



# ROAD TALK

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CATCH A GOOD NIGHT'S



SLEEP

Zzzz



In the trucking industry where there is a need for long periods of acute mental awareness during long stretches of physical inactivity, quality sleep is vitally important. From time to time we hear of incidents where sleep was related to a crash and we must not glaze over the seriousness of proper rest.

Most adults need 7-8 hours of sleep per night, although some need more or less sleep to be adequately rested. And when you have not gotten the right amount for your body, “oh boy” does it let you know. Well, sorry to say that there isn’t much that can take the place of a good night’s sleep to keep you alert. So, let’s first discuss what a good night’s sleep is and along the way talk about things to keep your alert level as high as possible while you’re awake.

Located in the brain is your body’s biological clock that tells it when it’s time to sleep and when to be awake. Your clock runs on a 24 hour cycle and regulates body temperature, alertness and the daily hormone cycles which stimulate cells into action. Disruption to any of the phases of the clock can cause physical and mental-related issues.

There are two main types of sleep, rapid-eye-movement (REM), and non-rapid-eye-movement (NREM). In most adults, sleep begins with the NREM phase. NREM sleep has three main stages.

NREM begins with the 1st stage of gently dozing off until reaching the 3rd stage which is the “couldn’t wake you up with a bullhorn” stage of the NREM phase. In the progression from stage 1 to stage 3, brain waves slow and become more synchronized, and the eyes remain still. In the 3rd stage, the brain becomes less responsive to external stimuli, blood pressure and body temperature drop and muscles relax. The 3rd stage is where scientists believe physical and mental recuperation occur like protein building and hormone release. The NREM phase then reverses stages to a more awake stage 2 then stage 1 at which point the REM phase begins.

During REM sleep (aka “active sleep” state), muscles in the arms and legs are temporarily paralyzed, the slow brain wave sleep of NREM quickens as does your heart beat and breathing. The blood pressure rises and the eyes move around in all directions. Scientists believe these eye movements are related to dreams. REM can last from 5 to 30 minutes. NREM sleep and REM sleep continue to alternate throughout the night with the length of NREM stage 3 declining during each cycle. The average length of the NREM-REM sleep cycles are between 70 and 120 minutes.

Many of us have awake times that do not match our internal sleep clock which wants to be awake during the day and asleep at night. For those that do, you’ll have to work extra hard to get the sleep your body needs.

There are a lot of factors that affect the quality and quantity of sleep which include stress, what we eat and drink, medical conditions and the medications we take, the environment in which we sleep and the times at which we finally get to sleep. Any one of these can disrupt the depth of sleep we need so badly.

**STRESS:** Stress can stimulate an arousal response making restful sleep more difficult to achieve. Search out ways to help decompress e.g., exercise, yoga, music, deep breathing techniques, etc.

**ALCOHOL:** Alcohol can cause a person to fall asleep more quickly, but the quality of sleep will be compromised. Ingesting alcohol before bedtime has shown to cause increased awakenings due to the arousal effect the alcohol has as it is metabolized throughout the night.

Continues on pg. 2

# Autonomous Vehicles Coming Fast

## FMCSA Seeking Comments



As the turn of the twentieth century ushered in the horseless carriage, and the billowing smoke of the internal combustion engine, the turn of the twenty first century will receive the driverless carriage with near zero emissions.

Over and over again we are seeing actual on-road testing of autonomous cars and commercial trucks - not only here in America, but around the globe, countries like China, the U.S., Australia and those in Europe are in a race to bring this area of artificial intelligence to the day-to-day activities of the world. The FMCSA is now seeking public comments "to facilitate the safe introduction of automated driving systems equipped commercial motor vehicles (CMVs) onto our Nation's roadways".

As this article was written, an extremely unfortunate and fatal crash occurred with an autonomous Uber vehicle and a pedestrian in Arizona. This is a catastrophic failure of this technology that at its core is supposed to detect distant objects and avoid them if necessary. This is a clear setback for the industry, but not one that will change it from its course.

In October 2016, the world was focused on San Francisco startup company Otto as they made the world's first autonomous truck delivery of beer in Colorado. Otto, was purchased by Uber for roughly \$680 million. Until the recent crash with a pedestrian, Uber was actively hauling loads in autonomous trucks on Arizona highways and utilizing transfer hubs to exchange loads to conventional trucks for last-mile delivery. Uber's autonomous vehicles have since been ordered off the state's roads.

Waymo, the self-driving trucks company for Alphabet and sister company of Google has been testing its trucks in both California and Arizona over the past year. Waymo has announced that it is now ready to begin delivering actual freight from Atlanta to data centers operated by Google. The company says that a human driver will be in the truck to monitor systems and take control if needed.

While our minds have been gravitating towards the endeavors of self-driving taxis and semi trucks, driverless technology is nothing new to Rio Tinto, a mining company operating in 35 countries around the world. Rio Tinto has been using autonomous haul trucks since 2008 and is expanding to a fifth mining site in western Australia this month. With 15 new trucks slated for its new site, the company's autonomous fleet will increase to 100 trucks with the expectation of 150 by year end.

Baidu, tuSimple, Tesla and Starsky Robotics are just a few other companies poised to hit the road with autonomous trucks in the very near future. These tech-savvy companies are beefing-up their R&D budgets in an effort to solidify themselves in a new revolution, one that is coming fast.

This revolution appears to be coming in stages beginning with the Amazons and Googles of the world. These companies have large customer bases all of which have shipping needs. As their self-driving operations grow, look for these companies to cut out the middle men (brokers) and control the entire logistics operation themselves. Yet another model in the early stages is that of Uber. Uber, using its UberFreight application solicits conventional trucking business to book loads for last mile delivery while it's autonomous trucks handle the long haul.

Trucks over the last 10 years have increased tenfold in computer-controlled functions and wireless technologies for efficiencies and pollution control. It appears the logical next step was to computer-control the vehicle. At the beginning of the year, many truckers were even mandated to electronically log their hours of movement. As computer-controlled driverless technology gains public acceptance and overcomes regulatory hurdles, the traditional role of the trucker will evolve - faster than expected.

## SLEEP (continued from pg.1)

**CAFFEINE:** A chemical called adenosine, which naturally builds in the brain during awake times is believed to inhibit brain cells that promote alertness. Hence, the longer we're awake, the more sleepy we become. Interestingly, caffeine works to block the adenosine receptors of the brain allowing nerve cells to maintain activity. However, the more caffeine we ingest the longer it will take for the affects to wear off which can interfere with sleep cycles.

**LIGHT:** Exposure to light in the evening tends to delay the phase of our internal clock and leads us to prefer later sleep times. Bright light bulbs and electronic devices are common examples and should be minimized before bedtime.

**PAIN:** Pain and discomfort limit the depth of sleep we get. Those with chronic and acute pain should limit caffeine and alcohol consumption and practice stress relieving techniques. Use of pain killers and/or sleeping pills, while effective, should only be used under the supervision of a physician.

**DRUGS:** Many medications contain alpha and beta blockers used to control heart rhythms and reduce blood pressure both of which affect sleep. Talk to your doctor about the affects they may cause.

**SLEEP ENVIRONMENT:** Increase your chances of better sleep by controlling your sleep environment. 1) Use no/low lighting such as nightlights to minimize the effects on the internal clock; 2) Reduce noise that can prevent transitions to the deeper stages of sleep, and; 3) Maintain a comfortable temperature to avoid disruptive sleep; 4) Invest in quality bedding.

Driving without the proper amount of quality sleep makes it harder to pay attention to the road and dramatically impacts your reactions. Signs of drowsy driving are trouble focusing, heavy eyelids, an inability to remember the last stretch of road that you just drove, yawning constantly, bobbing your head, and drifting from your lane. If this starts to happen while you're driving, find a safe place to pull over and take a quick nap or stretch, breath deeply and take a short walk, or buy a cup of caffeinated coffee to help keep you alert. **STAY SAFE AND GET SOME REST!**

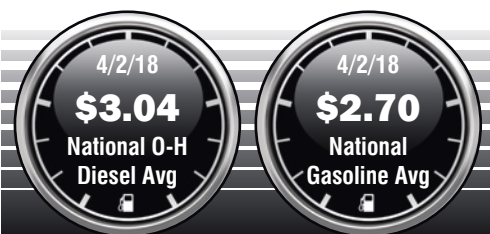
## FUEL UPDATE

**According to the U.S. Energy Information Association (EIA),** Venezuela has been declared to be in Selective Default by the main rating bureaus. Venezuela (as recent as September 2017) was the third largest importer of oil to the U.S. however, mismanagement of the country's oil industry has seen those shipments cut by 30% by December alone.

Political turmoil, quality oil issues and financial troubles have sent the country's inflation rate to 6,000% and is expected to reach 13,000% in 2018. The country is also faced with some \$8 billion in bond payments due this year as well. Because of this, a general default is possible which will likely to contribute to higher oil prices.

Currently, the U.S. average regular gasoline retail price is up 14.5 cents-per-gallon (cpg) from January and 34 cpg higher than the same time last year. Not to be outdone, the welcome to California price is 84 cpg higher than the national average for April 2, and 47 cpg higher than the same time last year.

The U.S. average diesel fuel price is just 2 cpg higher than January and 49 cpg higher than the same time last year. California was 67 cpg higher than the national average for April 2 and 79 cpg higher than the same time last year.



### On-highway Diesel Fuel Prices

Region	4/2/18	3/5/18	4/3/17
East Coast	3.066	3.046	2.605
New England	3.117	3.126	2.630
Central Atlantic	3.233	3.240	2.739
Lower Atlantic	2.938	2.894	2.505
Midwest	2.962	2.920	2.481
Gulf Coast	2.851	2.793	2.414
Rocky Mtns	3.044	2.910	2.623
West Coast	3.487	3.392	2.839
California	3.714	3.652	2.923

Prices listed above are diesel averages in dollars per gallon.

Up-to-date statistics are available from the Department of Energy at [www.eia.gov](http://www.eia.gov).

# LIQUID GOLD

How long do you expect your truck's engine to last? If it's one million miles or more, make sure you choose the proper oil and change it at proper intervals. Understanding what oil actually does for your engine might help to impress upon you the importance of keeping it clean.

The combustion process of a diesel engine creates extreme heat causing its metal parts to move at very high rates of speed both of which produce microscopic contaminants that degrade your engine and its performance. Oil reduces the effects caused by these interactions allowing your engine to run over long periods of time.

The fast moving parts of an engine contacting one another create friction, soot from the burning of fuel and debris through wear. The combustion chamber can generate temperatures upwards of 3,000° F which travels down to the connected rods to the bearings that are made of metal that softens at temperatures as low as 350° F. Heat from the combustion chamber must be cooled to preserve the integrity of those parts. Motor oil absorbs heat from the chamber and transfers it away to be cooled.

Soot particles in the engine collect over time creating a sandpaper effect on the metal parts. The more soot that collects, the more that sandpaper effect has on your engine. The engine's oil filter collects soot from the oil and traps it until replaced. However, the oil filter can only collect soot particles that are 25 to 30 microns in size. Many particles produced by the combustion process can be in the 1 micron size. Because of this, engine oils contain dispersant additives designed to suspend those smaller particles and keep them from coagulating. Still, there is only so much that the oil can store before those dispersants break down, releasing those particles back into your engine in the form of a sludge. For this reason, oil must be changed just like an oil filter to be effective over the long term. (For comparison, a grain of beach sand ranges from 100 to 2000 microns).

Another area where oil helps to extend the life of your engine is contamination from atmospheric dust. The combustion process of an engine requires air and fuel. External contaminants such as dirt can get past the engine's air filter and into the internal part of the engine. The typical paper air filter will trap most dirt particles that are 5 to 6 microns in size and larger, whereas premium air filters will stop anything 2 microns or larger in size or larger. Oil captures the remaining particles and either stores them or sends them to the oil filter for collection.

Need more time between changes, try synthetic oil - Synthetic oil is a product derived from the process of taking refined crude oil, breaking it down and rebuilding the petroleum molecules to remove impurities and improve performance. This is what is called the base stock. From there, chemical compounds (additives) are introduced to tailor the oil for specific needs. Some of the additives used in synthetic oils are there for added lubricity, viscosity, heat resistance and contaminant control. Synthetic oils outperform conventional oils, but can contain varying types of base oils and additives, so be sure to consult your mechanic for which type is right for your application.

Hopefully we've given you a better understanding of the need to keep your oil clean. If for whatever reason your engine has signs of sludge, talk to your mechanic about chemical detergent additives that can remove deposits and buildup that have developed over time

— Keep that engine runnin'.





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4

Roadtalk Newsletter

Commercial Vehicle Safety Alliance (CVSA)

## International Roadcheck Set For June

The event known as International Roadcheck will take place June 5-7, 2018. The Commercial Vehicle Safety Alliance will be conducting commercial motor vehicle inspections throughout the 72-hour period in jurisdictions throughout North America.

According to CVSA President Capt. Christopher Turner, "The top reason drivers were placed out of service during 2017 International Roadcheck was for hours-of-service violations" (32%). Appropriately, this year's focus will be on hours-of-service compliance.

During International Roadcheck, inspectors will primarily conduct the North American Standard Level I Inspection, a 37-step procedure that includes an examination of both driver operating requirements and vehicle mechanical fitness. The vehicle inspection includes checking brake systems, cargo securement, coupling devices, driveline/driveshaft components, exhaust systems, frames, fuel systems, lighting devices, steering mechanisms, suspensions, tires, van and open-top trailer bodies, wheels, rims and hubs, and windshield wipers.

Drivers are asked to provide their operating credentials and hours-of-service documentation, and will be checked for seat belt usage. Inspectors will also be attentive to apparent alcohol and/or drug impairment.

If no critical violations are found during an inspection, a CVSA decal will be applied to the vehicle, indicating that the vehicle successfully passed an eligible inspection conducted by a CVSA-certified inspector. If an inspector does identify critical violations, he or she will render the driver or vehicle out of service.

Automated Driver System Commercial  
Motor Vehicles

## FMCSA requesting comments

The FMCSA is requesting public comments on existing Federal Motor Carrier Safety Regulations (FMCSRs) that may need to be updated, modified, or eliminated to facilitate the safe introduction of commercial motor vehicles equipped with automated driving systems (ADS) onto our Nation's roadways. The Agency is requesting comments on this including whether any of FMCSA's current safety regulations may hinder the testing and safe integration of ADS-equipped CMVs. Further, FMCSA requests comment on certain specific regulatory requirements that are likely to be affected by an increased integration of ADS-equipped CMVs.

You can enter your comments at [regulations.gov](https://www.regulations.gov) using Federal Register Number: 2018-05788.