



## Aviation Human Factors Industry News July 21, 2008

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### U.S. seeks to improve runway safety

Installing lights that signal to pilots when a **runway is safe to enter** is one of the key changes that will be made at major U.S. airports to try to prevent deadly runway accidents.

The U.S. Federal Aviation Administration announced the change Monday amid criticism by federal lawmakers and others over the rate of "runway incursions" at airports.

A runway incursion, by FAA's definition, refers to anytime an aircraft, vehicle or person is in a protected part of the runway reserved for takeoffs and landings.

"Severe runway incursions are down," acting FAA administrator Robert Sturgell said in a press release. "And, we're **putting technology and procedures** in place to keep it that way. We're making changes on the runway and in the cockpit that are going to make a significant difference."

There were two close calls in less than a week at John F. Kennedy International Airport in New York, with one last Friday involving a Delta Air Lines plane and a Comair plane that prompted the agency to immediately change the way takeoffs and landings are sequenced on perpendicular runways.

Congressional investigators said in December that air travelers face a high risk of catastrophic collision on U.S. airport runways due to problems with federal leadership, **malfunctioning technology and overworked** air traffic controllers.



**Sixty-three people have died** in six U.S. runway collisions since 1990.

The FAA definition of "runway incursion" doesn't include serious errors such as the Aug. 27, 2006 crash of a Comair jet in Lexington, Ky., when pilots mistakenly traveled down a runway too short for takeoff and crashed killing all but one of the 50 people aboard.

The new lighting systems will be installed at **21 airports** over the next three years.

Lights will change color to signal when a runway is safe to enter or cross, the FAA says.

The runway light system is being tested at Dallas Ft. Worth and San Diego international airports.

Other airports where the system will be deployed include Atlanta, Baltimore Washington International, Boston, Charlotte, Denver, Detroit, Dulles, Ft. Lauderdale, Houston Intercontinental, John F. Kennedy, LaGuardia, Las Vegas, Los Angeles, Minneapolis, Newark, O'Hare, Orlando, Philadelphia, Phoenix, and Seattle.

The FAA also plans to test cockpit displays that will increase runway safety, such as aural alerting systems that let pilots know where they are on the runways or technology that shows aircraft positions on the airfield.

The cockpit displays seek to **reduce pilot errors**, which are the cause of most runway incursions, FAA says.

## **NTSB Inadequate Visual Lookout To Blame For 2007 Oshkosh P-51 Collision**

### ***Diminished Visibility, Breakdown In Communications, And Inadequate Briefing Contributed***

The National Transportation Safety Board released the final report this past week on the fatal landing accident between a P-51A and P-51D Mustang on July 27, 2007 at the 2007 AirVenture Oshkosh airshow at Witman Field.

Gerard S. Beck of Wahpeton, ND was flying the green-winged P-51A that apparently collided with a P-51D, flown by Casey Odegaard, as both aircraft came in to land at 1517 CDT on July 27 following a simulated air race performance during the airshow.



Beck's plane flipped as the aircrafts' wings touched, and the P-51A impacted the ground in an inverted attitude.

Beck was killed in the accident. Odegaard was able to exit his plane under his own power after it came to rest on its nose, about 50 yards ahead of the wreckage of Beck's aircraft.



The NTSB report stated as the five aircraft in the demonstration were recovering there was confusion over the landing intentions of the P-51A. Odegaard in the P-51D reported he thought the pilot of P-51A was departing the pattern and not landing at OSH as he was established on a downwind, however the P-51A was observed on a base leg at about 1,000 feet on a southwesterly heading with its gear and flaps retracted as the P-51D turned base.

As the P-51D turned final, the P-51A also turned inbound for landing behind it and transmitted

"Precious Metal, one mile final," but Odegaard did not hear the transmission.

Interviews with the air race demonstration pilots revealed there was confusion concerning the information discussed in the team brief prior to the race. The team representative reported that he briefed that the P-51D flown by Odegaard should land first, but two of the race pilots reported that they did not hear that discussed in the brief.

There was also confusion on the intentions of the P-51A as the team representative briefed that it intended to land, refuel, take on a passenger, and then depart OSH for another nearby airport – not depart the pattern as Odegaard thought.

As the Federal Aviation Administration had "waivered" the airspace, the show Air Boss was declared responsible for the show operations, but not responsible for providing aircraft separation. The Air Boss did not observe the two P-51's on short final, because his attention was on an airplane taxiing near the air show center. No warning was given to the pilots concerning the lack of separation between the airplanes.

The NTSB concluded the probable cause of the collision to be the failure of the P-51A pilot to maintain clearance from the P-51D due to an inadequate visual lookout. Contributing factors to the accident included restricted forward visibility of the P-51A, the air race team representative's inadequate flight brief, the failure of the air boss to recognize the lack of separation between the airplanes on short final, and the diminished air/ground radio communications during the air show.

## [Crash: Kalitta B747 at Bogotá on Jul 7th 2008, engine fire, impacted a farm house](#)

The aircraft took off runway 31L, declared emergency 20 seconds later reporting an [engine fire](#) in engine number 4 (outer right hand engine) and requested to return to runway 13R.

Bogota Tower cleared the airplane for that return to and landing on 13R (the departure runway in opposite direction). The landing gear was down at the time of impact. It is currently unclear whether the landing gear was ever retracted.

The tail of the airplane hit several trees past the highway, then the farm house in between that group of trees, before the left wing impacted ground first, an unnamed accident investigator told our correspondent Jorge Angel on site in Bogota.



The airplane nearly went down over Madrid, managed to recover and turn left before hitting the wires alongside the highway, a government official of the city of Madrid said. The airplane could be seen over a long distance due to its landing lights.

Works to clean up the site have started, several parts including engine #3 have already been ferried away.

The Colombian CAA reported, that the airplane took off runway 31L getting airborne at 3:58am local time. 20 seconds after liftoff the crew radioed an emergency call stating, that engine #4 was on fire. The airplane initiated a left hand turn as by the published engine out procedure. Radio contact got lost afterwards.

ATC transcripts have already been produced, but will not be released before the official report. Crew members out of intense care have been interviewed, there is no word from the CAA however, whether the interviews revealed anything as to why the airplane could not sustain flight.

A taxi driver just fueling his car at the nearby petrol station said that the airplane hit the wires along the highway triggering sparks, before it impacted ground.

Four members of the crew of the airplane could leave the hospital already. Two are still in intensive care but stable and improving. The woman struck in the farm house is recovering as well. [Her husband and her son have died in the crash.](#)

The NTSB, participating in the investigation, will be analyzing the flight data and cockpit voice recorders, both of which have been recovered. FDR and CVR are already in Washington.

A video taken by a police helicopter and used in a TV broadcast in Colombia (Spanish)

<http://video.canalcaracol.com/videos/Noticias/Nacional/Bogota/070708accidenteavion.wmv> ) allows identification of following approximate positions:



## [NTSB Safety Recommendations A-08-32 through -35](#)

The National Transportation Safety Board recommends that the Federal Aviation Administration:

Require that all air tour operators (14 Code of Federal Regulations Parts 91 and 135) establish and maintain a system for continuously analyzing the performance and effectiveness of their inspection and maintenance program to ensure that all maintenance is performed with the **utmost regard** for quality and safety. (A-08-32)



Require air tour operators to provide formal, **model-specific helicopter maintenance training for their mechanics** to ensure an adequate level of competency. (A-08-33)

Develop a mechanism to provide direct surveillance of **air tour maintenance at all locations** where a company's maintenance is conducted. (A-08-34)

Work with independent safety programs, such as the Tour Operators Program of Safety, to establish appropriate guidance for their members on how to develop and implement appropriate **inspection and maintenance quality assurance programs** and to encourage operators to participate in these voluntary programs. (A-08-35)

[http://www.nts.gov/recs/letters/2008/A08\\_32\\_35.pdf](http://www.nts.gov/recs/letters/2008/A08_32_35.pdf)





## From Nose to Tail

A corporate pilot followed standard company procedure for using a sport utility vehicle to tow an aircraft out of the hangar. But the routine ferry flight to a maintenance base turned out to be a little more exciting than planned.



- Through the checklists, engine start, taxi, and run-up, everything was normal. As I rotated, right away I noticed that the airplane yawed some, and it seemed to me that I had experienced a rudder boost failure. I retracted the landing gear. The yaw ceased, the gear made a louder thump than normal, but then everything seemed all right except the landing gear handle light stayed on. Then it dawned on me--I hadn't removed the tow bar. Was it still there?

I called Departure Control and advised them of the situation. They sent a truck down the runway to see if the tow bar was anywhere to be found. [It wasn't.] I decided to continue to our maintenance base, due to better facilities and equipment to deal with who-knows-what on landing. The Approach Controller set things in motion for my arrival. The Tower cleared me for a low pass. The Controller could see the tow bar...it was being held out forward at about a 60° angle by the nose tire itself. Amazingly enough, I landed uneventfully, except that the initial touchdown sent up quite a shower of sparks from the eye of the tow bar.

The only damage, besides that to my ego, was to the nose gear doors.

The reporter states that the company's towing procedure has been changed to prevent this from happening again. As if our reporter could ever forget!

## Aircraft Life Limits are in Our Future

The FAA plans to issue a new rule that would require airframe manufacturers to establish a life-limit for each airframe, based on the "limit of validity" of the engineering data that supports the original maintenance program.



A purpose of this exercise is to prevent widespread fatigue damage in aging aircraft, and airframe manufacturers will be required to identify **maintenance actions** necessary to prevent widespread fatigue damage before the airplane reaches its life-limit.

This rulemaking would require operators of any affected airplane to incorporate the life-limit into the airworthiness limitations section of the aircraft's instructions for continued airworthiness. In order to operate an affected airplane beyond the life-limit, the operator would need to develop an FAA-approved maintenance program designed to prevent widespread fatigue damage.

The official deadline for publication of this Final Rule is July.

## FAA's Multimedia Tools for Human Factors Presentations.

The FAA has created a multimedia support system to help **technical professionals** create **human factors presentations** matched to their specific requirements.

Containing nearly 150 PowerPoint slides, 10 video snippets, and 40 animations, the **Maintenance Human Factors Presentation System** is now available. The creator and IFA Associate member, Dr Bill Johnson, describes why the FAA built the system, its capabilities, and how you can use it the next time you talk about maintenance human factors.



To receive a free copy of the MHFPS on DVD please e-mail your name and full postal address to [aam520-mmpi-2@faa.gov](mailto:aam520-mmpi-2@faa.gov)

This is the North American Regional email address at the FAA Civil Aerospace Medical Institute.



## CNBC: American spends \$20,000 a minute on jet fuel

Ever wonder how much it costs to fill the fuel tank on a Boeing 767 jet? [CNBC answers that](#) in a story that looks at American Airlines fuel costs, writing that "at the recent market price of roughly \$3.85 a gallon, that means it costs about **\$77,000** to top off a Boeing 767." The network adds it takes about 9,000 gallons of jet fuel for a 767 to make a cross-country flight "That," CNBC writes, "means American Airlines pays about \$34,000 in fuel costs alone for that flight, up \$15,000 in just the past year. The airline takes in about \$54,000 in total revenue for the average flight from JFK to LAX. That leaves the company about \$20,000 to pay for everything else, let alone make a profit."



CNBC's interesting number-crunch comes as it looks at how AA tries to cope with soaring jet-fuel costs. CNBC says that "although American isn't about to go under, it is hurting. The \$6 billion it saved in a painful, post-9/11 reorganization has been swept away in a whirlwind of rising fuel prices. The airline guzzles more than **95 gallons every second**, draining its coffers by **more than \$20,000 a minute**."

Not surprisingly, American — like all U.S. carriers — is looking to cut fuel costs however it can. As part of its efforts to rethink the way AA consumes fuel, the company is taking an especially hard look at how weight and time spent on the ground affect its fuel consumption. "We spend 5% of our total fuel expense on the ground," Scott Turner, an AA pilot and the company's manager of flight operations efficiency, says to CNBC. "**That's \$500 million a year just spent taxiing these airplanes around.**"

As for weight, CNBC says AA saves 14,000 gallons of fuel a year for each pound it lighten a plane's weight by. That statistic is largely behind the airline's decision move to remove magazines, and is leading the airline to replace its 19,000 food carts with new ones that are 17 pounds lighter, according to CNBC. The estimated savings from that: \$7.3 million a year at current fuel prices, CNBC says.



## May We Have Your Attention, Please?

***With the workplace ever more full of **distractions**, researchers are developing tools to keep us on task***

It's official: The average knowledge worker has the attention span of a sparrow. **Roughly once every three minutes**, typical cubicle dwellers set aside whatever they're doing and start something else—anything else. It could be answering the phone, checking e-mail, responding to an instant message, clicking over to YouTube, or posting something amusing on Facebook. **Constant interruptions** are the Achilles' heel of the information economy in the U.S. These **distractions** consume as much as 28% of the average U.S. worker's day, including recovery time, and sap productivity to the tune of \$650 billion a year, according to Basex, a business research company in New York City.



Soon, however, the same kinds of social networking software and communications technologies that make it deliciously easy to lose concentration **may start steering us back** to the tasks at hand. Scientists at U.S. research labs are developing tools to help people prioritize the flood of information they face and fend off irrelevant info-bytes. New modes of e-mail and phone messaging can wait patiently for an opportune time to interrupt. One program allows senders to "whisper" something urgent via a pop-up on a screen.

Innovations like these belong to a sub-branch of computer science that's geekily called "attentional user interfaces." The goal, says Scott E. Hudson, a professor in this discipline at Carnegie Mellon University, is finding a way to reap benefits from the data deluge "without having it destroy us on the attention side."

Ours is hardly the first generation to fret about **distraction**. Humans are **essentially interruption-driven** because they must be alert to change, says Gary Marcus, author of *Kluge: The Haphazard Construction of the Human Mind*. "**We're not built to stay on task,**" he contends. But people in past eras never had to cope with so much beeping, blinking, pinging, and ringing. Gloria Mark, a professor of informatics at the University of California at Irvine, monitored thousands of hours of workplace behavior. Her studies documented that most workers **switch gears every few minutes**, and once they're **distracted**, it can take nearly half an hour to get back on track. "When you see the hard numbers, it kind of hits home how bad it really is," says Mark.

## A TRUSTED "PRESENCE"

One solution might be to construct a work world supported by all-seeing, ultra-organized digital assistants. Eric Horvitz, a principal researcher at Microsoft, has spent more than a decade creating artificial-intelligence systems that observe humans at work. These software programs, which reside on computers and various handheld gadgets, watch and listen to the user, tracking digital calendars and noting key contacts. And they apply mathematical formulas known as Bayesian probability models to predict the cost and benefit of interrupting someone at work. Having served as a guinea pig, Horvitz considers his latest prototype a trusted "presence." Recently, he received an urgent e-mail from a new intern. His e-mail triage program, called **Priorities**, ranked the message 100—a perfect score on a timeliness scale of 1-100. That afternoon, an announcement of "free food" down the hall ranked an ignorable 6.

This trusted presence isn't ready for prime time. But **Priorities** inspired Microsoft to create Outlook Mobile Manager, a product that enables Outlook to recognize urgent e-mails and to do "presence forecasting." That means users of OMM 2.0 can essentially let the software decide whether e-mails should be routed to their computers, phones, or some other device. Future versions of Windows will likely include another feature born in Horvitz's lab. Called Bounded Deferral, the feature holds messages in reserve until the recipient is ready for a "cognitive break." The ideal, says Horvitz, is "software that takes the fragility of human attention into deep consideration."

In contrast to Horvitz's sweeping, soup-to-nuts attention management strategy, IBM, favors a human-centric à la carte approach. One prototype it's testing is an instant-messaging answering machine known as **IMSavvy** that allows messages to tap gently at your consciousness. Invented by Gary Hsieh, a graduate student of Scott Hudson at Carnegie Mellon who served as an intern at IBM, the program can sense when you are away or busy by your typing and mouse patterns. It **protects your focus** by telling would-be interrupters you are not available. But it also suggests ways they can get through to you. Future versions may gauge "interruptibility" by using audio sensors, too. "It's just what your mom said: Don't interrupt when someone is talking," Hudson says.

But what about the dicier judgment calls? Picture the moment when the phone has fallen silent, your in-boxes are closed, and you're lost in a creative thought. Even the smartest digital assistant is likely to conclude it's safe to interrupt, but this is dangerous territory. "If you handle the exception cases wrong, your users will stop using your tool," says IBM team leader Jennifer Lai.

She found a solution in a time-honored social convention. If you pop into a co-worker's office when he's on the phone, he may try to wave you away but will listen if you whisper some important news. **IMSavvy** offers you a "whisper" option, with text that flickers on the recipient's screen, even if he has instructed the system to withhold his messages.

"Instead of trying to predict if an interruption is good or bad, we want to give people lightweight tools to help them do the right thing," says Lai.

Maggie Jackson's book: [Distracted](#)

Why attention spans are getting shorter

Maggie Jackson, author of *Distracted: The Erosion of Attention and the Coming Dark Age*, speaks about the origins of short attention spans and the tools being developing to stretch them.

[Video: Why Attention Spans Are Getting Shorter](#)



**28%**

Percentage of day average U.S. worker loses to interruptions

**\$650 billion**

The annual toll interruptions take on U.S. productivity

Data: BaseX

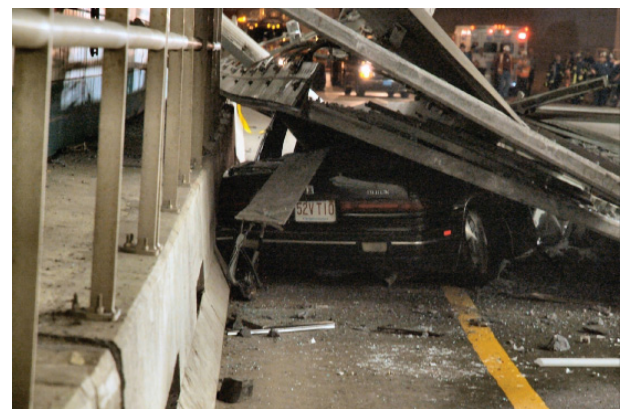
## What Engineers Should Learn from the Big Dig Tragedy

### Lessons Learned

- Make sure you understand the basics of potential polymer failure, such as susceptibility to creep under long-term tensile loads.
- Don't simply accept a supplier's certification of the capability of its materials.
- [Establish clear and ongoing lines of communication with engineers throughout the supply chain.](#)
- Conduct follow-up tests and inspections to ensure system reliability.

The dust has settled from the Big Dig tunnel collapse in Boston two years ago, but there are still [important lessons](#) for engineers to learn from the fatal tragedy, which was easily avoidable.

The message still hasn't adequately penetrated enough that when engineers are dealing with [new materials](#), they should use caution with the sources that they rely on," says Myer Ezrin, a failure analysis expert and former researcher at the University of Connecticut's [Institute of Material Science](#). material they have little or no experience and then confirm that investigation."



"Engineers working with with — particularly if it is a life and death matter as it was in the Big Dig — have to investigate the choices

In Ezrin's view, these are the engineering **errors made** in the ceiling of Boston's Interstate Connector Tunnel:

- The **wrong material was chosen** as the adhesive to hold up the concrete panels as a suspended ceiling.
- There was a **communication breakdown** between the construction engineers and the resin suppliers' engineers.
- Engineers **failed to adequately investigate** why anchor bolts using the same adhesive in another tunnel failed in 1999.
- Use of a suspended ceiling, particularly one made from concrete, **was a mistake** in the first place.

On July 10, 2006 a passenger car traveling to Boston's Logan Airport passed through the D Street portal of the Interstate 90 connector tunnel in Boston, part of a project often referred to as the "**Big Dig.**" As the car approached the end of the tunnel around 11 p.m., **26 tons of concrete panels fell**, killing a passenger. The panels were part of a suspended ceiling anchored to the concrete roof with threaded bolts in an epoxy-filled hole that had been drilled. Massachusetts Attorney General Martha Coakley charged epoxy supplier **Powers Fasteners** of Brewster, NY, with one count of involuntary manslaughter, which carries a maximum fine of \$1,000. Other contractors avoided possible criminal charges with a \$450 million settlement with state and federal officials.

The initial, and **most serious error**, was the use of a fast-setting adhesive supplied by Powers. In a **report** issued a year ago, the National Transportation Safety Board identified the probable cause as an **inappropriate epoxy formulation** and blamed engineers at Gannett Fleming Inc. and Bechtel/Parsons Brinckerhoff for failing to identify potential creep in the anchor adhesive as a **critical long-term failure mode**. The board noted that Gannett Fleming specified the use of adhesive anchors with adequate creep resistance in the contract. Selection of a **better adhesive** could have prevented the accident.

"The accident was due in part to a **lack of knowledge** and understanding of the chemistry and technology of polymers by engineers responsible for the design and construction of the collapsed ceiling," says Ezrin. "Why after more than 50 years of polymers being used in accident-critical installations is **there still a gulf** between the engineers that use polymers and those that make polymers."

The specific problem was **failure to understand** the chemistry of epoxy adhesives. The ability of epoxy adhesives to withstand heavy, sustained loads depends on the level of crosslinking in their molecular chains, according to Ezrin. "Crosslinking bridges individual chains with covalent bonds, effectively moving the polymer in the direction of infinite molecular weight," he says. "The result is reduced dimensional change under load."

## Crosslinking 101

The crosslinking in two-part thermoset systems, such as epoxy adhesives, is achieved through a second chemical called a hardener. Its chemical composition determines the amount of crosslinking and ability to resist creep under load.

According to the NTSB, Powers Fasteners **failed to provide** Big Dig engineers with sufficiently complete and accurate information about the suitability of its Fast Set epoxy for sustaining long-term tensile loads.

In Ezrin's view Big Dig engineers should have conducted an investigation of the Fast Set adhesive and not just simply accepted the supplier's recommendation.

The problem was exacerbated by installation problems. In some cases, the threaded bolts were not covered adequately with the epoxy adhesive. "Part of the difficulty is that adhesive is injected upside down vertically," says Ezrin. "Another problem of the epoxy is that it may not bond well to the concrete roof." Adding to the confusion, Powers also maintained that in some instances, installers **used the wrong grade of epoxy**.

The NTSB found the adhesive suppliers at fault and ordered Powers Fasteners, a distributor and its supplier Sika Corp., to **revise product literature and packaging** to clearly state that the fast-setting materials (Power-Fast Epoxy Injection Gel Fast Set and Sikadur Injection Gel AnchorFix-3 epoxy, respectively) are approved for short-term loads only. Powers Fasteners also supplies a Standard Set, which could have been adequate for the Big Dig application. Powers has increased the **safety factor** on its fast-setting materials by a factor of four since the Big Dig collapse.

Ezrin says the Big Dig failures were particularly maddening because there had been a **similar failure** in another tunnel in 1999. "The engineers involved **just assumed** the failure was due to faulty installation and did not explore the potential of a creep-related failure," he says.

Ezrin is also puzzled why the suspended ceiling was made from concrete. "A lightweight ceiling made, for example from foam, is a very common type," he says. After the fatal collapse in 2006, engineers decided, in fact, that a suspended ceiling was not required after all and ordered all of the ceiling modules be removed.

In its final report, the NTSB recommended federal and state highway authorities **develop standards and protocols** for the testing of adhesive anchors used in sustained tensile load overhead highway applications. The standards should consider the creep characteristics of polymers, the NTSB said. A mandatory tunnel inspection is also in order, the board said. The International Code Council was urged to require creep testing for the qualification of all anchor adhesives.

## NATIONAL SLEEP FOUNDATION VIDEOS



### Videos Featuring National Sleep Foundation's Work

- NBC's Today Show - Kids in the Parental Bed - [Watch Video](#)
- National Sleep Foundation's National Sleep Awareness Week 2008 Media Highlights - [Watch Video](#)
- National Sleep Foundation's National Sleep Awareness Week Video Highlights - [Watch Video](#)
- Congressman Joe Sestak (Pa.) talks about sleep deprivation with comedian Stephen Colbert on The Colbert Report - [Visit Comedy Central's Web site](#)
- CBS 60 Minutes, The Science of Sleep Part I - [Watch Video](#) | [Visit CBS's Web Site](#)
- CBS 60 Minutes, The Science of Sleep Part II - [Watch Video](#) | [Visit CBS's Web Site](#)
- NBC's Today Show - Why We Don't Get Enough Sleep - [Watch Video](#)



### Midnight Shift Nugget

#### Tired of being tired? Tips for fighting fatigue

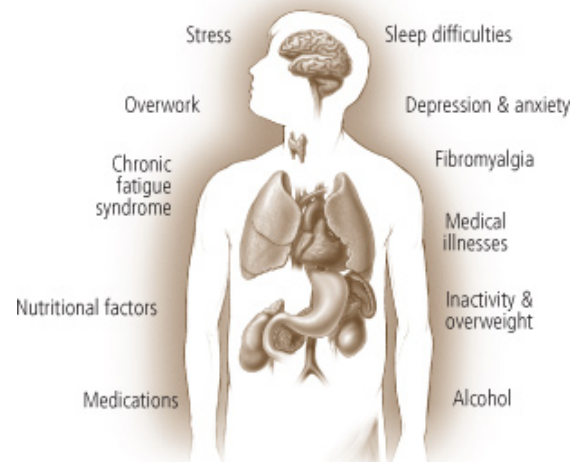
Feeling tired all the time? You're not alone. In fact, fatigue is one of the most common complaints that bring adults to doctors' offices. Numerous studies indicate that people who see their doctor about fatigue have generally experienced it for a considerable length of time — anywhere from six months to several years!



#### Causes of fatigue Causes of fatigue

Some causes of fatigue are obvious, such as lack of sleep or a medical illness, but many **others are harder to pinpoint**. Depression or anxiety, overwork, sedentary living, nutritional factors, or even a medication could contribute to fatigue or cause a feeling of low energy.

Fatigue can be due to numerous causes, such as medical conditions like congestive heart failure,



hypothyroidism, or diabetes. It can also be a result of sleep disturbances brought on by menopause, or by physical changes that accompany aging. But while fatigue may be an inescapable part of life, there's **no need to take it lying down**. Your body is geared toward generating energy as well as expending it. And there are numerous strategies to help regain the physical and mental energy needed to enjoy life to its fullest.

### [Eat for energy](#)

The tried-and-true advice for healthful eating also applies to keeping your **energy level high**:

**Eat a balanced diet** that includes a variety of carbohydrates, proteins, and fats with an emphasis on vegetables, whole grains, and healthy oils. Taking a daily multivitamin will ensure that you get the vitamins and minerals you need, but taking extra amounts of individual nutrients won't give you more energy.

**Eating certain types of foods** in particular amounts can help prevent fatigue. Because different kinds of foods are converted to energy at different rates, some — such as candy and other simple sugars — can give you a quick lift, while others — such as whole grains and healthy unsaturated fats — supply the reserves you'll need to draw on throughout the day.

**Eat small, frequent meals**. Where energy is the issue, it's better to eat small meals and snacks every few hours than three large meals a day. This approach can reduce your perception of fatigue because your brain, which has very few energy reserves of its own, needs a steady supply.

### [Reduce stress](#)

The most common cause of persistent fatigue is **stress** and the emotional response to it. People who feel fatigued most of the time don't necessarily have more stress in their lives than other people, but they may be **more sensitive** to its effects. Stress-induced emotions consume huge amounts of energy. **Relaxation therapy** can be an effective tool for reducing stress and naturally boosting your energy, particularly when used in combination with cognitive behavioral therapy. Meditation, self-hypnosis, yoga, and tai chi are all **relaxation techniques**. One of the easiest techniques to use is progressive muscle relaxation, which involves systematically tightening and releasing sets of muscles, beginning with your toes and progressing up your legs, torso, hands, and arms. You might also consider other relaxation therapies, including aromatherapy and massage. No matter what age you are, there are things that you can do to feel more energetic.

### [Escape the stress of out-of-control days](#)

Bills are piling up, the lawn needs attention, and work is overwhelming your life. There just isn't enough time to get everything done, and you're really feeling the **pressure**.



"Stress can threaten your health and well-being," says David Shern, Ph.D., president of Mental Health America, a leading nonprofit organization dedicated to mental health. "It's closely linked to **high blood pressure, heart disease and obesity**. People who feel **depressed or overly stressed** may be at greater risk of illness."

### Divide and conquer

When your **to-do list** is longer than your day, it's time to **prioritize** and set manageable goals. "Be realistic about your workload and deadlines," Dr. Shern says.

### Try these tips:

- > **Make a list**. Put the most important things on top, and re-evaluate every day.
- > **Say no** to nonessential tasks, but don't delay accomplishing your priority items. **Procrastination** adds to the feeling of being stressed.
- > **Get organized** before you begin a project — it'll save time and frustration.
- > **Separate** large tasks into smaller ones.
- > **Take the time** you need to do an important job right the first time, but keep in mind that doing the basics is good enough for some tasks.
- > **Delegate** whenever possible at work and at home.

"The **more control** you have," Shern says, "the less stressed you'll feel."

### Take care of yourself

When schedules get crazy, be sure to reserve time for things that **promote health**. Try to **eat right** and get enough **sleep**. Keep your **gym** date or enjoy a walk at lunch. Daily exercise **reduces anxiety and depression** and helps people cope with adversity, according to researchers.

"Don't lose sight of simple activities that bring pleasure or peace of mind," Shern says.

## BAD DESIGN

### *Turn down the TV*

You are sitting in front of the TV, and want to turn down the sound. You grab the remote control, scan for the button with the down-arrow and push it. The TV gets louder! You pushed the up-arrow button instead of the down-arrow button. Why?





The letter "V" for volume is on the two volume control buttons. Although the buttons are shaped like up- and down-arrows for increasing and decreasing the volume, the letter "V" looks like a down-arrow. When you are scanning the remote control for a down-arrow, you see the "V" as a down-arrow, and press it. Unfortunately, the first "V" you see is on the up-arrow!

### Design suggestion

Instead of the large "V" as a label on the volume control buttons, "Vol" in smaller letters could be used. In general, a control's features such as placement, shape, labeling, size, etc. **need to work together** to convey how to use the control. In this example, the shape and label convey conflicting information

## WILDFIRES AND AIR QUALITY

### 13 Recommendations from the American Lung Association

Wildfires are threatening many communities across Canada and the United States this week, spreading with them **dangerous air pollution**. In addition to the threats posed by the fires themselves, this air pollution poses potentially lethal health hazards to anyone working and living in the surrounding areas, endangering



especially those with respiratory problems such as asthma, emphysema and bronchitis, as well as chronic heart disease.

"People with respiratory problems and chronic heart disease **are at greatest risk** during this time," says Norman Edelman, MD, Chief Medical Officer of the American Lung Association. "Due to the extremely high levels of pollutants, many people may be experiencing increased symptoms and should contact their doctor promptly, especially those using oxygen. People using oxygen are strongly cautioned to not adjust their levels of intake without consulting their doctor first."

But according to Edelman, even if you don't have a respiratory or heart problem, you should still **take precautions**. "Even those without lung diseases are at risk during this time. With the rising air pollution levels we are seeing in the affected areas, there is increased risk of coughing and wheezing, asthma attacks, as well as heart attacks and strokes, especially for older adults and outdoor workers. Take special care to protect children. They are more susceptible to smoke, because their respiratory systems are still developing."

Here are 13 recommendations from the American Lung Association for those living and working in the surrounding areas of wildfires:

1. If you have asthma, contact your physician to see if your medication should be changed to cope with smoky conditions.
2. Stay indoors and avoid breathing heavy smoke or ash filled air.
3. Shut your doors, windows and fireplace dampers.
4. Circulate clean air through air conditioners and/or air cleaners.
5. Set your home air conditioner to the recirculation setting to avoid outdoor air contamination.
6. Do not use whole house fans, which can bring in unfiltered outside air.
7. If you must drive through smoky areas, keep the car windows and vents closed.
8. Set your car's air conditioning to "recirculate" to avoid exposure to outside air.
9. Don't rely on ordinary dust masks to filter your air. They're designed to filter out only large particles and still allow the more dangerous, smaller particles resulting from the fires to pass through.
10. Use disposable particle masks available at hardware and home supply stores. These can better help filter out harmful fine particles. Look for masks labeled "N95" or "P1000." (Those with lung disease should consult with a doctor before using this mask.)
11. Volunteer clean-up workers also need to remember to protect their lungs. Prior to clean up, wet thoroughly areas covered in dust and soot to reduce further air pollutants.
12. Workers should wear an N95 mask and replace it daily.
13. Avoid areas where asbestos and other hazardous materials are suspected.

More information on how to protect yourself during wildfires is available at the [American Lung Association](#) website.



## FACT CHECK

### • TOP 5 DRIVING MISTAKES THAT CAUSE CRASHES

- Multi-Tasking While Driving
- Following the Car in Front of You Too Closely
- Not Yielding on a Left-Hand Turn
- Incorrect Merging
- Relying on the Mirror When Backing up-As they say, objects in the mirror are closer than they appear.



## FACT CHECK

1,101 people were killed and 37,688 were injured in work zone crashes in 2006

Source: National Safety Council, 'Injury Facts,' 2008.



## Picture This!

### A Major League Anchor

Just in case you ever wondered where the phrase “high and dry” came from, here it is. The plus side was that the boat appeared to be unscathed. However, unless the fish were biting along that breakwater, it was a long afternoon.

Their wives asked why the menfolk got home so late.

“We were out after rockfish,” the husbands reported. “Did great. Got a couple huge ones.”

“That’s nice, dear,” the wives replied.

