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Report of the Week

Fatigue Leads to Combustible Dust Igniting.
05/05/2011

Report Number: 11-0000138

Report Date: 04/07/2011 13:10

Synopsis

Dust fire engulfs FF during overhaul.

Demographics

Department type: Paid Municipal

Job or rank: Fire Fighter

Department shift: 10 hour days, 14 hour nights (2-2-4)

Age: 25 - 33

Years of fire service experience: 7 - 10

Region: Canada

Service Area: Urban

Event Information

Event type: Fire emergency event: structure fire, vehicle fire, wildland fire, etc.

Event date and time: 01/20/2011 00:00

Hours into the shift:

Event participation: Involved in the event

Weather at time of event: Clear with Frozen Surfaces

Do you think this will happen again?

What were the contributing factors?

- Situational Awareness
- Fatigue
- Individual Action

What do you believe is the loss potential?

- Lost time injury
- Minor Injury

Event Description

I was on my second night shift. We had a busy first night shift and I hadn't slept during the day. In fact, I was fairly active that day including an anaerobic capacity test (maximal test). Additionally, this was my first day back after spraining both knees and had probably not given them enough recovery time. We were dispatched to an outdoor fire. It was a building approximately 50 feet wide by 100 feet long and 30 feet high. It was plastic/cloth covered with an aluminum frame. Inside the building were pallets of drilling mud in plastic bags packed similarly to sandbags and stacked three pallets high (approximately 12 feet). Drilling mud is basically pulverized wood so it creates a somewhat flammable atmosphere when spread through the air. We achieved some knockdown and began trying overhaul. We tried to use pike poles to pull down the burned material from the taller pallets but were unsuccessful because the bags would simply tear. I got up on a pallet approx three feet high and began

pulling down taller stacks by hand. This created a lot of dust that ignited around me. I tried to get off the pallet and away from the flammable atmosphere and slipped, twisting my right knee. I fell between a few pallets on the ground and got wedged in. The air current I created while falling made the flammable dust follow me down and it continued burning around me. Another firefighter reached in and helped me out and I was taken to a waiting ambulance.

Lessons Learned

I should have ensured proper rest between night shifts so that I was physically ready for work. I also should have given my knee more time to heal from the first sprain. When working with a material like the drilling mud, we should probably have a fog stream spraying around anyone working in the area to control ignition.

Report of the Week

The types of incidents firefighters can find themselves handling is beyond comprehension. Just when you think you have learned everything there is to know about the hazards in your area, something unexpected comes along. If we are fatigued, our situational awareness can be affected, leading to poor decision making and near misses. This week's ROTW, [11-138](#), describes just such an event that is unique in several ways.

"...We were dispatched to an outdoor fire. It was a building approximately 50 feet wide by 100 feet long and 30 feet high. It was plastic/cloth covered with an aluminum frame. Inside the building were pallets of drilling mud in plastic bags packed similarly to sandbags and stacked three pallets high (approximately 12 feet). Drilling mud is basically pulverized wood so it creates a somewhat flammable atmosphere when spread through the air. We achieved some knockdown and began trying overhaul. We tried to use pike poles to pull down the burned material from the taller pallets but were unsuccessful because the bags would simply tear. I got up on a pallet approximately three feet high and began pulling down taller stacks by hand. This created a lot of dust that ignited around me. I tried to get off the pallet and away from the flammable atmosphere and slipped, twisting my right knee. I fell between a few pallets on the ground and got wedged in. The air current I created while falling made the flammable dust follow me down and it continued burning around me..."

The full report cites several factors that contribute to this near miss. Situational awareness is one factor, fatigue a second, and individual action is the third. Fatigue and situational awareness are inextricably connected. When we are tired, our senses are dulled. The more tired we are, the more inattentive we are and therefore, the lower our situational awareness is. Recognizing fatigue is a factor in our performance is a crucial step to avoiding serious injury. Once you have read the entire account of [11-138](#) and the related reports, consider the following:

1. How much uninterrupted sleep did you get before your last shift?
2. How much sleep do you average on the nights you are on duty at the station?
3. How often do you take the next day after a night shift off and use the day to recover?

4. What are the cumulative effects of inadequate or insufficient sleep?
5. When would you say you are most vulnerable: just after you wake up, after your third run past midnight, or have been awake for 23 straight hours?

Rest is more than just an excuse for avoiding work. The restorative qualities of adequate rest are well documented. The long term effects of inadequate sleep manifest themselves in higher heart attacks, diagnoses of cancer, and other diseases. Some of these diseases are latent in their development and are the result of the culmination of decades of inadequate rest and recovery. Get your rest. You'll be more alert, make better decisions and lengthen your life.

For more information, [click here](#) to access: *The Effects of Sleep Deprivation on Fire Fighters and EMS Responders*.

Related Reports – Topical Relation: Fatigue/Situational Awareness

[05-391](#)

[06-395](#)

[07-965](#)

[08-629](#)

[09-1054](#)

[10-855](#)

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Note: The questions posed by the reviewers are designed to generate discussion and thought in the name of promoting firefighter safety. They are not intended to pass judgment on the actions and performance of individuals in the reports.