

# Tactical Considerations for Research-Based Public Fire Safety Education:

## Know How Fast Fire Spreads and Why Smoke is the Real Threat

### The Challenge

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- Most people underestimate the speed of fire spread and think they have more time than they actually do to escape.
- Some people think they can outrun a fire, while others believe smoke is just an inconvenience.
- Many don't realize how the increased presence of synthetic materials and lithium-ion batteries in our homes has changed the speed of fire spread and smoke toxicity.

### The Reality

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- Synthetic materials burn hotter and faster than natural materials. Lithium-ion batteries can overheat, explode, and cause fires that spread in seconds. Homes today contain a mix of all of these materials and devices.
- Research on today's fire environment shows that people may have 3 minutes or less to escape a home fire.
- According to NFPA, smoke inhalation is the number one cause of fire deaths. It is hot, toxic, disorienting, and can fill a home in minutes, making escape extremely difficult and dangerous.
- Civilians must first understand how fast fire spreads and why smoke is the real threat in order to value simple preventative measures and react urgently when a fire starts.



## How to Explain It

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- Civilians don't realize how common synthetic materials and lithium-ion devices are in their homes. Highlight common examples and emphasize how these materials and devices often burn hotter and faster and produce more toxic smoke than natural materials:
  - Synthetic materials: Foam-filled couches, plastic toys, polyester furnishings.
  - Lithium-ion batteries: Laptops, iPads, rechargeable power tools, e-bikes and e-scooters.
- Many civilians believe newer materials are inherently safer. Explain why synthetic materials require extra caution. **Use this video as a teaching tool to show the difference in fire growth between natural and synthetic materials.**
- Share your fireground experience and challenge misconceptions by explaining how real fires differ from those seen on TV. Highlight how quickly smoke spreads, its impact on visibility, and why it's deadly. **Use this video and encourage conversations about what civilians found most surprising about the speed of smoke and flame spread.**



<https://qrco.de/bflf0c>



<https://qrco.de/bflf3s>

## Sample Civilian Questions and Answers

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**Q:** "If my couch is made of synthetic materials, does that mean it's dangerous? I use a lot of lithium-ion devices, should I stop buying them?"

**A:** It's not about avoiding synthetic materials and lithium-ion devices entirely but about understanding how fire behaves in today's environment. Since they burn faster and hotter, adopting fire-safe habits like having working smoke alarms and an escape plan is essential to reducing risk.

**Q:** "Is it true new houses can burn faster than old ones?"

**A:** It can be. Newer homes are built with lightweight construction materials and open floor plans. These features allow fire to spread more quickly. Whether you live in an old or new home, we all have synthetic furnishings and lithium-ion devices that spread fire much faster. That's why early warning from smoke alarms and practicing other fire-safe habits is so important.



<https://qrco.de/bfmb9>

# Tactical Considerations for Research-Based Public Fire Safety Education:

## Install and Maintain Working Smoke Alarms

### The Challenge

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- Most people don't install or maintain smoke alarms correctly.
- Many people also disable alarms due to cooking-related false alarms or they do not have enough alarms installed in the right places.
- Some even believe their home is safe enough without them or that they might smell the smoke before the alarm.

### The Reality

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- According to NFPA, more than half of home fire deaths occur when there are no working smoke alarms.
- Smoke alarms are designed to give occupants the earliest warning of a fire so they can get out quickly and safely.

### How to Explain It

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- Demonstrate where smoke alarms should be installed and emphasize placement on every level of a home, including the basement and inside and outside each sleeping area. **Follow these helpful tips on installing and maintaining smoke alarms from NFPA.**
- Remind civilians to test alarms at least twice a year and that if an alarm is no longer working or if it has been more than ten years, it's time to replace it.



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- Share the news that there are new smoke alarms on the market that now meet the UL217 standard. These alarms will reduce nuisance alarms by distinguishing smoke from cooking and smoke from fires. **Encourage civilians to look for this certification when purchasing new alarms.**



## Sample Civilian Questions and Answers

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**Q:** “Won’t I just smell the smoke if there’s a fire, even when I’m sleeping? Do I really need smoke alarms?”

**A:** The smoke alarm will alert you to the fire faster. Sounds can disrupt sleep, but scents cannot. Do not rely on your sense of smell to alert you to a fire. Remember you may only have 3 minutes or less to escape a fire.

**Q:** “I disconnected my smoke alarms because they always go off when I am cooking.”

**A:** Older smoke alarms can be annoying; however, they will give you the earliest alert if there is a fire in your home. To avoid nuisance alarms, try installing the latest UL 217 smoke alarms, which can now tell the difference between smoke from cooking and smoke from a real fire.





# Tactical Considerations for Research-Based Public Fire Safety Education:

## Close Doors to Slow Fire Spread and Buy Time to Escape

### The Challenge

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- Civilians may not understand the role oxygen plays in fueling a home fire or that open doors and floor plans allow flames to spread faster.
- Many think closing doors may trap them during an emergency or that a common hollow-core door won't make a difference during a fire.
- Some might sleep with their doors open just due to habit or because they have children or pets.

### The Reality

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- According to more than a decade of research, a closed door is a life-saving barrier during a fire. It slows the spread of heat, smoke, and flames, giving occupants more time to react to a smoke alarm and escape safely.
- Sometimes, occupants get trapped in a home fire because smoke blocks their escape options. If escape isn't possible, staying behind a closed door can provide a survivable space until firefighters arrive.

### How to Explain It

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- Explain how a fire needs oxygen to exist and the role of oxygen flow and door control in a home fire by using familiar examples, like placing a lid on a cooking fire.
- Remind civilians that fire deaths happen most often when people are asleep, between 11 p.m. and 7 a.m., and that simply adding a closed bedroom door to their bedtime routine can increase their chances of survival if a fire does occur. **Use this video as a teaching tool.**



<https://qrco.de/bflf5w>



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- Use before and after footage or real-life incident stories showing how a closed door can dramatically reduce heat, smoke, and toxic gases in a room and reduce damage to a structure. **Here's one example from Fairfax County Fire and Rescue.**



<https://qrco.de/bflf6Q>

- Dispel common misconceptions about closed doors and share the facts that can save lives instead. **Share these videos to extinguish myths about closed doors.**



<https://qrco.de/bflf7C>

## Sample Civilian Questions and Answers

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**Q:** “I don’t like sleeping with my door closed. What if I need to get out quickly?”

**A:** A closed door slows the spread of fire and smoke. Smoke may spread so quickly that you may not be able to escape. Having that door closed before the fire starts gives you extra time to react to the smoke alarm and escape if you can, or stay isolated from the fire if you can’t get out.

**Q:** “I live in an apartment, not a house. Does this still apply to me?”

**A:** Yes, closed bedroom doors still provide a barrier between you and the fire, and closing your exterior apartment door can help prevent fire and smoke from spreading between units.



HALLWAY

# Tactical Considerations for Research-Based Public Fire Safety Education:

MAILBOX  
MEETING  
PLACE

Plan A  
Plan B  
Plan C

Create and Practice Escape Plans A, B, and C

FRONT DOOR

## The Challenge

- Nearly 40% of Americans don't have an escape plan.
- Most people assume they'll always be able to use their main exit and don't think about what they'll do if smoke blocks their path to escape.
- Many think they can run through smoke and are unaware of the extreme heat and toxic dangers it carries in a home fire.

## The Reality

- Conditions deteriorate quickly in a fire, and making split-second decisions under stress is difficult.
- Having a plan in place with multiple options can save lives when seconds count.

## How to Explain It

- Demonstrate how home fire smoke can reach extremely high temperatures and decrease visibility, making environments extremely dangerous in minutes, and limiting escape options. Remind civilians that if the smoke blocking their exit is too thick and dark to see through, then it's too dangerous to walk through, and they need to consider finding another exit. **Use this video to help guide conversations.**

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- Help civilians map out multiple exit routes in their house or apartment building, with the primary exit as Plan A and an alternate exit, such as a back door or window, as Plan B. Recommend that they close doors behind them as they exit to slow the fire's spread. **Use this escape plan guide to support these conversations.**



<https://qrco.de/bflf8M>

- Explain the value of Plan C, or getting behind a closed door, if escape is not possible. **Use these outreach materials to demonstrate how a closed door can provide protection until firefighters arrive.**



<https://qrco.de/bflf9p>

## Sample Civilian Questions and Answers

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**Q:** “If I see smoke but no flames, shouldn’t I just run through it to get out? Do I really need to find another exit?”

**A:** Home fire smoke is extremely toxic and superheated. If the smoke is too dark and thick to see through, running or walking through it can be deadly, and you can end up trapped. If you can’t escape through your main exit (plan A), then try an alternate exit or window (plan B). If all exits are blocked and you cannot get out, then get behind a closed door as far from the fire as possible (plan C). Then, call 911 and tell dispatchers where you are in the home.

**Q:** “Should I close all my doors as I’m escaping my house?”

**A:** Yes, if possible. Closing interior doors can limit fire spread and reduce damage, giving firefighters a better chance to save your home.

**Q:** “If I can’t escape and I have to get behind a closed door, what else can I do until firefighters arrive?”

**A:** Keep the door closed and cover any cracks or gaps with towels. Stay low in the space to avoid inhaling smoke. Turn on a light or use a flashlight to make it easier for firefighters to locate and rescue you.





# Tactical Considerations for Research-Based Public Fire Safety Education:

## Use, Handle, and Store Lithium-Ion Battery Devices Safely

### The Challenge

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- Lithium-ion batteries are everywhere these days. If not handled correctly, they have the potential to overheat and enter thermal runaway, leading to explosions and fires.
- Many people don't realize how many lithium-ion devices they own or how to handle them properly.
- Some people charge large devices, like e-bikes, scooters, or lawnmowers, near exits, which can block escape routes if the device catches on fire.
- Most don't understand how common habits like overcharging devices or exposing them to extreme temperatures increase the risk of thermal runaway and fires.

### The Reality

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- Improper use, handling, and storage of lithium-ion devices can increase the risk of the device overheating and entering thermal runaway. This can lead to fires and explosions that lower escape times to 1 minute or less.

### How to Explain It

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Teach your community what to do with lithium-ion devices from purchase to disposal using the **C.H.A.R.G.E.** acronym.



- Choose certified products.
  - When purchasing lithium-ion battery-powered devices, look for products that are listed or safety certified by a nationally recognized testing laboratory to ensure they meet important safety requirements.
- Handle with care.
  - Follow the manufacturer's instructions. Only use the charging equipment that comes with the product. Store devices away from extreme temperatures, direct sunlight, exits, and anything flammable.
- Always stay alert for warning signs.
  - Check devices often for damage, such as swelling or punctures. Listen for unusual hissing or popping sounds. Watch out for excessive heat or a strange odor. White or gray wispy smoke indicates immediate danger of thermal runaway. If you notice any of these warning signs, stop using the device immediately.
- Recycle batteries and devices properly.
  - Responsibly dispose of old or damaged devices by taking them to the nearest battery recycling center. Never discard batteries, chargers, or battery-powered devices in regular trash bins.  
**Share these resources to help people get started.**
- Get out quickly if there's a fire.
  - If you hear or see any warning signs of thermal runaway, follow your home fire escape plan to leave immediately and call 911.
- Educate others on battery safety.
  - **Use these first responder resources to help spread the word about lithium-ion battery safety.**



<https://qrco.de/bflfAo>



<https://qrco.de/bflfBp>

## Sample Civilian Questions and Answers

**Q:** "I leave my e-bike plugged in overnight by my front door. Is that a problem?"

**A:** Lithium-ion batteries can overheat and catch fire when they're overcharged and enter thermal runaway. It's best to avoid charging your e-bike overnight, keep it away from exits while charging, and always unplug it when it's fully charged.

**Q:** "I usually go for the cheapest charger or device I can find. It may not always be listed. Is it that dangerous?"

**A:** Without a safety certification, there is no way to know if the charger or device has critical safety features, like overcharge protection or thermal regulation. The lack of these safety features can lead to damage or overheating and cause a fire.



# Tactical Considerations for Research-Based Public Fire Safety Education:

## Implementation Call to Action

### Big Picture

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Firefighters play a critical role in educating civilians about fire safety. Take on the following challenges to discover new ways to impact fire safety in your community.

### Your Mission: Engage the Public in Fire Safety Conversations

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Over the next week, start at least one fire safety conversation with someone in your community outside of a formal event. This could be:

- A neighbor while chatting outside.
- A customer while waiting in line at a store.
- A parent while showing kids the fire truck at a community event.
- A friend or family member at a gathering.

Keep it simple. Use one of the following conversation starters:

- “Make sure you close your doors at night before bed. It can save your life in a fire!”
- “Do you know if you have working smoke alarms in your home? Make sure you test them at least twice a year - they will give you the earliest alert that there is a fire in your home.”
- “If there was a fire in your home tonight, would you know what to do? Make sure you have an escape plan A, B, and C - including what to do if you can’t get out!”
- “Do you have any lithium-ion devices at home? Do you know how to handle, store, and charge them properly?”



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After you complete the challenge, reflect:

- What was the response from the person you talked to?
- What worked well? What would you do differently next time?
- Did you learn anything about how people perceive fire safety?

### **Your Mission: Strengthen Your Collaboration With Prevention Teams**

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Take one step toward strengthening collaboration between firefighters and your prevention team. This could be:

- Asking a prevention team member how firefighters can better support their outreach.
- Suggesting a joint training session to connect fire prevention with fireground operations.
- Reviewing your department's outreach materials to see if they align with modern fire research.
- Bringing up fire safety education strategies at the next kitchen table discussion with your crew

After you take action, reflect:

- What did you do? What was the response?
- Did you learn anything new about how your department handles fire prevention?
- What's one small change you or your department could make to improve public fire safety education?



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