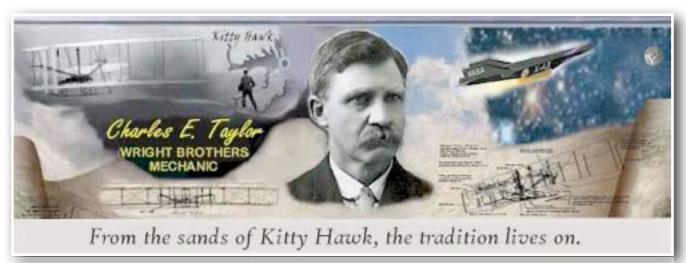
Aviation Human Factors Industry News

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From the sands of Kitty Hawk, the tradition lives on.

Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com
In this weeks edition of Aviation Human Factors Industry News you will read the following stories:

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Human Factors training is just common sense... Or is it?

Gordon Dupont - System Safety Services

Many times over the years, I have had class participants tell me that they don't need human factors training because it is just common sense.

Nothing could be farther from the truth. For example, look at the picture of the plumbing fittings on the right. It is just common sense that even your grandmother would know to tighten every single one of those fittings. Yet in my seven years of accident investigation I have met all too many very qualified, conscientious and loaded with common sense maintenance personnel who have left a line loose on an aircraft.



Human Factors training is nothing more than training the person on how to avoid the error they never intended to make. It calls for providing the person with information on what can set him/her up to make an error and more importantly, what "safety nets" the person can put in place in order to prevent an error from occurring or to prevent any error from becoming a accident.

What is a "Safety Net"? A safety net is a regulation, a policy, a procedure or a practice which if in place, might break a link or prevent a link from forming. An example is: developing the habit to always go back three steps in your work after being distracted. In Human Factors training you are taught that your mind can work faster than your hands and thus you may think and believe you have completed a task when in fact you have not. Now take a look at our plumbing lines, a safety net of always using TorqueSeal to mark lines as you tighten each fitting would let you and others know that each fitting is correctly tightened. A dual inspection by a second person would also help ensure no lines were left loose.

To error is human

Ever since Eve made the error of eating the forbidden apple, we humans have been making human errors. To lessen errors being made we have tried to "Murphy-proof" everything we have come into contact with. For example; you can't start your car unless it is in neutral or park or you can't retract the landing gear on the ground. We also have come up with rules, laws and regulations to reduce human errors. I.e., You must stop at a red light even though common sense tells you there is no one around and it would be safe to not do so. If you do make an error we have put up warnings to prevent it from causing an accident or at least lessen its consequences. I.e., A warning horn to let you know that you forgot to lower the landing gear before you land or a seat belt to keep you Safer if you choose to ignore the horn.

Today we have "human-proofed" the aircraft to the extent that we have a whole new set of problems. The pilots and crew on many occasions don't even know what the aircraft is doing. We also have so many rules nowadays that there are rules for the rules and because there are so many, few of us can remember them all. But the fact still remains that human error is still our biggest problem and in order to lower human error we must provide the correct training to all humans in the organization because EVERY human can make a mistake even with years and years of experience.

But what is the correct training?

We believe that by providing training that each participant believes in, can understand and easily apply to his work, to be the correct training. There are some terrible training courses out there. Courses that pilots call "Charm School" and maintenance call "Hug a Tree 101". These courses are simply a waste of time and money.

Human factors training for everyone (maintenance and pilots included) center around the "Dirty Dozen." The Dirty Dozen consist of 12 contributing factors that can set you up to make an error.

While human factors (HF) training will help lower human error we must also provide a work environment that is resistant to human error.

This is the role of a Safety Management System (SMS) of which HF training is a part of. HF training will help ensure the success of any SMS and is an integral part of any SMS seeking to lower human error to as low as reasonably practical. (ALARP).

http://system-safety.com/

http://www.system-safety.com/ourservices/maintenance_posters.htm

AirSafe.com's annual airline safety and security review for 2018

AirSafe.com Key information for air travelers

This marks AirSafe.com's 23rd annual airline safety review of significant airline safety and security events. The focus of this review is on events that involved one or more airline passenger fatalities due to accidents or deliberate actions. Unlike 2017, which saw only one event involving the death of an airliner passenger, 2018 saw eight such events, the most since 2011. Highlights from the past year include the following:

NORTH AMERICAN FATAL EVENTS

In both 2017 and 2018, there was one fatal airline passenger event, with only a single fatality, that occurred in North America.

FIRST FATAL CRASH OF THE NEWEST 737 MODEL

A 737 MAX, the newest version of the 737 crashed in late October, killing all on board. This 737 aircraft was less than three months old, and this aircraft model was certified by the FAA only last year.

THE MOST FATAL 737 EVENTS SINCE 2007

2007 also had four fatal passenger events involving the 737. The most such events in one year was 2005 with five.

FIRST DELIBERATE AIRLINER CRASH IN THE US SINCE 9/11

An airline employee who had access to parked aircraft, and no formal flight training, was able to take an airliner on an unauthorized flight in the Seattle metropolitan area, and appeared to have deliberately crashed the aircraft. Fortunately the crash was in an uninhabited area and the only person killed was the airline employee.

FIRST FATAL 757 EVENT SINCE 9/11

One passenger was killed after the airliner had a runway excursion after landing.

For details on these and other fatal and significant events from 2018, please visit the 2018 airline safety and security review page at https://airsafe.co/2VI4L98

Good News in the FAA's 2018 Reauthorization Act

by John Goglia

Late last year Congress passed and the President signed into law one of the longest FAA funding bills in decades. The five-year funding bill covers a wide range of issues, some written about extensively and some that I have not seen addressed at all. I thought I would cover some of the provisions that have not been highlighted that I think are noteworthy and positive.



Section 223 requires the FAA to establish a centralized regulatory guidance database. For those of you who struggle—as I have—to find what FAA guidance applies in a specific situation or how some entities get special permissions and others don't, I thought this was a very positive requirement. "Regulatory guidance documents" means all forms of written information issued by the FAA that an individual or entity may use to interpret or apply FAA regulations and requirements, including "information an individual or entity may use to determine acceptable means of compliance with such regulations and requirements, such as an order, manual, circular, policy statement, legal interpretation memorandum, or rulemaking document."

While the FAA has many databases, some of this information—such as internal policy statements or legal opinions to specific individuals or entities—is not always easy to find or even publicly available. A centralized database will make it easier for everyone who needs to comply with Federal Aviation Regulations or who needs special authorizations or exemptions from the agency. And the law specifically requires the database to be available to the public, a requirement that could help level the playing field. Even if you can't afford to hire a white-shoe aviation firm, you may be able to finally see what those who can are able to get from the agency, although private information and trade secrets are specifically protected by the law. While the law is a positive step and implementation is supposed to begin within 14 months, how long it will take to actually implement is unclear, as it requires a consultation process within and outside the FAA.

Along with greater transparency in finding regulatory guidance, the law requires a "regulatory consistency communications board" (Section 223). Many of you—again, like me—have at some point faced inconsistent opinions from FAA field personnel in different regions and even within different offices in FAA headquarters. It's maddening when you're running a business across regional lines and are being told different things by different inspectors, and you're afraid to antagonize one inspector with the opinion of another. This board would iron out differences in regulatory interpretations and make those decisions available internally and externally to the industry and the public. The law has very ambitious timelines, which I do not expect the FAA to meet. And, yet, if the agency at least begins the process of becoming more consistent and transparent, that's a good thing.

SAFETY INFORMATION GATHERING

Another positive benefit I see in the law is at Section 320. For those of us who believe that voluntary safety reports from frontline workers are critical to aviation safety—and form the crux of safety management systems—I was happy to see a presumption included in the Reauthorization Act (Section 320) that states: "There shall be a presumption that an individual's voluntary report of an operational or maintenance issue related to aviation safety under an aviation safety action program meets the criteria for acceptance as a valid report under such program." This presumption may make it more likely that workers will submit maintenance and operational safety issues through their company ASAP (aviation safety action program) and that they will qualify for the enforcement and disciplinary waivers that accepted reports have from both the FAA and the company they work for. In the past, concerns over whether a report was acceptable have led workers to hesitate to file them.

The Reauthorization Act makes some changes to the so-called Pilot's Bill of Rights (Section 392), referring to the section as the "Fairness for Pilots Act" even though it applies to holders of all airman certificates. While the changes are positive, calling it a "pilot" section bothers me on so many levels, particularly because it seems that Congress is unaware that the aviation industry is composed of more than just pilots—important as they are—and that FAA enforcement actions also affect other certified airmen. Calling this section, as the law that preceded it, a law for pilots makes it much more likely that mechanics, dispatchers, air traffic controllers, remote pilots, and other certificate holders will not be aware of it. How fair is that?

Among the changes required by the law, the FAA will now not only have to notify certificate holders of the nature of its investigation but also "the specific activity on which the investigation is based." If they know exactly what activity forms the basis for the FAA's investigation, certificate holders can better defend themselves. The section also requires that in cases involving emergency orders, the FAA "shall provide, upon request, to the individual holding the airman certificate the releasable portion of the investigative report at the time the Administrator issues the order. If the complete Report of Investigation is not available at the time of the request, the Administrator shall issue all portions of the report that are available at the time and shall provide the full report not later than five days after its completion."

Failure to timely provide reports to certificate holders could result in dismissal of the case if the FAA can't demonstrate that it had a good excuse for not providing them.

This same "Fairness to Pilots" section requires that requests for re-examination of airman certificates (not just pilot certificates) contain "a reasonable basis, described in detail, for requesting the re-examination." NTSB decisions have always required a reasonable basis for re-examination, but usually, the information communicated to the potential examinee has been limited to a description of an incident or accident that the FAA claimed raised questions of the person's qualifications. And the burden of proof has been very light in those cases where the FAA's decision was challenged. So certificate holders were left with the choice of either challenging the FAA's request for re-examination, most likely losing the challenge, and then paying the money for an aircraft to re-examine in; or just going ahead and agreeing to the re-examination to start with even if he or she did not believe the facts warranted it. This change will require the FAA to provide more information on why the re-examination is requested and hopefully provide greater opportunity to successfully challenge those requests believed to be unwarranted.

The last sections I thought were positive have to do with the law's establishment of task forces and studies to focus on how we're going to encourage more of our workforce to seek jobs in aviation, Sections 601 (Youth in Aviation), 611 (Women in Aviation) and 621 (Future of Aviation Workforce). What is particularly promising is the requirement in Section 625 for the Secretary of Transportation to establish grant programs "to provide grants for eligible projects to support the education of future aircraft pilots and the development of the aircraft pilot workforce; and a program to provide grants for eligible projects to support the education and recruitment of aviation maintenance technical workers and the development of the aviation maintenance workforce." Congress has authorized \$5 million a year each for pilot and mechanic projects for Fiscal Years 2019 to 2023.

These are some positive highlights that I saw in the new reauthorization act. I would love to hear from you what sections caught your attention in the new law.

Progress Being Made On U.S. Mechanic Development

While there is positive momentum for filling the future aviation mechanic workforce needs, not all metrics are good.

While there are still challenges to be met, progress is being made in filling current and future needs for aircraft mechanics in the U.S., according to the latest Pipeline



Report of the Aviation Technician Education Council (ATEC).

Here's the good news first: the majority of maintenance technician schools reporting anticipate the number of 2018 graduates will increase 10% over 2017, and a further 11% in 2019. And they expect total enrollment to increase 40% in 2019.

Furthermore, school capacity is no hurdle. Only one half of the seats in technical schools are now taken, so an additional 17,000 students can be readily accommodated.

One problem has been that a substantial portion of aviation technician school graduates has been seeking non-aviation jobs. The latest report says the number seeking non-aviation jobs has now dropped by nearly half, to 13%. And 70% of students are now taking the FAA mechanic exam upon graduation, a 10-point increase over the previous two years.

Of course, not all mechanics have to come from these schools. Of 6,401 mechanics certificated in 2017, 63% obtained certification based on completion of a technician school program, 10% based on military experience and 27% based on civilian experience. The FAA now counts 293,000 certificated mechanics, of which females make up 2.4%, a portion that has been constant for 15 years.

More progress must be made however. The Council reckons 30% of mechanics are now 60 years of age or older, which is a 3% increase from the prior year. And new mechanics still account for only 2% of the workforce each year. Unless this rate of replacement is increased, the mechanic population will decline 5% over the next 15 years, the Council projects.

Productivity improvements can trim some needs, as can outsourcing abroad. But so long as traffic is growing at 2-4% annually, it will be difficult to reconcile the demand with a declining supply of mechanics.

https://www.atec-amt.org/pipeline-report.html

NTSB: 'Pilot impairment' caused deadly 2017 plane crash near Boonville

Report finds pilot took cocaine, meth, other drugs

The National Transportation Safety Board released its final analysis of a deadly 2017 plane crash in Cooper County.

The report, dated November 5, 2018, concludes that impairment of the pilot, 67-year-old Charles McCutcheon, was the main contributing factor in the crash that killed him and his passenger, 49-year-old Bryan Roth, on April 24, 2017.

Impairment in Transportation Occurs from a variety of factors Medical and psychiatric conditions Alcohol Drugs Over-the-counter Prescription Illicit

Mechanical failures and weather conditions were ruled out as probable causes in the board's report.

"Weather conditions at the time of the accident included a clear sky with no obstructions to visibility," the report said. "Examination of the airframe and engine did not reveal any anomalies that would have contributed to the accident."

An autopsy revealed that McCutcheon suffered from coronary artery disease, however, that physiological condition was also ruled out as a probable cause of the crash because it does not affect a pilot's judgment, vision, or decision-making.

The autopsy further revealed that McCutcheon had tissue scarring from a previous brain injury that left his optic nerve severely damage.

The Fayette man was nearly blind in his left eye, something that the NTSB said, "likely contributed to the accident."

The biggest contributing factor, however, was the substances of which McCutcheon was found to have been under the influence.

Cocaine, methamphetamine, clonazepam, and diphenhydramine were found in the pilot's system.

"In addition to their psychoactive effects, these drugs are potent vasoconstrictors and can cause small arteries to spasm, cutting off blood flow to portions of vital organs," the NTSB said. "Although the pilot's stage of intoxication with methamphetamine or cocaine at the time of the accident is unknown, it is very likely that he was impaired by the combined effects of these drugs."

The full NTSB report can be found by following this link.

Contamination led to Qeshm Fokker gear-up accident

Iranian investigators have determined that poor maintenance procedures, allowing contamination of hydraulic lines, led to a gear-up landing by a Qeshm Air Fokker 100 earlier this year.

The aircraft had departed Tehran Mehrabad for Mashhad on 16 February but, some 10nm from touchdown, its crew discovered problems with the left-hand main landing-gear.



It executed a missed approach, says the Iranian Civil Aviation Organization, and entered a holding pattern while the crew attempted to resolve the problem.

Several attempts to recycle the undercarriage were not successful, says the inquiry, and neither was an effort to use the alternate landing-gear deployment procedure.

A low pass over the airport allowed ground personnel to observe that the left-hand gear was only partly extended, and high-load maneuvering failed to free it.

The crew declared an emergency and, having remained in the hold to burn fuel, conducted an approach to Mashhad's runway 31R.

As it landed the aircraft veered off the left side of 31R, coming to rest between the parallel runways, suffering left wing structure and flap damage from ground contact. The landing-gear was also damaged.

Occupants were evacuated from the aircraft. None of the 97 passengers or seven crew members was injured, the inquiry says.

Examination of the hydraulic system has concluded that "foreign pollution" entered while C-check maintenance was being carried out on a restrictor valve and hose from the left-hand landing-gear actuator.

A filter near the valve was damaged, it says, and enabled contaminants to block a downstream nozzle, affecting the landing-gear mechanism.

Investigators say that "insufficient surveillance" of the maintenance operation and a "lack" of experience from Qeshm Air maintenance personnel contributed to the situation.

Improper maintenance leads to forced landing

The commercial pilot stated that he had experienced engine roughness during previous flights in the Kitfox 7.

Maintenance personnel determined that the airplane was not receiving adequate fuel at full power, even with both electric fuel pumps operating. As a result, they installed check valves in the fuel system and replaced the fuel pressure regulator.



On the day of the accident, the engine experienced a total loss of power after both fuel pumps were turned off during a pre-takeoff engine run-up.

The pilot and mechanic then performed another run-up check, during which the engine operated normally.

The pilot subsequently departed and entered the traffic pattern at the airport in Cody, Wyoming. While on the downwind leg, with both fuel pumps operating, he reduced engine power and the engine experienced a total loss of power.

He performed a forced landing to a field, during which the nose landing gear collapsed.

Post-accident examination of the engine revealed that the fuel pressure and airbox pressure differential was not within the engine manufacturer's limits.

The fuel pressure regulator was adjusted within those limits, and the engine was subsequently test run with no anomalies.

Probable cause: Improper maintenance of the fuel pressure regulator, which resulted in an excessive fuel and airbox pressure differential and subsequent loss of engine power.

NTSB Identification: CEN17LA065

This December 2016 accident report is provided by the <u>National Transportation</u> <u>Safety Board</u>. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

SOCIAL MEDIA GIVING AVIATION SAFETY RECORD A BAD RAP

The rise and rise of social media is fueling the public's perception that flying is not safe with almost every aircraft incident, even the most insignificant, broadcast to the world.

Now virtually all airline passengers or visitors to an airport are photojournalists or commentators and the spread of in-flight WiFi has just widened their ability to transmit every incident to social media such as Facebook, Instagram or Snapchat.



This year it is estimated that over one trillion digital photos were taken, and 85 percent of them on mobile phones and most are on social media.

Putting that number in perspective, in the history of print film, only 2.5 trillion photos were taken, which means every two years almost as many photos are taken than in the entire history of analog cameras.

And if it's not a photo, it's a video with 300 hours uploaded to YouTube every minute and 5 billion videos watched each day.

Many air crash evacuation videos were taken by passengers, when they should be focused on getting off a burning aircraft, are watched tens of millions of times.

According to German airline Lufthansa's research, up to 70 percent of passengers have some fear of flying, and for more than 30 percent of travelers, it is the key factor when booking.

While not as good as some prior years 16 accidents and 555 deaths from 45 million flights and 4.5 billion passengers is a remarkable record when compared to Flashback 54 years ago, there were a staggering 87 crashes killing 1,597 when airlines carried only 141 million passengers — just a fraction today's 4.5 billion.

There is no question flying is safer and one of the reasons is the International Air Transport Association's Operational Safety Audit introduced in 2003.

Since then, 432 airlines have completed the comprehensive audit and those airlines' crash rate is around 75 percent better than airlines that do not do the audit.

Completing IOSA every two years is a condition of joining IATA, the leading industry body.

An IOSA audit examines every aspect of an airline's safety — on the ground and in the air — and ensures it has industry best practice with a continuous expert safety review process. It also ensures the airline has the systems to keep up with the latest safety developments.

2018 was a big year for aviation in the USA! Here's what happened...



1) An Update To 25-Year-Old Traffic Pattern Altitudes

According to previous guidance from the 1990s, traffic patterns were to be flown between 800 and 1,000 feet above ground level (AGL). **The new AC sets a clear standard of 1,000 feet AGL, eliminating 200 feet of confusion.** Unless terrain or obstacles require another altitude, 1,000 feet AGL is now the standard for non-towered pattern altitudes.

The AC also clarifies that "large or turbine-powered airplanes" should enter the traffic pattern at an altitude of 1,500 feet AGL, or 500 feet above the established pattern altitude. Ultralight aircraft are to operate no higher than 500 feet below the powered aircraft pattern altitude. These standards were detailed in a recent change to the Aeronautical Information Manual, and are included in this AC.

2) Big Changes To Part 61 Training Requirements

In June, the FAA published changes to Part 61, including broader use of technology to reduce the cost of flight training. For instance, you can now use an ATD Simulator to gain instrument currency for 6 months, instead of the previous 2 months. In April, the FAA eliminated the requirement for complex airplanes on commercial pilot practical tests. Now they've taken the rule a step further, eliminating the complex aircraft requirement for commercial training altogether.

Predicted to save GA Pilots in the USA \$110 Million over the next 5 years, changes to Part 61 are a big reason to be excited.

3) FAA Issues Clarification For IFR vs VFR Traffic Priority

According to the FAA, "pilots conducting instrument approaches should be particularly alert for other aircraft in the pattern so as to avoid interrupting the flow of traffic, and should bear in mind they do not have priority over other VFR traffic. Pilots are reminded that circling approaches require left-hand turns unless the approach procedure explicitly states otherwise."

Let's say there's a layer of overcast clouds above the airport at 2,000 feet AGL. There may be numerous VFR aircraft in the pattern flying well below the clouds. When an IFR aircraft on an instrument approach pops out of the clouds on final approach, they do not get automatic priority or right-of-way ahead of VFR traffic that might be on downwind, base, or final. Instead, they need to sequence themselves with the flow of other traffic.

4) ADS-B Out Rebate Continues

"Ahead of the January 2020 equipage deadline, the FAA reopened the ADS-B Out rebate, incentivizing even more pilots to adopt the new technology and keep our skies safer and more efficient... AOPA has worked with the FAA and manufacturers through the Equip 2020 Working Group to develop lower-cost solutions especially for pilots flying legacy aircraft. Pilots can claim the \$500 rebate until Oct. 12, 2019, or until all 10,000 remaining rebates are claimed."

5) ATC Privatization Bill Eliminated

According to AOPA, "If the proposed legislation had passed, it would have threatened the safest, busiest, and most complex airspace; cost tens of billions of dollars; been devastating for small airports; and created a 'too big to fail' monopoly requiring taxpayer bailouts."

"More than 300 aviation organizations, state and local officials, airports, manufacturers, labor unions, businesses, management associations, and consumer groups stood united against the so-called 'privatization' of ATC... Thanks to a relentless group of pilots, more than 200,000 phone calls, emails, and messages were sent to lawmakers, and the bill never made it to the floor of the House..."

6) Updated Procedure For VFR Traffic Pattern Entries

Section 11.3 of the AC clarifies traffic pattern entry procedures. Unlike previous guidance, the FAA has expanded their guidance for entering the pattern when you're crossing over midfield.

The preferred method is the "midfield overhead teardrop entry" (left diagram), and the second option is then "alternate midfield entry" (right diagram).

If you're crossing midfield to get to the downwind leg, the FAA recommends that you cross pattern altitude at 500+ above pattern, fly clear of the traffic pattern (approx. 2 miles), and then descend to pattern altitude and make a teardrop entry to the midfield downwind.

7) Updated Guidance For CFIs Giving Flight Reviews

According to the FAA, Loss Of Control (LOC) was the number one cause for GA fatalities from 2001 through 2010. So what exactly is LOC? It happens when aircraft accidents result from situations when a pilot should have maintained (or should have regained) aircraft control but failed to do so. And unfortunately, when LOC happens, it usually doesn't end well.

The new guidance focuses on three areas: traffic pattern operations, stabilized approaches, and flight through IMC.

8) Five Major Weather Forecast Improvements Added

Using ADS-B for free in-flight weather updates is a life saver, and it got a whole lot better this past June! *Here's are the new additions...*

- 1 Lightning Strikes
- 2 Turbulence
- 3 Icing Forecasts
- 4 Cloud Tops
- 5 Center Weather Advisories (CWA)

https://www.boldmethod.com/blog/article/2018/07/faa-eliminates-complex-aircraft-training-requirement-for-commercial-pilots/

https://www.aopa.org/news-and-media/all-news/2018/june/27/faa-cuts-cost-of-training-proficiency

https://www.aopa.org/news-and-media/all-news/2018/october/12/faa-relaunches-ads-b-out-rebate

 $\underline{https://www.boldmethod.com/learn-to-fly/regulations/the-faa-updated-their-guidance-on-flight-reviews-will-it-make-flying-safer/}$

Small Device Drives Airport Noise Complaints

Imagine you live close to a major airport, and since NextGen has changed many air routes in the last few years, a lot more noisy airplanes fly right over your house. Now it's easy for those citizens to file a noise complaint — instead of facing hours of paperwork, they can just push a button on a thumb-size device like those used by Amazon shoppers to order household goods. Barbara Deckert, who lives in suburban Maryland, told the Washington Post she has filed thousands of complaints: "Clicking that button is really psychologically satisfying." Airports in areas where dismay over noise is common say they have seen dramatic increases in complaints since the Airnoise device became available. According to the Post, officials at BWI believe Airnoise is why complaints surged from 2,692 in July to 17,228 in August. The Airnoise website says so far they have logged more than a million complaints at 29 U.S. airports. They also say they plan to soon release iOS and Android apps to

https://airnoise.io/

Shift Worker Health and Safety

make it even easier to file a report.



Safety + Health reports that experts say collaboration and innovation key to stemming risks arising from shift work.

It's a complicated story, and I think it's really important to recognize these risks, and we need to understand them and we need to treat them," said Hans Van Dongen, Washington State University professor and director of the school's Sleep and Performance Center. "But at the same time, I want to say that just because you're a shift worker, you're not necessarily doomed just because of that.

Get the full story at www.safetyandhealthmagazine.com

TED Talks - Ideas Worth Spreading

How to find the person who can help you get ahead at work

The workplace is often presented as a meritocracy, where you can succeed by putting your head down and working hard. Wall Street veteran Carla Harris learned early in her career that this a myth. The key to actually getting ahead? Get a sponsor: a person who will speak on your behalf in the top-level, closed-door



meetings you're not invited to (yet). Learn how to identify and develop a productive sponsor relationship in this candid, powerful talk.

https://www.ted.com/talks/carla_harris_how_to_find_the_person_who_can_help_you_get_ahead_at_work