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"Safety Comes First"

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Stress Strategies

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Learn these year-round management techniques

According to a recent ComPsych Corporation (www.compsych.com) *StressPulse 2015* report, more than half of employees are reporting high levels of stress. Are your stress levels high?

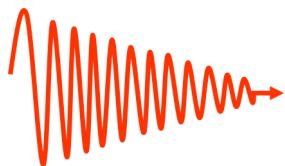
Follow these stress management tips from Benoy Tamang, CEO of eFileCabinet (www.efilecabinet.com):

- **Control what you can, accept what you can't.** "If you learn to accept the things that are beyond your control and focus on the things that you can control instead, you'll spend less time stressing over outside factors and more time getting things done," he says.
- **Remember to breathe.** "Inhale deeply to the count of five, then exhale normally through your nose for the same count. Do this for several minutes, or until you feel calm," Tamang suggests.
- **Schedule some breaks.** This gives you "time to clear your mind, catch your breath, and refocus before diving back in."
- **Focus on priorities.** "Identify your priorities and focus your efforts on the projects that will make the biggest impact," he advises.
- **Work smarter, not harder.** "Employ the proper tools and resources to help you get more done without having to push yourself beyond your limits."

Tamang's other stress-reduction tips include eat well, exercise daily, and get your sleep; minimize interruptions; and think positive thoughts.

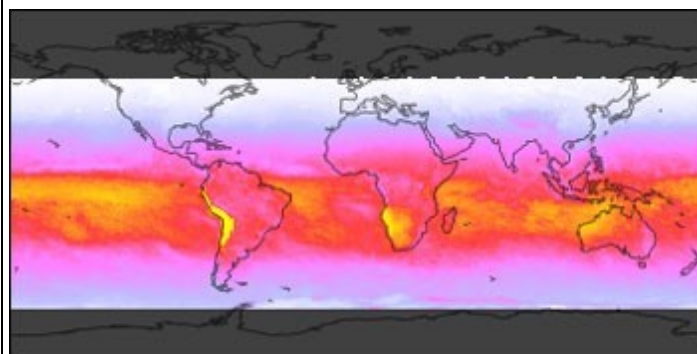
Source: Safety.BLR

Ultraviolet Radiation (Part IV)



“Satellite measurements are critical to our understanding of global change such as increases in UV radiation.”

How Much Ultraviolet (UV-B) Radiation Are We Getting? Scientists determine



TOMS UV Exposure (Joules/m²)

0 4000 8000

This map displays estimates of UV-B irradiance at the surface based on the abundance of ozone, as measured by NASA's Total Ozone Mapping Spectrometer (TOMS) instrument during the month of November, 2000. Data from satellites give us a daily, global perspective on the distribution of UV-B irradiance on the Earth's surface. (Image by Reto Stöckli, based on data from the TOMS)

UV-B exposure at the surface in two ways. The first way is by measuring it directly with instruments on the ground. These ground-based instruments can tell us the amount of UV-B radiation reaching the surface at their exact locations. Because the number of these ground-based instruments is limited by cost and by the inaccessibility of many locations around the globe, and because the amount of UV-B radiation can vary enormously from one specific location to another, we depend on data from satellites for long-term, global-scale measurements of UV-B exposure. Satellite data are greatly contributing to scientists' understanding of the effects of UV-B radiation.

The second way to determine UV-B irradiance at the surface is by making estimates based on satellite measurements of ozone, cloud cover, and the other parameters described in “What Reaches Earth's Surface” (December 2016/January 2017 issue). Such estimates must take into account changes in the amount of radiation coming from the sun to the top of the atmosphere. To understand how researchers arrive at estimates of UV-B radiation reaching the Earth's surface, one must first visualize a column of air that extends from the ground to the spacecraft above the atmosphere. Instruments on satellites orbiting the Earth (such as TOMS and OMI/Aura) measure the amounts of ozone, cloud cover, and aerosols in that column. Researchers can accurately calculate how much UV-B radiation there should be at the ground based on those measurements and on other conditions described earlier in this article (elevation, angle of sunlight, etc.). These values for each satellite field of view are incorporated into a global visualization of the data.

Satellite measurements are critical to our understanding of global change such as increases in UV radiation. Their importance derives from their superior calibration over long periods, their ability to observe remote or ocean-covered regions, and their capability of providing consistent global coverage. We also need well-maintained, strategically located ground-based instruments to continue to verify the accuracy of satellite-derived estimates of surface UV exposure over the globe.

Determining very long-term global trends still remains a problem because we have little historical data available before 1978, when NASA's TOMS was first launched.

(Continued on page 3)

Ultraviolet Radiation (Part IV), cont.

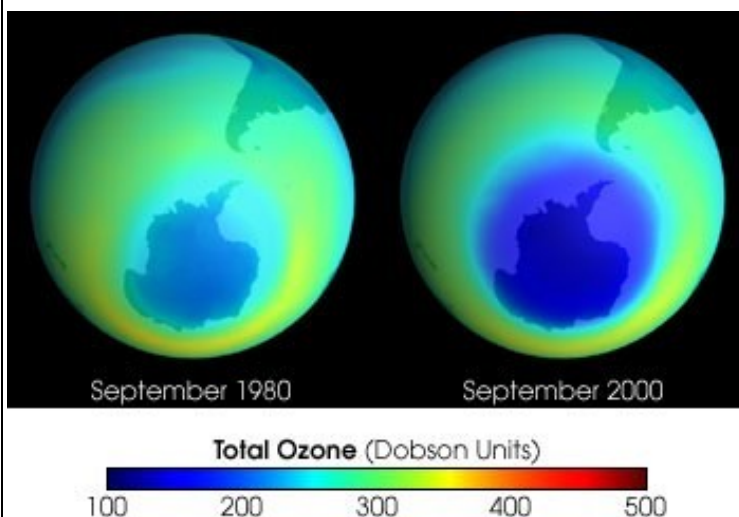
(Continued from page 2)

Our need for historical data to detect and understand change underscores the critical importance of monitoring the Earth's processes for a long period of time, an objective to which NASA has committed in its Earth Observing System (EOS) program.

In September and October over Antarctica, loss of ozone and consequent increased levels of UV-B radiation at the surface are now commonly twice as high as during other times of the year. High UV-B exposures occur in nearby regions at both poles, including some regions where people live, such as Scandinavia, most of Europe, Canada, New Zealand, Australia, South Africa, and the southern region of South America. Exposures get especially high in regions of elevated altitude, such as in the Andes Mountains, and in places that are relatively free of clouds at certain times of the year, such as South Africa and Australia during their summer (December to February). In July, very high exposures appear over the Sahara, Saudi Arabia, southwestern United States, and the Himalayan Mountain regions in northern India and southern China. The equatorial regions have their maximum exposure in the spring and autumn,

with higher values during the autumn due to decreased cloud cover.

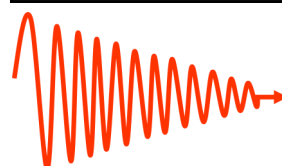
We have no reliable long-term record of actual UV-B exposure from ground-based measurements, but we do have accurate short-term estimates of decreasing ozone, which we know leads to an increase in UV-B exposure at the surface. In Scientific Assessment of Ozone Depletion: 1998, the World Meteorological Organization states that during 1998 at mid-latitudes in the north, between 35 and 60 degrees N, average ozone abundances were about 4 percent (per satellite measurements) or 5 percent (per ground-based measurements) below values measured in 1979, with most



The decrease of ozone amounts in the upper atmosphere above Antarctica and nearby regions between 1980 and 2000 has caused an increase in the amount of ultraviolet radiation striking the Earth and catalyzed extensive efforts by the scientific community to understand ozone chemistry. (Image courtesy NASA GSFC Scientific Visualization Studio, based on data from TOMS)

of the change occurring at the high end of that latitude zone. That means that recent UV-B radiation doses are correspondingly higher at those latitudes than historical levels (by amounts that depend on specific wavelengths). In the tropics and mid-latitudes, between 35 degrees S and 35 degrees N, both satellite data and ground-based data indicate that total ozone does not appear to have changed significantly since 1979.

“The equatorial regions have their maximum exposure in the spring and autumn...”



Exposure to Surgical Smoke

CDC

Exposure to Surgical Smoke Persists, Despite Available Ventilation Controls

A recent survey of healthcare workers found that certain surgical procedures often lack ventilation that removes surgical smoke at its source, according to researchers at the National Institute for Occupational Safety and Health (NIOSH). As a result, some healthcare workers may face serious health

problems from exposure to surgical smoke, as explained in an article in the *American Journal of Industrial Medicine*.



A recent survey of healthcare workers found that certain surgical procedures often lack ventilation that removes surgical smoke at its source. Photo courtesy of Vangie Dennis, The Emory Clinics: Ambulatory Surgery.

Thanks to medical advances in electrosurgery and laser surgery, we now have access to minimally or non-invasive procedures for everything from heart disease to glaucoma. For patients, these procedures provide clear benefits, including faster, less painful recoveries. However, the advances in technology can present new hazards to healthcare workers. As laser and electrosurgical tools heat body tissues, they generate surgical smoke that contains toxic gases, vapors, and cellular material. Exposure to these substances may cause short-term health problems, such as eye, nose, and throat irritation, and possible long-term illnesses, such as emphysema, asthma, and chronic bronchitis. The

Occupational Safety and Health Administration estimates that 500,000 healthcare workers are exposed to surgical smoke each year.

To control emissions, professional, consensus, and government organizations recommend that local exhaust ventilation (LEV) be used to capture the smoke at its source. This local, as opposed to general, ventilation collects smoke at the surgical site so that it never reaches the breathing zone of healthcare workers or patients. NIOSH recommends LEV, in addition to general room ventilation, to control healthcare workers' exposure to surgical smoke.

NIOSH researchers analyzed data from a targeted, anonymous, web-based

(Continued on page 5)

"...certain surgical procedures often lack ventilation that removes surgical smoke at its source..."

Exposure to Surgical Smoke, cont

(Continued from page 4)

survey to examine what precautions healthcare employers and workers take in relation to hazardous substances, including surgical smoke. The NIOSH Health and Safety Practices Survey of Healthcare Workers is the largest federally sponsored survey of healthcare workers in the United States. It addresses safety and health practices relative to the use of hazardous chemicals among more than 12,000 healthcare workers. Of the respondents, more than 4,500 reported exposure to surgical smoke during electrosurgery or laser surgery and answered specific questions about work practices that control surgical smoke. Most respondents were female, white, and between 41 and 55 years of age. In terms of occupation, over one-third were nurse anesthetists, and about one-fifth were anesthesiologists.

The results showed that only 47% of the respondents reported always using LEV during laser surgery, and even fewer, 14%, always used LEV during electrosurgery. Respondents who reported always using LEV also were more likely to report that they had received training on the hazards of surgical smoke and that their employer had procedures in place for preventing exposure. Few survey respondents reported that they wore respiratory protection; most wore surgical or laser masks, neither of which provide respiratory protection. Electrosurgery was the most common source of exposure to surgical smoke, with 4,500 respondents reporting they were present during this procedure. In contrast, 1,392 respondents reported exposure during laser surgery. These survey results can help raise awareness about the importance of local control of surgical smoke by underscoring impediments to LEV use.

More information is available:

Secondhand Smoke in the Operating Room? Precautionary Practices Lacking for Surgical Smoke

NIOSH Health and Safety Practices Survey of Healthcare Workers: Training and Awareness of Employer Safety Procedures

NIOSH Division of Surveillance, Hazard Evaluations, and Field Studies

Disclaimer: Mention of company names or products does not constitute endorsement by the National Institute for Occupational Safety and Health.

“The results showed that only 47% of the respondents reported always using LEV during laser surgery...”

CDC

OSHA: Final Walking/Working Surfaces Rule



“(OSHA) estimates this rule will prevent 29 fatalities and 5,842 lost-workday injuries every year.”

On November 17, OSHA announced the publication of its long-awaited final rule updating its general industry walking and working surfaces and establishing requirements for personal fall protection systems in general industry. Keep reading to learn the details of this major regulatory development.

The rule affects a wide range of workers, from window washers to chimney sweeps. Basically, any job task where slips, trips, or falls may result in serious injury or fatality is subject to the rule. It does not change construction or agricultural standards.

According to OSHA, the rule incorporates advances in technology, industry best practices, and national consensus standards to provide effective and cost-efficient worker protection. Specifically, the rule updates general industry standards addressing slip, trip, and fall hazards (subpart D), and adds a new section specifying requirements for personal fall protection systems (subpart I).

“The final rule will increase workplace protection from those hazards, especially fall hazards, which are a leading cause of worker deaths and injuries,” said Assistant Secretary of Labor for Occupational Safety and Health David Michaels, PhD. “OSHA believes advances in technology and greater flexibility will reduce worker deaths and injuries from falls.”

The agency estimates this rule will prevent 29 fatalities and 5,842 lost-workday injuries every year. Most provisions of the rule took effect on January 17, 2017.

WALKING/WORKING SURFACES RULE:

- Updates general industry standards to recognize technology advances and industry best practices
- New requirements for personal fall protection systems in general industry
- Greater flexibility to choose appropriate fall protection systems
- Increases consistency between construction and general industry standards

EFFECTIVE JANUARY 17, 2017



OSHA claims the rule benefits employers by providing greater flexibility in choosing a fall protection system. For example, it eliminates the existing mandate to use guardrails as a primary fall protection method and allows employers to choose from accepted fall protection systems they believe will work best in a particular situation. In addition, the new rule increases consistency between general industry and construction, potentially benefitting employers that work in both

(Continued on page 7)

Final Walking/Working Surfaces Rule , cont.

(Continued from page 6)

industries.

Other highlights of the rule include:

- The rule requires employers to protect workers from fall hazards along unprotected sides or edges that are at least 4 feet above a lower level. It also sets requirements for fall protection in specific situations, such as hoist areas, runways, areas above dangerous equipment, wall openings, repair pits, stairways, scaffolds, and slaughtering platforms. And it establishes requirements for the performance, inspection, use, and maintenance of personal fall protection systems.
- The rule codifies a 1991 OSHA memorandum that permits employers to use Rope Descent Systems (RDS), which consist of a roof anchorage, support rope, descent device, carabiners or shackles, and a chair or seatboard. These systems are widely used throughout the country to perform elevated work, such as window washing.
- The new rule includes requirements to protect workers from falling off fixed and portable ladders, as well as mobile ladder stands and platforms.
- The rule adds a requirement that employers ensure workers who use personal fall protection and work in other specified high-hazard situations are trained, and retrained as necessary, about fall and equipment hazards, including fall protection systems.

The final rule will be published in the *Federal Register* on November 18. On January 17, 2017 (60 days after its publication date), all provisions will take effect, with the following exceptions:

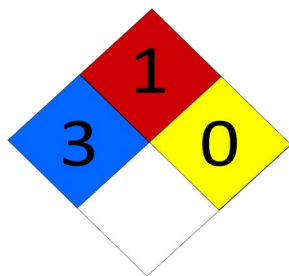
- Ensuring exposed workers are trained on fall hazards (6 months);
- Ensuring workers who use equipment covered by the final rule are trained (6 months);
- Inspecting and certifying permanent anchorages for rope descent systems (1 year);
- Installing personal fall arrest or ladder safety systems on new fixed ladders over 24 feet and on replacement ladders/ladder sections, including fixed ladders on outdoor advertising structures (2 years);
- Ensuring existing fixed ladders over 24 feet, including those on outdoor advertising structures, are equipped with a cage, well, personal fall arrest system, or ladder safety system (2 years); *and*
- Replacing cages and wells (used as fall protection) with ladder safety or personal fall arrest systems on all fix

“The new rule includes requirements to protect workers from falling off fixed and portable ladders, as well as mobile ladder stands and platforms.”



Source: Safety.BLR

Chemical Spotlight: Ammonia



“At very high levels, ammonia can even be fatal.”

Ammonia is a chemical found throughout the environment. Typically, ammonia is applied directly into soil on farm fields, and is used to make fertilizers for farm crops, lawns, and plants. Ammonia is a colorless gas with a very distinct odor. Ammonia gas can be dissolved into water to make liquid ammonia. Once exposed to open air, liquid ammonia quickly turns into a gas.

Exposure to high levels of ammonia can cause irritation and serious burns on the skin and in the mouth, throat, lungs, and eyes. At very high levels, ammonia can even be fatal. Knowing how to handle a chemical spill and what precautions to take can save lives.

So what should you do in the event of an ammonia spill?

- Wear fully encapsulating, vapor protective clothing for spills and leaks that do not involve fire.
- Do not touch or walk through spilled material.
- Stop leak if you can do it without risk.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements, or confined areas.
- Do not direct water at the spill or source of leak.
- Use water spray to reduce vapors or divert vapor cloud drift.
- Avoid allowing water runoff to contact spilled material.
- Isolate area until gas has dispersed.

Source: Safety.

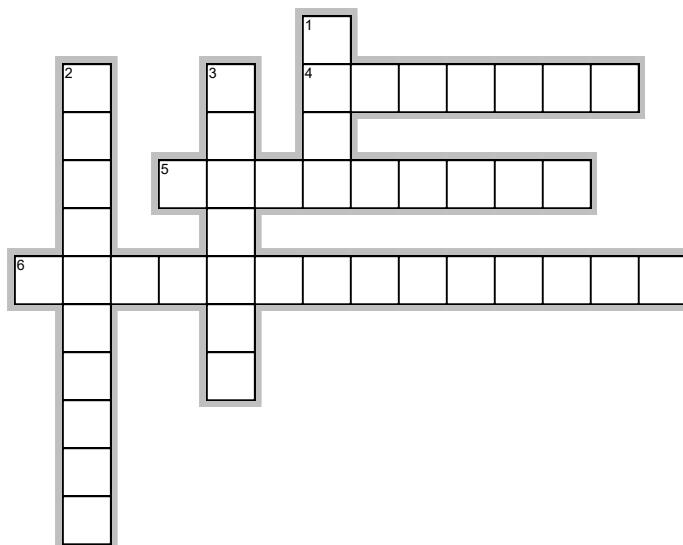


Fun Page

F U N P A G E

Across

4. This chemical is used to make fertilizers for farm crops, lawns, and plants.
5. _____ measurements are critical to our understanding of global change such as increases in UV radiation.
6. _____ was the most common source of exposure to surgical smoke.



EclipseCrossword.com

Down

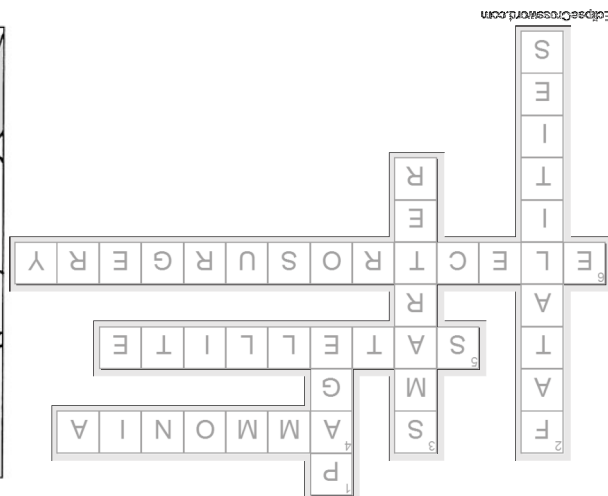
1. Last name of EHS Associate featured in this issue.
2. OSHA estimates the new walking/working surfaces rule will prevent 29 _____ per year.
3. One stress strategy is to work _____, not harder.

Funny Corner



"Hey—are you nuts?
Look at this tripping hazard here!"

Puzzle Answers



EclipseCrossword.com

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*368-5864
(hep14)*

*Contact
Heidi with
your questions
regarding
biosafety.*

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