Reading Smoke: The First Step in Safe Decisions: Everyone Goes Home. Retrieved from http://www.everyonegoeshome.com/resources/video-resources/volume4/

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VIDEO TRANSCRIPT

Hi I'm Battalion Chief Dave Dodson. Thanks for joining us today.

Welcome to the national fallen firefighters resource kit. Today, we are going to talk about a problem that the American fire service is having. We are also going to talk about solutions to that problem.

Right now, firefighters are dying in flashovers in a rate unseen in the American fire service. We're getting caught more often than we ever have.

Today's class is about the solution, and you are part of the solution. We are going to talk about something called reading smoke. You may have heard about the curriculum, but reading smoke is a way for you to get it quicker. How fast can you figure out what a fire is about to do before you commit to the environment?

We hope you find something useful. Let's talk a little bit more about the concept of reading smoke.

This problem has been set basically because some of the very things my generation has taught you on how to predict flashover are ending up being reactive. Things like heat that pushes you to the floor, rollover above your head, floor level fields are starting to off gas.

Well, those warning signs are only apparent if you're in the environment. And at that stage, it becomes a firefighter emergency. What we have to do is rethink the way we are predicting flashovers in buildings.

This whole concept of aggressive interior fire attack has to be done with an understanding of what the fires is about to do before you commit to that environment.

The whole solution is reading smoke. You are part of that solution. Now, it's not that what we did was wrong in the past. It just no longer fits for today's fire environment; and you did not change that, society changed that fire environment. So, I think it is incumbent upon us to change what we do about it.

And the solution is in the material, as you're going to see as part of this training package. We appreciate you being here.

Now, as a brief overview, reading smoke is a concept that allows you to, on arrival, figure out the answer to three questions. And the questions are actually pretty simple.

Specifically, where's the fire, what's that fire going to do in terms of size and intensity, and what is it going to do next?

And if you can answer those questions — where's the fire, how big is the fire, and what it's going to do next — then you'll be able to predict the fire and forecast fire behavior before we commit our people to it. And that is actually the essence of being intellectually aggressive versus arbitrarily aggressive.

And I do believe that is part of our problem. It's so many of our crews, and bless them. They're super aggressive, hard-working firefighting crews; but we've become arbitrarily aggressive. We're aggressive

because you're supposed to be aggressive, not because it's appropriate for that particular environment. We have to understand our environment and make the best choices before we commit. And reading smoke is one of our solutions to that.

We said society has changed the fire. What has really changed? We've measured this; we know what is changed and we are dealing with a synthetic society, and so many products that can burn at a hotter rate than ever before.

We just look at some classic firefighter language. Classic firefighter language that the foundation of the firefighting world that I came into was the typical residential fires release 8 to 10,000 BTUs per pound per fire load. First of all, we don't use those measurements. That's how outdated that is. But the bottom line is the equivalent in our simple language is fires today are 18 to 20,000 BTUs per pound. Things have changed that much. The rate of heat release, the energy release that's being released over short amount of time is off the charts and causing textbooks to be rewritten.

Another way to look at it is this: we know the classic fire growth in a compartment is measured is a 6–8-minute window. In the recent NIST tests (National Institute of Standards and Technologies), they're showing the flashover is an event that can occur as quick as 4 minutes.

So, our world has certainly changed. The basic adage that a fire will grow, or double in size in a minute, that's way old-school stuff. The reality is a fire can grow 10 or 20 times its volume in just a few seconds. It's called smoke gas ignition, and that can lead up to and include flashover as an event, and that's why we're starting to see an increase in firefighters caught in flashovers. Those very things we taught you, wait for the sensation to heat, in itself is a trap. What we have to learn, and one of the strongest messages in reading smoke, is we've got to learn to see heat, don't wait to feel heat, and reading smoke allows you to see that, especially if you know some of the patterns.

On top of that, societies have changed the building. We have a building that's better insulated initially and holds the heat, but then starts failing really quick, especially with engineered lightweight wood buildings.

And those two things: we've changed the fire, changed the building, are leading to basically a collision course for firefighters, and the rate that were getting caught by that collision course is not anecdotal. It's a definite trend in the fire service and we have to reverse that trend.

That's where you come into play. When you come into play, you are part of the solution. We have to learn to read the building, we have to learn to read the smoke, so we can predict what would happen in the next 2 minutes or 5 minutes, whatever your setup in evolution time is, and make sure that we're doing things from a strong "control the environment" point of view versus old-school, where we are a slave to our environment.

We can't be a slave to our environment anymore. We have to learn to master our environment, control that environment, as part of our aggressiveness. That's what we call intellectual aggressiveness, not arbitrary aggressiveness.

So, let's look at some of those fire dynamics that are taking place inside of a building. Not only has the time temperature curve been compressed, we have a higher heat release rate, which means things are happening quicker. But the temperatures are off the charts. We typically thought of ceiling temperatures in the growth stage fire going from 800 to 1,000, and maybe flashover right around 1,100 degrees. Then, the temperature would start tailing off as fuels were used up in a room.

Our studies are indicating that ceiling temperatures of 1,300 to 1,500 degrees are routinely conservative and we even have thermocouples showing 1,700 degrees in ceiling temperatures. That totally changes the fire dynamics inside that building, and that manifests itself in aggressive interior crews having to deal with heat conditions that they've never seen before.

Now, we have great gear; and gear allows us to get in a little bit closer to the fire. But I got to warn you on that. Even though our fires are faster, they are releasing at a quicker rate, and they're hotter, the smoke itself is ignitable, more ignitable at lower temperatures.

As a matter of fact, smoke is ignitable at temperatures that you can't initially feel in your new protective equipment. So, this has set the stage for disaster. As part of the courage to be safe program, this resource kit attempts to identify and give you those solution tools for this amazingly hot, rapidly burning interior structure fire.

What we want you to do is take from this information that will allow you to be safe and have that courage to be safe.

Reading smoke is a solution. The more time you spend learning to read smoke, the better off we're going to be at the next structure fire. Remember, our key is when we show up at two o'clock in the morning, our key is how fast do you get it. How fast can you figure out, not what's happening now, but what's about to happen with that fire behavior.

We hope this kit gives you that information. We want to thank the National Fallen Firefighters Foundation for making this resource kit available to you. But, a kit is only as good as whether it's on the shelf or you utilize it. You hold the key to the solution. I hope you found some useful information on how to read smoke. If you practice this and make it part of your "first do decision-making world," you can make a difference. We can make a dent in that 30% increase in firefighters caught in flashovers. That's what we must do. That's what you must do. You are part of the solution.

Thank you for your time and energy watching this. Let me send you away with one thought.

I got to do this job for 25 years and I feel very fortunate and I actually believe I'm lucky that I'm still vertical. But, you got to remember in my 25 years I got to fight predictable fires in resilient buildings. You are fighting explosive fires in disposable buildings. You can't afford to be lucky; you must be good.

Let me send you off with this thought: go out there and read smoke. Learn to read smoke and get good at it. Learn how to read buildings too. Read smoke, read buildings, and just don't be safe, work your butt off at the next incident and make it more safe. I'm Dave Dotson, thanks for joining us.