



A yawn is a silent shout.
~ G.K. Chesterton

I may be fatigued if I:

- fall asleep at the desk,
- feel restless and irritable with people,
- have to check my work repeatedly,
- have difficulty focusing on tasks,
- feel like I really just don't care.

All of us may be fatigued if we have difficulty:

- understanding a complex situation,
- avoiding distractions,
- keeping track of the current situation,
- updating strategies
- thinking about several things at once
- being innovative
- assessing risk and/or anticipating consequences
- maintaining interest in outcomes
- controlling mood and avoiding inappropriate behavior

Recognizing the Signs of Fatigue

The question in many pipeline control rooms is, "How can I tell when someone is fatigued?" What is a method to recognize the signs of fatigue before a person becomes fatigued and makes a fatigue-related error?

These are questions with no simple answer! Remember the causes of fatigue: lack of sleep, long hours of physical or mental work, working at night, stress, health problems, sleep disorders, or a combination of these issues. How can we see them in a person?

A person may have any or all of these causes, suffering the effects of fatigue, and may look fit for duty. The opposite is true; a person may look like a dead man walking, but may be well-rested. As in other cases, looks can be deceiving when it comes to predicting the signs of fatigue. Yet, yawns and head nodding may be good signs.

Instead of examining the physical appearance, there are some methods using devices that measure performance impairment. Here's a possible shift change task: the person coming on duty performs a "psychomotor vigilance task" or some other test that measures reaction time. If the person can't pass the test, this failure is assumed to be a sign of fatigue. Would you like for your employees to take a vigilance task before assuming shift or at times on shift when they may be fatigued. What if a person "fails" the test at 0400? These tests can be beneficial, but should be carefully evaluated.

If you want to test your reactions, there is an enjoyable reaction game at <http://www.bbc.co.uk/science/humanbody/sleep/sheep/>. I do not do very well at the game when fully rested, and this indicates that slowed reactions can be caused by reasons other than fatigue.

Other methods include stimulus/response indicators built into a system or head nodding instruments. A problem with the first is that it may interfere with the operating system. By the time a person is experiencing head nodding, the person is fatigued. With a truck driver, a head nodding instrument can alarm and shut off the ignition. In pipeline operations, would we want a head nod to shut down the system?

We do need a scientific method for assessing fatigue, but a practical one does not currently exist. Appearances can be deceiving, a vigilance test may have unintended consequences, and reliance on the other two could interfere with the system.

A better method for now may be to use fatigue modeling software that "predicts" the times during a shift when fatigue is most likely so that companies and employees can use fatigue countermeasures before those times. That works well, in my experience.