPR), which aims to ensure that reliable performance-related data are made available, by means of a Declaration of Performance (DOP), for any construction product placed on the European market. The CPR also enables consumers to easily identify products as “fit for purpose” through the “CE” marking. Because the CPR was intended primarily to break down barriers to trade, it also requires that products meet a number of “essential requirements”, including those related to fire safety.

The fire safety concepts upon which the CPR is based are fundamentally sound. But the fire safety test methods have not been revised since 2002 and are based on data from no later than 1994.

The test methods called on by the CPR are based on

small-scale tests that in many cases are not representative of a real-scale fire. Consequently, they are profoundly limited in their ability to predict modern real-world fire safety performance.

There is no harmonized European standard test method to ensure for example, that external wall (or ETICS) systems, which often contribute to the spread of fires in large or high-rise buildings, are safe. And, most alarmingly, they take no account of the toxicity of smoke, which is responsible for more than half of all fire-related fatalities.

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Regrettably, no mechanism exists to correct or update the technical details of test methods in the light of changing building technology or product evolution.

In short, the testing system had limitations from the start and its inability to evolve simply perpetuates the inadequacies.

IN NUMBERS:

2,000,000
fires

are reported in Europe annually

50%

of the fire deaths are due to inhalation of smoke and toxic combustion gases only



[CASE IN POINT]

The importance of harmonized test methods

When an international team of scientists and engineers carried out large-scale tests on external thermal insulation composite (ETICS) systems in Croatia recently, they had to use a British standard - simply because no EU standard exists.

The tests aimed to demonstrate the performance of different types of insulation systems in high-rise buildings.

The results were striking for many: A wall fitted with combustible insulation pumped toxic black smoke into the air and was completely burned out within 15 minutes.

The wall covered exclusively with non-combustible insulation contained the fire and remained structurally undamaged.

The wall with combustible insulation and a non-combustible fire barrier above the source of the fire delayed the spread of the fire for 10 minutes. However, when the blaze “jumped” this barrier, the same toxic smoke and furious flames of the first wall occurred. The test highlighted the shortfalls of the current EU testing regime for ETICS solutions given that there is no harmonized large-scale European test to ensure that only systems that meet rigorous fire performance criteria should be allowed on high rise buildings.



A video of the test can be watched [here](#)

The dust of renovation must settle on a safe environment

IN NUMBERS:

90%

of our time is spent in buildings

90%

of fires in the EU happen in buildings

3 minutes

is all it takes for fire to involve an entire room, because our buildings contain more flammable materials than ever before

In light of the fact that buildings currently account for more than 40% of the energy used annually in Europe, the EU has recently taken steps to reduce energy consumption in buildings and thereby protect the lifestyle and energy security of its citizens. The EU Directives on Energy Efficiency and on the Energy Performance of Buildings demand that all EU countries put in place programs to promote near-zero energy new

buildings and establish thermal renovation projects over the next years. The implementation of these programs should deliver significant energy savings, greenhouse gas reductions, and millions of new jobs.

But as buildings across Europe are renovated, their fire safety characteristics will change.

This exciting period of change and renovation offers the EU an unprecedented opportunity to act and improve the fire safety of its built environment.

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and improve the fire safety of its built environment. Fire safety rules must be drastically improved and consistently enforced across Europe.



[CASE IN POINT]

More combustibles, faster fires

In the 1950's it would typically take about 25 minutes for a small fire to become out of control, allowing the rescue services time to respond and contain the fire. Nowadays a small fire can become a blazing inferno in less than 3 minutes - injuring and killing the building occupants before the emergency services can arrive on the scene. The average time it takes the fire and rescue service to arrive at a fire is between 8 and 15 minutes in Europe.



DEVELOPING AN ACTION PLAN

Europe needs a fire blanket

The European Union is unique in its ability to enable citizens of 28 countries to live, work and travel across border with relative ease. Currently over 500,000 European students study abroad annually, 660 million hotel nights are booked in European hotels each year, and more than 12 million people, many construction workers, work outside their home countries.

It therefore seems appropriate that the EU ensures that all countries strive for a common level of fire safety in buildings to safeguard the daily security of all Europeans no matter where they are. What's more, the EU has already acted in the built environment and has demonstrated a proven track record of success in implementing EU-wide standards and regulations that improve and/or protect the health and well-being of its citizens.

The current fire safety problem is massive in scale but not un-solvable. It is complicated by the diversity of regulations and construction practices across countries, the pace of change in the built environment, the roll out of new renovation programmes, and the increased mobility of construction workers (leading to complications due to regional variations in standards and practices).

THE ACTION PLAN SHOULD INVOLVE 3 STRAIGHTFORWARD STEPS:



Raising the ambition on fire safety in buildings across the EU with a Fire Safety Strategy;



Update the provisions in the Construction Products Regulation (CPR) to address its gaps and weaknesses in testing methods;



Incorporate smoke toxicity in EU standards and regulations for construction products.

But if the matter is faced with political bravery and a coherent action plan, it can be addressed.

The heightened level of ambition will ensure that fire safety efforts are on the right track across Europe. A CPR update will modernize its standards and regulations so that they reflect the real-world performance of construction products and systems in a fire. And, the incorporation of toxicity will tackle the major killer in any building fire: smoke.



[CASE IN POINT]

Road safety, where European teamwork has saved thousands of lives



A model for action already exists in the form of the EU Road Safety Strategy. The Strategy aims to cut EU road deaths by 50% by 2020 compared with 2003 levels. And by 2010 a 33% reduction had already been achieved.

Was it easy? Probably not. Was it worth it? Absolutely. Is fire safety less important?

European Fire Safety Strategy

Although each EU Member State is ultimately responsible for developing, implementing, and enforcing safety standards applicable to its territories, the European Commission should move with political conviction towards defining minimum fire safety levels. The EU needs a Fire Safety Strategy.

As was the case with the EU's Road Safety Strategy, as a starting point in this effort, reliable data, based on a harmonized methodology, will be needed to identify trends, best practices, pinpoint which actions should be taken, and indicate progress with compliance. Goals also need to be set for each EU Member State country on the "acceptable" human and economic losses for fire safety.

Updating the CPR to address its gaps and weaknesses in testing methods

The test methods called on by the CPR for the fire safety of construction products are in urgent need of revision, especially with regard to their scale. The simple fact is that the fire behavior of some of the most commonly used modern construction materials and systems cannot always be reliably predicted with existing small-scale tests or modelling. Fortunately, tackling the update does not mean starting with a blank slate, because several International (ISO) and European national test protocols already exist.

The European Commission has published "Guidance Paper G", which addresses issues related to the functioning of the European system for classification of construction products reaction to fire. The concepts contained in Guidance Paper G should be incorporated in CPR legislation and thus made normative.

The standardisation bodies responsible for the development of the test methods, CEN/CENELEC, should then be mandated to assess and continually monitor the suitability of established test methods and to incorporate existing or new large-scale and where possible small-scale tests and criteria to ensure that product and systems are tested in a way that reflects their real-world performance in a fire. External wall (ETICS) systems and sandwich panels are particularly in need of attention, as are systems with combustible elements sensitive to installation errors and ageing.

Incorporating Toxicity

Data from across the globe indicate that more than half of all fire-related injuries and deaths are caused not by the fire directly but by its smoke. Smoke from a fire can obscure evacuation routes, impair the vision of evacuees, cause irritation to the respiratory tracts, and eventually bring about narcosis due to the inhalation of asphyxiant gases. In addition, the long term exposure to smoke also represents a major cause of cancer among Fire Fighters.

Clearly one of the greatest dangers of smoke lies in its toxic potency. Yet no current European regulation or standard includes smoke toxicity in its requirements. Opacity, yes. Toxicity, no. This means that the greatest potential fire-related killer lies silently in the background, ignored until it strikes.

That is why Fire Safe Europe recommends strongly that a system be put in place to quantify the toxic potential of smoke from different construction products in different fire situations. ISO has developed test methods and criteria for smoke toxicity. It simply needs to be applied via a mandate to CEN/CENELEC to incorporate toxicity criteria into the CPR classification scheme based on the existing ISO WD 16405 and ISO 13571 methodologies.

TAKING ACTION, SAVING LIVES

Fires in European buildings injure and/or kill over 70,000 people every year. Many of those injuries and deaths result from building design and construction flaws that are not properly addressed by local or national fire safety regulations.

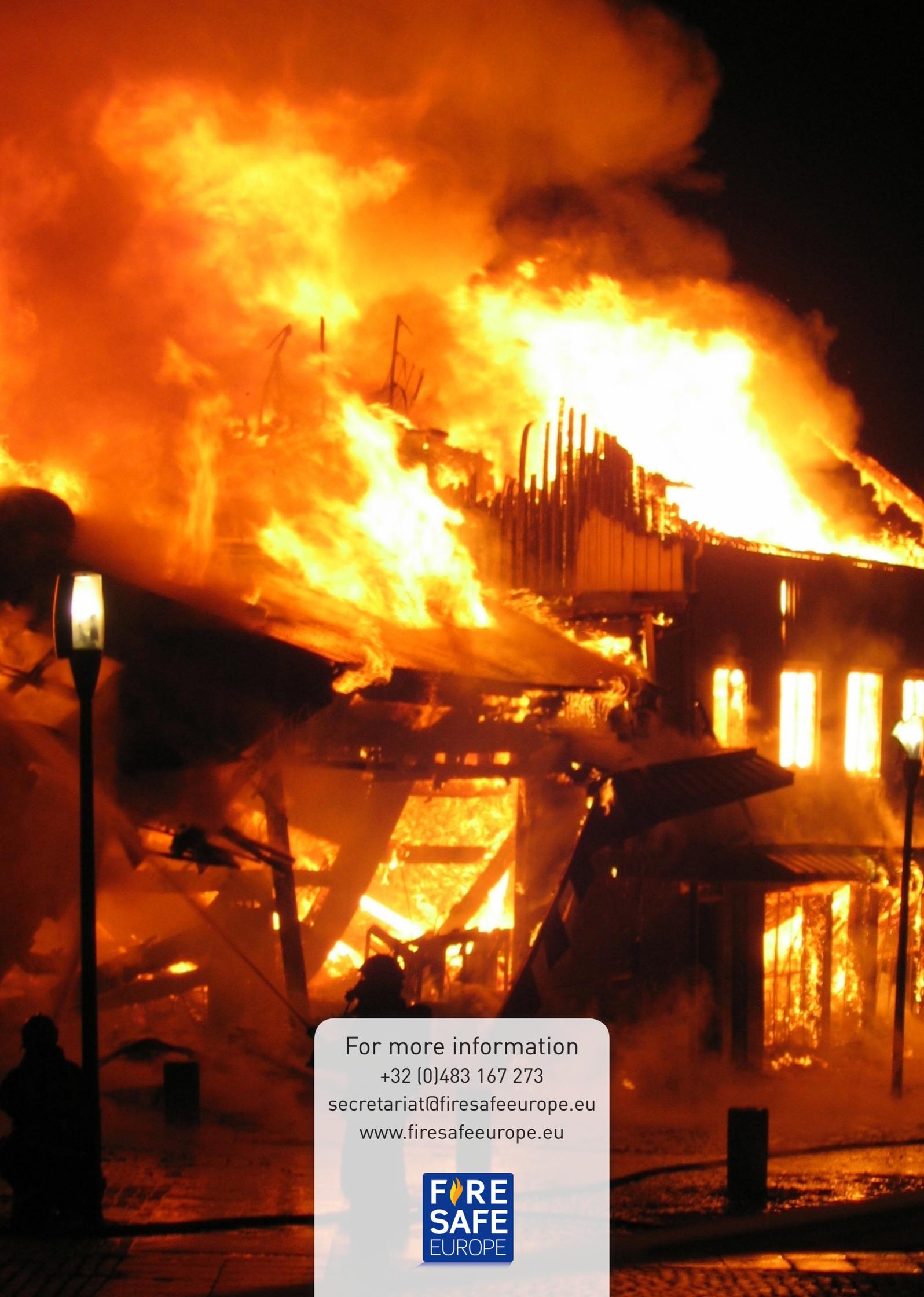
It is a problem that grows worse every day as we change the fabric of buildings, yet despite the danger to European citizens, no EU-wide standards and regulations currently exist to address the matter of fire safety in buildings.

As long as the issue remains unaddressed, fire and its deadly companion- smoke will stand unchecked as killers waiting to strike. The European Parliament has a track record for taking on tough issues and ensuring that Europe addresses them.

It is time for the European Parliament to wake up to the threat of fire. To continue to ignore the problem is to sleep through a very loud alarm.

We call you to action.





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