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**Maintenance Uptime**

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# Addressing safety strategies across generations

By Charles Chandler

An interview with a Kimberly-Clark Professional

In 1970, the Occupational Safety and Health Administration (OSHA) and the National Institute for Occupational Safety and Health (NIOSH) were created. Today, almost four decades after the implementations of the *OSHA Act*, a safe place to work is a requirement and an expectation. Yet, each year there are still an incredible number of workplace injuries and deaths.

The numbers have been trending down, but are still unacceptable. What is not understood is why worker fatalities are so high and why workers continue to injure themselves?

In *Workplace Safety*, James T. Burnette writes that several behavioral theories suggest that workers “may not care about the consequences; they could misperceive the risks or the consequences; or they might intentionally sabotage the safety policies and procedures.”

Within any discussion of workplace safety, it’s important to consider the implications that generational shifts are having on the number and type of work-related injuries, as well as attitudes, work practices and performance.

## KCP SAFETY SURVEY

In 2012, Kimberly-Clark Professional (KCP) conducted a survey of safety professionals to better understand the complicated issue of workplace injuries. Of



Baby Boomers can transfer their job knowledge by becoming mentors to Gen Y and helping to train new hires.

those surveyed, “82 percent of the safety professionals said they had observed workers in their organizations failing to wear required personal protection equipment (PPE) during the past year. Even though it is mandated by OSHA, the vast majority of workers who have experienced on-the-job injuries were not wearing PPE.”

Some of the reasons respondents cited for not wearing their PPE were: “uncomfortable, too hot, blamed for decreased productivity or an inability to perform tasks, unavailable near the work task, ill-fitting and unattractive looking.”

For further insight on workplace accidents and prevention, in 2013 *Aircraft Maintenance Technology (AMT)* magazine reached out to safety expert Randy DeVaul, then senior capability development manager, Global Industrial Safety,

for KCP. DeVaul has a doctorate in occupational safety and health, a master’s degree in cross-cultural studies, is a commercial pilot ground instructor and holds Commercial/Instrument Pilot, Airframe & Powerplant (A&P) mechanic and multi-engine ratings.

*AMT*: The issue of workplace safety and some of the human factors that drive incidents is complicated. You have suggested that the ages and attitudes of two key groups of workers needs to be considered. In so doing, safety professionals, company managers and employee work groups can develop better safety solutions, resulting in higher acceptance and reduced risk or injury.

The work groups are:

**Generation Y (Gen Y)** – defined as ages 15 to 30 years – which represents 14 percent of the U.S. labor force and is a high risk for workplace injuries.

**Baby Boomers** – defined as ages 49 to 67 years. Fatal work injury rates for workers 65 years of age and older was more than three times the rate for all workers.



The Jackson Safety V60 Safeview Safety Eyewear with Rx inserts is ideal for corrective lens wearers or workers that require close-up magnification.

**AMT: WHAT ARE THE MAIN CHALLENGES THAT THE AVIATION MAINTENANCE INDUSTRY IS FACING IN TERMS OF THESE GENERATIONAL DIFFERENCES?**

**DeVaul:** Many Baby Boomer aviation workers are able to retire but don't necessarily want to retire. Those employees are working longer because they enjoy what they do or they have postponed retirement for various economic reasons.

One in five people in the workplace are over the age of 55. By 2016, one-third of the total U.S. workforce will be age 50 or older, and the number of those workers will increase to 115 million by 2020.

Another factor is that many manufacturing jobs have moved out of the U.S., limiting the opportunity for Gen Y to develop an interest in, or work in, manufacturing or other heavy industries. Therefore, we have an aging workforce that isn't wholly retiring and a skilled labor gap.

In the aviation industry, this is creating challenges related to general safety, airplane safety and worker quality of life.

**AMT: WHAT ARE THE SAFETY IMPLICATIONS OF THE BABY BOOMER GENERATION CONTINUING TO WORK PAST THE AGE OF RETIREMENT?**

**DeVaul:** As part of its *Safe-Skilled-Ready Workforce Initiative*, NIOSH conducted research related to aging, shift work and fatigue. One finding was that after a person consistently works a 10- to 12-hour shift, their response times become similar to a person who is legally drunk.

When an older worker is doing shift work while fatigued, it can be a challenge for them to perform their tasks as efficiently and safely as they could 20 years earlier – especially when working in environments with exposure to hazards, lifting, carrying and other injury triggers.

Injuries also tend to increase in severity, recovery time and cost with older talent. This creates a quality of life challenge for the injured and their family and for their employer because an experienced worker is out on lost time and the employer incurs the expenses of that recovery.

Recent estimates show that accident compensation amounted to more than \$51.1 billion in direct costs annually for U.S. employers.

**“ One finding was that after a person consistently works a 10- to 12-hour shift, their response times become similar to a person who is legally drunk.”**



Randy DeVaul, former senior capability development manager, Global Industrial Safety for Kimberly-Clark Professional

**AMT: WHAT ARE SOME OF THE DIFFERENCES IN ATTITUDES AND BEHAVIORS BETWEEN THE TWO GENERATIONS REGARDING WORKPLACE SAFETY?**

**DeVaul:** In general, Gen Y is understood to be an entitlement generation that has grown up with everything being done for them or has the expectation that it will be. Part of that thinking carries over into the workplace. Employers are faced with a younger generation that is unskilled in certain tasks due to a lack of experience.

These workers have the expectation that someone is watching out for them and may not understand the limitations of their PPE. Therefore, they may not take responsibility for their safety.

Conversely, if Baby Boomers are injured, they feel that it is simply part of their job.

To them, it has always been this way. Because of this thinking, they may not be as careful as they could be when working.

Gen Y is willing to wear PPE but expects someone to watch out for them, while Baby Boomers tend to not want to wear PPE and may even take shortcuts developed over time to make work easier.

**AMT: WHAT ARE SOME RECOMMENDATIONS FOR ADDRESSING THESE DIFFERENCES IN WORK PRACTICES, ATTITUDES AND WORKPLACE SAFETY SOLUTIONS?**

**DeVaul:** Baby Boomers should be given more responsibility for transferring job knowledge so they are more directly engaged with Gen Y. Baby Boomers can be mentors, new-hire trainers and help de-

velop job-specific training videos.

Aviation schools also should be more directly involved in creating safety training programs for entry-level aircraft maintenance technicians.

One way KCP is working to address some of these challenges is by talking with and learning from front-line aviation workers to develop innovative PPE. An example of these professional-derived safety solutions is the Jackson Safety V60 Safeview Safety Eyewear.

Given that older workers often experience decreased visual acuity, which includes having a harder time reading small print or discerning colors and signage that identifies hazards, this new safety eyewear features close-fit prescription Rx lens inserts that can be easily clipped behind an eye shield.

Ideal for corrective lens wearers or workers that require close-up magnification, the glasses help to reduce eye fatigue or strain so workers do not compromise on safety, performance or comfort.

In combination with these efforts, KCP is also developing training and mentoring programs that will help bridge the gap between the Baby Boomers and Gen Y aviation professionals.

Each year employers, workers and society pay the tremendous costs for workers' insurance, medical expenses and lost wages and productivity associated with workplace illnesses, injuries, and deaths. We, the workers, must accept the responsibility for following safety precautions and wear the required PPE necessary to keep us safe.

It will always be us – the workers and not the agencies or corporations – that will endure the pain and suffering, psychological and family stress, lifestyle adjustments and career-shortening implications associated with these workplace injuries.



**Charles Chandler** is a field editor for AMT. He began his aviation career as a junior mechanic for American Airlines and retired after 27 years of service. After leaving American he

held both line and staff positions in six other major companies. His positions with those companies included curriculum development specialist, manager and director for organizational development, management and leadership development, and maintenance training operations departments.



# Is your shop prepared for an OSHA inspection?

To avoid unnecessarily triggering an OSHA inspection, have regular communication with employees about working conditions and safety, have effective safety training programs in place and be sure safety rules are well communicated and consistently enforced.

Photo courtesy of Meritor

By David A. Kolman

A guide to getting passing grades and maybe avoiding an inspection altogether

The main federal agency charged with the enforcement of safety and health legislation is the Occupational Safety and Health Administration (OSHA). It is authorized to conduct workplace inspections to determine if companies are complying with its standards for safe and healthy workplaces.

OSHA inspections can happen at any time at any workplace covered by the Occupational Safety and Health Act of 1970.

Because of the enormous number of

such workplaces, OSHA has established a system of priorities for its inspections. These are, in order of importance:

- **Imminent danger** – Any condition or situation that can be expected to cause

death or serious physical harm.

- **Catastrophes and fatalities** – Situations that result in fatalities or three or more employees being hospitalized.
- **Employee complaints** – Formal

“The more you know about the safety and health requirements about your company’s operation and the ways to improve them, the better you can manage your organization in general.”



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employee complaints of alleged safety and health violations, or unsafe or unhealthy working conditions.

- **Programmed high-hazard inspection** – Planned inspections at high-hazard industries and occupations.
- **Follow-up inspections** – Done to ensure that previously cited violations have been corrected.

### DO EMPLOYEES KNOW?

If your organization has never been through an OSHA inspection, or it has been years since your last one, it is common to be somewhat lax with OSHA compliance, according to officials with Business & Legal Reports (BLR), a provider of compliance and training solutions in the areas of human resource, compensation, safety and environmental areas. Training new employees on the rules, and refresher training for current employees, often takes a back seat to other matters.

They say never assume that employees:

- Are aware of the OSHA standards.
- Follow the rules.
- Would never report a potential violation or hazardous situation to OSHA.

To avoid unnecessarily triggering an inspection, and to be prepared should an inspection occur, BLR officials recommend developing an effective compliance plan that incorporates five key elements:

1. Knowledge and implementation of all relevant OSHA regulations.
2. Regular communication with employees and employee representatives about working conditions and worker safety.
3. Robust and effective safety and health training programs.
4. Well communicated and consistently enforced safety rules.
5. A clear understanding of what an OSHA inspection entails.

### DO YOU KNOW?

If you know what unsafe conditions and hazards are in your workplace, you can take measures to remedy them, say officials at J.J. Keller & Associates, the nation's leader in risk and regulatory management solutions. That will help you be in compliance with OSHA standards.

Moreover, the more you know about the safety and health requirements about your company's operation and the ways to improve them, the better you can manage



**Because an inspection typically comes without advance notice, it is best practice to regularly tour the workplace to identify safety potential problems and non-compliance with OSHA regulations.**

Photo courtesy of TransAm Trucking



**Safety signs play a critical role in safety because they guide human behavior and reinforce training.**

Photo from iStock

your organization in general.

Officials at both J.J. Keller and BLR stress the importance of having a designated person responsible for staying current on both applicable OSHA regulations and the rules governing inspections. They say it is a good idea for companies to design and conduct their own safety and health self-audits in order to stay in OSHA compliance and prepare for an OSHA inspection.

Safety audits also encourage and maintain employee interest in safety.

The officials further recommend regularly walking through your workplace to identify recognizable hazards and problem areas.

It is also important to make sure safety and health rules are enforced. Having posted signs that are routinely ignored, outdated or unneeded, along with having rules

that are given lip service or only casually enforced, can undermine safety efforts.

Safety training should be reinforced on a regular basis, as should identifying needs for additional training, say BLR officials. Always involve workers in making the workplace safe.

Heightening safety awareness pays dividends in compliance, as well as in the quality of a company's workplace.

### THE UNEXPECTED

No matter how safe your workplace may be, it is best practice to be prepared for an OSHA inspection. Any delay and confusion when an inspector arrives can be used as evidence of culpability, and misunderstanding about what the inspector can and cannot do can subject you to liability, according to officials at Hogan Lovells, a global legal practice.

An inspection typically comes without advance notice, they point out. Being prepared to cooperate with the inspector will make the inspection go as quickly and smoothly as possible.

The officials advise making someone, preferably a safety professional, responsible for OSHA inspections. This person should:

- Be familiar with OSHA regulations governing vehicle maintenance and repair shops and with the rules governing inspections.
- Regularly tour the workplace to identify potential problems and identify supervisors who will be able to answer

the inspector's questions.

- Discuss with supervisors the importance of regularly enforcing all health and safety rules.
- Know where the health and safety records required by OSHA are and ensure that they are kept up-to-date.
- Identify any areas of confidential and proprietary information.
- Identify the employee representative – someone selected by the employees, not the employer – who will also accompany the inspector and compile a list of other persons, including senior management and the company's counsel, who should be called as soon as an inspector arrives.

**INSPECTION PROCEDURE**

An OSHA inspection begins with an opening conference wherein the inspector will explain:

- The purpose and scope of the visit and what triggered it.
- The standards that apply.
- What documents he wishes to review.

Following this comes the inspection tour where the inspector, accompanied by the company tour guide and any other employer representatives, walks around the workplace to examine actual working conditions and evaluate compliance with OSHA standards.

The route and duration of the inspection are determined by the inspector, J.J. Keller officials note. An inspection tour may cover part or all of an establishment, even if the inspection resulted from a specific complaint, fatality or catastrophe.

When the inspection is complete, the inspector will conduct a closing conference. That is the time for a discussion of problems and needs, the officials explain. The inspector will describe any unsafe or unhealthful conditions observed and indicate all apparent violations found and how and when they should be corrected. He will also note those for which a citation may be issued or recommended.

The inspector will not indicate any specific proposed penalties. Only the OSHA area director has that authority.

The citation with penalties and abatement dates are sent by certified mail from the OSHA area office. Penalties are assessed based on the degree of severity of a potential injury and the probability

the injury will occur.

If a citation is received, it must be promptly posted at or near the place in which the violation occurred. The citation must remain there for three days or until the violation is abated, whichever is longer.

Citations are classified as “willful,” “repeated,” “serious” or “other-than-serious,” explain BLR officials. Each citation is broken down to alleged violations of particular standards. The basic OSHA standard will be quoted, the location and other particulars of the alleged violation will be described.

Abatement dates will be listed for each standard item and the proposed penalty (if any) also will be listed.

Citations can be contested by submitting a written *Notice of Contest* within 15 working days after receipt of the citation and *Notice of Penalty*. Modification of abatement dates also can be petitioned. After a *Notice of Contest* is filled, the case is officially in litigation.

**OTHER ENDINGS**

There are other consequences beside citations and penalties for those companies found to be out of compliance during an OSHA inspection.

For one thing, OSHA violations are publicly available and can create a poor company image.

For employees, non-compliance shows that their workplace is not necessarily safe and that management is not actively involved with safety. This may create distrust and anxiety amongst the workforce and may spark additional complaints.

In summary, one good way to avoid OSHA inspections and possible citations is to not get inspected in the first place. That means practicing workplace safety each and every day.

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**David A. Kolman** is the editor of *Fleet Maintenance Magazine* ([www.VehicleServicePros.com](http://www.VehicleServicePros.com)). It delivers the best practices that maintenance managers need to keep their vehicles operating with minimal downtime.

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This photo taken at a recent AMTSociety education event clearly shows the demographics of today's workforce. How many youngsters do you see in the crowd?

# The perfect storm of aviation workforce issues

By Dr. Tara Harl

Large retirements, changing demographics and rising demands for aircraft technicians create the perfect storm

Every 10 to 14 years, leadership development issues have loomed over the aviation/aerospace industry. Yet, the beginning of the 21st century has brought a greater awareness that large retirements of prior generations is unfolding, U.S. demographics are changing and the rising demands of the world aviation employee numbers will impact the economy, politics and technology.

Fundamentally, this means, there will not be enough well-qualified, trained and certified personnel to meet the needs of current and retiring personnel replacements.

The Department of Employment and Economic Development projects that the aviation industry will have more than 1

million job openings in the next 10 years.

Likewise, government and industry forecasts paint a picture of an industry facing critical shortages in the next two decades as each week 10,000 baby boomers – the most educated generation our country has ever produced - become eligible to retire.

- There are currently 140,000 Airframe & Powerplant technicians, of which 60 percent work in the U.S. aviation industry.
- Of those in the United States: 35 percent are 50 to 65, 45 percent are 40 to 50 and 15 percent 30 to 40.
- 5 percent age 18 to 30, and 20 percent of the above are in business aviation

- Only 12 percent in business aviation have a business degree
- By 2030, the aviation industry will require 650,000 new commercial airline maintenance technicians; the airlines are facing a critical shortage similar to the 1960s (*Wall Street Journal*, November 2012).
- The largest demand for technicians will be in the Asia-Pacific region, with an expected need for 247,400 technicians. China alone will need 108,300 technicians (Boeing Pilot & Technician, Study 2011).
- The Unmanned Aircraft Systems (UAS) industry is poised to create more than 70,000 new American jobs

in the first three years following the integration of UAS into the U.S. national airspace system by 2015; more than 100,000 new jobs are projected to be created by 2025 (AUVSI) March 2010.

- The vast majority of industry knowledge, globally, is centered on legacy all-metal aircraft; the declining global talent pool's skills are becoming obsolescent as the industry transitions to composite technology (Aerotek, 2012).
- 2011 was the first year the Baby Boomers began to retire; with roughly a quarter of the nation's 637,000 aerospace workers being eligible.
- There is little specific data regarding the number and types of jobs that exist in the aviation industry, outside of flight crew and air traffic management positions. Workforce development in the aviation industry is focused on individual training and less on the organizational and systematic components of a comprehensive workforce development program. (ACRP Synthesis #18, October 2009).
- Minorities have been underrepresented across all three areas of aviation in the United States: airline/air transport, military and general/business aviation. Business and corporate aviation (corporate flight departments/service providers) in particular have experienced low entrance and retention numbers for minority professionals (Harl, 2011).

Looking with a wider lens beyond aviation at the U.S. demographics/education statistics, we discover a startling image of what our industry is facing:

- The male labor force is projected to grow by 6.3 percent from 2010 to 2020, compared with 7.4 percent for the female labor force (U.S. Department of Labor's Bureau of Labor Statistics, 2011).
- By the year 2043, the white population will be the minority in the United States, a historic shift already reshaping U.S. schools and its workforce, and will redefine the pool of employees for the future (U.S. Census Data released Dec. 12, 2012).
- Fewer middle school girls vs. boys see themselves in STEM careers; only 10 percent of all girls would choose a job in STEM vs. 32 percent of boys. More than twice as many boys vs. all girls (23

**“ Likewise, government and industry forecasts paint a picture of an industry facing critical shortages in the next two decades.”**

percent vs. 11 percent) say their parents would like them to have a job in STEM. 27 percent of all girls and 35 percent of boys agree with the statement “boys have more career options than girls” (Simmons College, Fall 2012).

- As the nation's demographics change, large portions of the younger generation are among those who are least well-served by the current U.S. system of education; those whose educational opportunity and attainment reflect the disadvantages of race, income and geography (National Center for Public Policy & Higher Education, 2008).
- For an industry that has historically depended on the white male for its employee pool, in a nation with rapidly changing demographics, harboring societies and school systems that are failing minority youth and not encouraging girls to aspire toward STEM career fields, aviation is facing some tough recruiting issues for the future.

**HOW TO FACE CRITICAL WORKER SHORTAGES**

Aviation Workforce Development (AWD) believes our industry needs a radical shift in leadership vision and implementation of recruitment matrixes to replace our 20th century mindset.

For example: Whenever aviation has been faced with worker shortages, or someone notes there aren't enough women or minorities on the flight deck, it rolls out an airshow, sends speakers into classrooms and supports aviation “camps” to “recruit.” Yet, after more than two decades of programs - such as Experimental Aircraft Association's (EAA) Young Eagles, Women in Aviation International's (WAI) outreach to young women, Organization of Black Aerospace Professionals' (OBAP) Aviation Career Education (ACE) Camps, 70,000 CAP Cadets nationwide and oth-

ers – the question begs: Why haven't the numbers changed for students entering aviation/aerospace career tracks?

The U.S. aviation and aerospace industries simply must act now to head off finding their leadership positions on the world stage diminished. As older workers move toward retirement, new workers search to develop their careers, and incumbent populations hope to regain employment, the aviation industry will compete with other high-tech industries for employees with the skills necessary to run today's glass flight decks, NextGen Air Traffic Control facilities and maintenance/avionics repair stations.

At a time when the cost of a four-year collegiate aviation degree, with flight or maintenance licensure, can reach nearly \$100,000, the return on investment for acquiring such a degree often hinders high school graduates from considering an aviation degree track.

The aviation industry is in desperate need of leadership that will step beyond our silos, conference topics, hangar stories and ingrained habit of “admiring the problem” to then only address it with “passion projects.” We need 21st century initiatives built upon solid data.

AWD has been building just such a data bank for nearly five years and advocating radical leadership vision shifts to anyone who will listen. It will take a brave step back to look at ourselves in the mirror and realize just how much of our marketing, recruiting, training and retention of our aviation workforce, is rooted in practices that, truthfully, haven't changed much since the first century of aviation.

This problem cannot be fixed overnight.

We have somehow forgotten just how gutsy our aviation ancestors were, and how little you heard them say, “Yes, but in six months, what's the ROI for this?”



**Dr. Tara Harl** is president of Aviation Workforce Development (AWD). As a Tri-Sector Leader with nearly three decades of experience in the business aviation arena, her passion for professional development and diversification of the workforce brought her to found AWD as “The Aviation Industry Support Organization” for career entry, advancement, leadership development, and issue resolution.



# How to help your technicians maintain healthy hands on the job

In their work, vehicle technicians come in contact with a variety of skin irritants on a daily basis. Exposure to these elements can result in a variety of occupational skin diseases, including contact dermatitis and system toxicity.

Photo from iStock

By David A. Kolman  
Advice on  
preventing  
occupational  
skin disease

**T**echnicians who have hard-working hands are routinely exposed to harsh chemicals and mechanical irritants, as well as extreme environmental conditions that come with the job. Exposure to these elements that can result in occupational skin disease when irritants that absorb through the skin.

These agents can cause a variety of occupational skin diseases, including contact dermatitis and system toxicity, says James W. Arbogast, Ph.D., vice president of health and hygiene alliances at Gojo Industries, a leading global producer and marketer of skin health and hygiene solutions for away-from-home settings.

“Contact dermatitis is skin inflammation that results from exposure to irritants or allergens,” he explains. “The condition can vary from slight reddening and itching to irritating rashes and weeping, discharging sores.”

The disease costs employers billions of dollars each year in medical care and productivity losses.

The National Occupational Research Agenda – a partnership program to stimulate innovative research and improved workplace practices – reported that once workers acquire contact dermatitis, it is estimated that 75 percent of the cases become chronic, requiring ongoing medical care and affecting workers’ well-being, notes Arbogast.

Therefore, he says, it is important for vehicle technicians “to take proper care of their skin by reducing exposure to common irritants, using products designed to clean and condition tough-soiled hands and following a healthy skin washing and

**“When dealing with tough soils day in and day out, technicians need to use hand cleaners and conditioners made for the grease and grit they encounter on the job.”**



James W. Arbogast, Ph.D., vice president of health and hygiene alliances at Gojo Industries

skin care regimen. With these key steps in place, technicians will have healthier more comfortable hands, which leads to a better quality of life and improved on-the-job productivity.”

**TYPICAL HAZARDS**

The first line of defense is to become more aware of the hazards that technicians encounter, says Arbogast. There are four main skin irritants found in harsh work environments like vehicle repair shops:

1. **Chemical irritants** – This includes metalworking fluids, lubricants, oils, greases, solvents, paints, fiberglass, acids and even poorly-formulated hand cleansers that include surfactants – compounds that lower the surface tension of a liquid.
2. **Mechanical abrasion** – Machining, milling, sanding and grinding generate metal chips that are particularly rough on the fingertips and tend to abrade the skin, causing irritation.
3. **Physical agents** – Repeated exposure to heat, cold, water and friction can really take a toll on the skin.
4. **Biological and microbiological agents** – This is the transmission by hand of germs that may cause illness.

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## HAND-CLEANING PRODUCTS

“When dealing with tough soils day in and day out, technicians need to use hand cleaners and conditioners made for the grease and grit they encounter on the job,” Arbogast of Gojo says. “Quality hand-cleaning products are the technician’s main protection against skin dehydration and potential infection.”

He recommends that technicians choose a hand cleaner that is formulated to easily remove heavy dirt, grease and oil and is pH balanced to promote skin health. The pH level refers to how acidic or alkaline a solution is.

“Leading products for automotive environments include cream and gel formulas with pumice scrubbers. These work to balance cleaning performance with skin conditioning for hands to feel clean and refreshed after washing with minimal wash time and mechanical friction required.”

It’s also best to choose a hand cleaner that is free of Volatile Organic Compounds and Nonylphenol Ethoxylates, he adds, since “these ingredients can be a regulatory and sustainability concern, as well as contribute to stripping the skin of its natural moisture and cause irritation.

“If proper hand-cleaning products aren’t readily available, workers tend to develop unhealthy habits. One of which is washing with typical bathroom lotion soaps that can’t fully remove contaminants without extended wash times or use of mechanical aids like brushes. The use of these everyday soaps can contribute to dry, irritated skin that develops usually from over-scrubbing.”

Another extremely bad habit is the use of gas, kerosene, turpentine, acetone or benzene to clean hands, notes Arbogast. “These chemicals should be strictly avoided since they strip the skin of the lipids (fatty acids) and natural moisturizers and can cause chronic skin damage that affects how the skin is formed.

“Dry, damaged skin that has been stripped of its natural oils and moisture becomes susceptible to contact dermatitis and contaminants entering the blood stream. Damaged skin is also more likely to react to irritants than skin that is kept in good condition.”

## HAND CARE BASICS

Proper washing and moisturizing of the skin helps maintain good skin condition.



**By using products designed to clean and condition tough-soiled hands, and following a healthy skin washing and skin care regimen, technicians will have healthier, more comfortable hands, which leads to a better quality of life and improved on-the-job productivity.**

Photo courtesy of Gojo Industries

## 6 hand-cleaning “don’ts”

It is easy to cut corners when it comes to keeping hands clean in tough work environments, observes James W. Arbogast, Ph.D., vice president of health and hygiene alliances at Gojo Industries, a leading global producer and marketer of skin health and hygiene solutions for away-from-home settings.

He offers this list of “nevers” to remind technicians of what not to do.

1. Never use harsh detergents, solvents or chemicals to clean hands. Stick to a cleanser formulated for tough soils.
2. Never wipe hands on a dirty shop towel. Shop towels can contain metal shavings or other debris that can cut and damage hands.
3. Never use abrasives or brushes that aren’t designed for the skin.
4. Never put dirty contaminated hands in gloves. The gloves will trap the contaminants against the skin, causing irritation and even permeation.
5. Never eat or drink with hands that are covered in chemicals or dirt to avoid ingesting dangerous substances.
6. Never handle harsh chemicals with unprotected hands.

That, in turn, helps prevent contact dermatitis and other painful conditions.

To encourage healthy habits, workers should have convenient access to hand cleaners formulated for tough soils, says Arbogast of Gojo. Employers should provide the gentlest hand cleaner that is effective on removing heavy duty grease and grime quickly, easily and completely.

“Don’t overlook the need to keep hand cleaner dispensers in good working condition and full of hand cleaner with re-

fills readily available to make it easy for employees to follow proper hand-washing protocols,” he advises. “There are dispensers on the market that use sealed refills to prevent the contamination of the cleanser and also offer portion-control dispensing so excess product isn’t wasted by getting washed down the sink.

“Technicians should also get in the habit of washing their hands at regular intervals. Cleaning hands regularly during the day, with extra attention paid to lunch

breaks and when leaving at the end of the day, will improve skin health and help cut down on workplace absences.”

**LOTIONS AND MOISTURIZERS**

Another important step is adding a formulated lotion to the hand-care routine, says Gojo’s Arbogast. Choose a hand lotion or conditioner that is specially formulated to help technicians recover from the abuse their hands take each day and still fit within their normal work flow – i.e., quickly absorbing, not too greasy.

“It is best to apply a moisturizer at least three times a day when there is time for it to fully absorb. Applying the product before work, during lunch or an extended break and before bed will go a long way in helping the skin maintain a healthy barrier to workplace toxins and infections.”

He points out that moisturizers are not an effective barrier to contaminants like solvents, oil and grease. It’s still a good idea to wear gloves when coming into contact with these substances.



Proper washing and moisturizing of the skin helps maintain good skin condition and that, in turn, helps prevent contact dermatitis and other painful conditions.

Photo courtesy of Gojo Industries

**WORKPLACE CULTURE**

To reinforce healthy hand-washing habits, employers also can take advantage of informational materials provided by leading manufacturers that serve as a reminder to employees on how to maintain healthy hands. Some manufacturers provide informative videos, posters and other materials for the workplace that serve to reinforce good hand-washing habits with workers.

Daily exposure to these informational materials can help develop a healthier

workplace culture, says Gojo’s Arbogast.

In the end, he says keeping hands in top working condition comes down to a few key steps:

- Be aware of what causes skin damage and take precaution to minimize exposure.
- Use proper hand-cleansing products.
- Practice healthy skin care methods.

“With these practices in place, vehicle technicians can maintain healthy hands and enjoy more confidence on and off the job,” he says.

David A. Kolman is the editor of Fleet Maintenance Magazine (www.vehicleservicepros.com). It delivers the best practices that maintenance managers need to keep their vehicles operating with minimal downtime.



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# The basics of shop safety

By Kenneth DeVolpi and Jason Chapman

Key areas of focus for a safer work environment

It should be our ultimate goal each and every day to not only get the job done, but to do our best to ensure that our guys go home safely to their families at the end of the day.

It's time to discuss a topic frequently overlooked – safety. Oftentimes, shop safety takes a back seat to the job at hand due to time constraints, work load, etc. Then an accident or injury occurs. Now it's too late to look back and say “what if?”

We have some simple areas to focus on to help make your work environment a safer place.

## PERSONAL PROTECTIVE EQUIPMENT (PPE)

This includes welding equipment PPE, such as a welding helmet and welding gloves for any type of welding (arc, mig or tig). For cutting torch or grinding work, tinted glasses, face shield and leather gloves are a must as well.

Make sure not to wear a cotton or similar fabric glove when using a wire wheel, as the wheel can easily snag the glove and pull your fingers right in. Rubber gloves and a face shield should be used whenever working with harmful or caustic chemicals.

Sturdy leather boots (preferably steel toed) should be standard required footwear in any shop.

## HOUSEKEEPING

A messy shop not only looks bad and is a pain to work in, but is also dangerous. Most injuries are preventable and many can be attributed to poor housekeeping.

“Some people can cope with it better and are more apt to leave ‘work at work’ and ‘home at home.’ Some people, however, cannot.”



## SLIPS, TRIPS AND FALL HAZARDS

Slips, trips and falls are the major source of workplace injuries every year. The sad thing is, they are virtually all preventable.

For example:

- Fluid spills should be cleaned up as soon as possible.
- Air hoses should be rolled up when not in use.
- Extension cords should only be used temporarily and then stored in the proper place.
- All tools and miscellaneous parts should be kept off of the shop floor.
- During icy conditions, all walkways should be covered with an ice-melt material and people should walk with short, deliberate steps. Anti-skid tape or coatings also can be used on smooth steps or surfaces.

## LOCKOUT/TAGOUT

Whenever a machine or piece of equipment is broken or in for scheduled service, an out of service tag should be affixed and the unit should be disabled – mechanically or electrically.

If a repair or service lasts until the next shift begins, then it should be communicated to the guys starting work. This includes removing any lockouts in place and allowing the following shift to install their own.

## PRE-SHIFT SAFETY BRIEFING

This can be a quick, 10-minute meeting prior to the start of every shift to outline the planned work activities of the day. The meeting should include any procedures, tools and logistics needed to complete any tasks.

This way, everyone is on the same page and knows what is expected of them, as well as when and in what order things will happen.

This also serves as a good time to assign tasks for the day as well.

**ELIMINATION OF UNSAFE ACTS**

Sometimes, people think that the rules may not apply to them or that it is okay to bypass a safety rule to make a job easier or to save time. This is dangerous thinking.

How many times has a supervisor heard this:

- “I was only grinding for a few moments.”
- “I didn’t think that the safety glasses were really necessary.”
- “I meant to clean up that oil puddle as soon as I finished, but I got side-tracked.”

People who take unnecessary risks are not only a danger to themselves, but to others as well. It’s bad enough to make a careless mistake that injures yourself, but do you really want the injury of a fellow co-worker on your conscience? We hope not.

**ATTITUDE AND AWARENESS**

Have you ever been at work with a co-worker who is under a lot of stress

due to personal or financial problems? Has that person ever been you?

Problems with home life or finances can surely place a heavy burden on someone’s piece of mind. Some people can cope with it better and are more apt to leave “work at work” and “home at home.” Some people, however, cannot.

As aviation ground support equipment maintenance supervisors, it is our responsibility to safeguard our people as well as our equipment. If you see an employee struggling mentally due to outside stressors, take the time to speak with them about the issue. If they are unable to discuss the matter or are in a really poor state of mind, then maybe removing them from the workplace should be the answer.

It’s better to lose some production and a little pay for a day than to damage equipment, have an injury or worse. If an employee has other things on his mind, he may not have the proper amount of

awareness in both the shop and on the ramp, which can prove disastrous.

Complacency in the workplace is a killer that we can all do without.

The environment in which we work can be an interesting, exciting and yet dangerous place. It should be our ultimate goal each and every day to not only get the job done, but to do our best to ensure that our guys go home safely to their families at the end of the day.

**Kenneth DeVolpi**, is the manager of ground support equipment (GSE) and operations for Matheson Flight Extenders, a company that specializes in terminal handling and ground support services for the United States Postal Service (USPS) and other commercial carriers. He has worked for Matheson for more than four years and has been in the aviation industry for more than 25 years, including 15 years with Northwest Airlines.

**Jason Chapman** works in Matheson’s company’s GSE maintenance department. He gained GSE mechanical experience with the U.S. Air Force and has worked in the commercial GSE industry for 12 years.



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Keeping vehicles clean – especially in winter – is important in preventing corrosion for NFTA's fleet.  
Photo courtesy of NFTA

# Battling the elements

By Daniel Mike

Fleets often need to take on the harshest of weather elements

**D**ave Rugg and his maintenance team are very busy throughout the year. The same can be said for Dave Nyink and his crew.

While both are doing much of the same work on their respective fleets, there is a vast difference in some of their work throughout the year.

Rugg is the manager of bus maintenance and equipment for Niagara Frontier Transportation Authority (NFTA) in Buffalo, N.Y. As such, he and his staff spend many of the winter months dealing with all the effects of what can often be a brutal winter.

For Nyink, fleet and facility program supervisor for Valley Metro in Phoenix his year is spent dealing with extreme heat and dry conditions and keeping the air conditioning units working is a priority.

## EXTREMES

Temperatures in Phoenix can reach into the 100s on a regular basis. That led Valley Metro to equip its fleet with retrofitted Electrical Manufactured Products (EMP) electric engine cooling systems that have kept engines cool and have proved profitable as well.

“These electrical fans keep the engines within four degrees of the optimum engine operating temperature,” Valley Metro’s Nyink says. “We have also experienced an average of 9 percent fuel savings using the EMP system over the standard hydraulic-driven engine cooling fans.”

Summer months prove more costly in Phoenix. With radiant heat from streets reaching approximately 155 degrees F at times, Valley Metro finds the tires and brakes on its buses wear faster and need earlier repairs.

Buffalo offers an entirely different dynamic when it comes to weather. NFTA’s



Valley Metro maintains a fleet of nearly 900 buses.

Photo courtesy of Valley Metro

Rugg and his staff have found that keeping up with maintenance throughout the year makes winters more bearable. Technicians at NFTA aren’t doing as much last-minute work as the winter months approach due to their work throughout the year to maintain all systems in the bus.

“You used to be always waiting until the last minute to get them ready,” says Rugg. “It’s all about preventative maintenance opposed to ‘crash and rescue.’ It’s easier when maintaining it year-round because you don’t have that rush.”

Rugg can remember one year in which that last-minute rush was pushed up.

“On Oct. 13, 2006, when Buffalo got 32” of snow - that was early, even for Buffalo - and we only had 13 people in the shop. That was rather difficult,” he recalls. “You don’t want to be running around on that day making sure 313 buses are ready to go.”

## TEMPERATURES UNDER CONTROL

NFTA uses a winter blend in its diesel fuel in the winter months, something vital when the average low is 19 degrees F in January and February. It blankets its passive regenerative filters for the diesel exhaust systems on buses.

“We want to make sure the temperature stays hot enough to go through the passive regeneration system,” Rugg of NFTA says. “We’ve also got to make sure we’re keeping up with our auxiliary heaters, air systems.”

Heating and cooling systems for buses are maintained throughout the year in all temperatures. Several locations throughout the country require heating and cooling systems, while areas like Phoenix need to do extra work to A/C units.

Valley Metro retrofitted an additional air conditioner condenser with fans on top

“It’s all about preventative maintenance opposed to ‘crash and rescue.’ It’s easier when maintaining it year-round because you don’t have that rush.”

Dave Rugg, manager of bus maintenance and equipment, Niagara Frontier Transportation Authority

of all buses. It uses 407C Freon because of its capacity for cooling, but summer can cause issues.

“In the extreme heat of the summer it expands, causing extreme internal pressures and causing the A/C system to shut down,” says Hyink of Valley Metro. “The additional retrofitted AC condenser provides the added capacity needed during the extreme heat of our summers.”

“The added AC condenser has increased the capacity of the AC system by 60 percent, lowered the system internal pressure by 100 psi and cooled the compressor by 30 degrees.”

### PREPARATION

C. Richard Lehnert, president of Trans/Air Manufacturing Corp., which specializes in commercial vehicle air conditioners, tries to ensure bus companies are prepared to take care of their systems.

“We offer winter kits for skirt-mounted condensers, panels to put over the condenser,” he says. “Our condensers are designed for the exterior environment, but it helps protect them for the season.”

“We also encourage people to visit our website for maintenance suggestions and preventive maintenance.”

Nova Bus manufactures buses that are being used in cooler areas such as Yellowknife in Canada, and other buses are used in warmer climates such as Puerto Rico.

“One of the challenges we have in the industry is we have some major temperature variances,” says Jean-Yves Vallée, director of product planning for Nova Bus. “The same product that needs to be used in some markets that get as high as 120 degrees also need to go in areas that get 20 below. In order to make that happen, we need very good insulation because of both climates.”

### CORROSION

“One of our biggest problems from the snow and ice is the fact that all of the streets use a myriad of ice melt,” NFTA’s Rugg says. “It starts having a real horrendous outcome on the metals on our buses and the electrical connections. It’s a constant battle trying to keep the undercarriage clean.”

“Things keep changing as ice melts evolve. Probably 60 percent of the problems on our buses are some effect of cor-



**By staying on top of vehicle maintenance throughout the year, NFTA prevents last-minute work.**

Photo courtesy of NFTA



**The extreme heat in Phoenix led Valley Metro to equip its fleet with electric engine cooling systems.**

Photo courtesy of Valley Metro

rosion, which is mostly from ice melt that comes on our streets. We haven’t found that silver bullet yet to keep it away.”

The biggest help for Rugg and his peers has been the ever-evolving technology bus manufacturers are providing. As technology improves, the maintenance and upkeep on items becomes less and less.

“It’s been huge,” says Rugg. “With multiplex systems on buses, there’s not all copper terminals for everything. Communication wires run through the bus opposed to underneath.”

“The same product that needs to be used in some markets that get as high as 120 degrees also need to go in areas that get 20 below. In order to make that happen, we need very good insulation because of both climates.”

Jean-Yves Vallée, director of product planning for Nova Bus

“We are pretty particular with the manufacturers about where we have some of our ECMs and control units, our sub-systems, ABS, engine and transmission. Sometimes they look at me like I have a third eye on my forehead, but there are reasons why we do that.”

**Daniel Mike** is a freelance writer from Elkhorn, Wisconsin.



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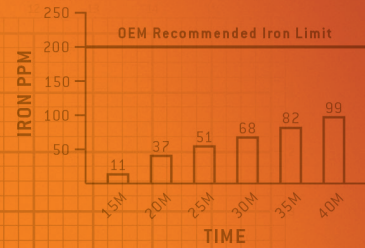
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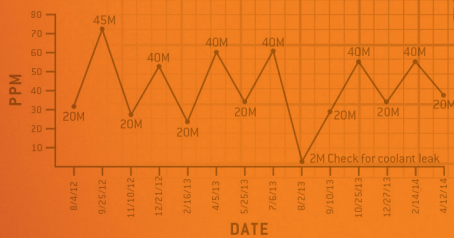


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