**Understanding Fatigue Risk: Assessment and Countermeasures**

**Methodology and Data Management Process**

Background

The purpose of these tools are to help company’s obtain a better understanding of the causes of fatigue in the workplace, both from workplace factors and employee habits on and off the job. The project includes two parts: an operational assessment to investigate workplace sources of fatigue (such as shift scheduling practices), and an employee survey to identify employee habits that may introduce fatigue (such as sleep schedules).

This information should be used to develop strategies and countermeasures, for example educational programs or scheduling policies to better manage and reduce the risk that fatigue poses in the workplace. The goal of the assessment and a comprehensive fatigue risk management system (FRMS) is a safer working environment, happier and healthier employees, and an overall better community.

Operational Needs Assessment

The operational needs assessment is designed to help companies identify hazards, calculate risk levels, and audit for fatigue risk management countermeasures. The information generated by the operational needs assessment should be used to create an action plan including identification of hazards and recommendations on how to manage or reduce those hazards through policies, practices, procedures, programs, and/or training. The operational needs assessment is intended to be completed by a human resources manager and/or an operational leader.

The operational needs assessment is broken into three sections. Section 1 is designed to be a quick scan of fatigue hazards in the workplace through a series of “Yes/No” questions. This section asks questions about physical and mental work demands, general work scheduling, and environmental conditions that could affect ergonomics and fatigue. Section 1 will most likely be completed by a site safety leader or workplace supervisor.

Section 2 of the operational needs assessment gets deeper into determining the risk level of fatigue at a worksite by asking for data in two ways – scheduled work hours versus actual work hours. This section also asks for data about the time of day that the majority of near misses and incidents occurred. An optional part of this section asks about the percent of employees with specific health conditions affecting fatigue, such as sleep apnea or use of prescription

medications. The questions in Section 2 pertaining to work hours will most likely be completed by a site human resources lead. The questions pertaining to near miss and incident reporting may be completed by the same HR lead, or someone responsible for collecting and documenting safety reporting.

Section 3 of the operational needs assessment continues the needs assessment with a short series of “Yes/No” questions pertaining to leadership commitment and initiatives for fatigue risk management systems that may already exist at the organization/site. This section will most likely be completed by a site safety leader or workplace supervisor.

Employee Survey

The employee survey is designed to be completed using online survey software, but could also be printed. The first page of the employee survey should be the Informed Consent Form. Employees who do not agree to the conditions of informed consent as outlined in the form will not complete the survey. Those who do agree to the conditions of informed consent still have the option of terminating the survey at any point. The survey should be anonymous.

The employee survey should take 10-15 minutes to complete online. The employee survey is designed to gather information about on- and off-the-job factors that contribute to sleep health and energy levels that can act as sources of fatigue. The employee survey includes multiple choice and fill-in-the-blank questions about sleep habits, job factors (such as shift timing and rest breaks), and the organization’s safety culture. The data collected from the employee survey should be completely anonymous and will help your company/organization understand the sources of fatigue in the workplace and the risk that fatigue may poses in the workplace. The intent of the employee survey is that the company/organization will use this information to develop a plan to manage the sources of fatigue in its workplace.

**Operational needs assessment**

**Section 1: Scanning for Fatigue Hazards**

**Work demands**

1. **Y / N** Does anyone do physically demanding tasks? Physically demanding tasks may include heavy lifting and are physically tiring, such as heavy lifting, walking for long lengths of time.
2. **Y / N** Does anyone do cognitively demanding tasks? Cognitively demanding tasks may require long durations of concentration or require high levels of attention and vigilance, such as working under pressure or tight timelines, or interacting and dealing with the public.
3. **Y / N** Does anyone conduct repetitive tasks over long periods of time? Repetitive tasks often require the same movements. Examples could include typing, assembly, driving long distances, etc.

**Scheduling and hours**

1. **Y / N** Does anyone consistently work between the hours of midnight and 6 a.m.? Consistently means at least 30% of their working hours.
2. **Y / N** Are workers scheduled for at least one day off per week?
3. **Y / N** Does the work schedule make it difficult for workers to consistently have at least two consecutive nights sleep per week?
4. **Y / N** Do work practices include on-call work, call-backs and/or sleepovers?

Call-back = employees called in to do repair work.

1. **Y / N** Do planned work schedules vary from those actually worked?
2. **Y / N** Does the work schedule involve rotating shifts?
3. **Y / N** Does anyone travel more than one hour to their job?
4. **Y / N** Does anyone regularly work in excess of 12 hours a day including overtime?
5. **Y / N** Is the break between shifts less than 10 hours?
6. **Y / N** Is work performed at low body clock times (2 a.m. – 6 a.m.)?

**Environmental conditions**

1. **Y / N** Does anyone perform work in harsh or uncomfortable temperature conditions (e.g. hot, humid or cold)?
2. **Y / N** Does anyone work with plant or machinery that vibrates?
3. **Y / N** Is anyone consistently exposed to loud noise?

**Section 2: Determining Risk Level**

1. **Scheduled versus actual hours**
   1. What is the typical shift schedule for these departments?
   2. What is the average shift length? What is the range?
      1. Scheduled hours: Average: \_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
      2. Actual hours worked: Average: \_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
   3. What is the average number of hours worked a week? What is the range?
      1. Scheduled hours: Average: \_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
      2. Actual hours worked: Average: \_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
   4. What is the average number of consecutive shifts?
      1. Scheduled: Average: \_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
      2. Actual: Average: \_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
   5. What was the longest shift worked in the past 30 days?
      1. Scheduled: Average: \_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
      2. Actual: Average: \_\_\_\_\_\_\_\_ Range: \_\_\_\_\_\_\_ to \_\_\_\_\_\_
2. **Near miss, incident reporting and investigation**
   1. What percentage of near misses or incidents occurred during a night shift (a shift between the hours of midnight and 6 a.m.)?
   2. What percentage of near misses or incidents occurred during an early morning shift (a shift that starts prior to 7 a.m.)?

**Section 3: Needs Assessment (FRMS Audit / Countermeasures)**

**Leadership commitment**

1. **Y / N** Does your organization have a diverse committee in place to manage fatigue in the workplace, including representation from operations, HR, medical, data managers, executive team?

**FRMS audit**

1. **Y / N** Does your organization have a fatigue management policy that includes limits on work hours, and minimum requirements for off-duty and recovery rest periods?
2. **Y / N** Does your organization regularly monitor for fatigue risk, such as reviewing overtime schedules?
3. **Y / N** Does your organization’s safety culture communicate shared responsibility, where the organization defines roles and responsibilities for managing fatigue and the employee assumes responsibilities for arriving fit for duty?
4. **Y / N** Does your organization have a fatigue reporting system for employees?
5. **Y / N** Does your organization have procedures to determine whether fatigue played a role in an incident?
6. **Y / N** Does your organization have fatigue management training and education for employees, and management?
7. **Y / N** Does your organization provide sleep disorder information and management?
8. **Y / N** Does your organization have a continuous improvement process for managing fatigue risks?

**Appendix: Employee Survey**

Fatigue describes the feelings of tiredness, sleepiness, reduced energy and increased effort needed to perform tasks at a desired level. Fatigue is a problem that affects every person, and can compromise your health and wellbeing. Understanding why you are fatigued is the first step is managing your fatigue.

**Insert informed consent.**

Please read the question or statement, and choose the best answer.

**Section 1: Sleep health**

1. How important is it for you to get good sleep?

1 (Not at all important)

2

3

4

5 (Very important)

2. How concerned are you with how your sleep affects your…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 - Not concerned at all | 2 | 3 | 4 | 5 - Very concerned |
| Physical health | ❏ | ❏ | ❏ | ❏ | ❏ |
| Mental health | ❏ | ❏ | ❏ | ❏ | ❏ |
| Job performance | ❏ | ❏ | ❏ | ❏ | ❏ |
| Family life | ❏ | ❏ | ❏ | ❏ | ❏ |

3. How often do you…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 - Never | 2 | 3 | 4 | 5 - Frequently |
| Get enough sleep to feel your best the next day | ❏ | ❏ | ❏ | ❏ | ❏ |
| Feel tired at work | ❏ | ❏ | ❏ | ❏ | ❏ |

4. About how many hours of sleep do you typically get a day?

1 6 11

2 7 12

3 8 13

4 9 14

5 10

**Section 2: Job factors**

5. How do you describe your normal work hours?

1. Daytime hours/shift
2. Evening hours/shift
3. Night shift
4. Rotating shift (shifts that rotate or change according to a set schedule)
5. Irregular shift (shifts that may vary day-to-day and are unpredictable or follow no set schedule)
6. Other \_\_\_\_\_\_\_\_\_\_

6. How many hours is your scheduled work day, or shift length?

|  |
| --- |
|  |

7. How long is your actual, typical work day in hours?

|  |
| --- |
|  |

8. How long is your scheduled work week, or the number of hours you are scheduled in a week?

|  |
| --- |
|  |

9. How long is your actual, typical work week in hours?

|  |
| --- |
|  |

10. On average, how many hours do you get off from the end of your workday until you begin to work again? For example, if your work day ends at 5 p.m., and you begin work the next day at 8 a.m., your answer would be 13 hours. If your work schedule varies, please give your best estimate.

|  |
| --- |
|  |

11. Roughly how many breaks, including lunch, do you take in a work day? By breaks, we mean any activity away from your work that lasts 10 minutes or longer.

|  |
| --- |
|  |

12. Thinking about your regular job, about how often do you find yourself performing activities that are…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Never | Rarely | Sometimes | Often | Always |
| Physically demanding (such as heavy lifting, frequent movement or on my feet) | ❏ | ❏ | ❏ | ❏ | ❏ |
| Mentally demanding (such as monitoring, reading, scheduling, strategic development) | ❏ | ❏ | ❏ | ❏ | ❏ |
| Frequently repetitive tasks (such as driving long distances, assembling, or typing) | ❏ | ❏ | ❏ | ❏ | ❏ |

13. On average, about how long is your drive to your job?

1. Less than 15 minutes
2. 15 minutes to less than 30 minutes
3. 30 minutes to less than 1 hour
4. 1 hour to less than 2 hours
5. More than 2 hours
6. Don’t drive/carpool/use public transportation

**Section 3: Workplace culture**

14. How often do you feel…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Never | Rarely | Sometimes | Often | Always |
| Pressured to work more hours? | ❏ | ❏ | ❏ | ❏ | ❏ |
| Pressured to skip or take fewer breaks during your shift? | ❏ | ❏ | ❏ | ❏ | ❏ |
| Your work schedule causes you to get less sleep than you need? | ❏ | ❏ | ❏ | ❏ | ❏ |
| Workplace safety is at risk due to your own tiredness? | ❏ | ❏ | ❏ | ❏ | ❏ |
| Your safety at work is at risk due to someone else’s tiredness? | ❏ | ❏ | ❏ | ❏ | ❏ |

15. Please rate your level of agreement with the following statements.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Strongly Agree |
| My employer sees fatigue (or being tired) as a safety issue | ❏ | ❏ | ❏ | ❏ | ❏ |
| My employer encourages breaks | ❏ | ❏ | ❏ | ❏ | ❏ |
| My employer cares about how much rest I get outside of work | ❏ | ❏ | ❏ | ❏ | ❏ |
| My employer considers my ability to get sleep when scheduling shifts | ❏ | ❏ | ❏ | ❏ | ❏ |
| My work schedule allows me to get the proper rest I need to function safely on the job | ❏ | ❏ | ❏ | ❏ | ❏ |

16. Please rate your level of agreement with the following statements.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Somewhat Agree | Strongly Agree |
| I am not able to perform my job as well when I’m tired | ❏ | ❏ | ❏ | ❏ | ❏ |
| I feel comfortable telling my supervisor I need a break | ❏ | ❏ | ❏ | ❏ | ❏ |
| I would not feel comfortable telling my supervisor I am too tired to safely perform my job | ❏ | ❏ | ❏ | ❏ | ❏ |