

## The Effects of Sleep Deprivation of Firefighters and EMS Workers:

### What You Need To Know: A Synopsis of THE EFFECTS OF SLEEP DEPRIVATION ON FIREFIGHTERS AND EMS RESPONDERS

Available at: <http://www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=559>

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There is a chance that an ambulance agency/fire department will be sued in negligence for allowing someone to operate a vehicle or respond to a Fire or EMS Call in a sleep-deprived state. This cause of action would likely fall under a claim of negligent supervision. One of the first things requested after an accident of any kind are training schedules and hours worked for the people in question. As far as criminal charges, in New Jersey, there is a law known as Maggie's law that provides that a knowingly fatigued driving (one that has been up for more than 24 consecutive hours) who causes a fatal accident can be convicted of vehicular homicide.

Having policies and training in place to address sleep deprivation and fatigue may help to limit your exposure to potential lawsuits.

The above mentioned report is a collaborated effort supported by both the International Association of Fire Chiefs and the United States Fire Administration. Drs. Elliot and Kuehl have been studying firefighters in the northwest for over twenty years. We are forwarding this memo to our fire and EMS clientele to make them aware of the study as we feel it has legal ramifications. Also new regulations may be created and policies drafted based on its findings.

#### **OBJECTIVE:**

Extrapolate data from similar transit-related professions in order to create generalized recommendations regarding the implication of sleep deprivation on both fire and emergency services.

#### **RESEARCH:**

The authors began with a review of sleep studies and general human sleep needs and found:

- The average adult needs 6-10 hours of sleep per night

- Sleep cycles typically last 90 minutes each, and an individual adult has 4-5 per night. 75% of sleep is non-REM (physical repair) sleep and 25% is REM (mental repair) sleep.
- The average sleep time for most American adults is 6.8 hours
- Acute sleep deprivation: less than four to six hours of sleep in a 24 hour period.
- Sleep debt: when individuals repeatedly do not get a good night's sleep. Decreasing sleep time by one hour a night for seven consecutive nights is equal to staying up for 24 hours straight once a week.
- Immediate effects of sleep deprivation:
  - Small amounts of sleep loss can be very dangerous. In one study, sleepy people acted just like drunk people when behind the wheel of a car.
  - A reduced ability to stay alert
  - Performance not stable
  - Make errors
  - Thinking is impaired
  - Inability to sense how tired you are
- Chronic effects of sleep deprivation:
  - Associated with irritability, depression, and a reduced sense of well-being
  - Physical effects on firefighters/EMTs particularly [which also happen to be health problems associated with sleep deprivation and fatigue]:
    - Musculoskeletal injuries
    - Heart disease
    - Cancer
  - 1/3 of sleep-related crash drivers said they were not aware they were fatigued prior to the crash.
  - A per-night sleep average of less than six hours/night is comparable to smoking a pack of cigarettes per day.
  - Heart disease (also the number one killer of firefighters)
  - Weight gain and obesity as lack of sleep produces hormonal changes leading to weight gain.

The authors reviewed sleep deprivation related studies from numerous transit-related professions (trucking, shipping, air transport) and found:

- Approximately 30% of crashed and other accidents are fatigue related.
- Typically in a sleep related crash, there is no indication of braking or other attempts to avoid the crash, the driver is often alone, they occur on higher-speed roadways, and serious injuries are more common.

- Employed drivers in sleep-related crashes were twice as likely to work two jobs.
- Untreated obstructive sleep apnea (OSA) increases the risk of single car crashes between seven and twelve fold.
- Many regulations now require testing for OSA before commercial truck drivers are hired.

They also reviewed data from highly studied groups such as medical residents, interns and nurses, regarding the impact of shift work and long hours without sleep and found:

- Long hours compromise both patient safety and the medical staff's overall health.
- Interns and residents were two times more likely to be involved in a car accident on the way home from a long work day.
- There were five times more errors on long hour schedules (24+) versus shorter schedules (12 hours).

### **CAVEATS:**

- The authors of the study noted that the unique characteristics of each firefighter/EMTs work schedule, demographics, and amount of work make it difficult to generalize.
- All people differ in their ability to tolerate sleep deprivation.
- Not much data has been collected on Firefighter/EMT collisions commuting to and from work and non-fatal accidents, which would help this study moving forward.

### **STUDY RECOMMENDATIONS:**

- Individuals
  - Exercise daily
  - Have 5-9 servings of fruits and vegetables per day
  - Limit intake of saturated and trans-saturated fats
  - No tobacco use
  - Maintain a healthy body weight
- Worksite Mitigation Strategies
  - Educate workers about sleep and fatigue management
  - Provide the following physical environment:
    - For alertness: bright lights, cool temperature, exercise facilities
    - For sleeping: quiet, dark, private place with quality mattresses
  - Encourage those coming off long and busy shifts to take a 20 minute nap in a provided room before driving home.

- Structure work schedule so important tasks are completed when the workers are most alert.
- Create a culture of shared responsibility that allows firefighters/EMTs to monitor each other for signs of sleepiness as individuals are not the best judges of how tired they are.
- If shift hours are restructured, include everyone in the decision making process including workers, management, and families.
- Have firefighters/EMTs take the assessment test for OSA attached as Appendix A to this memo.
- Know the risk signs for OSA:
  - Excessive daytime sleepiness
  - Loud, frequent snoring
  - Being overweight and having a neck size greater than 17 inches (male)

SAS intends to:

- Give everyone the short ten question assessment relating to sleep deprivation and fatigue included as appendix B. Following this, have them watch the 40 minute video provided on the IAFC site listed above. Have them sign a training form acknowledging that they have completed this training.
- Provide a place to allow those coming off long and busy shifts to rest before driving home.
- Monitor your employees' total hours worked to the best of your ability. Many firefighters/EMTs have multiple jobs and these hours accumulate. There is software available for keeping track of such hours.
- Encourage an environment where the need for sleep is acknowledged and embraced.
- Provide employees' who you think fit the criteria of having OSA the opportunity to be assessed in a sleep clinic.

We are currently reviewing our Policies and procedures regarding this matter and will release further details soon.