

Pressure Vessel Safety and Inspection

Pressure vessels are used in a variety of applications ranging from industrial compressed air receivers to domestic hot water storage tanks. Examples of pressure vessels in and owned by Riverside County departments include compressed air tanks, industrial boilers, and storage vessels for liquefied gases like propane and LPG. If not properly inspected and maintained, Pressure vessels can fail in a catastrophic manner, releasing vast stores of energy and contents. Inspections of pressure vessels have shown that there are a considerable number of cracked and damaged vessels in workplaces. Cracked and damaged vessels can result in leakage or rupture failures. Potential health and safety hazards of leaking vessels include poisonings, suffocations, fires, and explosion hazards. For example, an 80-gallon air tank operating at 200 psi has the equivalence of 393 grams of TNT - enough force to destroy an average sized building and harm its employees. Inspections ensure that such accidents do not happen. Since inspections are a snapshot in time and can only determine how safe the vessel is at the time of the inspection, owners/operators must keep their pressure vessels properly maintained. The safe design, installation, operation, and maintenance of pressure vessels in accordance with the appropriate codes and standards are essential to worker safety and health.



Air Tanks

One of the biggest causes of failure of an air tank is the buildup of water or moisture in the tank. This will cause deterioration over years. A drain is required to keep the tank dry. Depending on moisture in the area this should be done each day or each week, depending on the use and drainage observed. Most air tanks with a maximum allowable working pressure of 150 psi or above require a certificate inspection every five years (see Photos 1,2,3). Portable tanks (on wheels) require an inspection every three years.

Propane Tanks

Propane tanks are inspected every five years when supplying gas by pipe to equipment. Propane tanks that are used to fill other vessels have a three-year permit.



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Boilers and Pressure Vessels

Large boilers (see Photo 5) and pressure vessels in high-hazard process systems pose significant hazards. Vessel failure due to failure to control hazardous energy and system failures can be catastrophic in loss. Clues to a hazardous boiler include leaking safety and or safety relief valves , feed water to boiler, steam leaks (steam systems), high stack temperatures (excess of 350°F), insufficient heat for building , condensate dripping down stack or out the front of the boiler, and constantly resetting of controllers and safety devices. Inspection certification and maintenance of

pressure vessels minimize the risk of failures.

Inspections and Permits

The Division of Occupational Safety and Health (DOSH) - [Pressure Vessel Unit](#) is responsible for the inspection of boilers (any fired or unfired pressure vessel used to generate steam pressure by the application of heat), and tanks (any fired or unfired pressure vessel used for the storage of air pressure or liquefied petroleum gases) and the issuance of a Permit To Operate. The applicable regulations are contained in CCR, Title 8, sections 450-560 and 750-797 and California Labor Code sections 7620-7771.



Permits are required for air tanks, LPG propane storage tanks over 125 gallons, and high-pressure boilers over 15 psig steam. Permit exceptions depend on vessel capacity and operating pressures. Permit inspections may be performed by a Pressure Vessel Unit inspector or an inspector employed by a qualified insurance company. When the first inspection is done, the inspector will stamp a number above the nameplate of on the head of the tank and is the first indication the tank was inspected. Permits are mailed to the office or location address and must be displayed near the pressure vessel for easy reference.

County Departments are responsible to ensure that Permits To Operate are current and regulatory requirements are met.

WE ARE BEATING
THE COVID-19 VIRUS IN
RIVERSIDE COUNTY!
LET'S KEEP IT GOING



WEAR A MASK



STAY 6 FEET APART



AVOID CROWDS

Pressure Vessel Safety and Inspection

The employer requirements for operation of air tanks, fired or unfired, include:

- *No air tank shall be operated unless a permit has been issued. The permit shall be posted under glass in a conspicuous place on or near the air tank or in a weatherproof container secured to the unit, and shall be available at all times to any qualified inspector.*
- *Except as provided in Subsection 461(h), the permit for portable air tanks shall expire not more than three years from the date of inspection and for all other air tanks not more than 5 years from the date of inspection or upon the alteration of, or damage to, the air tank or installation, or upon change of ownership and location, whichever occurs first.*
- *Air tanks having a volume of 1 1/2 cubic feet or less which have safety valves set to open at not more than 150 psi do not require a permit but shall comply with all other provisions of these Orders, including construction. Air tanks used for self-contained breathing apparatus and having a volumetric capacity of 1 cubic foot or less and constructed, inspected, and maintained in accordance with DOT regulations do not require a permit.*
- *No alteration or repair affecting the safety of any air tank covered by these Orders shall be made without the authorization of a qualified inspector.*
- *Each air tank shall be protected by 1 or more safety valves and other indicating and controlling devices that will insure safe operation of the tank. If the tank has a volumetric capacity in excess of 2,000 gallons, it shall be fitted with at least 2 safety valves, the smallest of which shall have a relieving capacity of at least 50 percent of the relieving capacity of the largest valve*
- *Each air tank shall be equipped with a suitable pressure indicating gage with the dial graduated to approximately double the operating pressure, but in no case less than 1.2 times the pressure at which the safety-relieving device is set to function.*
- *Each air tank shall be equipped with a manually operated, valve drain located at the lowest point where water can collect. The valve for this drain shall be suitably located for convenient operation. Automatic drains shall not be considered as complying with this order unless also equipped with a manually operated by-pass.*

CSAC EIA
IS NOW



PRISM

The County of Riverside is a member of the Public Risk Innovation, Solutions, and Management (PRISM)., formerly know as the California State Association of Counties Excess Insurance Authority (CSAC EIA).

Pressure Vessel Inspection Services are offered through Hartford Steam Boiler for Property Program members that purchase Boiler & Machinery Coverage. *Riverside County is a member of PRISM providing inspection services from the Hartford Steam Boiler Inspection and Insurance Company.*

1. *Upon purchase or installation of a regulated pressure vessel, or before a Permit To Operate expires, an inspection must be conducted and a current Permit To Operate issued. To request an inspection, call in to the Hartford Steam Boiler (HSB) Inspection Hotline at 1- 800-333-INSP or 800-333-4677, Extension 61589 and reference HSB policy number 2322297. [Be prepared to identify a date and time for the requested inspection. This has proven to be an effective method to ensure inspections are scheduled and completed when specifically desired. HSB inspectors will contact departments directly to conduct these inspections.]*
2. *Inspections can also be requested from Cal/OSHA Pressure Vessel Unit Office for a fee. <https://www.dir.ca.gov/dosh/pressure.html>*
3. *Upon receipt of a Permit To Operate, please post near the pressure vessel and send a copy to the Human Resources County Safety Division who administers this program.*

MAYO CLINIC



Mayo Clinic Q and A: Repetitive Motion Injuries during COVID-19

By Cynthia Weiss, Original Article [Here](#)

Dear Mayo Clinic: Earlier this year, I began experiencing some pain in my right hand and wrist. I am a systems engineer and have always done a fair amount of typing at work. Now with the COVID-19 pandemic, I am working at home and spending even more time on a keyboard. I'm finding the pain has increased, and I'm also having some new tingling and numbness in my hand and wrist. I heard about carpal tunnel and was wondering if I may have it. If I

do have carpal tunnel, what can I do to help or reverse it?

Answer: There are various things that can cause hand and wrist discomfort. Feelings of pins and needles, or a sensation of tingling or prickling, can occur in the hands due to pressure on nerves, which are like electrical cables that in part give feeling to your fingers.

The exact area of discomfort and symptoms will guide which condition you likely have. Are your symptoms occurring all day or only at certain times? Are you having pain only while typing?

Given the situation you describe, it's most likely you are experiencing one of two common ailments that have become more common in the age of technology. The first is a type of tendonitis known as De Quervain's tenosynovitis. This is considered an overuse injury caused by repetitive hand or wrist motion. The second possibility sounds like it could be carpal tunnel syndrome. Activities such as typing or texting, golfing, and gardening can worsen these conditions.

[De Quervain's tenosynovitis](#) affects the tendons on the thumb side of your wrist. You may have swelling in this area and pain that is exacerbated when you twist your wrist, grasp or lift something heavy like a milk jug.

[Carpal tunnel syndrome](#) is a condition that can create numbness and a sensation of tingling in your fingers. It occurs when the median nerve, which is on the palm side of the hand, is compressed or irritated in some way. Symptoms typically are limited to your thumb, index finger, middle finger and thumb side of your ring finger.

If you feel tingling along the inner aspect of your forearm down to your pinky finger, carpal tunnel is not likely the cause. Rather, it may be that you are suffering from cubital tunnel, which is irritation of a nerve by your inner elbow. Many patients with carpal tunnel report initial symptoms at night, although as the condition progresses, carpal tunnel can cause weakness of the thumb's pinching muscles and lead to difficulties performing routine tasks. Some patients have reported numbness in their hand that is exasperated, for instance, while holding a phone or driving.

If your symptoms are related to De Quervain's tenosynovitis, using ice for swelling and taking a mild pain reliever can help with discomfort. The best treatment, though, is to reduce the activity that is most likely causing your symptoms. While that can be challenging now, especially if you notice that your pain is exasperated while you type, consider using a voice-activated dictation system or switch fingers if you text a lot. For instance, if you most often use your thumbs to text and it has become more painful, switch to using your index fingers instead.

ERGONOMIC CORNER



I also would recommend that you perform an ergonomics check of your at-home workspace. Your posture can affect how you function and develop some of these symptoms. Second, look at the position of your wrist. If you are sitting or standing at an awkward height, your wrist could be in a significantly flexed position that puts pressure on the nerves and tendons, and increases your risk for issues and symptoms.

To help alleviate your carpal tunnel like symptoms at night, try an over-the-counter splint with a metal reinforcement on the palm side. This splint will stop you from flexing your wrist and reduce irritation on the nerve. If your symptoms progress, talk with your health care

provider about next steps to confirm your diagnosis and the potential for other nonsurgical treatments, such as hand therapy or an injection. -- **Dr. Sanjeev Kakar**, *Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota*

INDUSTRIAL HYGIENE CORNER



James L. Jackson III, CIEC, CIH, MS, Ed. D.
Safety Certified Industrial Hygienist
Certified Indoor Environmental Consultant

“I need gas, my car is running on fumes!”



Have you ever heard or said this? Well, the truth is there is no such thing as gasoline fumes. Fumes are the product of solids, not liquids. The definition of a fume is: *An airborne particulate formed by the evaporation of solid material.* Fumes can range in size from .001-1.0 micrograms.

In an occupational setting, fumes are mostly produced from hot processes such as burning, welding, metalizing, grinding, soldering, etc. Smoke, which is the product of the incomplete combustion of organic material such as coal, oil or wood, depending on the size can also be categorized as a fume.

Health effects- Since fumes originate from a multitude of products, their health effects vary greatly. Prolonged exposure to welding fumes for example may cause lung damage and various types of cancer (e.g. lung, urinary tract, larynx, etc.). However, fumes from the hot processes of road and roofing asphalt may cause eye irritation, skin cancer and fatigue just to name a few. So, next time you hear the phrase “gas fumes”, you know differently.

References

Fundamentals of Industrial Hygiene-3rd edition, National Safety Council
The American Industrial Hygiene Association, Stock #BIHS07-731; www.aiha.com
<https://www.osha.gov/asphalt-fumes>



TAKE CARE OF YOURSELF!



This is a challenging time for everyone. We're committed to supporting County employees and their families as things continue to unfold during this pandemic. To help us all remember to commit necessary time to our health and well-being, we will be sharing an 8-week series called ***Mindful Minute***, offered at no cost by Kaiser Permanente (this wellness series is open to ALL County employees, not just KP members!).

Mindful Minute is facilitated by Kevin Pham, who has been a personal trainer for 10 years and holds a 200-hour Yoga Teacher Training Certification. We hope you find these resources helpful.

Here is what you can expect each week:

- Employees will learn about stress management and mindfulness techniques to help improve their resiliency and mood.
- Two 3-5-minute YouTube video links
- 1 Mindful Minute video
- 1 Targeted Stretches video
- One summary document to provide you with key points of focus



MINDFUL MINUTE VIDEO: [HERE](#)

STRETCHING VIDEO: [HERE](#)

NEW SAFETY DATA SHEET SYSTEM

COUNTY OF RIVERSIDE HUMAN RESOURCES
SAFETY DIVISION

Safety Newsletter

RIVCO DASH



800-704-9215

We will be introducing a new Safety Data Sheet System in the coming weeks. The above number is to be used in case of an emergency to retrieve any Safety Data Sheet (SDS) you may need. This number will provide all employees with 24-hour access to toll free phone number for the provision of SDS Sheets and for Emergency Response information regarding hazardous materials in the workplace in compliance with OSHA Right to Know regulations.

County of Riverside Employees can access to ChemTel Chemical Expert Assistance Hotline by dialing the number above.

ChemTel Call Center is available 365/24/7

Contract Number: MIS6742529

What is DASH? Stands for **DA**tA **SH**eets

24 HOUR EMERGENCY RESPONSE TELEPHONE NUMBER 24-7-365 Emergency Response Service

VelocityEHS' ChemTel is one of a select few federally recognized Emergency Response Communication Call Centers. We have been providing exceptional and accurate emergency mitigation services to the hazardous materials transportation industry for over twenty years.

ChemTel has evolved into a premier emergency communications provider thanks to its technically trained and highly experienced professional staff of hazardous materials specialists who are capable of handling virtually any type of hazmat related incident. Our complex 24 hour communications infrastructure is comprised of state of the art telecommunication and computer systems which provide our responders with reliable and immediate access to critical Environmental Health and Safety information 365-24-7.

Our 24-7-365 Communications Infrastructure

Features

- Live operator assistance 24-hours a day /7 days a week /365 days a year by a highly trained and experienced staff of emergency mitigation professionals
- All phone calls into Emergency Call Center are recorded, date and time stamped, and saved as retrievable windows media files. All recordings are archived for a minimum of 18 months.
- Instant access to keyword searchable Safety Data Sheets allows emergency operators to provide immediate and reliable first aid information and incident mitigation procedures to medical personnel and on-scene emergency responders
- Automated transfer to Poison Control Center or medical professionals in the event of life threatening exposures or product misuse
- Real time customized incident report generation in response to product spills, accidental releases in transit, personal exposure, or product misuse. These incident reports can be customized to client specifications to include the precise information needed for review and investigation. Distribution of these reports can be product-specific or location-specific.