MATTRESS FIRES BY FRANK C. MONTAGNA

The firefighter crawls into the room. Even through the thick smoke he can see the red glow ahead of him. He moves in closer to the fire, and he can feel its heat. It's a mattress fire. He points the nozzle of his 2½-gallon water extinguisher at the flames and depresses the trigger. The water hits the base of the fire and quenches the flames. He can see only blackness now as he uses up the remaining water in the extinguisher—just to be sure. To his right, he can hear his officer searching the room for victims. "I got it, Captain," he shouts, his voice muffled by his facepiece. "It was a mattress." Putting down his extinguisher, he sweeps his arm across the surface of the mattress and then his leg under the bed, hoping not to find a victim.

The engine officer at the door of the room, hearing the fire is out, calls to his nozzle team: "Hold the line. It was a mattress and they got it." His nozzle team is just entering the door to the house. The members stop their stretch, drop their line on the stoop, and come into the building to get a look at the fire area.

"The primary search is negative," the truck captain reports to the incident commander. "How does the ceiling look?" asks the chief. "We're opening it up now, Chief," the truck captain responds. As one firefighter opens up the gypsum board ceiling near a light fixture, two others are dragging the mattress to the windowsill. The window has been vented, but the sash frame is still in place. A firefighter hits it once with the back of his axe, snapping it in two, and then helps the other firefighters heft the mattress to the window. When they reach the window, one firefighter peers out and, seeing no one in the yard below, calls out anyway, "Look out below."

The firefighters lift the mattress into the window and start to push it out. As they do, fresh air is introduced to the area around the still-smoldering mattress. It bursts into flame. The startled firefighters drop the mattress and try to jump back from it. All jump clear, except one. The burning mattress lands on top of him. He yells, "Get it off me; I'm burning." All the firefighters in the room come to his aid and try to pull the flaming mattress off him. The engine officer yells, "Get that line up here! Get me water!" The nozzle team is in the fire apartment. One of its members is trying to grab the mattress. The other bolts out the apartment door, runs down the stairs to the building entrance, and grabs the nozzle. As he drags the line into the building, the pump operator, hearing his officer's call for water, charges the line. The added weight of the water in the line stops the firefighter dragging the line into the building dead in his tracks.

CRITIQUE

This should have been a simple operation, but it has turned into a fiasco. What is worse, a firefighter has been needlessly injured. Major errors were made. Had they not been made, the injury would not have occurred.

- *Error #1.* The engine officer made this one. When he heard that it was a mattress fire and that the extinguisher man "got it," he ordered the stretch stopped. This was a serious error. When fire burns in a mattress, it burrows into the interior. Inside, the flames are shielded from the extinguisher's spray, and the fire can continue to burn or smolder. The steam from the water and the smoke from the fire, confined in the room, combine to prevent the fire from flaring up. The fire appears to have been extinguished.

A foam mattress, or one with foam padding, presents another problem. Even after extinguishing the flame, the foam can be hot enough to continue to decompose and give off flammable vapors. The extinguisher does not contain enough water to remove the heat from the foam and so is unable to stop the generation of flammable vapors. We have flammable vapors and a smoldering fire. We have fuel and heat. Missing is the third element of the fire triangle, oxygen. It is supplied when the mattress is exposed to the fresh air entering the vented window. The result is a sudden flare-up of flames on the mattress and injury to an unsuspecting firefighter.

Had the officer not stopped the line at the building door and had he positioned a charged line at the door to the fire room, he could have instantly extinguished the flare-up and prevented serious injury. In addition, he could have put enough water on the mattress to cool it and extinguish any smoldering fire. The mattress need not have flared up at all.

- *Error #2.* The second error was made by the nozzle team. The members left their assigned position, the nozzle, to get a look at the fire area. After the fire is out, and when their officer releases them from their assigned position, it is a good idea for them to see what the fire area looks like. It, however, is not a good idea to leave your position and take a tour of the fire on your own. The nozzle team at all times should remain in a position that will allow it to move and operate the line in an emergency.
- *Error #3.* The truckies made this one. They should have cut open the mattress, exposing any smoldering fire inside. This is done to allow the engine company to extinguish hidden fire and cool the mattress, thus stopping the generation of flammable vapors. Admittedly, this extra application of

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water can create a problem: It makes the mattress heavy, and firefighters can be injured lifting it. The solution is to have enough firefighters helping and not to apply excessive water. This may sound like a "catch-22" situation—not enough water can result in the fire's flaring up, and too much water can result in a back injury. There is, however, an alternative to drenching the mattress.

Before dragging the mattress to the window, the truckies should have folded it, burnt side in, and tied it that way with a short length of rope. There are two advantages to tying the mattress in this way: It is easier to handle and, more importantly, by tying the burnt side over onto itself, fresh air is kept from reaching any smoldering portion of the mattress. By keeping oxygen from the smoldering fire and the flammable gases, the truckies could have prevented the flare-up and injury.

You should always transport a burnt mattress folded and tied. If you must bring it down the stairs to get it out of the building, tie it up first. In addition, have a charged line standing by just in case it flares up as you jockey it down the stairs. Never bring such a mattress into an elevator to get down to street level. You can imagine the results if a mattress flares up while it is being transported in an elevator by two or three firefighters. Even a charged line couldn't help them because it couldn't reach them.

It should also be standard operating procedure that if you plan to push a burnt mattress out of a window, a firefighter should be stationed below that window. Just yelling "Look out below" is not enough. You must prevent any unsuspecting firefighter or civilian from walking into the danger area. It also would prevent you from covering a victim who may have jumped to escape the flames.

Anytime you have a fire in a mattress or stuffed furniture, stretch a charged line. Cut open the burned area to expose hidden fire, wet it down with your hoseline, and remove it from the building. If the fire is truly minor and did not burrow into the mattress or chair, you need not remove it from the building. Removing a charred cushion from a chair or cutting out a small burn mark from a mattress may do the trick. Thorough overhauling is the best tactic when dealing with this type of fire. The safest course is to remove the burnt stuffed furniture from the building. Once outside the building, any undetected smoldering fire can easily be dealt with and, if missed, will do no harm to the occupants, the building, or firefighters. ■